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Research Article

Determinant of Overload Occurrence in Clients Chronic Kidney Failure with Hemodialysis

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Abstract

Aims: Patients with renal failure who are in the final stage require replacement therapy for kidney function to maintain their survival such as kidney transplantation, hemodialysis and Continuous Ambulatory Peritoneal Dialysis (CAPD) therapy. Failure of kidney function can cause overload complications. In order to avoid complications from overload, good precautions must be taken, namely adherence to limiting fluid. Compliance must be based on the level of knowledge of the individual itself. The higher the level of knowledge is more open by carrying out compliance in limiting fluid in chronic renal failure with hemodialysis.
Main Objectives: Knowing the Determinants of Overload Occurrence in Chronic Kidney Failure with Hemodialysis at the Indonesian Christian University Hospital in 2019.
Research Method: Analytical Method, the sample in this study were all chronic renal failure patients who performed routine hemodialysis in the UKI Hemodialysis Hospital in February 2019 and the instruments used in this study used a questionnaire of 56 respondents. So the sampling method in this study is incidental sampling.
Results: From the results of the Chi Squere test, the researchers obtained p-value <0.05, meaning that there was a relationship between age, type, sex, education, duration of hemodialysis, knowledge and adherence to overload.
Suggestion: It is expected that health workers in the HD room of the Christian University Hospital will provide knowledge to clients and families through routine counseling and education about overloaded kidney failure and risks if they do not comply with fluid restrictions. If the client has knowledge about overload, the liquid compliance will be greater.

Keywords:
Knowledge and compliance, Overload

INTRODUCTION

Indonesia's population according to (1) is expected to reach 273.65 million people in 2025 with a life expectancy of 73.7 years, but in reality not all residents can reach the government's targeted life expectancy at this time. The number of cases of disease that occurs causes people to die at ages not in line with life expectancy, one of which is a disease caused by chronic kidney failure, while life expectancy is an indicator in assessing a country's health status.

A progressive renal function condition, chronic kidney failure causes uremia when the body cannot regulate its metabolism and fluid and electrolyte balance. Diseases such as diabetes mellitus, high blood pressure, chronic glomerulonephritis, chronic interstitial nephritis, urinary tract infections, and obesity are all contributors to

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chronic kidney failure (2). Chronic kidney failure is associated with an increased risk of cardiovascular disease and death. One of the conditions that can arise as a result of kidney failure is fluid overload. According to (3), more than half of HD patients at Fatmawati Hospital had experienced fluid overload in the past. Furthermore, Wizemann (4) reported that more than 15% of overload instances resulted in death. in hemodialysis patients. Overload-related problems in people with chronic renal failure are avoidable if fluid intake is restricted properly and diligently.

Restriction of fluid and electrolyte intake is very important in patients with chronic renal failure. Client compliance in adhering to the amount of fluid consumption determines the client's quality of life, the great enthusiasm of the Intradyalitic Weight Gain (IDWG) presentation, then has a negative impact (5). The results of Lolyta's research (Ramela, Ismonah and Hedrajaya 2016) IDWG show a positive coefficient value. This can be explained because poor volume control in patients with chronic renal failure can result in several adverse effects on the cardiovascular system. Client non-compliance with fluid and electrolyte restrictions results in long-term losses, namely cardiovascular damage, heart failure, hypertension and pulmonary edema as well as short-term losses, namely edema, bone pain and shortness of breath (6)

Monitoring of fluid and electrolyte intake and output in chronic kidney failure using a fluid intake output chart has proven effective in dealing with fluid overload in clients, as evidenced by the reduced manifestations of fluid overload in clients (7). The greater the client adheres to fluid restrictions, the smaller the occurrence of fluid overload. (3). Compliance with limiting fluid intake is patient compliance in limiting fluid consumption as seen from weight gain between the two times of dialysis, namely after the first hemodialysis and before the second hemodialysis, carried out before treatment and after treatment.

Data from the World Health Organization (WHO) in (8), globally more than 500 million people experience chronic kidney failure. That is, around 1.5 million people have to lead a life dependent on renal replacement therapy or hemodialysis (HD), with an incidence of 8 % and continues to grow every year. Hemodialysis therapy will change the rhythm of a person's life, both for patients and their families. Changes that occur include eating patterns, drinking patterns, sleeping patterns and life activities that occur at home and in the community.

The prevalence of chronic kidney disease (CKD) is increasing worldwide. According to the WHO, the number of people suffering from kidney failure rose by 50% in 2013. The incidence of renal failure rose in 2014 in the United States. According to statistics, 200,000 Americans suffer from chronic renal failure and require hemodialysis treatment each year. There is a significant number of people suffering from kidney failure in Indonesia. An estimated 12.5% of Indonesians, or 25 million people, have impaired kidney function, according to a poll by the Indonesian Nephrology Association (9).

The same case was also obtained from the initial research survey in February 2019 in the hemodialysis room at UKI Cawang Hospital, namely there were 65 clients undergoing hemodialysis, an increase of 30% routinely 2-3 times a week, previously undergoing hemodialysis 1-2 times a week, because the patient was still many do not comply with fluid restrictions, resulting in an overload and an irregular dialysis schedule.

During the time the researchers served in the internal medicine inpatient room, those who did not comply with fluid restrictions so that they were admitted to the hospital several times to be treated. Some patients violate the rules set by the doctor to be obeyed while the hemodialysis patient is at home. If the patient knows the importance of complying with fluid restrictions, the patient may not experience problems and complications that lead to hospitalization.

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From the description above, the researcher intends to conduct research in the field with the title Determinants of Overload Occurrence in Chronic Kidney Failure Patients with Hemodialysis in the HD room of UKI Hospital East Jakarta.

METHODS

This study uses analytic methods, with a cross-sectional approach where those involving the independent variable and the dependent variable are measured simultaneously at the same time. By using primary data through a questionnaire regarding the occurrence of overload in chronic renal failure. Respondents were taken as many as 56 people, where this type of trial was a used trial because of the limited population so that the trial respondents included real research members. Used trials are a technique for testing the validity and reliability by collecting data only once and the results of the trials are immediately used to test hypotheses.

RESULTS

UNIVARIATE ANALYSIS

Table 1. Frequency Distribution of Respondents by Age in the HD Room at UKI Hospital, East Jakarta

Age	Frequency	Percentage (%)
≤55 year	27	48,2
>55 years	29	51,8
Total	**56**	**100,0**

Table 1 shows that out of 56 respondents, the majority of respondents aged >55 years were 29 people (51.8%), while respondents aged ≤55 years were 27 people (48.2%)

Table 2. Frequency Distribution of Respondents by Gender in the HD Room at UKI Hospital, East Jakarta

Gender	Frequency	Percentage (%)
Man	25	44,6
Woman	31	55,4
Total	**56**	**100,0**

Based on table 2 shows that of the 56 respondents, the majority of respondents were female, 31 people (55.4%), while the male respondents were 25 people (44.6%).

Table 3. Frequency Distribution of Respondents Based on Education in the HD Room of East Jakarta UKI Hospital

Education	Frequency	Percentage (%)
Low (SD, SMP, SMA)	40	71,4
High (Diploma, S1, S2)	16	28,6
Total	**56**	**100,0**

Based on table 3 shows that of the 56 respondents, most of the respondents had low education as many as 40 people (71.4%), while respondents with high education were 16 people (28.6%).

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Table 4. Frequency Distribution of Respondents Based on Length of Hemodialysis in HD Room at UKI Hospital, East Jakarta

Hemodialysis	Frequency	Percentage (%)
>2 year	28	50,0
≤2 year	28	50,0
Total	**56**	**100,0**

Table 4 shows that out of 56 respondents, 28 people (50.0%) had done hemodialysis for ≤2 years, and 28 people (50.0%) had done hemodialysis for >2 years.

Table 5. Frequency Distribution of Respondents Based on Knowledge in the HD Room of East Jakarta UKI Hospital

Knowledge	Frequency	Percentage (%)
Not enough	9	16,1
Good	47	83,9
Total	**56**	**100,0**

Based on table 5, it shows that out of 56 respondents, the majority of respondents had good knowledge of 47 people (83.9%), while respondents had poor knowledge of 9 people (16.1%).

Table 6. Frequency Distribution of Respondents Based on Fluid Compliance in the HD Room at UKI Hospital, East Jakarta

Fluid Compliance	Frequency	Percentage (%)
Not Obey	38	67,9
Obey	18	32,1
Total	**56**	**100,0**

Based on table 6 shows that out of 56 respondents, the majority of respondents did not comply with fluid restrictions as many as 38 people (67.9%), while respondents adhered to fluid restrictions as many as 18 people (32.1%),

Table 7 Frequency Distribution of Respondents Based on Overload Incidents in HD Room at UKI Hospital, East Jakarta

Overload Event	Frequency	Percentage (%)
Yes	11	19,6
no	45	80,4
Total	**56**	**100,0**

Based on table 7 it shows that out of 56 respondents, the majority of respondents did not experience overload events as many as 45 people (80.4%), while respondents experienced overload events as many as 11 people (19.6%).

BIVARIATE ANALYSIS

Overload occurrences were used as the dependent variable, and bivariate analysis was used to determine the association between the independent factors (age, gender, education, length of hemodialysis, knowledge, and fluid adherence). Chi-Square was employed with a 95% level of significance (= 0.05).

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According to the findings, 9 participants had the most overload events before the age of 55, whereas 27 participants did not have the most overload events after the age of 55. Also, the p-value of 0.031 indicates that there is a statistically significant correlation between patient age and the prevalence of overload in the HD Room at UKI Hospital in East Jakarta among those who have chronic renal failure.

The study found that 10 female respondents had more overload events than male respondents (24) but that male respondents did not have more overload events than female respondents. The data presented above also demonstrates that there is a statistically significant correlation between gender and the prevalence of overload among patients with chronic renal failure in the HD Room at UKI Hospital in East Jakarta (p-value 0.05).

According to the study's findings, while 11 respondents reported experiencing overload events while in elementary school, the remaining 28 reported not experiencing overload events during their elementary school years. According to the data presented above, there is a statistically significant correlation between patients' levels of education and the frequency with which they are overloaded in the HD Room at UKI Hospital in East Jakarta, and the p-value for this correlation is 0.023 (less than 0.05).

The study indicated that those who had been doing hemodialysis for longer than two years had the highest rates of overflow events (9 persons), while those who had been doing it for less than two years had the lowest rates of overload events (26 replies). Patients with chronic kidney failure receiving hemodialysis in the HD Room at UKI Hospital in East Jakarta had a significantly higher rate of overload as their treatment time increased, as indicated by a p-value of 0.044 (less than 0.05).

Based on the findings, it was determined that 6% of respondents had first-hand experience with overload situations requiring expert knowledge, whereas 41% of respondents had no such first-hand experience. The results reveal that there is a correlation between patients' level of knowledge and their level of overload in the HD Room at UKI Hospital in East Jakarta, and that the p-value of 0.010 is less than 0.05.

From the results of the study it was known that 11 people experienced the most overload events for those who did not comply with limiting fluids, while 27 respondents did not experience the most overload events for those who did not comply with limiting fluids. The above also shows that a probability value (p-value) of 0.011 is less than 0.05, meaning that there is a significant relationship between patient adherence and overload events in chronic kidney failure patients in the HD Room at UKI Hospital, East Jakarta.

DISCUSSION

A. Univariate Discussion Results

Age

The research results obtained from the HD Room at UKI Hospital East Jakarta with a total of 56 respondents found that 51.8% of respondents were aged ≤55 years. The results of this study differ from those of Melianna and Wiarsih (2013) which showed that 44.0% of respondents were in late adulthood (> 55 years).

Gender

The research results obtained from the HD Room at the East Jakarta UKI Hospital with a total of 56 respondents found that 55.4% of the respondents were female. The results of this study differ from those of (3) which showed that 57.1% of the respondents were male.

Education

The research results obtained from the HD Room at UKI Hospital East Jakarta with a total of 56 respondents found that 71.4% of respondents had low education, namely elementary, junior high and high school. The

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results of this study are in accordance with the research of (3) which shows that 71.8% of respondents have low education (elementary, junior high and high school).

Hemodialysis duration

The research results obtained from the HD Room at UKI Hospital, East Jakarta with a total of 56 respondents found that 50.0% of respondents had performed hemodialysis for ≤2 years, and 50.0% of respondents had performed hemodialysis for >2 years. The results of this study differ from those of Melianna and Wiarsih (2013) which showed that 54.8% of respondents performed hemodialysis for >12 months. previously carried out hemodialysis therapy in a shorter time.

Knowledge

Research conducted at the HD Room of UKI Hospital East Jakarta found that 83.9% of the 56 participants had an above-average level of expertise. One's actions (overt behavior) are formed in large part by one's knowledge or cognitive domain. It has been found through experimentation that knowledge-based behaviors last longer than those that are not.

Fluid compliance

Research conducted in the HD Room at UKI Hospital East Jakarta with 56 participants revealed that 67.9% of participants disobeyed staff by drinking excessively. This study's findings that 68.0% of respondents don't like talking about liquids are consistent with those of (3). Patients undergoing hemodialysis are urged to cut back on their fluid intake (10). Patients on hemodialysis typically have daily urine outputs between 200 and 300 ml. For this reason, patients shouldn't drink more than 500 ml every day. For hemodialysis patients, this guideline and others to reduce salt intake are the most challenging. In reality, hypertension, shortness of breath, chills, anxiety, panic, muscle spasms, and even sudden death can result from drinking too much water and salt. This is because fluid builds up in the lungs. As stated by (11)

Overload Event

Overload is a condition in which an individual experiences or is at risk of experiencing excess intracellular or interstitial fluid. The research results obtained from the HD Room at UKI Hospital East Jakarta with a total of 56 respondents found that 80.4% of respondents did not experience overload events. The results of this study are in accordance with the research of (3) which showed that 54.0% of respondents experienced fluid overload.

B. Results of bivariate discussion

The relationship between age and the incidence of overload

As can be seen from the results presented thus far, of the 27 respondents aged 55 years, 9 reported experiencing overload events, while the remaining 18 reported no such occurrences. Two of the 29 respondents aged 55 and up reported experiencing overload incidents, while the other 27 reported no such occurrences. Overload is more common among older patients with chronic kidney failure in the HD Room at UKI Hospital in East Jakarta, as seen in the table above, where the p-value is 0.031 (less than 0.05). When comparing those over the age of 55 to those under the age of 40, there is a marked increase in the likelihood of numerous issues occurring that aggravate kidney function (Table 1).

The relationship between gender and the incidence of overload

Thus it is known that the respondents experienced the most incidents of overload in the female sex. As many as 24 respondents did not experience the most overload events in the male sex. The above also shows that a probability value (p-value) of 0.015 is less than 0.05, meaning that there is a significant relationship between gender and the incidence of overload in patients with chronic kidney failure in the HD Room at UKI Hospital, East Jakarta. One's emotionality clearly affects one's perception. Men tend to be able to control their emotions compared

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to women, gender is a respondent's identity that can be used to compare male and female patients. According to the researchers (12), the overload that is experienced more according to gender is women, because women are very weak and more sensitive in all things and experience more stress than men. Compared to men who are more resilient and stronger who can accept everything because men are the main person in earning a living in meeting the needs of their family. And the zest for life is very strong (Table 2).

The relationship between education and overload events

The results above show that out of 40 respondents with low education there were 11 respondents who experienced overload events, and 29 people who did not experience overload events. Meanwhile, out of 16 respondents with higher education, 16 of them did not experience overload. The table above also shows that a probability value (p-value) of 0.023 is less than 0.05, meaning that there is a significant relationship between education and the incidence of overload in patients with chronic kidney failure in the HD Room at UKI Hospital, East Jakarta. According to (13), factors that influence knowledge include educational factors. The higher the level of one's knowledge, the easier it will be to receive information about objects or related knowledge. knowledge and technology. According to researchers, the higher the patient's education, the easier it will be to accept new things, especially in therapy to prevent overload (Table 3)

The relationship between the length of hemodialysis and the incidence of overload

From the above it shows that of the 28 respondents who had carried out hemodialysis for >2 years, there were 9 respondents who experienced overload events, and 19 people who did not experience overload events. Meanwhile, of the 28 respondents who had carried out hemodialysis for ≤2 years, there were 2 respondents who experienced overload events, and 26 respondents who did not experience overload events. Overload was more common among patients with chronic renal failure receiving treatment in the HD Room at UKI Hospital in East Jakarta as their hemodialysis sessions lasted longer (p=0.044, less than 0.05). A patient's ability to limit fluid intake and exercise good control over fluid balance improves as they gain experience with hemodialysis. Thus the longer the patient undergoes hemodialysis, the more compliant and non-adherent patients tend to be patients who have recently undergone hemodialysis, because the patient has reached the accepted stage with health education. According to another study from a study conducted by (3) the results of the analysis based on the duration of HD showed that HD > 12 months was not compliant with fluid restrictions by 73.9%, and HD <12 months was 60.5%. According to the researchers, the longer the patient undergoes hemodialysis, the better the patient's adaptation because the patient has received health education or the information needed, more and more from health, many health workers (Table 4).

Relationship of Knowledge with Overload Events

The largest number of overflow events encountered by respondents was six, and the most number of overload events not experienced by respondents was forty-one. Overload was much more common among patients with chronic kidney failure in the HD Room at UKI Hospital in East Jakarta, as demonstrated by a p-value of 0.010 (less than 0.05) from a bivariate test. (14) argues that the amount of information a person receives, both directly and indirectly, can have an effect on how much knowledge that person has. Thus, the more knowledge patients with chronic kidney failure have regarding the incidence of fluid overload and its prevention, the more awareness they have to comply with limiting the fluids they drink. According to another study in the HD room of PKU Muhamadiyah Hospital,

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Yogjakarta, namely knowledge after being given education about fluids that the knowledge that was already good reached 31 people (83.3%) and 6 people (16.2%) had knowledge that was still not good from a sample of 37 people. Meanwhile, according to researchers, the higher the knowledge, the more respondents know the risks in patients who are overloaded (excess fluid) (Table 5)

Relationship between fluid compliance and overload events

Respondents experienced the most overload events for non-adherence in limiting fluids as many as 11 people, while respondents who did not experience the most overload events for non-adherence in limiting fluids were 27 people. Patients with chronic kidney failure at the HD Room at UKI Hospital in East Jakarta had a significantly higher rate of overload when they were not compliant with their treatment, as shown by a bivariate test with a p-value of 0.011 (less than 0.05). Patients with chronic renal failure who do not follow recommended fluid intake limits are at risk for developing pulmonary edema and left ventricular hypertrophy. The accumulation of fluid in the body causes severe work function of the heart and lungs, which in the physical response of the patient gets tired and shortness of breath, physical activity is also disrupted both during light and moderate activities. The results of this study are different from the research of (3) in the HD room of Fatmawati Hospital, Jakarta, the relationship between compliance with fluid overload obtained from respondents who were not overloaded were 39 (46.4%) and who experienced overload were 45 (53.6%). %) which indicates that there is no relationship between adherence to fluid restriction and fluid overload (p 0.35 > 0.05). According to the researchers, compliance in limiting fluids in clients with chronic kidney failure, hemodialysis is a person's behavior towards health. The more obedient in everything the more there is a change and development in one's life (Table 6).

CONCLUSION

Of the 56 HD patients who answered the survey, 51.8% were younger than 55, 55.4% were female, 71.4% had a low level of education (elementary, junior high, or high school), 50% had been on hemodialysis for less than 2 years, 83.9% had good knowledge, 67.9% limited their fluid intake as instructed, and 80.4% did not have overload events. In the HD Room of East Jakarta UKI Hospital, there is a strong link between information and how often people are overloaded (p-value 0.010 0.05). In the HD Room at UKI Hospital in East Jakarta, there is a significant link between fluid retention and the number of cases of overload (p-value 0.011 0.05). There is a strong link between education and the number of people who are overloaded in the HD Room of East Jakarta UKI Hospital (p-value 0.023 0.05). In the HD Room of East Jakarta UKI Hospital, there is a strong link between age and how often people are overloaded (p-value 0.031 0.05). There is a strong link between how long someone is on hemodialysis and how often they are overloaded in the HD Room at UKI Hospital in East Jakarta (p-value 0.044 0.05).

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