ORIGINAL ARTICLE

The health education based on family support toward self-care AVF access and life quality of patients with hemodialysis

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ABSTRACT

Background: *According to a report by the Indonesian Renal Registry (RII) in 2017, the number of patients with chronic kidney disease increased drastically. It shows more patients who may have hemodialysis. Patients with hemodialysis use AVF Access to ease the therapy process. Education based on family support is needed to help patients in self-care, using AVF Access, and improving the quality of patients.* ***Purpose:*** *This research aims to know the impact of education based on family support toward self-care and the life quality of patients with hemodialysis.* ***Methodology:*** *The methodology of research used is total sampling. There are 22 samples of patients with hemodialysis with AVF Access that fulfill inclusive criteria (living with family, having components awareness, and doing regular hemodialysis twice a week). The instruments to collect data are questionnaires of self-treatment with ACF Access and KDQL SF™-36. The data is analyzed with the validating technique of the T Dependent Test with a significance level of 0,05.* ***Result:*** *The result shows that most respondents have good self-treatment for 14 patients (63,6%), proven by p-value = 0,000. The life quality of most respondents is good, proven by p-value = 0,00.* ***Conclusion:*** *In conclusion, there is a significant, substantial, and one-way correlation between education based on family support toward self-care AVF Access and the life quality of patients with hemodialysis. Family is obliged to give more support to patients with hemodialysis to do self-care well so the life quality of patients may improve.*

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1. Introduction

According to the National Foundation Kidney Disease Outcome Quality Initiative (NKF-KDOQI), Chronic Kidney Disease is a functional disorder of the kidney or damage in the kidney that lasts for three months or more. According to the Indonesian Renal Registry (RII) report 2017, the number of patients with chronic kidney disease is increasing drastically. It shows more patients that may have hemodialysis (new and active patients with hemodialysis (National et al. Centre, 2014).

Hemodialysis is one of the therapies which is recommended for patients with chronic kidney disease. Hemodialysis is a curing procedure. Hemodialysis is a process in which a crystal substance passes a semi-permeable membrane. It is done to excrete waste and poisonous matter from blood if kidney insufficiency occurs. Hemodialysis was developed for the first time by Thomas Graham in 1884, and Dr William Koff was considered the godfather of Hemodialysis (Mollaoğlu et al., 2012). Hemodialysis is proven to extend the life of patients by giving more hope to the lives of patients with PGK Stadium V.

Pasien hemodialisis membutuhkan akses vaskular untuk mempertahankan hemodialisis. Terdapat tiga tipe akses vaskuler yang dapat dipakai untuk tindakan hemodialisis, yaitu: *arteriovenous fistula/AVF* (av-shunt), *arteriovenous graft/AVG*, dan *central venous catheter HD/CVC* (Drew et al., 2015). Av-shunt is vascular access that is commonly used. It is easier to do hemodialysis in the long term, resulting in a significant decrease in complications such as

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thrombus, infection, and bleeding, which can be seen in other vascular access. Access Av-shunt must be used with the proper treatment to survive longer (Harwood et al., 2016).

Self-treatment of patients with hemodialysis is an effort of patients to maintain health actively and to respond to daily activities that will be done (Sousa et al., 2020). Self-care programs can improve life quality related to patients' daily activities with chronic kidney failure. However, the fact is that there are still more cases of rehospitalization, and patients are still not able to do their daily activities due to a lack of motivation and knowledge related to diseases and psychological disorders. It happens because patients do not have sufficient effort to do self-treatment, which is the education of self-treatment (Sousa et al., 2020).

This treatment management becomes one of the treatment models nurses arrange for patients. There are several models of treatment management. In this case, nurses use leaflets and booklets written by nurses and give them to patients. Self-treatment of patients with hemodialysis shows low prevalence. Therefore, it is essential to give full support to patients for maintaining self-treatment. The limitation in self-treatment of patients may cause stress, frustration, offended-easily, and sensitive feeling (Mollaoğlu et al., 2012). The behavior of self-treatment may improve health status, self-edification, work ethic, and less complication. Self-treatment can improve the life quality of patients.

Life quality is a condition in which a person may feel satisfied in life day by day. Stated that 56.7% of PGK patients with hemodialysis have poor life quality. It is an important indicator to evaluate therapy results of hemodialysis toward patients. Besides, several factors may affect the life quality of patients, such as physical, psychological, social, economic, and environmental aspects. Family support becomes one factor that influences patients in hemodialysis treatment and supports the success of nursing treatment (Moon et al., 2009).

Family support is essential when dealing with a health problem and a preventive strategy to minimize problems (Pasyar et al., 2020). Family support is also one of the palliative treatments. Palliative treatments are done for patients with hemodialysis treatment in a holistic nature according to perspectives of biology, society, psychology, and spirituality to improve the life quality of hemodialysis patients (Chiou & Chung, 2012). It may be done by including family in treatment. The primary purpose of Palliative Care is to prevent, decrease pain, and provide aid to have the quality of health for patients and their families without observing the condition of patients.

2. Methods

The method used in this research is pre-experimental design. A group of pre-tests and post-tests does it. This research consists of two variables: dependent and independent variables. The independent variable in this research is education based on family support, and the dependent variables are self-care of AV-shunt access and the life quality of hemodialysis patients. This research uses a total sampling technique. The samples used in this research are 22 respondents who use AV-shunt access. This research was done at RSUD Sunan Kalijaga Demak from February until March 2023

Measuring instruments used in this research are a questionnaire on self-care, which consists of 15 items, and a questionnaire on life quality, which consists of 36 items in five domains. A questionnaire of life treatment and life quality for 80 PGK patients with hemodialysis at Rumah Sakit Akademik Universitas Gadjah Mada Yogyakarta. The validity is counted using the formula CVI for 80 patients with a value of 1.00. Therefore, the questionnaire is valid and can be used as an instrument of research. A minimum value of 0.83 is valid. Reliability testing uses a formula of Alpha Cronbach, which results in 0.823. Therefore, the questionnaire is reliable and trustable (the instrument is reliable if the Alpha Cronbach value is $\geq$ 70).

3. Results and Discussion

The results of the research will provide data in tables. It is a distribution based on characteristics of the respondent that include age, education, occupation, the length of using AVF access, self-care of AVF, and life quality before and after the intervention of health education based on family support and bivariate analysis.

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3.1 Analisis Univariate

Hasil penelitian akan menyajikan data dalam bentuk tabel yang berupa distribusi berdasarkan karakteristik responden yang meliputi usia, pendidikan, pekerjaan, lama menggunakan akses AVF, perawatan diri akses AVF dan kualitas hidup sebelum dan sesudah diberikan intervensi edukasi kesehatan berbasis *family support* dan Analisis bivariat. Analisis univariat menjelaskan mengenai karakteristik responden dan gambar sebelum dan sesudah dilakukan intervensi.

a. Characteristic of respondent
Based on the result of the research, the distribution of frequency in characteristics of respondents can be observed in Table 4.1

Table 4.1 Distribution of frequency in characteristics of the respondent

Karakteristik Responden	Frekuensi (f)	Percentage (%)
a. age		
(17–25 year-old)	1	4.5%
(26-35 year-old)	12	54.5%
(36-45 year-old)	6	27.3%
(46-60 year-old)	3	23.6%
b. education		
Elementary	5	22.7%
Junior High School	2	9.1%
Senior High Scool	12	54.5%
College	3	13.6%
c. Occupation		
Employed	12	54.5%
Unemployed	10	45.5%

According to Table 4.1, most respondents in the Hemodialysis Room at RSUD Sunan Kalijaga Demak in the 26–35-year-old range are 12 respondents (54.5%). The highest percentage of respondent's education in senior is 12 respondents (54.5%). The number of unemployed respondents is 12 respondents, with percentage (45.5%)

a. Description of self-care before and after health education based on family support
Analysis result of self-care before and after health education based on family support can be seen in Table 4.2

Table 4.2 Description of self-care before and after health education based on family support

Variable	Pre / Post	Level of Self-care AVF Access	Number (N)	Percentage
Self-care AVF Access	Pre	Good	2	9.1%
		Average	7	31.8%
		Poor	13	59.1%
	Post	Good	14	63.6%
		Average	7	31.8%
		Poor	1	4.5%

According to Table 4.2, 13 respondents must improve (59.1%) in the self-care AVF Access category pre-test. On the other hand, are 14 respondents in the post-test category of self-care AVF Access.

b. Description of life quality before and after health education based on family support.
Analysis results before and after health education based on family support can be seen in Table 4.3

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Table 4.3 Description of life quality before and after health education based on family support.

Domain	Pre/Post	Level of self-care AVF Access	Number (N)	Percentage (%)
Physical Component Summary (PCS)	Pre	Good	2	9.09%
		Poor	20	90.9%
	Post	Good	18	81.8%
		Poor	4	18.2%
Mental Component Summary (MCS)	Pre	Good	3	13.6%
		Poor	19	86.4%
	Post	Good	20	90.9%
		Poor	2	9.09%
Burden Kidney Disease	Pre	Good	5	22.7%
		Poor	17	77.3%
	Post	Good	19	86.4%
		Poor	3	13.6%
Symptom and Problem	Pre	Good	4	18.2%
		Poor	18	81.8%
	Post	Good	20	90.9%
		Poor	2	9.09%
Effect of Kidney on Daily Life	Pre	Good	2	9.09%
		Poor	20	90.9%
	Post	Good	18	81.8%
		Poor	4	18.2%

Table 4.3 shows the result of each domain of life quality obtained. Domain Physical Component Summary (PCS) in the pre-test is of poor quality, with 20 respondents (90.9%). On the other hand, life quality is good in the post-test with 18 respondents (81.8%). Domain Mental Component Summary (MCS) in the pre-test is of poor quality, with 19 respondents (86.4%). On the other hand, life quality in the post-test is good with 20 respondents (90.1%). Domain Burden Kidney in the pre-test is of poor quality, with 17 respondents (77.3%). On the other hand, life quality in the post-test is good with 19 respondents (86.4%). Domain Symptom and Problem in the pre-test is of poor quality with 18 respondents (81.3%). On the other hand, life quality in the post-test is good with 20 respondents (90.1%). Domain Effect of Kidney on Daily Life in the pre-test is of poor quality, with 20 respondents (90.1%). On the other hand, life quality in the post-test is good quality with 18 respondents (81.3%).

3.2 Analysis Bivariate

1. The influence of education based on family support toward self-care AVF Access.

Table 4.4 Result of Chi-Square Testing to Self-care AVF Access

Variable	Mean	Std. Deviation	Sig. (2-tailed)
Self-care AVF Access	110.636	11.786	0.000

Analysis result in Table 4.4 displays the increasing value of measurement in self-care AVF Access before and after intervention of education based on family support. The measurement of the pre-test and post-test proves it. It uses a T-Test Dependent that displays a value of 0.000 so it can be concluded to get a significant outcome.

2. The influence of education based on family support toward life quality

Table 4.5 Result of T-Test Dependent based on life quality

Variable	Mean	Std. Deviation	Sig. (2-tailed)
Life Quality	745.000	149.374	0.000

Analysis result in Table 4.4 displays the increasing value of measurement in self-care AVF Access before and after intervention of education based on family support. The measurement

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of the pre-test and post-test proves it. It uses a T-Test Dependent that displays a value of 0.000 so it can be concluded to get a significant outcome.

3.3 Discussion

The discussion contains an explanation of the research results with related theories supported by previous journals. This research will discuss the analysis of the Univariate beforehand. It is distributed to respondents based on age, education, occupation, self-care, and life quality before the intervention of health education based on family support is given. It will also discuss the result of bivariate by using an independent t-test. According to the result of research in RSUD Sunan Kalijaga Demak, hemodialysis patients with av-shunt are in the range of adults 31-45 years old (50%). This research is in line with previous research in the United States, with the majority age of respondents in an elderly stage, which is >65.36. This research is supported by a theory that states the body's functional ability may decrease as a person gets older than before. One of the functional abilities is kidney function. It may be evaluated through several GFR/LFG. The data of patients with chronic kidney disease from 45 to 84 years old range between 15/minutes per 1.73 m2 (Moon et al., 2009).

Patients with chronic kidney disease at 45-65 years old may be present because of contribution to deficiency of GFR function when patients are getting older and other factors such as diets or other diseases. The education level in this research is elementary, with nine individuals (30%), and primarily junior high is in the control group with 15 individuals (50%). It is supported by previous research in Jambi with education level in elementary and junior high with 64 individuals (47.8%) (Weti, 2016). Research with similar results states that most patients with chronic kidney failure in hemodialysis treatment at RSU Dr. Zainoel Abidin Banda Aceh are at the basic level of education with 24 individuals (38.1%) (Rukmaliz, 2013). This research is supported by previous research in Jakarta that states the majority of respondents in junior high and high senior is 37.5% (Hendry & Wibowo, 2015).

The education level also affects the success rate in patients with hemodialysis. Education level in this field influences patients' knowledge of the therapy process. It will ease the identification of stressors and influence the awareness and understanding of stimuli for diseases. Patients' educational background is an essential component of treatment quality (Chiou & Chung, 2012). Occupational status in this research is majorly unemployed, with 20 individuals (67%). This research is supported by previous research that 63.6% of patients are unemployed and limited in activities (Nurchayati, 2016). Working is commonly a physical activity that consumes time and causes exhaustion. Patients with hemodialysis must limit physical activities by accessing av-shunt. It relates to one of the treatments, av-shunt, so it can still be maintained. Access may become an obstacle for patients to do everyday activities daily, and they must find alternative ways to fulfill responsibilities in daily life (Maya Sari, 2019; Rosyanti et al., 2018). According to the result of research at RSUD Sunan Kalijaga Demak, education about this treatment may affect the improvement of self-care for hemodialysis patients at home clinically. It is proven by p value0.001. Interventions in this research are evaluating and monitoring. The goal is determining the value and success rate to achieve the settled purpose. Evaluation is an integral part of a health program. We may observe the parameter of success of a program.

The success of this research toward the knowledge of self-care is due to the accuracy of the method given, which the researcher not only educated in one way but also involved the family who treated patients at home and allowed patients and the family to tell the issues related av-shunt access treatment at home. Besides, respondents were given a module to help patients memorize the education given. Self-care is needed to improve health and well-being. Patients must be aware of their illness and understand how to treat themselves. Self-care education programs may solve the problems of hemodialysis patients significantly and improve their life quality. This statement is also related to the matter of the dependency of patients on hemodialysis tools in the long term. Therefore, self-care education is a proper solution to comfort patients' anxiety toward self-care to do their daily activities normally.

Self-care is a planned individual action to control illness and maintain or improve health and well-being (Kurella et al., 2014). Besides education, family support is also essential for the

program's success. It states that one of the factors influencing self-care management is family. Family support is one of the interpersonal relations given by the family to patients in the form of affection (love and empathy), instrumental aid (items, services), information, and assessment related to self-evaluation (Poorgholami et al., 2015). Family may become a factor that influences an individual to determine beliefs and values. It also helps them to decide on medication treatments that they could receive. The family may support and decide on treatment for the sick family member. Another research states that education may improve the knowledge of hemodialysis patients, especially av-shunt access self-care. Self-care of hemodialysis patients with AV-shunt access requires excellent and proper knowledge to prevent complications. It aligns with research that explains the self-care behavior of hemodialysis patients with AVF and DCL, including preventing complications (Sulastri et al., 2018).

According to the research at RSUD Sunan Kalijaga Demak, the life quality of hemodialysis patients improved after education based on family support was given. According to the World Health Organization Quality of Life (WHOQOL), life quality is an individual's perception of their position in life based on the cultural context and value system where the individual lives and its correlation with purpose, hope, fixed standards, and affection. Health education based on family support is a crucial matter in treating hemodialysis patients. The quality of interpersonal relations between health workers, nurses, and patients correlates significantly with disciplines in medication. Therefore, health education support by nurses and other health workers with a family support approach is necessary to achieve therapy success (Parvan et al., 2015). Health education based on family support is a process that includes assessment, intervention, and evaluation with a family support approach in which the role of the family is required in controlling the diet behavior of patients.

Patients' dependency on hemodialysis therapy results in changes in the lives of the patients. During therapy, patients may lose freedom in their lives because they may have prohibitions or rules that need attention so their condition does not worsen. Life quality is an important indicator to evaluate hemodialysis results. One of the supporting factors for success in service is support in information, emotion, hope, and dignity. Family support is a perception of the ability, limitation, symptoms, and psycho-social character of an individual in a cultural environment and the value of doing the leading role and function.

Family support is closely related to supporting an individual's life quality (Xi et al., 2011). The reason is that life quality is a perception of an individual's ability, limitation, symptoms, and psycho-social character in a cultural environment and its value and leading role and function. This research which states that a family has a vital role in patients' life quality. Based on the observation by a researcher during research, there is a good relationship between patients and their families. Most respondents stated that family support boosted their willingness to do hemodialysis and gave them more willingness to recover from the current illness. It is supported by the statement that there is a significant connection between family support and the quality of patients with chronic terminal kidney failure who are in hemodialysis therapy (Marsinova et al., 2019).

4. Conclusion

There is a significant, substantial, and one-way connection between education based on family support toward AVF access self-care and the life quality of hemodialysis patients. The family must give more support to hemodialysis patients to do self-care appropriately to improve their quality of life.

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Ethics approval and consent to participate

This research involves hemodialysis patients, and the data used is authentic and actual. Before doing the research, there are several important points: Participants or respondents in this research were previously given consent information or approval agreement to be the respondents, and it is signed if they agree. Test for this research is done at Komisi Etik Penelitian Kesehatan (KEPK) RSUD Sunan Kalijaga Demak with No. 445/1330/2023

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