

## Conference Paper

# Relationship between Nutritional Status and Quality of Life of Chronic Kidney Failure Undergoing Hemodialysis

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## Abstract

Hemodialysis is a method of dialysis therapy which is the first choice and is a common treatment in patients with chronic kidney failure. This lead the patient to lose their freedom, depend on the health service provider, so that physical, psychological, socioeconomical and environmental aspects can be negatively affected and impacting on quality of life. One factor that affects quality of life is a nutritional status. The purpose of this study was to determine the relationship between a nutritional status with the quality life of the patients with chronic kidney failure who undergo hemodialysis at Immanuel Hospital in Bandung. The study design was a correlation design using a cross sectional approach. The study population is 175 people with a sample of 64 people using purposive sampling technique. Data collections for quality of life using questionnaire of KDQOL SF 36 and to measure nutritional status using Malnutrition Inflammation Score (MIS). Data processing using the Spearman Rank correlation test. The results obtained 47 respondents (73.4%) with good quality of life and 29 respondents (45.3%) without malnutrition. The correlation test results obtained P-value of 0,000 ( $\alpha < 0.05$ ) so it was concluded that there was a relationship between nutritional status with quality life of patient with chronic kidney failure patients undergoing hemodialysis. Conclusion: Based on the results of the study, it is recommended to improve the nutritional status of patients with chronic kidney failure who undergo hemodialysis by maintaining the intake of food consumed to improve their quality of life.

**Keywords:** Hemodialysis, Nutritional Status, Quality of Life

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## 1. Introduction

Chronic kidney failure is a failure of kidney function to maintain metabolism and fluid and electrolyte balance due to the progressive destruction of kidney structure with manifestations of accumulation of metabolic waste (uremic toxic) in the blood [1]. Based on data from the Basic Health Research (Riskesdas) [2] found that the prevalence and incidence of chronic kidney failure in Indonesia around 0.2% or 2 per 1000 population.

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Hemodialysis therapy method is the main choice and a common treatment for Chronic kidney failure.

Hemodialysis is a method of dialysis therapy that is used to remove fluids and waste products from the body, when acutely or progressively, the kidneys were unable to carry out the process. This therapy is carried out by using a machine equipped with a semi permeable filter membrane (artificial kidney). The purpose of hemodialysis is to remove waste products that accumulate in the client's circulation and released into the dialysis machine [1]. On the other hand, hemodialysis can also cause a side effect includes decreasing appetite, nausea, vomiting, indigestion, dizziness, weakness and weight loss, loss of energy stores including fat tissue, body fat and body protein likewise albumin serum, transferrin and other visceral proteins. From the data of the Indonesian Renal Registry (2016) [3], the numbers of active Hemodialysis client reaches 52,835 people, its increase compared to the year of 2015 which reaches 30,554 people. Similarly with the number of the new clients undergoing Hemodialysis in 2016 as many as 25,446 people also increase compared with 2015 which reaches 21,050 people. The number is arising along with the increasing of the people suffer from diabetes and hypertension.

Hemodialysis is a long, expensive therapy that requires restrictions fluid and diet. This results to the client, losing his freedom, depending on the health service provider, split in marriage, family and social life and reducing or losing income. Therefore, the aspect of physical, psychological, socioeconomical and environmental can be negatively affected and impacting on the quality life of clients with chronic kidney failure [4].

Other quality life of chronic kidney failure clients is physical changes caused by any increasing in ureum that affected to the whole body become itchy which makes skin color turn into spotting black or shiny gray, scaly dry skin, edema pitting, breath ammonia smelling, weakness and fatigue (Farker, 2009 in Slametningsih, 2012). Malnutrition's status is an important risk factor for morbidity and mortality of dialysis clients. The National Cooperative Dialysis Study (NCDS) reported that protein catabolic rate (PCR)  $<0.8$  has an association with increased morbidity, mortality and hospitalization associated with  $PCR > 1$ . Therefore nutritional status has an important role in the quality life of clients with chronic kidney failure who undergo hemodialysis (Sukandar, 2006). Nutritional status is an expression of a state of balance in the form of certain variable or the manifestation of natriture in the form of certain variables [5].

High protein is known to be significant in improving the nutritional's status of the patients. The existence of incorrect nutrition in patients with chronic kidney failure undergoing hemodialysis will affect the quality life of hemodialysis clients. As in the study conducted by Bakewell et al regarding dialysis adequacy, nutrition and quality

of life for 88 patients undergoing peritoneal dialysis at Walsgrave Hospital, England gained a relationship regarding nutrition with quality of life.

## 2. Methods

The design in this study is descriptive correlation using a cross sectional approach that is measuring variables at the same time. The populations in this study were patients with chronic kidney failure who underwent routine hemodialysis twice a week from January to March 2018 in Immanuel Hospital, amounting to 524 people with an average of 175 people. The technique of taking samples in this study uses purposive sampling that is the technique of determining sample with certain considerations [6]. The inclusion and exclusion criteria include:

### 2.1. Inclusion Criteria

- a. CKF clients who have undergone regular hemodialysis for > 6 months and have undergone laboratory tests while undergoing hemodialysis.
  - b. Willing to be a respondent by signing an informed consent.
  - c. Communicative and can work together
  - d. Do not experience cognitive / mental disorders

### 2.2. Exclusion Criteria

- a. Clients of CKF who have just undergone hemodialysis therapy and have never had a laboratory examination during hemodialysis.
  - b. Missing hemodialysis from a predetermined schedule.
  - c. Experience a decline in conditions so that it is not possible to become a respondent.
  - d. Replacing dialysis therapy

Data collection tools to assess patient nutritional status were using the Malnutrition Inflammation Score (MIS). Malnutrition inflammation score (MIS) is a development tool from 7 components of Subjective Global Assessment (SGA) and is equipped with 3 additional components (BMI and serum albumin concentration and TIBC). MIS scores consist of 10 groups with a maximum score of 3 each, bringing the total score to 30 where score 0-5 without malnutrition, 6-10 mild-moderate malnutrition,  $\geq 11$  severe malnutrition. To collect data on quality of life, the Kidney Disease Quality Of Life Short Form 36

questionnaire (KDQOL SF 36) consists of 36 questions that will measure four subscales related to quality of life that is the physical and mental function scale (sf-12) with items about general health, activity limits, ability to complete desired tasks, depression and anxiety, energy levels, and social activities.

The SF 36 KDQOL instrument is an instrument that has internal consistency and reliability coefficient (Cronbach's alpha) of  $\alpha > 0.75$ . In this study the English version of the KDQOL SF 36 instrument was downloaded from [https://rand.org/surveys\\_tools/kdqol](https://rand.org/surveys_tools/kdqol) which was then back translated to the National English Center (NEC) and content was tested to Drs. Asep Sumpena M.Pd. then for Malnutrition Inflammation Score, it is a special assessment tool for hemodialysis clients and has become the gold standard. Nutritional status measurement tools such as weight scales, laboratory equipment are periodically checked and routine calibration tests are in accordance with operational standards.

Univariate analysis in this study is presented in the form of frequency distributions for each variable. Bivariate data analysis are using Spearman Rank correlation test. This test is used to test the correlation of two variables with an ordinal data scale.

### 3. Results

#### 3.1. Univariate Analysis

##### 3.1.1. Nutritional status

TABLE 1: The Frequency Distribution of Nutritional Status (n=64).

Nutritional Status	Frequency	Percentage
Without Malnutrition	29	45,3 %
Mild Moderate Malnutrition	24	37,5 %
Malnutrisi berat	11	17,2 %
Amount	64	100,0 %

Based on table 1, it shows the nutritional status of clients of chronic renal failure undergoing hemodialysis almost a half (45.3%) without malnutrition.

##### 3.1.2. Quality of Life

Based on table 2, it shows the quality life of clients with chronic kidney failure who undergo hemodialysis, most (73.4%) with good quality of life.

TABLE 2: The Frequency Distribution of Quality of Life (n=64).

Quality of Life	Frequency	Percentage
Good quality of life	47	73,4 %
Poor quality of life	17	26,6 %
Amount	64	100,0 %

### 3.2. Bivariate Analysis

TABLE 3: The Relationship of Nutritional Status with Quality of Life (n=64).

Nutritional Status	Quality of Life				Total		P value	Correlation coefficient
	Good		Poor		N	%		
	N	%	N	%				
Without Malnutrition	29	45,3	-	-	29	45,3	0,000	0,705
Mild Moderate Malnutrition	18	28,1	6	9,4	24	37,5		
Severe Malnutrition	N	7	11	17,2	11	17,2		
Total	47	73,4	17	26,6	64	100		

Based on Table 3 it can be seen that almost a half (45.3%) of chronic kidney failure clients undergo hemodialysis without malnutrition with a good quality of life. Statistically shows a significant relationship evidenced by the results of statistical tests using the Spearman Rank test which obtained the calculated statistical value  $p=0.000$ , that means  $p < 0.05$ , with a correlation coefficient score 0.705, can be concluded that there is a strong relationship between Nutritional Status with Quality of Life.

## 4. Discussion

### 4.1. Nutritional Status of CKF Clients undergoing Hemodialysis

Based on the research results conducted shows that the nutritional status of clients with chronic kidney failure undergoing hemodialysis at Immanuel Hospital in Bandung is almost a half (45.3%) with nutritional status without malnutrition, the results above are different from studies conducted by Sharif, et al [7], which states that most of the nutritional status of clients with chronic kidney failure undergoing hemodialysis with a BMI  $<18.5$  is 67.3%. In addition, Oktiadewi (2012) in his research also stated that nutritional status based on PG-SGA scores was found in the majority or around 69.2% of PGK clients who underwent regular hemodialysis, including the category of poor

nutritional status, while good nutrition was only found in 30.8% of clients. Whereas Lase's research [8] states that the majority of CKF patients undergoing HD have a good nutritional status of 96.9% and only 3.1% of clients have poor nutritional status.

Nutritional status is an expression of a state of balance in the form of certain variable or the manifestation of nutrition in the form of certain variables [5]. Clients with chronic kidney failure undergoing hemodialysis often found nutritional status with malnutrition. Malnutrition in CKF clients is caused by inadequate uremic toxins and ongoing hemodialysis procedures. Uremic toxicity which accumulates in the body will accelerate protein breakdown and reduce protein synthesis [8] (Association of Indonesian Internal Medicine Specialists, 2006 in Lase, 2011). This is supported by the wasting of a lot of protein, vitamins and glucose during the hemodialysis process.

Thus, people with chronic kidney failure often experience protein and calorie malnutrition which causes the client's quality of life going to decrease. Therefore patients with chronic kidney failure is often recommended to make dietary arrangements in order to support the improvement of the quality of life in addition to the therapeutic process becomes really adequate so that there will not much toxic uremia collected and protein also glucose and vitamins will not much wasted. Moreover, clients undergoing hemodialysis should get an adequate food intake to keep them in a good nutrition because malnutrition is an important predictor of the occurrence of death clients in hemodialysis [8]. According to Sharif, et al [7], poor nutritional status in hemodialysis clients can be influenced by inflammation and inadequate energy and protein intake. Clients who undergo hemodialysis should get a protein intake of 1-1.2 gr / kgWeight / day with 50% consisting of high biological value protein, but most protein intake given to patients with chronic renal failure undergoing hemodialysis does not fulfill the protein intake standard based on recommendation from NKF-K / DOQL. This is evidenced by the results of research conducted by Sharif, et al [7] which states that the majority of CKF patients undergoing regular HD (92.7%) do not fill the recommended standard energy intake.

From the nutritional status measurement results, there are 24 clients with moderate mild malnutrition obtained in the medical history, the average client states dietary intake and appetite decrease and often feeling tired. From physical examination data, the sign of loss of muscle mass and the reduction of light fat mean body mass index is  $18 \geq 20$ , and from laboratory parameters serum albumin is 3.5-3.9, for average tbc average 200-249.

In 11 clients with malnutrition, the average client states reducing solid food intake, sometimes vomiting, often feeling tired, on physical examination results showed signs

of muscle mass loss and moderate reduction in fat reserves, for body mass index in the range of 16-18, for serum albumin average <3.0, for the average tbc results in the range 150-199, although the client's body weight before undergoing hemodialysis increases but just after hemodilysis the client's body weight decreases from 1 kg to 5 kg.

In this study the average nutritional status of patients was in the normal range. The client always maintains the frequency of his food so that the protein that is wasted during hemodialysis can be replaced. In addition there is also aminefron therapy which is always consumed by clients who undergo hemodialysis with mild and moderate to severe malnutrition. But even though this study shows that the average nutritional status of the client is in the normal range, food intake in chronic kidney disease clients must be considered to minimize the incidence of malnutrition in hemodialysis clients so that later the client's nutritional status will increase or even in good condition.

#### 4.2. Quality of Life for CRF clients undergoing hemodialysis

In the management of regular hemodialysis patients, assessment of quality of life is a major factor besides adequate hemodialysis. Ferrans and Powers (1994, in Septiwi, 2011) defines quality of life as a welfare that is felt by someone and comes from satisfaction / dissatisfaction with the areas of life that are important to them. Quality of life is related to client morbidity and mortality. The results of the study of the quality of life of clients undergoing hemodialysis at the Immanuel Bandung hospital showed that the majority (73.4%) had a good quality of life while those with an unfavorable quality of life ranged from 26.6%.

The quality of life of patients with chronic kidney failure who undergo HD does not all have a poor quality of life because it is likely that some clients have a good quality of life. This is evidenced by the research of Lase [8], which states that most CKF clients undergo HD has a good quality of life that is equal to 62.5% and only 37.5% of clients who have a poor quality of life.

Based on several studies above, it can be seen that the quality of life of CKF clients who undergo HD varies depending on each individual in addressing the problems that occur in him. If faced positively it will become good quality of life, but another thing if dealing negativity it will also become bad quality of life. Quality of life is not related to the length of time a person will live but to achieve quality of life needs to be fundamentally changes in the way of the client's view of kidney failure itself [8].

Most of the clients who underwent hemodialysis at Immanuel Bandung Hospital for more than 1 year were 54 people. Viewed in terms of long undergoing hemodialysis Sapri (2008) states that the longer the client's chronic kidney failure undergoing hemodialysis, the more clients can adapt to all the routine activities they undergo so that it will support the quality of life of clients of chronic kidney failure.

When collecting quality of life data using KDQOL SF 36 on the physical and mental dimensions, the average client answered his health was good, the client also said it had reduced heavy work, even though many clients were still working due to economic problems, on the dimensions of kidney disease clients feel that their current situation is a burden for the family and it is mostly true that kidney disease is very disruptive to their activities / lives. On the scale of symptoms and problems the average client answers is very troublesome. And on the effect of kidney disease, the average client can still work around the house, the ability to travel is a bit inconvenient, on food limitation the average client answers that it's a little inconvenient, but at the fluid limitation almost all of the answers that there are very troublesome and it become the highest score of all questions. The client said they could only be surrender to the current situation, even though the client continued to live life like other normal people.

Quality of life of kidney failure clients who undergo hemodialysis, average clients have problems related to limitations for heavy activity, lack of physical achievement, limited work, lack of emotional achievement, perceived disruption of kidney disease, muscle pain and cramps, impairments in work ability, disorders in fluid limitation, travel ability, medical dependence and sexual life disorders.

According to the researchers' assumptions from the results of the study, most of the good quality of life might also depend on the individual's perception of life, coping of the individual in accepting his illness, length of time undergoing HD and the severity of the disease. When the client has begun to accept his current condition and has begun to adapt to his present situation, this will affect the quality of his life.

### **4.3. Relationship of Nutritional Status with Quality of Life for Chronic Kidney Failure**

Based on research results, it's explaining the relationship between a nutritional status with quality of life on hemodialysis clients. Clients with nutritional status without malnutrition ranged from 45.3% with 29 respondents. Whereas with mild moderate malnutrition status has a percentage of 28.1% or around 18 people, has a good quality of life. And on mild moderate nutritional status with poor quality of life has a percentage of 9.3%

with a total of 6 people. While the poor nutritional status with poor quality of life around 17.2% with 11 respondents.

Statistically shows a significant relationship this is evidenced by the results of statistical tests using the Spearman's test which obtained the calculated statistical value obtained  $p = 0.000$ , which means  $p < 0.05$ , with a correlation coefficient of 0.705 so that it can be concluded that there is a strong relationship between Nutrition Status with the Quality of Life of Chronic Kidney Failure clients undergoing hemodialysis at Immanuel Hospital in Bandung.

These results are consistent with Lina's (2008) study which states that there is a positive and significant correlation between nutritional status as measured by BIA with physical and mental dimensions on quality of life ( $p$ -value= 0.02). Another study conducted by Oktiadewi (2012) found that there was a relationship between nutritional status and quality of life of CKF patients on serum albumin indicators with physical health dimensions ( $P$ -value = 0.02), SGA score indicators with physical health dimensions ( $p$ -value = 0.037) and SGA score indicators with dimensions of problems due to kidney disease ( $p$ -value = 0.031). Relationship between nutritional status with physical and mental dimensions on quality of life. In Lase's research (2011) [8], it also showed that nutritional status factors had a significant relationship with quality of life ( $p$ -value = 0.031).

Therefore it can be understood that the nutritional status of clients undergoing hemodialysis affects the quality of life of the client itself. Quality of life in chronic renal failure clients undergoing hemodialysis is influenced by several factors including: age, sex, nutritional status, etiology, duration of HD and comorbid conditions. Nutrition is one of the factors that affect the quality of life of CKF clients who undergo hemodialysis because hemodialysis clients often suffer from malnutrition so that the poorer the nutritional status of patients, the worse the quality of life [9].

Based on the study above, almost half of clients with non-malnutrition status have a good quality of life, researchers argue that due to the monitoring of nutritional status and providing education by nutritionists according to standard operational procedures for all hemodialysis clients and clients always maintain the frequency of food and adhere to the diet so that protein is wasted when hemodialysis can be replaced and maintain the client's nutritional status so that the quality of life is becoming good.

In contrast to clients whose nutritional status is malnutrition and their quality of life is poor due to disobedience to a recommended diet, plus the presence of protein, glucose and vitamins that are wasted during hemodialysis, causing the patient to become malnourished so that the presence of malnutrition in clients with chronic kidney failure will cause various complaints such as physical weakness, lack of energy and energy to

carry out daily activities that reduce physical functioning and will have an impact on the ability of clients to run their lives so that the quality of life will decline.

Based on the data, there are almost half of the clients (28.1%) experienced mild-moderate malnutrition, the quality of life was good, mild malnutrition was not always accompanied by nutrient, calorie and protein deficiency so that the symptoms that arose were not always the same and physical function was not always disturbed so patients can still do physical activities like usual, researchers also think that from the distribution of male sex 57.8% have the motivation to be healthy and they are still able to carry out their daily lives because they have to support their families. In addition, they also get support from their partners so that they can motivate patients and encourage them to be healthy and live their lives. Both men and women, individuals with married status have a higher quality of life.

The role of nurses in providing client nursing care with chronic kidney failure plays an important role especially for clients who experience nutritional status of malnutrition. Assessment of nutritional status in chronic renal failure clients is a benchmark in providing nursing interventions, education about food intake and nutritional value contained in food is very important especially protein intake for chronic renal failure clients undergoing hemodialysis.

Nurses can also coordinate with nutritionists in providing education so that clients and families have optimal knowledge about diet management and the client's nutritional status is expected to be good so that his quality of life is could be good. Nurses must more actively carry out their roles as counselors, educators, an advocates as well taking care directly can prevent complications from the disease thereby affecting the quality of life of the client for the better.

## 5. Conclusion

There is a relationship between a nutritional status with the quality life of patients with chronic kidney failure undergoing hemodialysis at Immanuel Hospital Bandung. It is hoped that further studies can conduct more in-depth research on factors affecting nutritional status or examine quality of life with other variables not studied yet in order to develop nursing interventions in providing nursing services to patients with chronic kidney failure undergoing hemodialysis.

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