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ORIGINAL RESEARCH

THE RELATION OF LONG SUFFERING CHRONIC KIDNEY DISEASE (CKD) AND STRESS WITH MENSTRUAL ABNORMALITIES IN HEMODIALYSIS UNIT RSUD PROF. DR. SOEKANDAR

Lutfi Wahyuni, Eka Noer Soe'mah, Indah Kusmindarti, Agus Haryanto
Universitas Bina Sehat PPNI Mojokerto
Email: Ltf.hidayat@gmail.com

ABSTRACT

Chronic kidney disease (CKD) is a long-term disease where the kidneys have decreased function. In women who experience prolonged CKD, other problems will arise, namely Menstrual abnormalities. CKD patients who have just undergone hemodialysis therapy are prone to stress, if not treated immediately it will disrupt the menstrual cycle. This research design uses correlation analytic with cross sectional approach. The population in this study were 49 women who suffered from CKD in the hemodialysis unit of RSUD Prof. Dr. Soekandar. Sampling using non-probability sampling technique Consecutive sampling type within a period of 3 weeks. The sample in this study amounted to 43 people. The instruments used in this research are DASS questionnaire and Menstrual abnormalities checklist sheet. Data analysis using logistic regression test. The results showed that 20 respondents (46.51%) had CKD >4 years. For stress levels, it was found that 17 respondents (39.53%) were at mild stress levels. And 39 respondents (90.70%) experienced Menstrual abnormalities. The results of the logistic regression test showed that the p-value = 0.048.It can be concluded that there is a long-standing relationship between chronic kidney disease and stress with menstrual abnormalities in the hemodialysis unit of RSUD Prof. Dr. Soekandar. Women who suffer from CKD in their bodies will experience hyperprolactinemia which will disrupt the menstrual cycle. A person who has just been diagnosed with CKD is prone to stress, which stress will stimulate the release of Corticotropic Releasing Hormone (CRH). Hyperprolactinemia and CRHcan affect the performance of Gonadotropin-releasing hormone (GnRH) which lead to menstrual abnormalities

Keywords

chronic kidney disease, stress, menstrual abnormalities

INTRODUCTION

Chronic kidney disease (CKD) is a condition in which the kidneys fail to maintain fluid-electrolyte balance due to progressive destruction of kidney structures with manifestations of accumulation of metabolic waste (uremic toxicity) in the blood (Muttaqin & Sari, 2014). In women who experience prolonged CKD, other problems will arise, namely menstrual disorders or what are called Menstrual abnormalities. CKD is irreversible, so there is a need for kidney replacement therapy including hemodialysis (Naryati & Nugrahandari, 2021). Women who have recently undergone hemodialysis therapy are prone to stress and if not treated immediately will disrupt the menstrual cycle. Menstrual abnormalities in women, if left alone, will

cause complications such as: irritability, impaired physical activity, anemia, and even cause infertility (Ilmi & Selasmi, 2019). Chronic kidney disease (CKD) is still a public health problem. Reviewing data in 2015 from the World Health Organization (WHO) the prevalence of Chronic kidney disease (CKD) worldwide reached 10% of the entire human population in the world (Jawak, Novizar, & Girsang, 2020).Based on the prevalence of Chronic Kidney Disease (CKD) in Indonesia According to the 2018 RISKESDAS, there were 713,783 (0.38%) diagnosed by doctors in residents aged ≥15 years. The province with the highest prevalence of CKD was located in West Java with 131,846 (0.48%) followed by East Java which ranked second with 113,045 people (0.29%) diagnosed with CKD and the third largest, namely Banten, with 33,587 people (0.25%) (Riskesdas, 2018). According to the results of interviews with HD nurses at Prof. Hospital. Dr. Soekandar on April 11 2022 found that there were 150 CKD patients undergoing hemodialysis therapy. 130 patients (86.6%) underwent HD therapy with a frequency of 2x a week and 12 patients (8%) underwent therapy 3x a week, the remaining 8 patients (5.3%) underwent HD once a week. When interviewed 5 female patients who were undergoing HD with a vulnerable age of 30-40 years. 3 women (60%) who had CKD for more than 4 years and 1 person (20%) who had CKD for 2 years said they did not experience menstruation. While 1 person (20%) who suffers from CKD is less than 6 months still menstruating. Of the five patients, none of them used any contraception. CKD stage End Stage Renal Disease (ESRD) has several complications. One of them in women is the occurrence of Menstrual abnormalities. because women who have long suffered from CKD in their bodies will increase endorphins, prolactin, leptin. These three elements are involved in decreasing GnRH secretion in the hypothalamus, which has an impact on estrogen not being able to stimulate FSH and LH so that there is no increase in the corpus luteum which will result in changes in menstrual patterns (Serret-Montaya et al., 2020). In the previous study, which was carried out in the hemodialysis unit RSUD Waled Cirebon Regency, the results showed that there was a significant relationship to Chronic kidney disease with changes in menstrual patterns with a p value = 0.027, α = 0.05 r = 0.707. Patients with CKD stages of End Stage Renal Disease (ESRD) experience a progressive and irreversible decline in kidney function where the body's ability fails to maintain metabolism and fluid and electrolyte balance (Siagian & Damayanty, 2018). Because CKD is irreversible, there is a need for kidney replacement therapy including hemodialysis (HD), peritoneal dialysis or kidney transplantation. Hemodylisa is the process of cleaning the blood from waste substances through screening or filtering processes from outside the body using an artificial kidney from a dialysis machine. Hemodialysis therapy is needed for the management of CKD patients who cannot be treated anymore (Wahyuni, Rofiah, & Achwandi, 2019) CKD patients who have recently undergone hemodialysis therapy are prone to experiencing stress. Because there will be lifestyle changes, uncertainty about the success of therapy, and other factors that become aggravating stress in CKD patients undergoing hemodialysis. In previous studies, 14 people (51.9%) experienced severe stress who underwent hemodialysis for less than 6 months (Syahrizal, Dendy Kharisna, & Putri, 2020) When a woman experiences stress, her body will release the hormone cortisol which will affect estrogen in women, so that there will be changes in menstrual patterns (Ozimek & Velez, 2022) Based on a research study conducted by

(Kaslam, Widodo, Satari, & Karuniawati, 2021) there were 27 respondents (32.1%) experiencing stress, 16 respondents experiencing changes in the menstrual cycle. so it can be concluded that there is a relationship between stress and changes in the menstrual cycle. If stress and complications in women are not resolved, new problems will arise, namely Menstrual Abnormalities. Because the duration of CKD and stress will affect the hormone estrogen in women which will inhibit or even stop the menstrual cycle. Menstrual abnormalities or menstrual disorders occur when menstrual changes such as irregular cycles, excessive pain, menstruation for a long time, and menstrual blood that becomes more abundant (Rima Wirenviona, 2020) If menstrual abnormalities are not treated immediately, new problems will arise such as: irritability, impaired physical activity, anemia, and even cause infertility. To prevent and minimize the impact of menstrual abnormalities, it is best if CKD sufferers who are undergoing hemodialysis are able to improve their coping mechanisms so as not to overdo stress, routinely undergo hemodialysis therapy according to a predetermined schedule. Based on the above background, the researcher is interested in conducting research on "The relationship between long-standing Chronic Kidney Disease (CKD) and stress with Menstrual Abnormalities at Prof. RSUD. Dr. Soekandar.

RESEARCH METHODS

In this study, a correlation analytic design was used using a cross-sectional approach which was carried out to determine the relationship between two or more variables and collected at a certain time and simultaneously (Lapau, 2017) The population in this study were 49 female patients suffering from Chronic kidney disease (CKD) in the hemodialysis unit at Prof. Hospital. Dr. Soekarno. In this study, the sample was taken using a non-probability sampling technique of the Consecutive sampling type, which is a way of taking samples based on research criteria within a certain period of time until the number of samples is fulfilled (Nursalam, 2016). The timeframe in this study was 3 weeks. The sample size used in this study were 43 female patients suffering from CKD in the hemodialysis unit at Prof. Hospital. Dr. Soekarno. Data collection in this study used instruments consisting of: The instruments used in the study were the Depression, Anxiety, Stress Scale (DASS) questionnaire and a checklist sheet for Menstrual abnormalities. In this study, researchers used a questionnaire DASS 14. Reliability of the DASS-42 translation this has been tested using Cronbach's Alpha Formula (α=.9483). menstrual abnormalities instrument (disorder menstruation) was tested for validity with a pearson correlative with a value of r table = 0.3610. Data analysis test in this study used a logistic regression test.

RESEARCH RESULT

1. General data

Table 1 Characteristics of Respondents based on age, use KB, HD frequenc

Characteristics respondent	frequency	Prosentase
Age		
<20 years	3	6.98%
21- 30 years	8	18.60%
31-40 years	13	30.23%
> 40 years	19	44.19%
Use KB		
Yes	2	4.65%
Not	41	95.35%
Hemodialysis frequency		

one time	1		2.33%
Twice		42	97.67%
Three times	0		0.00%
		43	100%

Based on Table 1, it was found that almost all respondents were >40 years old, namely 19 people (44.19%). The characteristics of the respondents based on the use of family planning, the result was that almost all respondents did not use family planning, namely 41 respondents (95.35%). The characteristics of the respondents based on the frequency of hemodialysis (HD) in a week showed that almost all respondents had a frequency of 2x HD in a week, namely 42 respondents (97.67%).

1. Special Data

Table 2 Distribution of the frequency of respondents based on length of suffering from Chronic kidney disease (CKD) in the hemodialysis unit RSUD Prof. Dr Soekandar.

No	Long suffering CKD	Frequency	Prosentase
1	<1 years	9	20.93%
2	1-2 years	7	16.28%
3	3-4 years	7	16.28%
4	>4 years	20	46.51%
	Total	43	100.00%

Based on table 2, it was found that almost half of the respondents suffered from Chronic Kidney Disease (CKD) >4 years, namely 20 respondents (46.51%).

Table 3 Distribution of the frequency of respondents based on stress levels in CKD patients in the hemodialysis unit at Prof. Hospital. Dr. Soekandar

No	Levels Stress	Frequency	Presentase
1	Normal	9	20.93%
2	Light Stress	17	39.53%
3	Moderate Stress	3	6.98%
4	Heavy Stress	7	16.28%
5	Very Heavy Stress	7	16.28%
	Total	43	100.00%

Based on table 3, it was found that 17 respondents (39.53%) were at a mild stress level.

Table 4 Distribution of the incidence of Menstrual abnormalities in Chronic kidney disease (CKD) patients in the hemodialysis unit at Prof. Hospital. Dr. Soekandar

No	Menstrual abnormalities	Frequency	Presentase
1	Not occur	4	9.30
2	occur	39	90.70
	Total	43	100

Based on table 4, it was found that almost all respondents experienced menstrual abnormalities, namely 39 respondents (90.70%).

Table 5 Logistic regression analysis of chronic kidney disease (CKD) and stress with menstrual abnormalities

		df	Sig.	Exp (B)
Step 1[a]	long suffered_ CKD	1	0.018	35.287
	Stres	1	0.038	8.68
	Constant	1	0.048	0

Based on table 5, the results show that the p-value <0.05, which means there is a relationship between long suffering from Chronic kidney disease (CKD) and stress with Menstrual abnormalities in the hemodialysis unit at Prof. Hospital. Dr. Soekandar.

DISCUSSION

1. **Identification of length of time suffering from chronic kidney disease (CKD) in the hemodialysis unit of Prof. Dr. Soekandar**

Based on the results of research conducted in the hemodialysis unit at Prof. Hospital. Dr. Soekandar found that almost half of the respondents had CKD for more than 4 years, namely 20 respondents (46.51%). Length of suffering can be interpreted as the time span between the patient's first diagnosis and the current time expressed in years. Chronic kidney disease (CKD) is an irreversible kidney function disorder in which the body's ability to maintain metabolism of fluid and electrolyte balance fails resulting in uremia (pretention of urea and other nitrogenous wastes in the blood) (Nurbadriyah, 2021)

CKD patients who undergo HD have had kidney function damage and decreased end-stage kidney function, so that patients can no longer survive without having HD 2x per week. The lower the kidney function, the more metabolic waste that cannot be disposed of that accumulates in the body and is harmful, one of the therapies is HD (Rahayu, Ramlis, & Fernando, 2018).

In this study, it was shown that most of the respondents underwent treatment for ≤ 2 months, which means that the majority of respondents entered the initial stage of treatment which aims to effectively reduce the number of germs in the patient's body and minimize the influence of a small number of germs that may have been resistant since before the patient received treatment. Long suffering from Chronic kidney disease (CKD) is the span of time a person was first diagnosed until now. In this study, the majority of patients suffered from CKD for >4 years as many as 20 respondents (46.51%) with 15 respondents (75%) aged >40 years and 5 respondents (25%) aged 31-40 years. As a person ages, there will be a decrease in kidney function, if a person continues to increase the workload of the kidneys, the kidneys will experience a decrease in function, so there is a need for hemodialysis therapy to replace kidney function in removing waste substances in the body. Identification of stress in chronic kidney disease (CKD) patients in the hemodialysis unit at Prof. Dr. Soekandar Based on the results of research conducted at the hemodialysis unit at Prof. Hospital. Dr. Soekandar, the results showed that almost half of the respondents experienced mild stress, namely 17 respondents (39.53%).

Stress is an unpleasant condition, which is perceived as a threat or challenge that needs adjustment, which can lead to unpleasant consequences, so that individuals can adjust to these demands (Azizah, Zainuri, & Akbar, 2016) Kidney failure patients who are undergoing hemodialysis, need 12-15 hours for dialysis every week, or at least 3-4 hours per therapy. This activity will continue throughout his life. This is what takes time and energy for chronic kidney failure patients undergoing hemodialysis therapy, resulting in changes in them because they have to depend on dialysis machines for the rest of their lives and adjusting to illness conditions resulting in changes in the patient's life (Dewi & Rodli, 2021) The initial response that appears when having to undergo hemodialysis is crying, shock, fear and rejection. Meanwhile, the responses and attitudes while undergoing hemodialysis are accepting, sincere, patient, resigned and grateful (Hadrianti, 2018) In terms of research conducted by (Rahayu et al., 2018) that most 46.3% (31 people) experience mild stress. Because patients who suffer from CKD for longer have more experience with various forms of stressors, so that patients will be more adaptive in coping mechanisms

to these patients. Although sometimes complications from CKD often make patients experience various problems and if the patient's coping mechanism is not good at responding to stressors it will have an impact on the patient's stress level (Rahayu et al., 2018).

In this study, there were 17 patients (39.53%) who experienced mild stress, this was because the patients had entered the accepted phase, the patients had resigned themselves to what happened to them, even though at first they experienced previous phases, namely rejection, anger, bargaining, depression. Because according to them there is no benefit in grieving for too long and only create various problems for themselves. Of the 17 respondents who were at a mild stress level, as many as 10 respondents (58.83%) had CKD for >4 years in the age range >40 years and as many as 7 respondents (41.17%) had CKD for 3-4 years in the age range 31- 40 years. The longer a person is diagnosed with CKD, the patient will be at normal, mild, and moderate stress levels. Because they are used to the conditions that occur. Whereas patients who have just been diagnosed with CKD will be at a level of severe stress and even very severe stress because they feel that there is a change in themselves and uncertainty about the success of therapy.

2. Identification of the incidence of menstrual abnormalities in chronic kidney disease (CKD) patients in the hemodialysis unit at Prof. Dr. Soekandar

Based on the results of research conducted at the hemodialysis unit at Prof. Hospital. Dr. Soekandar got the result that almost all respondents experienced Menstrual abnormalities 39 respondents (90.70%).

Menstrual abnormalities or menstrual disorders are conditions in which women experience changes in menstrual patterns. Normally, a woman's menstrual cycle ranges from 21 days to 35 days with menstrual periods ranging from 3-7 days and during menstruation, the amount of blood that comes out is not more than 80 ml or the frequency of changing pads is 2-6 times/day (Harzif, Silvia, & Wiweko, 2018) Based on research conducted by (Nurjanah, Sit, Kes, & Pertiwi, n.d.) of 20 CKD patients who were undergoing hemodialysis, it was found that irregular menstrual patterns were 12 respondents (60%) and the lowest percentage in the category of regular menstrual patterns was 8 respondents (40%). This is in accordance with the theory of (Serret-Montaya et al., 2020) which states that women with CKD will experience an increase in endorphins, prolactin, and leptin in their bodies. These three elements affect the decrease in GnRH secretion in the hypothalamus, this will have an impact on estrogen not being able to stimulate FSH and LH so that there is no increase in the corpus luteum which will result in changes to the menstrual cycle (Serret-Montaya et al., 2020).

The risk of secondary amenorrhea in CKD patients undergoing HD is influenced by many factors, one of which can be caused by kidney damage itself which causes disruption of reproductive hormones and uremia syndrome as well as other risk factors in the form of psychological status (Prastiwi, Salwani, & Saminan, 2017). According to researchers, the longer a woman suffers from CKD, the more problems she will have with her menstrual pattern or what is called Menstrual Abnormalities, because women who suffer from CKD will have an increase in Endorphins, Prolactin, and Leptin in their bodies. These three elements can affect the increase in the corpus luteum which will result in changes in menstrual patterns.

3. Analysis of the relationship between chronic kidney disease (CKD) and menstrual abnormalities in the hemodialysis unit at Prof. Dr. Soekandar

The results showed that p-value = 0.018. This can be interpreted that there is a relationship between long suffering from chronic kidney disease (CKD) and menstrual abnormalities. Menstrual abnormalities or menstrual disorders occur when menstrual changes such as irregular cycles, excessive pain, menstruation for a long time, and menstrual blood that becomes more abundant (Rima Wirenviona, 2020) In terms of previous research conducted by (Ardiyani, Purbaningsih, & Nurfajriani, 2019) 25 respondents (69.44%) experienced changes in the menstrual cycle. The duration of the patient experiencing chronic renal failure will occur disturbances in calcium metabolism where this can affect LH secretion and inhibition of LRH (Luteinizing Releasing Hormone) secretion which causes negative feedback on estrogen in the hypothalamus. This can lead to changes in the menstrual cycle. Another hormone that causes menstrual changes is the hormone prolactin which causes hyperprolactinemia so that the changes that occur can be secondary amenorrhea (Ardiyani et al., 2019).

In the study of Rathi Manish and Ramachandran R in India, increased levels of prolactin or hyperprolactinemia caused by uremia toxin in impaired glomerular filtration in patients with chronic renal failure and decreased dopaminergic inhibition of prolactin secretion. This will cause disruption of the menstrual cycle to the emergence of secondary amenorrhea and result in infertility (Rathi & Ramachandran, 2017). According to research results, the longer a person suffers from Chronic kidney disease, the more toxic uremic in the blood will increase which will result in hyperprolactinemia which will disrupt the menstrual cycle.

4. Analysis of the relationship between stress and menstrual abnormalities in the hemodialysis unit at Prof. Dr. Soekandar

Based on table 5 on variables stress results obtained p-value = 0.038. This can be interpreted that there is a relationship between stress and menstrual abnormalities. Under conditions of stress, the amygdala in the limbic system is activated. This system stimulates the hypothalamus to release a hormone called Corticotrophic Realizing Hormone (CRH). This hormone, directly inhibits GnRH secretion in the hypothalamus in the arcuate nucleus, and this process occurs by augmenting the secretion of endogenous opioids. Increased CRH levels stimulate the release of endorphins and corticotropin hormones into the blood. These hormones directly cause a decrease in GnRH levels, and stress can cause disruption of the menstrual cycle (Rahma, 2021).

In terms of previous research conducted by Nathalia, in her research she concluded that the results of statistical tests found that there was a significant relationship between stress levels and the menstrual cycle in female students P-value = 0.000 (Nathali, 2019). This is in line with research conducted by (Rahma, 2021) that among respondents with high stress levels there were 38 respondents (66%) who had abnormal menstrual cycles. With the results of the chi-square test yielding p-value = 0.005, there is a significant relationship between stress levels and the menstrual cycle. According to the results of the study there is a relationship between stress and the incidence of menstrual abnormalities. This happens because in a state of stress caused by a stressor, the HPA axis activates,

causing the hypothalamus to secrete Corticotropic Releasing Hormone (CRH). This CRH has a negative effect, namely inhibiting GnRH secretion.

5. **Analysis of the relationship between chronic kidney disease (CKD) and stress with menstrual abnormalities in the hemodialysis unit at Prof. Dr. Soekandar**

Based on the logistic regression test of three variables with an interpretation of the results of significance at p-value = 0.048, it can be concluded that there is a significant relationship between duration of suffering from Chronic kidney disease (CKD) and stress with Menstrual abnormalities.

CKD stage End Stage Renal Disease (ESRD) has several complications. One of them in women is the occurrence of Menstrual abnormalities. because women who have long suffered from CKD in their bodies will experience an increase in endorphins, prolactin, leptin. These three elements are involved in decreasing GnRH secretion in the hypothalamus, which has an impact on estrogen not being able to stimulate FSH and LH so that there is no increase in the corpus luteum which will result in changes in menstrual patterns (Serret-Montaya et al., 2020).

In terms of research conducted by Haniza (2018), it was found that 21 respondents (63.6%) who experienced stress also experienced menstrual disorders. Because in a state of stress there is activation of the amygdala in the limbic system. This system will stimulate the release of a hormone from the hypothalamus, namely Corticotropic Releasing Hormone (CRH). This hormone will directly inhibit hypothalamic GnRH secretion from its production site in the arcuate nucleus. Increased CRH will stimulate the release of endorphins and Adrenocorticotropic Hormone (ACTH) into the blood. An increase in ACTH levels will cause an increase in blood cortisol levels. These hormones directly and indirectly cause a decrease in GnRH levels, which in this way causes stress to disrupt the menstrual cycle from what was previously normal to oligomenorrhea, polimenorrhea, amneorrhea. (Prawirohardjo, 2016).

According to researchers, long suffering from CKD will cause menstrual disorders (Menstrual abnormalities). Because in the body of CKD sufferers, there is an increase in uremia and glomerular filtration disorders, causing an increase in prolactin which can interfere with the menstrual cycle. Likewise with stress. Stress can affect the menstrual cycle because when a woman experiences stress, her body will produce Corticotropic Releasing Hormone (CRH) which will affect the performance of Gonadotropin-releasing hormone (GnRH) which can cause menstrual disorders.

Based on the results of the logistic regression analysis test 5, it was found that the p-value was <0.05, which means that there is a relationship between length of time suffering from Chronic Kidney Disease (CKD) and stress and Menstrual Abnormalities in the hemodialysis unit of RSUD Prof. Dr. Soekarno. But the variable that has the most influence on Menstrual Abnormalities is the experience of Chronic Kidney Disease (CKD). This can be seen from the highest Exp.B(OR) value, namely: 35,287 in the long-suffering Chronic Kidney Disease (CKD) variable.

CONCLUSION

Based on the results of the study, it can be concluded that there is a relationship between long suffering from Chronic Kidney Disease (CKD) and stress with Menstrual Abnormalities in the hemodialysis room at Prof. Dr. Soekarno. This is because someone who suffers from CKD will have hyperprolactinemia in their

body. Likewise with stress, someone who has just been diagnosed with CKD is prone to experiencing stress because there are changes in him and he is unable to carry out good coping mechanisms. So when a woman with CKD, stress problems will arise where stress will stimulate the release of Corticotropic Releasing Hormone (CRH). Hyperprolactinemia and Corticotropic Releasing Hormone can affect the performance of Gonadotropin-releasing hormone (GnRH) which is responsible for stimulating follicle-stimulating hormone (FSH) and luteinizing hormone (LH).

SUGGESTION

a. For CKD Patients

Provide education to routinely carry out therapy according to schedule and reduce stress in order to reduce the impact of Menstrual abnormalities.

b. For Research Sites

Provide education regarding the impact of Menstrual abnormalities for patients with long-standing CKD and excessive stress.

c. For Further Researchers

Carrying out research development on the interventions provided in reducing the impact of Menstrual abnormalities through videos, leaflets so that they are more useful for the development of nursing knowledge.

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