ORIGINAL ARTICLE

Gender Differences in Determinant of Quality of Life Among Haemodialysis Patient

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ABSTRACT

Introduction: Chronic kidney disease is a health problem in the global community with a fairly high incidence and prevalence. Patients with chronic kidney failure (ESDR) who undergo hemodialysis will experience stressors. The process of adaptation to hemodialysis varies between men and women. Women's expectancies and behaviors vary from men. Puspose: To investigate the disparities in gender in determinant of hemodialysis patients' life quality. **Methods:** A cross-sectional research approach was used. This research was carried out in an Indonesian hospital. A number of 239 hemodialysis patients were enlisted (112 females and 127 men). Data were collected including ociodemographic characteristics, Center for Epidemiological Studies Depression (CESD), Kidney Disease Quality of Life- Short Form (KDQOL-SF), and Spiritual Questionnaire. **Results:** There were a significant different in total score of depression and domain of depressed affect, and total score of spiritual and spiritual experience between male and female. The DSES result showed that both female and male participants were high in spiritual level. No significant different in family support in both female and male. Depression was a significant predictor of quality of life among female, while in male, age and depression significant predictor of quality of life. **Conclusion:** Gender disparities in quality of life, however, were significantly reduced after account was taken of differences in symptoms of depression.

Keywords: Gender difference, Quality of life, Hemodialysis

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INTRODUCTION

Chronic kidney disease is a health problem in the global community with a fairly high incidence and prevalence. The prevalence of CKD increases with the increase in the incidence of diabetes mellitus, hypertension and the increasing number of elderly people (1). According to data from the Indonesia Renal Registry, in 2018 the number of active patients undergoing hemodialysis was 30,554 patients. While there were 21,050 new patients undergoing hemodialysis from all over Indonesia.

Chronic kidney disease (CKD), commonly referred to as chronic renal failure, has been described as a gradual loss of kidney function and associated with age-related renal function speeded up decline in hypertension, diabetes, obesity, and primary renal disorders (2). Kidney failure occurs when the kidneys are unable to carry the body's metabolic waste or carry out its regular functions. An ingredient that is usually eliminated by urine accumulates in body fluids due to impaired renal excretion and causes impaired endocrine and metabolic function, fluids, electrolytes, and acid base (3). Hemodialysis treatment serves as the main therapy for patients with end-stage renal disease.

Patients with chronic kidney failure (ESDR) who undergo hemodialysis will experience several stressors, functional restrictions, dietary restrictions, medication effects, difficulties at work as well as social and dynamic changes. Concerning physical and psychological difficulties arising from treatment with hemodialysis, the patient's financial influence can often change due to expected changes in work schedule and higher medical costs. Moreover, there

is a relationship between religiosity and spirituality to improved quality of life and a reduction in the frequency of depression However, Religious and spiritual concepts are not commonly used in medical management (4). Spirituality enhances a patient's ability to cope with illness and accelerates healing (5).

The process of adaptation to hemodialysis varies between men and women (5–13). Women's expectations and behaviours differ from men's (14–16). Previous research reported that women had higher risk of depression than male (20,21). Women having longer lifespans can be a problem due to the burden of chronic illnesses they encounter (17–19,22,23). Facts such as women's economic dependence, minimal education and inadequate healthcare services may also reduce women's quality of life (17–19,22,23).

The roles set down by gender stereotypes and sex discrimination could lead to lower quality of life at all stages of the life cycle and diseases. In this study, we investigated the determinants of quality of life among hemodialysis patients according to gender differences.

MATERIALS AND METHODS

Design and sample

This cross-sectional study was conducted at one of referral hospital in Malang East Java Indonesia, started from March to May, 2019. A total of 239 hemodialysis patients (females, 112; males, 127) were recruited. The inclusion criteria were diagnosed as chronic kidney disease (CKD), having hemodialysis treatment regularly 2 times/ week, age □ 20 years old, cooperative and able to communicate, writing, and reading the questionnaires.

Measurement

A preconfigured report was utilised to collect data on age, hemodialysis treatment duration, diagnosed CKD duration, ethnicity, education level, monthly salary, and other diseases.

Depression was measure using the Center for Epidemiological Studies Depression (CESD). CESD, was published originally by (24). The indicators in CESD were depressed effect/ negative affect, somatic symptoms, positive affect, and interpersonal relation. Response options range from 0 to 3 for each item (0 = Rarely or None of the Time, 1 = Some or Little of the Time, 2 = Moderately or Much of the time, 3 = Most or Almost All the Time). Scores range from 0 to 60, with high scores indicating greater depressive symptoms. The Cronbach alpha in the current study was 0.79.

Kidney Disease Quality of Life- Short Form survey (KDQOL-SF) as the tool of choice for assessing this outcome in adult patients with end-stage renal disease. It was consisted of 36 items and divided into physical function, physical role, pain, general health, social function, emotional role, vitality, and mental health (25). Scores range from 0 to 100, with higher scores indicated good quality of life. We used KDQOL-SF 36 because emotional problems, social functions, mental / psychological health, vitality, bodily pain, and health perception are hemodialysis problems experienced by patients in general. In addition, KDQOL SF 36 can add to the kidney disease domain specific items to get a more detailed and in-depth assessment of quality of life i.e. the accompanying symptoms / problems, kidney disease effects, kidney disease burden, work status, cognitive function, quality of social interaction, sexual function, sleep, support gained, support from dialysis staff, patient satisfaction. The Cronbach alpha in the current study was 0.78.

Data collection

The University of Muhammadiyah Malang's Commission of Research Ethics accepted this study (Number: E.5.a/012/KEPK-UMM/III/2019). We invited participants and requested them to complete a series of questionnaires after obtaining written informed consent. We found them in the hospital's Hemodialysis Unit.

Data analysis

Results are presented as proportions for categorical variables and mean ± SD for continuous variables. Descriptive analyses and frequency distributions were used to describe the distributions of demographic characteristics, CESD, family support, and spirituality according to gender differences. A chi-square test, Mann-Whitney test, and independent t-test were used to assess associations of quality of life and gender differences (univariate analyses). Multivariate predictors in quality of life was analyzed using linear regression and we tested these predictors separately between male and female of patients undergoing hemodialysis A p-value of 0.05 indicated statistical significance. Data analyses were performed using SPSS v. 23.0 (SPSS Inc., Chicago, IL, USA).

Ethical Clearance

The University of Muhammadiyah Malang's Commission of Research Ethics accepted this study (Number: E.5.a/012/KEPK-UMM/III/2019).

RESULTS

Data was collected directly by visiting residents who had a history of chronic disease. The mean age of the participants was 61.4 years with a minimum age of 33 years and a maximum age of 80 years. A total of 16 participants showed positive proteinuria 1 (+1), 4 people showed a positive value of 2 (+2), 3 people had a positive proteinuria value 3 (+3) and 1 person had positive proteinuria 4 (+4). The systolic pressure of all participants had an average of 143 mmHg and an average diastolic pressure of 91 mmHg. Most of the participants had a

history of chronic hypertension and some participants had other comorbidities such as stroke, kidney stones, uncontrolled diabetes mellitus, uncontrolled heart disease and chronic edema conditions.

Participants' Charlson comorbidity index (CCI) had a mean score of five, with a maximum value of 24 and a minimum value of one. The Charlson comorbidity index can predict one-year mortality for participants who may have various comorbid conditions, such as heart disease, AIDS, or cancer (a total of 22 conditions). Each condition is assigned a score of 1,2,3,4, or 6, depending on the risk of death associated with the condition.

Levels of Knowledge About CKD

The results of the knowledge level test about CKD before the participants performed CKD self-management had an insufficient level of knowledge about CKD. There is an increase knowledge after intervention (M = 16.71, SD = 6.6) than before interventions, t= -11.3, p=0.000. (table I)

Levels of Self-Regulation

The results of the self-regulation level test after the participants performed CKD self management program, they had a moderate level of self regulation (M = 88.3, SD = 19.1, t= -12, p= 0.000) (table II)

Proteinuria Overview

The results of statistical tests showed that there was no change in the value before the participants did self-management with n = 0. The results of s tatistical tests also showed that there was no change after the participants did self management with n = 0. So it can be concluded that the value of protein in the urine before and after intervention does not change (p= 1.000) (Table III)

Uric Acid Levels in the Blood

The results showed there was a significant decrease in the uric acid levels of the participants after intervention (M = 5.3, SD = 1.18, t= 4.2, p= 0.000) (table IV)

Cholesterol Levels in the Blood

The result shows there is significant decrease in the cholesterol level of the participants after intervention (M = 181.3, SD = 51.4, t= 3.6, p= 0.002) (table IV)

Blood Pressure Overview

The results of the blood pressure test showed a significant decrease after intervention (M = 6.67, SD = 8.0, t= 4.1, p= 0.000) (table IV).

Table I : Demographic characteristics of patients undergoing haemodialysis (n=239)

	Female (n=112)	Male (n=127)	p-value
Age in year (mean ± SD)	51.50 ± 9.31	50.17 ± 13.79	0.715
Duration of hemodialysis in month (mean ± SD)	22.25 ± 21.87	25.10 ± 24.53	0.690
Duration of diagnosed with CKD in month (mean ± SD)	24.95 ± 17.18	31.19 ± 28.09	0.391
Javanese ethnicity (n, %)	19 (95)	20 (83.3)	0.261
Education level (n, %)			0.002*
Elementary school	84 (75)	25 (20)	
Junior high school	11 (10)	37 (29)	
Senior high school	6 (5)	52 (41)	
University	11 (10)	9 (7)	
Monthly income (n, %)			0.005*
Below minimum regional basic salary	0	43 (34)	
Above minimum regional basic salary	112 (100)	84 (66)	
Comorbidity (n, %)			0.440
Yes	62 (55)	80 (70)	
No	50 (45)	47 (30)	

Note: *=p<0.005; CKD= Chronic kidney diseas

Table II : An overview of studied variables

	Female	Male	p-value
	Mean ± SD	Mean ± SD	
Quality of life			
Total score	54.1 ± 19.1	44.3 ± 14.8	**0.005**
Physical functioning	37.2 ± 29.8	17.3 ± 19.5	**0.011**
Role limitations caused by physical health problems	36.1 ± 11.8	33.9 ± 12.8	0.555
Role limitations caused by emotional health problems	71.4 ± 23.1	66.3 ± 25.7	0.496
Social functioning	55.7± 13.5	50.0 ± 12.3	0.155
Emotional well-being	61.0 ± 41.7	22.9 ± 38.9	**0.003**
Pain	60.7± 23.8	53.5 ± 21.2	0.292
Energy/fatigue	58.5 ± 24.5	64.6 ± 21.5	0.385
General health perception	52.6 ± 25.5	45.6 ± 22.9	0.370
Depression			
Total score	19.8 ± 4.7	21.4 ± 3.2	**0.003***
Depressed affect	5.9 ± 1.2	7.0 ± 2.3	**0.040***
Somatic symptom	5.9 ± 2.65	5.51 ± 2.72	0.626
Positive affect	5.95 ± 2.85	4.79 ± 2.55	0.163
Interpersonal relation	3.60 ± 2.54	2.46 ± 1.69	0.083
Family support			
Total score	46.8 ± 9.43	48.2±8.16	0.634
Emotional support	11.2 ± 2.46	10.9±2.54	0.670
Informational support	12.3 ± 2.67	13.0±2.46	0.378
Instrumental support	11.3 ± 2.27	11.6±2.16	0.685
Appreciation support	12.0 ± 3.04	12. 7 ± 2.49	0.429
Spiritual			
Total score	73.9 ± 9.33	70.8 ± 11.98	**0.004***
Spiritual experience	71.2 ± 11.19	68.0±15.35	0**.001***
Closeness with God	2.65±0.87	2.79 ± 0.83	0.586

Note: *=p<0.005;

Table III : Predictors of quality of life among female undergoing hemodialysis (n=112)

Independent variable	B	SE	β	t	p-value	R	R^2
Age	- 0.342	0.473	- 0.168	- 0.724	0.482	0.745	0.555
Duration of hemodyalisis	0.344	0.252	0.397	1.362	1.96		
Duration of diagnosed with CKD	- 0.179	0.333	- 0.162	- 0.538	0.600		
Depression	-1.879	0.541	- 0.715	- 3.471	0.004		
Family support	- 0.885	0.492	- 0.441	- 1.797	0.096		
Spiritual	- 0.046	0.322	- 0.033	- 0.144	0.877		

Table IV : Predictors of quality of life among male undergoing hemodialysis (n=127)

Independent variable	B	SE	β	t	p-value	R	R^2
Age	- 0.477	0.164	- 0.418	- 2.916	**0.01**	0.835	0.698
Duration of hemodyalisis	0.588	0.313	0.915	1.878	0.078		
Duration of diagnosed with CKD	- 0.532	0.287	- 0.949	- 1.914	0.073		
Depression	- 1.461	0.333	- 0.690	- 4.384	**0.000**		
Family support	0.034	0.306	0.019	0.111	0.913		
Spiritual	- 0.235	0.166	- 0.238	- 1.411	0.176		

DISCUSSION

The level of knowledge about the participants' kidney disease showed a significant increase in results, from the 24 participants who did self-management, all of them had an increased understanding of chronic kidney disease. The approach was carried out directly 4 times for 2 weeks. All participants pay attention to the contents of the booklet provided and regularly study it. Before participants carried out self-management accompanied by booklets, the average level of knowledge they possessed was quite understanding. However, after being given a booklet and undergoing an intensive 2-weeks self-management program, there was a significant increase in knowledge about kidney disease. The level of self-regulation of participants also experienced significant changes, from 24 participants who had very low average self-regulation, after carrying out self-management programs, had an average of moderate self-regulation. This was supported by the enthusiasm of the participants during the visit and self-awareness of the importance of keeping the kidneys healthy.

This significant change is supported by 3 factors, namely individual, social and information factors (11). Participants have different personality backgrounds, different moods and emotions, and different attitudes and experiences regarding chronic kidney disease. Social factors in the form of education level, age, gender, ethnicity and culture of each participant also determine changes in the level of knowledge and self-regulation they have. Information obtained during life, media and direct implementation also play an important role in changing levels of knowledge and self-regulation. All participants were very cooperative when the self-management program was implemented, and tried to follow the recommendations provided in the booklet. Problems that have been arranged together and the objectives to be achieved by participants can be fulfilled properly. The problems and solutions to be achieved can be fulfilled properly, this is due to the design of the solutions that have been prepared in the booklet and are easily accessible. High individual self-awareness also makes the implementation of self-management programs well. Participants were very enthusiastic and had positive responses after knowing

about CKD properly and having a commitment to improve their health. The information obtained from the self-management program can increase the patient's knowledge, skills and confidence, and the patient can also adjust to the stage of CKD he is experiencing (12). Recent studies using cohort methodologies have shown that self-management interventions are effective for CKD patients because they can slow disease progression, improving overall quality of life (13).

The uric acid levels found in data collected showed significant changes before undergoing self-management programs and after undergoing self-management programs. Although the average uric acid range was still normal, there was a difference between male and female uric acid levels before and after the implementation of the self-management program. Some participants had uric acid levels above normal but after following the program there was a significant decrease in uric acid levels. High uric acid levels are associated with a significant reduction in glomerular filtration rate and have a higher risk of kidney failure. Hyperuricemia is a potentially modifiable factor in CKD (14).

The picture of proteinuria in participants with an average age of 61.4 years showed that all participants had a previous proteinuria condition, this is supported by a study which states that diabetes mellitus, hypertension and those over 50 years of age have a significantly high risk of developing proteinuria. The use of the dipstick urine method for initial screening has proven to be economical and effective in identifying the presence of CKD in community settings (15), especially in areas that have difficulty accessing health services in hospitals. The cholesterol figure before self-management was 207.96 with a high threshold category. The condition of dyslipidemia is a complication of damage to the kidneys, the profile of fat in the blood depends on kidney function and the degree of protein in the urine (16). Along with the occurrence of kidney damage, the condition of dyslipidemia often worsens (17). However, the average cholesterol value of participants after self-management became 181.33, which indicates that it is still in the normal range, so this shows that self-management programs can lead to better health outcomes, are better for participants (18).

The blood pressure in participants experienced significant changes between before and after doing a self-management program. Most of the participants had a history of uncontrolled hypertension. Systemic hypertension causes intraglomerular hypertension resulting in glomerular hypertrophy and injury to the kidneys. Hypertensive conditions can lead to decreased kidney function in patients who have experienced CKD before (2,19). Self-management programs have been shown to change knowledge and self-regulation in all participants who have a history of uncontrolled hypertension. After knowing that the blood pressure was above the normal range, most of the participants who had a history of hypertension took the initiative to immediately go back to the health center and commit to continue taking anti-hypertensive drugs and trying to control their blood pressure.

There are several limitations in this research, timeline research only has a duration of 2 weeks from the 12 weeks that should have been done in the previous research. This is due to the difficulty in getting permission to reach the population in question regarding the COVID-19 pandemic in 2021. However, in the reference article, the previous author acknowledged that 12 weeks was quite a long time and was less effective for the author himself, this was stated in the author's discussion limitation on published articles. Another limitation is the setting of the writing location which should be in the hospital clinic, but because the conditions made it impossible to conduct in clinical setting due to the Covid 19 pandemic, it was decided that this research should be done in a community that has a green zone (free from covid 19).

Likewise with the inclusion criteria that should use serum creatinine data to determine the glomerular filtration rate of potential participants, to determine whether or not potential participants have kidney problems, another screening method is used, the urinalysis method, with reagent strips to identify the presence of protein in the urine (dipstick), measure serum uric acid levels, and measure serum cholesterol levels. Based on the selected screening method, it is possible to determine potential participants who meet the inclusion criteria. Studies show that proteinuria is a risk factor as well as a marker of kidney damage (20–22). Proteinuria has an important role in determining a person's deterioration of kidney function and has been used as a marker for glomerulopathy problems (23). Likewise, a significant decrease in glomerular filtration rate and the risk of kidney failure is closely related to high serum uric acid levels in the blood (14) Hyperuricemia is an independent risk factor for assessment of renal function (24). Uric acid levels in the blood often increase in patients with kidney damage (25,26). A person suffering from CKD also tends to experience problems with narrowing of his blood vessels, so checking cholesterol levels is very important as a measuring tool for CKD (27). Cholesterol measurement is actually more accurate to say as a risk factor that aggravates the condition of the kidney that has been damaged. Cholesterol assessment can also be used as a measure of the success of a self-management program.

CONCLUSION

Self-management programs within booklet with social cognitive therapy is an effective approach to increasing knowledge about CKD can improve self-regulation in

patients with chronic kidney disease. Self-management programs can be carried out in the community with intensive follow up and also can improve health quality by lowering serum uric acid levels, serum cholesterol and blood pressure.

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