

Health Related Quality of Life in Life Hemodialysis Patients : A Single Center Study

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ABSTRACT

Objective: This study were to identify the many factors (gender, age, education level, employment, accessibility, income, history of disease, dialysis duration, caregiver, nutrition) that might influence QoL scores on hemodialysis patients.

Analysis: The quality of life (QoL) has become a recognized outcome in studies of the treatment for patients with undergoing hemodialysis (HD).

Method: This study used a cross-sectional design and was conducted in Hemodialysis Unit of dr. Soetomo Hospital on September-October 2016. The subj of this study were 59 HD patients with HD therapy >3 months (twice a week) and used the SF-36 forms covering 8 domains of QoL, into physical composite summary (PCS), mental composite summary (MCS) and total score.

Findings: the mean age was 44.3(±11.3), 52.5% were male. Most of participants were graduate from senior high school (54.2%), have nondiabetes mellitus history(91.5%), has spouse as caregiver (61%). The mean albumin scores were 3.8(±0.26). The total score mean was 65±20.1, PCS was 58.8(±19.6), MCS was 71.5(±29.4). There were significant correlation between age with RE and GH domain (s= -0.283;r=0.291), education level with PF domain(s=0.327), HD duration with BP, VT, and SF domain (s=0.278, 0.272 and 0.309 consecutively), nutrition with GH and VT domain (s=0.420;r=0.582) and significant comparison between history of disease with PF domain (P<0.006).

Result: Factors affecting some QoL domain in HD patients were age, education level, history of disease, HD duration, and nutrition. Adequate management of these factors can increase patient outcomes.

Keywords: Hemodialysis, quality of life, Adequate management, treatment, patients

INTRODUCTION

World Health Organization defined health as State complete physical, mental and social well-being and not merely the absence of disease or infirmity ^[1]. NKF/K/DOQI (2002) state that chronic kidney disease is a worldwide public health problem. In the United States, there is a rising incidence and prevalence of kidney failure, with poor outcome and high cost. Some of study shows the prevalence of earlier stages of chronic kidney disease are higher. Irreversible retrograde of renal function that lead to end-stage renal disease (ESRD). Hemodialysis (HD) is one of therapy needed for ESRD patients. Based on United States Renal Data system Annual Data Report 2015, Incidence case on ESRD was

reported by the end of 2013 in the US were 117,162, the incidence rate was 363 per million/year ^[2]. Prevalence of HD patients in Indonesia had increased 9396 cases in 2013 to 11689 cases in 2014, and the incident also increased 15128 cases in 2013 to 17193 cases in 2014 ^[3].

Successful renal replacement therapy leads to good quality of life (QoL). HRQOL can be used to evaluate the impact of illness, quality of healthcare, and analysis of cost effectiveness with HRQOL ^[4]. Patients perception can be described with HRQOL about their own function status and the impact of the medical condition on their daily lives ^[4]. Increased mortality and complication are associated with decreased HRQOL in HD patients. There are several factors related to QoL in

hemodialysis patients, such as body mass index, serum albumin, hemoglobin, dietary intake, HD duration, age, and ethnicity [5].

However, these studies did not evaluate the comprehensive factors affected with QoL. Thus, the aim of this study was to identify the many factors (gender, age, education level, employment, accessibility, income, history of the disease, dialysis duration, caregiver, and nutrition) that might affect the QoL scores among on hemodialysis patients using Short Form 36 (SF 36) surveys.

EXPERIMENTAL METHOD

This cross-sectional study was conducted in Hemodialysis Unit of dr. Soetomo Hospital on September- October 2016. We studied 59 of 152 HD patients who had Hemodialysis therapy >3 months (twice a week). This study using primary data with sample size calculated by 95% Confidence level and 0.10 of precision.

The sample was obtained by simple random sampling and interviewed to the eligible respondents (primary data) using SF 36 surveys, it's a generic core of Kidney Disease Quality of Life Short-Form (KDQOL-SF™) [6]. SF 36 consist of 36 items that cover 8 domains of QOL. These eight scales can be aggregated into two summary measures: the Physical Composite Summary (PCS) and Mental Composite Summary (MCS), a total score of QoL also assessed. PCS comprises the scale of physical function (PF), role limitations due to physical health problems (RP), bodily pain (BP), and general health perceptions (GH). MCS comprises the scale of social function (SF), role limitations due to emotional (RE), and general mental health perceptions (MH). Furthermore, gender, age, education level, employment, accessibility, income, history of disease, dialysis duration, caregiver and nutrition also assessed independent variable.

Nutrition assessed based on levels of albumin. Gender was categorized by female and male, age was ratio data type, education level was categorized with elementary, junior high school, senior high school and college, history of disease was categorized with diabetes mellitus (DM) and nondiabetes mellitus (nonDM) and other variable were ratio data type.

Respondents signed informed consent prior to data collection. Data were analyzed using comparison and correlation tests such as Pearson's, Spearman's, Independent t-test and Willcoxon Mann-Whitney test. Dependent variable with normal distribution was analyzed with Independent t-test for comparison and Pearson's test for correlation. The others of dependent variable were assessed with Spearman's test and Willcoxon Mann-Whitney test.

RESULTS AND DISCUSSION

A total of 59 HD patients with the mean age was 44.3 (± 11.3), 52.5% were male. The mean duration of dialysis was 43.27 \pm 31.85 months. Most of the respondents, 54.2% were senior high school, 67.8 % were unemployed, a mean income was IDR 2.783.898 (\pm IDR 1.975.440), accessibility respondents to the hospital was 13.37 (± 14.6) kilometers and the most frequent history disease 91.5 % was Non Diabetes Mellitus (Non DM), the caregiver 61% was spouse. The mean value of albumin were 3.8 (± 0.26). Average of QoL are showed below (table 1).

Table 1:v Quality of Life (QoL) of Hemodialysis Respondents

SF 36	Score mean* \pm SD
Total score of SF 36	65 \pm 20.1
Physical Component Summary (PCS)	58.8 \pm 19.6
Physical functioning (PF)	59.9 \pm 27.6
Role limitations – physical (RP)	49.6 \pm 38.7
Bodily pain (BP)	71.7 \pm 28.7
General health perceptions (GH)	53.9 \pm 15
Mental Component Summary (MCS)	71.5 \pm 29.4
Vitality, energy or fatigue (VT)	72.4 \pm 67.7
Social functioning (SF)	81.5 \pm 27.7
Role limitations - emotional (RE)	78.9 \pm 86.1
General mental health (MH)	53.1 \pm 23.3
* The score range 0-100, with higher score indicating better QoL	

The mean scores of PCS were 58.8 and MCS were 71.5. Additionally, there was not significant comparison between gender and history of disease and not significant correlation between age, education level, employment, accessibility, income, dialysis duration, caregiver, and nutrition with total score, PCS and MCS (table 2).

Table 2: Factors related to total score of QoL, Physical Component Summary (PCS) and Mental Component Summary (MCS)

Variable	P value		
	Total Score	*PCS	MCS
Gender	0.439	0.768	0.785
Age	0.414	0.432	0.160
Education level	0.980	0.336	0.436
Employment	0.586	0.839	0.662
Accessibility	0.381	0.940	0.842
Income	0.933	0.324	0.686
History of disease	0.211	0.086	0.446
Dialysis duration	0.092	0.095	0.597
Caregiver	0.484	0.898	0.584

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Nutrition	0.058	0.234	0.061
PCS: Physical Component Summary; MCS: Mental Component Summary			

Statistically, there were comparison and correlation between RE, SF, GH, PF, BP, and VT domains. Age was significantly correlated to RE ($s = -0.283$). In addition, age also was correlated to GH ($r=0.291$). Education level was a significantly correlated to PF ($s=0.327$). History of disease also significantly compared with PF ($p=0.006$) with mean rank for non DM was 31.86 and DM was 9.90. Duration of HD (in month) was significantly correlate between BP ($s=0.278$), VT ($s=0.272$), SF ($s=0.309$). Enhancement of HD duration could increase BP, VT and SF scores. Albumin level was a significantly correlate between GH ($r=0.420$) and also VT ($s=0.582$) (Table 3).

Table 3: Factors related 8 domain of QoL

Variable	P value							
	PF	RP	BP	GH	VT	SF	RE	MH
Comparison Test								
Gender	0.148	0.284	0.753	0.498	0.437	0.842	0.245	0.217
History of disease	0.006	0.336	0.463	0.396	0.412	0.306	0.132	0.085
Correlation test								
Age	0.794	0.078	0.685	0.025	0.390	0.912	0.030	0.121
Education level	0.01	0.303	0.463	0.170	0.662	0.686	0.91	0.169
Employment	0.721	0.995	0.578	0.239	0.581	0.683	0.958	0.188
Accessibility	0.746	0.066	0.579	0.858	0.301	0.225	0.593	0.117
Income	0.721	0.995	0.578	0.336	0.581	0.683	0.958	0.118
Dialysis duration	0.231	0.278	0.033	0.555	0.037	0.017	0.618	0.999
Caregiver	0.490	0.566	0.360	0.271	0.207	0.654	0.985	0.289
Nutrition	0.230	0.874	0.249	0.05	0.000	0.637	0.522	0.205
<i>PCS: Physical Component Summary; PF: Physical functioning; RP: Role limitations – physical; BP: Bodily pain; GH: General health perceptions; VT: Vitality, energy or fatigue; SF: Social functioning; RE: Role limitations – emotional; MH: General mental health</i>								

The QoL scores measured among the studied patients were converted into percent scores, with higher scores indicating better QoL [7]. The mean total score of QoL were 65.

In this study, age had a correlation with RE domain in negative coefficient correlation. That showed the older age in patient related to the lower RE score. Thus, weaker and negative coefficient correlation were revealed with age, more limited role due to an emotional problem. Limited role due to an emotional problem caused the

severity of illness. Research showed patient’s age and increasing the severity of illness are score strongly correlate ($r = 0.93, P=0.0001$) [8] Age also correlate with GH domain in positive coefficient correlation. It showed that increasing age can improve a spirit of life, satisfaction of life and have a good perception of their health too. Research showed that age correlates strongly with the satisfaction of life score (SMLS) [9].

PF domain of QoL had significant correlation with education level and had a positive correlation, that meant

respondents with higher education had better PF domain of QoL. Higgins, Lavin and Metcalfe (2008) state that education is an important social determinant of health, education can affect health in different stages of the life cycle. In older people physical functioning, education level have a greater impact on mental health (van Oort, van Lenthe and Mackenbach, 2004). Other studies also showed that education level had significantly affected in all HRQoL dimension ^[10].

The result of this study indicated that history of disease was associated with PF domain. Percentage of the history of disease for nonDM was 91.5%. Additionally, hypertension and other factor included in nonDM category. Hypertension was the most recognized cause of ESRD, followed by diabetes ^[8]. Hypertension and diabetes mellitus were risk factor of CKD. Thus, impairment in functioning and well-being may be due to conditions that cause chronic kidney disease (such as diabetes or hypertension) or complications of decreased GFR. In this study showed respondents with nonDM had better PF score than DM.

As duration of HD had a significantly correlation BP, VT, and SF. The longer duration of HD can increase the score of BP (reduced pain intensity), VT (more vitality and spirited), SF (good social lives). Other study showed duration of HD was associated with QoL especially bodily pain ^[11].

Albumin level (nutrition) was a significant correlation between GH and VT domain. That showed good nutrition give a good perception about general health and could make patient happier and spirited. Albumin level was one of nutrition measurement in Hemodialysis patients. Based on NKF-K/DOQI guideline, one of the most important markers of protein-energy malnutrition (PEM) in patients with chronic kidney disease was serum albumin concentration, even when only slightly less than 4.0 g/dL. Albumin level also independently associated with QoL ^[7].

CONCLUSION

We conclude from our study that factor affecting some QoL domain in HD patients were age, education level, history of disease, duration of HD, and nutrition. Adequate management of these factors can increase patient outcomes. One of primary goals of renal

replacement therapy was improving patient's QoL. Multi-center research is needed to evaluate HD patient's QoL and comprehensive factors that affected HD patient's QoL in Indonesia.

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REFERENCES

1. Fukuhara S, Yamazaki S, Hayashino Y, Green J. Measuring health-related quality of life in patients with end-stage renal disease: why and how. *Nature Reviews Nephrology*. 2007 May 22;3(7):352.
2. Okubo R, Kai H, Kondo M, Saito C, Yoh K, Morito N, Usui J, Yamagata K. Health-related quality of life and prognosis in patients with chronic kidney disease: a 3-year follow-up study. *Clinical and experimental nephrology*. 2014 Oct 1;18(5):697-703.
3. Hays RD, Kallich JD, Mapes DL, Coons SJ, Carter WB. Development of the kidney disease quality of life (KDQOL TM) instrument. *Quality of life Research*. 1994 Oct 1;3(5):329-38.
4. Yusop NB, Mun CY, Shariff ZM, Huat CB. Factors associated with quality of life among hemodialysis patients in Malaysia. *PLoS One*. 2013 Dec 16;8(12):e84152.
5. Rostami Z, Einollahi B, Lessan-Pezeshki M, Abadi AS, Kebar SM, Shahbazian H, Makhloogh A, Makhdoomi K, Salesi M, Jalalzadeh M. Health-related quality of life in hemodialysis patients: an Iranian multi-center study. *Nephrology monthly*. 2013 Sep;5(4):901.
6. Kimmel PL, Peterson RA, Weihs KL, Simmens SJ, Boyle DH, Cruz I, Umana WO, Alleyne S, Veis JH. Aspects of quality of life in hemodialysis patients. *Journal of the American Society of Nephrology*. 1995 Nov 1;6(5):1418-26.

7. Germin-Petrović D, Mesaroš-Devčić I, Lesac A, Mandić M, Soldatić M, Vezmar D, Petrić D, Vujičić B, Bašić-Jukić N, Rački S. Health-related quality of life in the patients on maintenance hemodialysis: the analysis of demographic and clinical factors. *Collegium antropologicum*. 2011 Sep 30;35(3):687-93.
8. Bohlke M, Nunes DL, Marini SS, Kitamura C, Andrade M, Von-Gysel MP. Predictors of quality of life among patients on dialysis in southern Brazil. *Sao Paulo Medical Journal*. 2008 Sep;126(5):252-6.
9. Neneh BN. An assessment of entrepreneurial intention among university students in Cameroon. *Mediterranean Journal of Social Sciences*. 2014 Sep 2;5(20):542.
10. Cassidy* S. Learning styles: An overview of theories, models, and measures. *Educational psychology*. 2004 Aug 1;24(4):419-44.