



Implementation of HANDIA with Roy's Adaptation Theory Towards Treatment Hemodialysis for CKD Patients in the Hospital

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ABSTRACT:

Introduction : Chronic kidney disease (CKD) is a global health problem requiring lifelong hemodialysis therapy in its final stages. Adherence to hemodialysis remains a challenge, influenced by various internal and external factors. The application of Roy's Adaptation Theory in nursing interventions is believed to improve adaptive behavior, including adherence to therapy.

Objective : This study aims to analyze the relationship between adaptation factors according to Roy's Adaptation Theory including knowledge, past experience, beliefs, family support, and access to health services with CKD patient compliance in undergoing hemodialysis in hospital.

Methods : This study used a quantitative design with an analytical observational approach and a *cross-sectional* design . A sample of 85 CKD patients was taken by *purposive sampling* from the Hemodialysis Unit of Dr. Loekmono Hadi Kudus Regional Hospital. The research instrument was a structured questionnaire and the data were analyzed using the Spearman Rank Correlation test at a significance level of $p < 0.05$.

Results : There was a significant relationship between knowledge ($p = 0.029$), past experience ($p = 0.027$), and confidence ($p = 0.008$) with CKD patient compliance. In contrast, family support ($p = 0.474$) and access to health services ($p = 0.328$) did not show a significant relationship.

Conclusion : Internal factors such as knowledge, experience, and beliefs play a significant role in improving patient adherence to hemodialysis therapy. Family support and access to services do not necessarily guarantee adherence without individual adaptive readiness. Nurses need to develop educational and psychosocial interventions based on Roy's Adaptation Theory, such as the HANDIA module, to improve patient adaptive readiness. Education should focus on strengthening patient motivation and beliefs as the foundation for adherence behavior.

1. Introduction

Chronic kidney disease (CKD) is a global health problem that continues to increase year after year. CKD is defined as a decline in kidney function lasting more than three months and is characterized by a decrease in the glomerular filtration rate (GFR) <60 mL/min/1.73 m² or the presence of structural or functional kidney damage. [1] In Indonesia, the prevalence of CKD increased from 2 per thousand in 2013 to 3.8 per thousand in 2018, with more than 42,000 deaths due to this disease each year [2]. Treatment of CKD that has entered the final stage, namely End-Stage Renal Disease (ESRD), requires renal

replacement therapy such as lifelong hemodialysis, which directly impacts the patient's quality of life [3].

Hemodialysis is a complex procedure, requiring regularity and discipline from patients. Unfortunately, non-compliance with schedules, diet, and fluid restrictions remains a major problem, leading to serious complications and even death [4]. Patient compliance is greatly influenced by various factors, including level of knowledge, motivation, family support, access to healthcare, and the individual's experience and beliefs about the therapy being undertaken [5]. Lack of understanding of the importance of therapy and low



patient adaptability to chronic diseases are the main obstacles in carrying out therapy optimally.

In the context of nursing, Roy's adaptation theory is one theoretical framework that can be used to help patients adapt holistically to changes brought about by chronic diseases such as CKD. Roy views humans as adaptive systems that are influenced by stimuli and respond through regulatory and cognator subsystems to achieve balance in four modes of adaptation: physiological, self-concept, role function, and interdependence [6]. The application of this theory in nursing practice has been proven to be able to help CKD patients adapt better to their health situation, including in developing adherence behaviors to hemodialysis [7], [8].

Based on a preliminary study with interviews conducted with 10 patients in the hemodialysis ward of Dr. Loekmono Hadi Kudus Regional Hospital, of the 7 patients, 5 said they could not go to the hospital for dialysis if their children or family did not accompany them, related to their advanced age and the distance from their homes to the hospital. Meanwhile, 2 patients said they were reluctant to go for dialysis because they were afraid of repeated puncture procedures, even though the distance between their homes and the hospital was close and their families were always ready to take them. In contrast, 3 patients said they always regularly went to the hospital for dialysis. Based on this background, it is important to delve deeper into the effectiveness of implementing a hemodialysis adherence module "Kepatuhan Hemodialisis (HANDIA)" based on Roy's adaptation theory. This approach not only supports physical recovery but also encourages a comprehensive transformation of patients' adaptive behavior.

2. Objectives

This study aims to analyze the relationship between adaptation factors according to Roy's Adaptation Theory including knowledge, past experience, beliefs, family support, and access to health services with CKD patient compliance in undergoing hemodialysis in hospital.

3. Methods

This study used a quantitative design with an analytical observational approach and a *cross-sectional design*.

The purpose of this study was to analyze the relationship between adaptation factors based on Roy's Adaptation Theory with the level of compliance of CKD patients in undergoing hemodialysis. The study was conducted at the Hemodialysis Unit of Dr. Loekmono Hadi Kudus Hospital, Central Java, Indonesia during June–July 2024. The population in this study were all CKD patients who underwent hemodialysis regularly in the unit, with a total population of 524 patients. The study sample was taken by *purposive sampling* with inclusion criteria such as CKD patients who underwent hemodialysis ≥ 2 times per week and were willing to be respondents, as well as exclusion criteria such as patients with immunodeficiency diseases or active infectious disorders. Based on the Slovin formula, the minimum sample size was 85 respondents [9].

The data collection instrument was a structured questionnaire covering independent variables such as severity, knowledge, family support, access to health services, past experiences, and beliefs, as well as the dependent variable, patient adherence to hemodialysis. The validity and reliability of the instrument were previously tested. Data analysis was conducted in two stages: univariate analysis to describe respondent characteristics and variable distribution; and bivariate analysis using the Spearman Rank Correlation test to examine the relationship between independent variables and patient adherence, with a significance level set at a *p-value* < 0.05 . [10], [11]. The entire research process adheres to ethical principles such as informed consent, data confidentiality, and the principles of beneficence and justice [12]. This research has received ethical review approval from the Health Research Ethics Commission of Dr. Loekmono Hadi Regional Hospital with the number: 53/KEPK/RSLH/XII/2024.

4. Results

Table 1. Frequency Distribution of Respondent Characteristics

No	Category	F	%
1	Age		
	Young	14	16.5
	Old	41	48.2
	Elderly	30	35.3



No	Category	F	%
2	Gender		
	Man	51	60.0
	Woman	34	40.0
3	Education		
	Elementary School	29	34.2
	Junior High School	17	20.0
	Senior High School	28	32.9
	College	11	12.9
4	Intensity		
	2x a Week	54	63.5
	3x a Week	31	36.5

Based on table 1. above, it can be seen that the characteristics of respondents based on age with the highest number are the elderly category with 41 people or 48.2%. The characteristics of respondents based on gender with the highest number are the male category with 51 people or 60%. The characteristics of respondents based on education with the highest number are the elementary school category with 29 people or 34.2 % . The characteristics of respondents based on hemodialysis intensity with the highest number are the 2x a week category with 54 people or 63.5 % .

Table 2. Frequency Distribution of Variables

No	Variables	Category	F	%
1	Social Support	Good	85	100
2	Knowledge	Enough	2	2.4
		Good	83	97.6
3	Access to Health Services	Enough	1	1.2
		Good	84	98.8
4	Past Experiences	Good	85	100
5	Belief	Good	85	100
6	Compliance	Enough	3	3.5
		Good	82	96.5
7	Severity Level	Stage 1	26	30.6
		Stage 2	31	36.5
		Stage 3	21	24.7
		Stage 3a	7	8.2

Based on table 2. above, it can be seen that the frequency distribution of the social support variable is highest in the good category with 85 people or 100%. The frequency distribution of the knowledge variable is highest in the good category with 83 people or 97.6 % . The frequency distribution of the health service access variable is highest in the good category with 84 people or 98.8 % . The frequency distribution of the past experience variable is highest in the good category with 85 people or 100%. The frequency distribution of the belief variable is highest in the good category with 85 people or 100%. The frequency distribution of the compliance variable is highest in the good category with 82 people or 96.5 % . The frequency distribution of the severity variable is highest in the stage 2 category with 31 people or 36.5%.

Table 3. Spearman Rank Test Results

Variables	Correlation Coefficient	Sig. (2-tailed)	Information
Family Support	0.079	0.474	No effect
Knowledge Access to Health Services	0.237	0.029	Influential
Past Experiences	0.107	0.328	No effect
Belief	0.240	0.027	Influential
	0.288	0.008	Influential

Spearman rank test in Table 3, it can be seen that there is a relationship between knowledge, past experience, and beliefs with the compliance of *CKD patients* at Dr. Loekmono Hadi Kudus Regional Hospital (p-value: 0.029; 0.027 and 0.008). Furthermore, the results of the study also showed that there was no relationship between family support and access to health services with the compliance of *CKD patients* at Dr. Loekmono Hadi Kudus Regional Hospital (p- value: 0.474; 0.328).

5. Discussion

The Relationship Between Knowledge and Compliance of CKD Patients

The results of the study showed a significant relationship between the level of knowledge and adherence of CKD patients to hemodialysis therapy (*p -value* = 0.029 < 0.05). This finding indicates that the better the patient's knowledge about chronic kidney disease and the



importance of hemodialysis therapy, the higher their level of adherence to the therapy. Good knowledge allows patients to understand the goals of therapy, the risks of non-adherence, and the long-term consequences of ignoring medical advice. This is in line with the view of Afrianti and Rahmiati (2021), who stated that knowledge is one of the important cognitive factors that influence adherence behavior to treatment [1].

Within the framework of Roy's Adaptation Theory, patient knowledge is included in the contextual stimuli that influence the adaptation process and decision-making through cognator mechanisms. Individuals who have adequate information about their health condition will be better able to respond positively to the disease through adaptive behaviors, such as following a hemodialysis schedule, complying with fluid restrictions, and following a special diet. Conversely, patients with low knowledge are more likely to avoid or delay treatment because they do not understand its urgency [14], [6]. Therefore, increasing patient knowledge through appropriate education is a crucial intervention in supporting the success of therapy and improving the quality of life of CKD patients.

The Relationship Between Past Experience and CKD Patient Compliance

The results of the study showed that past experience had a significant relationship with the compliance of CKD patients in undergoing hemodialysis therapy, with a significance value of $p = 0.027 (< 0.05)$. This indicates that patients who have positive or long enough experiences in undergoing hemodialysis tend to be more compliant with the therapy they undergo. Patients with previous experience will have a better understanding of the effects of therapy, lifestyle adjustments, and emotional management during repeated treatment processes. Satria Hadi (2020) stated that the length of hemodialysis is directly proportional to the patient's ability to adjust to strict fluid and dietary restrictions, as well as increasing acceptance of their health condition. [13].

From the perspective of Roy's Adaptation Theory, past experiences are categorized as residual stimuli that influence the psychological and behavioral adaptation

mechanisms of patients to chronic diseases. Roy stated that factors that are difficult to measure but play a role in the adaptation process such as emotional memories, personal perceptions, and previous experiences can determine the effectiveness of an individual's adaptation to the stimulus being faced [6]. Patients who have experienced complications due to non-compliance in the past, or who have experienced real benefits from adherence to the hemodialysis schedule, will be more motivated to continue with therapy with discipline. Therefore, it is important for healthcare professionals to explore and utilize patients' past experiences as a basis for providing education and counseling, so that the process of adaptation and adherence to hemodialysis can be continuously improved.

The Relationship Between Beliefs and CKD Patient Compliance

This study shows a significant relationship between patient beliefs and adherence to hemodialysis therapy with a significance value of $p = 0.008 (< 0.05)$. This means that the stronger the patient's belief in the benefits and importance of hemodialysis therapy, the higher their level of adherence. This belief includes the patient's perception of the effectiveness of treatment, hope for recovery or prolongation of life, and trust in the healthcare professionals who provide services. This is reinforced by the *Health Belief Model theory* which states that an individual's beliefs about the threat of disease and the benefits of a health action greatly influence the health behaviors taken [14]. In this context, patients who believe that hemodialysis can improve their quality of life will be more motivated to comply with the therapy schedule and medical recommendations.

Within the framework of Roy's Adaptation Theory, beliefs play a role as part of the cognator mechanism, where an individual's cognitive system, encompassing perception, thought, and emotion, processes received stimuli and generates adaptive responses. Positive beliefs will encourage patients to develop behaviors that support adaptation to chronic illness, such as regular therapy and healthy lifestyle management [6]. Conversely, patients with low beliefs tend to be passive, refuse treatment, or feel helpless in dealing with their health condition. Therefore, it is important for nurses and medical



personnel to build positive beliefs in patients through an educational and empathetic approach to ensure sustainable adherence to hemodialysis.

The Relationship Between Family Support and Access to Health Services with CKD Patient Compliance

Based on the research results, the family support variable did not show a significant relationship with CKD patient adherence to hemodialysis ($p = 0.474$). Although theoretically, family support can influence the psychological condition and motivation of patients in undergoing therapy, these results indicate that other factors may be more dominant in influencing adherence, such as the patient's knowledge, experience, and personal beliefs. Research by Kurniasih and Prabandari (2019) also showed that although family support provides emotional comfort, it does not necessarily increase adherence if the patient does not clearly understand the importance of therapeutic actions. [15]. Within the framework of Roy's Adaptation Theory, social support (including family) enters into an interdependent mode, which plays a role in forming adaptive social relationships. However, its effect on adherence is highly dependent on the quality of communication, frequency of involvement, and the extent of the family's role in therapeutic decision-making [6].

The variable of access to health services also did not show a significant relationship with patient compliance ($p = 0.328$). This finding may be due to the local context of the study, which was conducted at a referral hospital with hemodialysis services that are relatively easily accessible to CKD patients. Geographical factors, service schedules, and facility availability at Dr. Loekmono Hadi Kudus Regional Hospital did not appear to be major barriers to patient compliance. This is in line with a study by Sari and Puspitasari (2021) which stated that ease of access does not always correlate with health behavior, especially when not accompanied by psychological readiness and patient motivation [16]. In Roy's Adaptation Theory, access to services is categorized more as a contextual stimulus that supports or hinders physiological adaptation. However, if other stimuli such as knowledge and beliefs are stronger, then

the influence of access to services on compliance becomes less dominant [6].

6. Conclusions

This study shows a significant relationship between the variables of knowledge, past experience, and belief with the level of compliance of CKD patients in undergoing hemodialysis therapy at Hospital. Patients who have good knowledge about the disease and therapy, positive experiences in undergoing treatment, and strong beliefs in the benefits of therapy tend to show a higher level of compliance. In contrast, the variables of family support and access to health services do not show a significant relationship with patient compliance, indicating that internal factors play a more important role in encouraging patient adaptive behavior.

It is recommended that healthcare professionals, particularly nurses, provide ongoing education and adaptive counseling based on Roy's Adaptation Theory to increase knowledge, strengthen beliefs, and utilize patients' past experiences as a basis for intervention. Structured educational interventions such as the HANDIA module need to be further developed and made an integral part of hospital hemodialysis service programs. Furthermore, patient empowerment strategies should focus on increasing intrinsic motivation rather than solely on strengthening external support such as family access or logistics, as strong self-adaptation is more crucial to the success of long-term therapy.

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