

RELATIONSHIP BETWEEN KNOWLEDGE LEVEL OF CHRONIC KIDNEY FAILURE PATIENTS AND HEMODIALYSIS THERAPY COMPLIANCE AT GUNUNG JATI CIREBON REGIONAL HOSPITAL

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Abstract

Chronic Kidney Disease (CKD) is a condition due to a progressive and irreversible decline in kidney function. The incidence of Chronic Kidney Failure worldwide reaches 10% of the population. This study aims to determine the relationship between the level of knowledge of Chronic Kidney Failure patients and adherence to Hemodialysis therapy at Gunung Jati Regional Hospital, Cirebon. This study used observational analytic with a cross-sectional design carried out at Gunung Jati Regional Hospital in June-July 2024. Data collection used questionnaires and medical records. The sample used in this study was 139 people using probability sampling techniques. The analysis test was carried out using spearman. There were 34 respondents (58.6%) who had sufficient knowledge, 18 respondents (31.5%) were good, and 6 respondents (10.3%) were said to be poor. The majority of respondents had a compliance level of 50 (86.2%), and 8 respondents (13.8%) were non-compliant. The results of the Spearman correlation test showed that there was a significant relationship ($p = 0.034$) between the level of knowledge of chronic kidney failure patients and adherence to hemodialysis therapy at the Gunung Jati Regional Hospital in Cirebon and a value ($r = 0.280$) with a weak correlation strength. There is a relationship between the level of knowledge of chronic kidney failure patients and adherence to hemodialysis therapy at the Gunung Jati Regional Hospital in Cirebon.

Keywords: Chronic Kidney Failure, hemodialysis therapy compliance, knowledge

Introduction

Chronic Kidney Failure Disease (CKD) is a condition due to a decrease in the ability of kidney function to maintain balance in the body. Chronic kidney disease is one of the non-communicable diseases (NCDs), where the disease progression process is progressive (will be continuous) and *Irreversible* or cannot return to the original condition (Siregar, 2020).

The incidence of Chronic Kidney Failure worldwide reaches 10% of the population, while chronic kidney failure patients undergoing hemodialysis are estimated to reach 2 million people worldwide (Purbasari et al., 2023). The results of Basic Health Research (RISKESDAS) in 2018 by the Health Research and Development Agency show that the prevalence of chronic kidney failure in Indonesia is 0.38% of people per 1000 population, and around 60% of people with kidney failure must undergo hemodialysis (Kronik, 2023). The estimated incidence and prevalence of chronic kidney failure patients undergoing hemodialysis in Indonesia are 66433 new patients and 132 active patients. 142 people. Meanwhile, according to the Indonesian Ministry of Health (2021), the number of cases of chronic kidney failure in Indonesia in 2020 was 1,602,059 (Purbasari et al., 2023).

The prevalence of mortality (death) in chronic kidney failure is still very high. According to the data *World Health Organization* (WHO) in 2020 the mortality rate of

chronic kidney failure was 813,000 to 1.3 million people in 2019. This shows an increase in mortality rates in patients with chronic kidney failure (WHO, 2020).

Patients with chronic kidney failure are highly dependent on hemodialysis therapy as a kidney replacement therapy in normal conditions, the kidneys will work continuously to remove fluid through the urine and remove the remnants of toxic substances in the human body, so hemodialysis or other renal replacement therapy is a therapy that greatly determines the quality of life of patients with chronic kidney failure (Hasanah et al., 2023).

Behavior supported by knowledge will be more lasting than behavior that is not based on knowledge. Knowledge or cognition is an important domain in shaping a person's actions. Cognitive abilities will shape a person's way of thinking, including the ability to understand factors related to disease and use that knowledge to overcome health problems they experience (Notoatmodjo, 2012).

Obedience comes from the root word obedient which means obedient, loving to obey commands. Compliance is the level at which the patient carries out the treatment and behavior recommended by the doctor or by others. Compliance is a change in behavior from behavior that does not obey regulations to behavior that obeys regulations (Puspasari & Nggobe, 2018).

Based on previous researchers on the relationship of family knowledge and support, there is dietary adherence in renal failure patients undergoing hemodialysis therapy, in the study the results of knowledge and dietary adherence in renal failure patients undergoing hemodialysis therapy were obtained (Fitri et al., 2023).

Gunung Jati Cirebon Regional Hospital is a hospital located in the city of Cirebon which is the local regional referral center. From the Indonesian Renal Registry (IRR) data at Gunung Jati Hospital in January 2024, the number of chronic kidney failure patients undergoing hemodialysis or dialysis was 1,700 procedures and routine patients undergoing hemodialysis with a total of 139 people.

Based on the description above, the researcher is interested in conducting a study on "The Relationship Between the Level of Knowledge of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital".

The general goal to be achieved is to find out how the relationship between the level of knowledge of Chronic Kidney Failure patients and compliance with Hemodialysis therapy at Gunung Jati Cirebon Regional Hospital.

The results of this research can be used for the development of health science, especially regarding NCDs (Non-Communicable Diseases) and are input material for further research activities and are a means to apply the knowledge and theories obtained in order to add insight, one of which is to determine the relationship between the level of knowledge of chronic kidney failure patients and compliance with hemodialysis therapy.

Research Methods

The scope of this study includes the fields of public health, and internal medicine. This research will be carried out in 2024 at the Gunung Jati Cirebon Regional Hospital. This study is an analytical observational research using a *cross sectional approach*. This study is quantitative where to look at the independent variable (Hemodialysis Therapy Compliance) with Medical Record data and patient schedules and the bound variable (Knowledge Level of Chronic Kidney Failure Patients) with the data of questionnaire results at Gunung Jati Cirebon Regional Hospital.

Relationship Between Knowledge Level of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital

The target population in this study is chronic kidney failure patients undergoing hemodialysis therapy in Cirebon City. The affordable population in this study is chronic kidney failure patients who undergo hemodialysis therapy at the Gunung Jati Cirebon Regional Hospital. The sample in this study is chronic kidney failure patients who meet the inclusion criteria.

Inclusion Criteria

1. Chronic Kidney Failure Patients undergoing Hemodialysis who can communicate verbally
2. Can read and write
3. The patient has undergone hemodialysis therapy at Gunung Jati Regional Hospital for at least 1 month.

Exclusion Criteria

1. Patients with Chronic Kidney Failure who have not been scheduled to undergo Hemodialysis routinely
2. Patients with decreased consciousness

How to Sampling

The sampling method in this study uses *Non-probability sampling*, sampling in this study uses *Consecutive Sampling*, sampling based on inclusion and exclusion criteria at Gunung Jati Cirebon Regional Hospital.

Large sampling formula Slovin

$$n = \frac{N}{1 + Ne^2}$$

Information:

n = Sample Size

N = Large Population

E = Sample Recall Error Rate 10%.

How Data is Collected

Materials and tools

The data in this study are in the form of primary and secondary data, secondary from Medical Records and patient schedules at Gunung Jati Cirebon Regional Hospital.

Research Procedure

Prepared with a letter of introduction from the Faculty of Medicine, Gunung Jati Independent University, the researcher contacted the Gunung Jati Cirebon Regional Hospital to ask for permission to conduct research, then the researcher collected data from the hospital in accordance with the permission from the head of the hemodialysis room at the Gunung Jati Cirebon Regional Hospital.

Data Analysis

Data analysis is defined as an effort to process data into information, as the characteristics or properties of the data can be easily understood and useful to answer

problems related to research activities. This statistical analysis aims to find out whether there is an influence, difference or relationship of the sample being studied.

1. Univariate analysis has been carried out on each research variable which aims to explain the characteristics of each research variable, namely the level of knowledge of chronic kidney failure patients and hemodialysis therapy compliance. For the presentation, namely by using the presentation of each variable. Then the characteristics of the respondents will be explained, including gender, age, education level and occupation which will be displayed in the form of percentages.
2. Bivariate Analysis has been carried out on 2 variables that are suspected to be correlated, namely from the variable of the level of knowledge of chronic kidney failure patients and the variable of hemodialysis therapy adherence. Data that has been taken from secondary data will be processed and analyzed using *statistical software* or using computer-based statistics with the *spearman correlation test method*, this type of data analysis test is chosen because the scale of the data measurement is in nominal form.

Results and Discussion

In this chapter, we will discuss the results of the research and discuss the relationship between the level of knowledge of chronic kidney failure patients and hemodialysis therapy compliance at Gunung Jati Cirebon Regional Hospital.

Characteristics of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy Based on Gender at Gunung Jati Cirebon Regional Hospital

Table 1. Frequency Distribution of Gender of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Regional Hospital

Gender of Chronic Kidney Failure Patients Who Have Hemodialysis	F	%
Male	29	50,0
Woman	29	50,0
Total	58	100,0

Based on the table above, half of the chronic kidney failure patients who underwent hemodialysis therapy at Gunung Jati Cirebon Regional Hospital were male and female with the same percentage, which was 50%.

Characteristics of Chronic Kidney Failure Patients Undergoing Age-Based Hemodialysis Therapy at Gunung Jati Cirebon Regional Hospital

Table 2. Age Frequency Distribution of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Regional Hospital

Age	F	%
12-16	1	1,7%
17-25	1	1,7%
26-35	2	3,4%
36-45	9	15,5%
46-55	24	41,4%
56-65	18	31,0%
> 65	3	5,2%
Total	58	100,0

Relationship Between Knowledge Level of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital

Based on the table above, most of the chronic kidney failure patients undergoing hemodialysis therapy at Gunung Jati Cirebon Regional Hospital are in the age range of 45-55 years, namely 24 people (41.4%), the age range of 56-65 years as many as 18 people (31.0%), the age range of 36-45 years as many as 9 people (15.5%), the age range >65 years as many as 3 people (5.2%), vulnerable age group of 26-35 years as many as 2 people (3.4%) and age range of 12-25 years as many as 1 person (1.7%).

Characteristics of Chronic Kidney Failure Patients Undergoing Occupational Hemodialysis Therapy at Gunung Jati Cirebon Regional Hospital

Table 3. Distribution of Employment Frequency of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Regional Hospital

Chronic Kidney Failure Patient Occupation	F	%
Self employed	29	50,0
IRT	20	34,5
Civil Servants	9	15,5
Total	58	100,0

Based on the table above, patients with chronic kidney failure who underwent hemodialysis therapy at Gunung Jati Cirebon Regional Hospital half of the respondents were self-employed, namely 29 people (50%), 20 patients (34.5%) who worked as IRTs, and 9 patients who worked as civil servants (15.5%).

Characteristics of chronic kidney failure patients undergoing hemodialysis therapy based on education level at Gunung Jati Cirebon Regional Hospital

Table 4. Frequency distribution of education levels of chronic kidney failure patients undergoing hemodialysis therapy at Gunung Jati Cirebon Regional Hospital

Education Level of Chronic Kidney Failure Patients	F	%
Elementary School / Equivalent	23	39,7
Junior High School/Equivalent	5	8,6
High School/Equivalent	22	37,9
D2	1	1,7
D3	1	1,7
S1	6	10,3
Total	58	100,0

Based on the table above, most of the chronic kidney failure patients who undergo hemodialysis therapy at Gunung Jati Cirebon Regional Hospital have an elementary education level, namely 23 people (39.7%), high school/equivalent as many as 22 people (37.9%), S1 as many as 6 people (10.3%), junior high school/equivalent as many as 5 people (8.6%), D2 as many as 1 person (1.7%), and D3 as many as 1 person (1.7%).

Univariate Analysis

Overview of the Level of Knowledge of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Hospital

Table 5. Frequency Distribution of Knowledge Levels of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Regional Hospital

Knowledge	F	%
Good	18	31,5
Enough	34	58,6
Less	6	10,3
Total	58	100,0

Based on the table above, most of the chronic kidney failure patients who underwent hemodialysis therapy at Gunung Jati Cirebon Regional Hospital had a sufficient level of knowledge as many as 34 people (58.6%).

Overview of the Compliance Level of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Hospital

Table 6. Frequency Distribution of Compliance Levels of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Regional Hospital

Compliance	F	%
Obedient	50	86.2
Non-Compliance	8	13.8
Total	58	100,0

Based on the table above, almost all of the chronic kidney failure patients at the Gunung Jati Cirebon Regional Hospital are compliant to undergo hemodialysis therapy as many as 50 people (86.2%).

Bivariate Analysis

The Relationship Between the Level of Knowledge of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital

Table 7. The Relationship Between the Level of Knowledge of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital

Hemodialysis Therapy Compliance								
Knowledge	Obedient		Non-Compliance		Total		P-Value	r
	F	%	F	%	F	%		
Good	13	72,2%	5	27,8%	18	100,0		
Enough	31	91,2%	3	8,8%	34	100,0	0,034	0,280
Less	6	100,0%	0	0,0%	6			
Total	50	86,2%	8	13,8%	58		0,280	

Based on the table above, it is known that of the 58 respondents with good knowledge, 5 (27.8%) respondents with knowledge with the Sufficient category are 3

(8.8%). Of the 58 respondents who were compliant, 50 (86.2%), and respondents with the non-compliant category were 8 (13.8%). The results of further analysis showed that the p-value was 0.034 and the r value was 0.280 so it could be concluded that the hypothesis (H0) was rejected, meaning that there was a significant relationship between the Knowledge Level of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital.

Discussion

Overview of the Level of Knowledge of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Hospital

Knowledge is a result of "knowing" and this happens after people have sensed certain objects. The perception of objects occurs through the human senses, believing that sight, hearing, smell, taste and touch are on their own (Dewi, 2018). The results of the researcher described the knowledge of chronic kidney failure patients on hemodialysis therapy compliance at Gunung Jati Cirebon Regional Hospital obtained results as many as 38 (58.6%) respondents who said they were adequate, 18 respondents who said good as many as 18 (31.0%), and respondents who said they were less as many as 6 (10.3%).

The level of knowledge in this study is determined based on definitions, risk factors, symptoms, management, and prevention. The 15 questions include:

1. Chronic kidney failure is a decline in kidney function that lasts more than 3 months
2. Chronic kidney failure is characterized by elevated laboratory levels of urea and cratinin in the blood
3. Hypertension and diabetes mellitus are the most common causes of chronic kidney failure
4. Obesity, flowing drinks, smoking are not factors that cause decreased kidney function
5. Signs of chronic kidney failure are swollen legs, itching, nausea, scaly skin, and fatigue easily
6. Chronic kidney failure can be detected early on from typical complaints
7. Shortness of breath in chronic kidney failure can be caused by fluid buildup and low blood hemoglobin levels
8. Hemodialysis is not routinely performed in patients with chronic kidney failure
9. Factors that aggravate the work of the kidneys are sugary and fizzy drinks
10. Excess fluid (swelling) and toxins in the body can be removed through hemodialysis therapy or dialysis
11. Dialysis is done twice a week for 4-5 hours each dialysis
12. Infection can cause damage to the kidneys
13. Regular hospital visits are important to maintain healthy kidney function
14. Patients with chronic kidney failure do not need to restrict fluid intake
15. Prevention of chronic kidney failure is healthy living and regular exercise.

From the data, these questions can represent knowledge in patients related to chronic kidney failure. Factors that affect knowledge are education, age, occupation, experience, knowledge, and socio-culture. The lowest level of education of patients is elementary school and the highest level of education is S1, so the higher the level of education, the wider the knowledge. However, it does not mean that a person with low education has low knowledge as well, considering that knowledge is not only obtained from formal education, but can be obtained from non-formal education (Notoatmodjo, 2014). Saying that with increasing age it will affect the addition of knowledge he has acquired (Swarjana, 2016).

The mindset and catching power will become more mature or better as they get older so that the knowledge they have will be better (Oktavia, 2019). This is in line with the theory where the factors that affect knowledge are over because the older a person is, the more mature they are in working and thinking (Sedarmayati, 2011).

A person's work greatly affects the process of accessing the information needed for an object (Notoatmodjo, 2014). Almost all patients who were respondents in this study already had jobs. A person who has worked, the scope of his association will be wider so that it will be easy to get new knowledge from anyone and anywhere. But that does not mean that those who have not worked have low knowledge, it is also possible to get knowledge from other sources such as print media and electronic media where for now it is very easy to access both types of sources.

A person's experience also greatly affects knowledge, the more a person's experience about something, the more a person's knowledge of it will increase (Notoatmodjo, 2014). A person who often interacts with the surrounding environment has a great chance of having good knowledge, because something that is experienced directly will last a long time in memory.

Overview of the Compliance Level of Chronic Kidney Failure Patients Undergoing Hemodialysis Therapy at Gunung Jati Cirebon Hospital

Compliance is the level at which the patient carries out the treatment and behavior recommended by the doctor or by others. Compliance is a change in behavior from behaviors that do not obey regulations to behaviors that obey regulations (Notoatmodjo Soekidjo, 2012).

Based on the results of this study, it was found that the level of compliance of chronic kidney failure patients undergoing hemodialysis therapy at Gunung Jati Cirebon Regional Hospital can be known that as many as 50 (86.2%) patients with the compliance category in hemodialysis therapy, This is in accordance with the research of Aini, Tamrin, & Wiyatmoko (2017), which obtained the results from 86 respondents as many as 50 (58.1%) respondents with the compliance category (Aini et al., 2017).

In this study, compliance was measured by measuring compliance with fixed patients (outpatients) in the dialysis unit of the Gunung Jati Regional Hospital. Patients are given a schedule once per week or twice per week (Monday + Thursday, Tuesday + Friday, Wednesday + Saturday), patients are said to be compliant if they are according to the schedule given or implemented by the Gunung Jati Regional Hospital. The patient is said to be non-compliant if it does not comply with the schedule that has been given by Gunung Jati Hospital.

Education can be one of the factors that can affect compliance, namely education, can help in terms of increasing compliance because the higher the education that individuals take, the more books will be read by patients and will understand the importance of complying with all recommendations given by the health team. Age, can be a benchmark for compliance because young people tend to be less compliant due to environmental factors and daily activities. Gender, Women have a higher level of obedience than men. Patients who have been undergoing hemodialysis for a long time will be more compliant than patients who have been undergoing hemodialysis for a long time. Social support, a form of support provided by family, friends, time and venasis (Edi, 2015).

The Relationship Between the Level of Knowledge of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at Gunung Jati Cirebon Regional Hospital

Patients with chronic kidney failure are chronic renal faculties leading to unspecified kidney tissue damage. *reversible* and progressive (Suriani, 2023). The process of replacement therapy for chronic kidney failure (Hasanah et al., 2023). Therapeutic compliance in hemodialysis patients is an important thing to pay attention to, because if the patient does not comply, there will be a buildup of harmful substances from the body (Saraswati et al., 2019).

Compliance itself is related to the knowledge of chronic kidney failure patients about undergoing hemodialysis, knowledge is influenced by formal education factors knowledge is very closely related to education, it is hoped that with high education the person will have a wider range of knowledge. However, it needs to be emphasized, it does not mean that a person with an absolute low education is not absolutely influenced by non-formal education (Dewi, 2018).

From the results of this study, the level of knowledge of chronic kidney failure patients is 58 people in the category of 34 (58.6%). Meanwhile, patients who did not comply in undergoing hemodialysis therapy, namely 8 (13.8%) people, the results of further analysis were known *to have a p-value* of 0.034 (*p-value* $\alpha < 0.05$), so it can be concluded that there is a significant relationship between the level of knowledge of chronic kidney failure patients and hemodialysis therapy compliance.

This is in line with the research of Aini, Tamrin, dan Wiyatmiko (2017). There was a significant relationship between family support and adherence to fluid intake restriction in CKD patients undergoing hemodialysis, for which their results were obtained (*p-value* $\alpha < 0,05$) (Aini et al., 2017).

According to Anggraini dan Nurvinanda (2021), the difficulty of chronic kidney failure patients undergoing hemodialysis in compliance with fluid intake restrictions is influenced by several factors, one of which is gender. The results of this study found that 34 (79.1%) female respondents did not comply with fluid intake restrictions, and 9 (20.9%) respondents with male gender were in the category of non-compliance (Anggraini & Nurvinanda, 2021).

Conclusion

Based on the results of a study carried out at the Gunung Jati Cirebon Regional Hospital on the Relationship Between the Level of Knowledge of Chronic Kidney Failure Patients and Hemodialysis Therapy Compliance at the Gunung Jati Cirebon Regional Hospital, the following results were obtained: (1) Based on the level of knowledge of chronic kidney failure patients undergoing hemodialysis therapy at Gunung Jati Cirebon Regional Hospital, as many as 34 people (58.6%) are in the adequate category, as many as 18 people (31.5%) are in the good category, and as many as 6 people (10.3%) are in the poor category. (2) Based on the level of compliance of chronic kidney failure patients undergoing hemodialysis therapy at Gunung Jati Cirebon Regional Hospital, as many as 50 people (86.2%) are in the compliance category, and 8 people (13.8%) are in the non-compliance category. (3) There was a relationship between the level of knowledge of chronic kidney failure patients on hemodialysis therapy compliance at Gunung Jati Cirebon Regional Hospital with a *p-value* of 0.034 and an *r* value of 0.280 with a weak correlation strength. This is in accordance with the hypothesis, namely the higher the level of knowledge, the higher the level of compliance.

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