Mardiyah A, et al. Belitung Nursing Journal. 2017 August;3(4):426-431
Received: 25 May 2017 | Revised: 19 June 2017 | Accepted: 31 August 2017
http://belitungraya.org/BRP/index.php/bnj/

ORIGINAL RESEARCH **ISSN: 2477-4073**

FUNCTIONAL STATUS IN PATIENTS WITH CHRONIC KIDNEY DISEASE BEING TREATED WITH HEMODIALYSIS IN PKU MUHAMMADIYAH HOSPITAL, YOGYAKARTA, INDONESIA

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ABSTRACT

Background: Hemodialysis process is useful for patients with end-stage renal disease. However, this is a situation of abject dependence on a machine, a procedure and a group of qualified medical professionals for the rest of their lives that may influence their functional status.
Objective: This study aims to describe the functional status of patients with chronic kidney disease undergoing hemodialysis.
Method: This was a descriptive study with cross-sectional design, which conducted in the PKU Muhammadiyah Hospital Yogyakarta Indonesia on March 2017. There were 78 patients selected using purposive sampling. Functional status was measured using SF-36 questionnaire. Descriptive statistic was performed for data analysis
Result: The total average of functional status level was 42.92, with Physical Component Scale (PCS) of 42.31 and Mental Component Scale (MCS) of 45.78.
Conclusion: There were functional deficiencies in both physical and mental status in patients with chronic kidney disease undergoing hemodialysis. Thus, it is suggested that pharmacological management of these patients need stringent monitoring on part of the psychiatrist to deal with mental health problems, and the interdisciplinary team need to do great efforts to improve functional status and quality of life of patients with chronic kidney disease.

Keywords: hemodialysis, functional status, chronic kidney disease

INTRODUCTION

Chronic kidney disease is a general term for heterogeneous disorders affecting the structure and function of the kidney.[1] The variation in disease expression is related partly to cause and pathology, severity, and rate of progression. The definition of chronic kidney disease is based on the presence of kidney damage (i.e.,

Editor's Note: This article has been updated on 13 July 2020 in terms of the completeness of correspondence address. The update is based on BNJ policy on article

albuminuria) or decreased kidney function (i.e., glomerular filtration rate [GFR] <60 mL/min per 1·73 m²) for 3 months or more, irrespective of clinical diagnosis. [1,2] Chronic kidney disease consists of various stages, where the final stage of chronic kidney disease is called end-stage renal disease (ESRD).

Based on the data from United Stated Renal Data System (USRDS),[3] it is known that there were 678,383 prevalent cases of ESRD; the unadjusted prevalence (crude proportion) was 2,067 per million in the U.S. population in 2014. This increased rate also occurs in Indonesia which the data show that patients with chronic kidney disease continues to rise.[3] According to PT. ASKES, the number of chronic kidney diseases cases was 17,507 people in 2010, which continues to rise by about 23,261 cases in 2011, and 24,141 cases in 2012. While based on Riskesdas,[4] the number of patients with chronic kidney disease in Indonesia reached 504.248 persons, and in 2011 approximately 12,500 patients had end-stage renal disease who needed routine hemodialysis, with 4,445 patients from West java, followed by Yogyakarta (1,914 patients), Bali (1,847 patients), and Central Java (725 patients). [4]

Hemodialysis process is very useful for patients with end-stage renal disease. However, complication may occur to the patients who undergo hemodialysis, which will influence functional status of patients.[5] Functional status is an ability to perform daily activities, including in doing a job, self-care, and taking care of family or social roles, as well as personal function in various fields, like physical health, the quality of self-care and role activity, intellectual status, social activities, attitudes toward the world and against self, and emotional status.[6]

Based on theoretical analysis, functional status is seen as multidimensional consisting of behavior (daily performance or activity), psychological (mood), cognitive (attention, concentration), and social (activities related to roles according to stage of development).[7] Functional status is an ability of individuals to use their physical capacity to fulfill their life obligations to carry out physical activity, self-care, maintenance, and obligation to interact with others, so as to improve the health of individuals. [7]

Complications that occur in patients who undergo hemodialysis include discomfort, increased stress, and low quality of life.[6] Preliminary result showed that patients undergoing hemodialysis experience decreased muscle strengths and fatigue. Most of the patients felt bored with the treatment, which might trigger distress and lead to psychological problem. Therefore, the purpose of this study was to describe the functional status of patients with chronic kidney disease undergoing hemodialysis.

METHODS

Study Design

This was a descriptive study with cross-sectional design, which conducted in the PKU Muhammadiyah Hospital Yogyakarta on March 2017.

Population and Sample

The target population in this study was patients with chronic kidney disease who underwent routine hemodialysis at PKU Muhammadiyah Hospital, Yogyakarta. There were 78 patients selected using purposive sampling. The inclusion criteria to select sample were: 1) patients who received a regular hemodialysis twice a week, 2) long-term treatment at least 1

year or more, 3) no interference with musculoskeletal and nervous system.

Instruments

Functional status was measured using SF-36 questionnaire, which adopted from Safarudin (2012)[8] in Indonesian version. The SF-36 questionnaire consists of: 1) Physical component scale dimension (PCS) consisting of Physical function (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Function (SF), and 2) Role and dimension of Mental component scale (MCS) consisting of Role Emotional (RE) and Mental Health (MH) aspects which have been used extensively by the hemodialysis population. There are 8 dimensions with 36 items. If the score < 60, means low functional status; and if the score 100, means very good functional status. The instrument has been validated with the result of coefficient correlation was 0.3, and Cronbach alpha was 0.898.

Data Analysis

Descriptive statistic was performed for data analysis to describe frequency distribution and the mean and standard deviation.

Ethical Consideration

This study has been ethically approved by the Health Research Ethics of Faculty of Medicine of Diponegoro University and Dr. Kariadi Hospital Semarang with No. 81/EC/FK.RSDK/III/2017. The researchers have confirmed that all respondents have obtained appropriate informed consents.

RESULTS

Table 1 shows that the number of the respondents was 78 with 61.5% of males and 38.5% of females. The majority of the respondents aged 41-50 years (69.2%), with senior high school level background (74.4%), and unemployed (75.64%). Most of respondents had a hemodialysis treatment for 2-4 years (78.2%).

Table 1 Frequency distribution of the characteristics of the respondents based on age, gender, education, employment status, and length of hemodialysis treatment (n=78)

Characteristic of respondents	Frequency	%
Gender		
Men	48	61.5
Women	30	38.5
Education		
Junior High School	12	15.4
Senior High School	58	74.4
University	8	10.2
Age (year)		
31-40	19	28.4
41-50	54	69.2
>50	5	6.4
Employment status		
Employed	19	24.35
Unemployed	59	75.64
Length of hemodialysis treatment		
2-4 years	61	78.2
4-6 years	14	17.9
>6 years	3	3.84

Table 2 The level of functional status (n= 78)

SF-36 Dimensions	*Functional Status*	
	Mean	**SD**
Physical Function (PF)	50.13	7.68
Role Physical (RP)	29.49	9.65
Bodily Pain (BP)	47.95	5.97
General Health (GH)	36.21	8.72
Vitality (VT)	39.23	7.93
Social Function (SF)	49.67	6.03
Role Emotional (RE)	35.89	8.94
Mental Health (MH)	49.07	8.88
Physical component scale **(**PCS**)**	42.31	4.70
Mental component scale **(**MCS**)**	45.78	8.69
Total SF-36	42.92	4.39

Table 2 shows that the total score of SF-36 dimension was 42.92, with physical component scale was 42.31 and mental component scale was 45.78. This score indicates that the functional status of patients undergoing hemodialysis was low. Of 8 dimensions, the role physical dimension was the lowest.

DISCUSSION

This study aims to describe the functional status of patients with chronic kidney disease undergoing hemodialysis with SF-36 dimensions. The majority of the respondents aged 41-50 years (69.2%). It is in contrast with previous studies which stated that Chronic kidney disease (CKD) is common in the elderly,[9] and the predicting a further increase in prevalence is occurring among those aged 65 years and older.[2]

Findings of this study revealed that the functional status patients with chronic kidney disease undergoing hemodialysis the PKU Muhammadiyah Hospital Yogyakarta remains low. This is in line with previous study indicated that patients with terminal renal failure who undergo hemodialysis have decreased vitality, physical and psychological functioning, resulting in a decline in their quality of life.[10]

Functional status in this study was measured in terms of *physical and mental component scale.* Physical component aspect is related to the ability or limitation in doing daily activity, such as walking, walking up the stairs, and any other activities. This self-limited condition is associated with muscle weakness, as the complication of hemodialysis. In addition, Physical inactivity is associated with higher levels of fatigue in ESRD patients.[11]I Fatigue is one of the most frequent complaints of dialysis patients and is associated with impaired health-related quality of life (HRQOL).[12] The prevalence of fatigue ranges from 60% to as high as 97% in patients on long-term renal replacement therapy.[13] Fatigue is a subjective sense of weakness, lack of energy, and tiredness.[14]

On the other hand, patients with chronic kidney disease undergoing hemodialysis cause psychiatric symptoms and it is worth noting the same to avoid confusion. The most common psychiatric complication occurring as a result of renal failure is depression in the patient and anxiety in the associated partner.[15] Most dialysis patients who are employed may seldom return to full time work activity. It can be seen that 75.64% of patients in this study were unemployed. Work in addition

to a source of income is often associated with a sense of accomplishment, self-esteem and identity in most patients. [16] In addition, Extreme anxiety and anxiety somatic symptoms such as breathlessness, palpitations, chest pain, sweating and fear of dying may occur in renal failure cases. It is also noteworthy that when depressed, the dialysis patient has at his disposal a very effective method of escape i.e. suicide.[16]

This study provided the information regarding the functional deficiencies in patients with chronic kidney disease undergoing hemodialysis. There is a multifaceted problem having both physical and psychological connotations for the patient.

CONCLUSION

The results of this study revealed that there was a low functional status in both physical and mental status in patients with CKD undergoing hemodialysis. Thus, it is suggested that pharmacological management of these patients need stringent monitoring on part of the psychiatrist to deal with mental health problems, and the interdisciplinary team need to do great efforts to improve quality of life of patients with CKD.

Declaration of Conflicting Interest

None declared

Funding

This study was supported by Master of Nursing, Faculty of Medicine, Diponegoro University, Semarang, Indonesia.

Author Contribution

All authors contributed equally in this study.

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Cite this article as: Mardiyah A, Anggorowati, Johan A. Functional status in patients with chronic kidney disease being treated with hemodialysis in PKU Muhammadiyah Hospital, Yogyakarta, Indonesia. Belitung Nursing Journal 2017;3(4): 426-431. https://doi.org/10.33546/bnj.87