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Menstrual patterns in women with chronic kidney failure in the hemodialysis room of RSUD Tidar Magelang City

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Abstract

Background: Patients with kidney failure in the final stages will experience a loss of kidney function of up to 90% or more, so that the body's ability to maintain fluid and electrolyte balance is disrupted, excretory function becomes inadequate, hormonal function is disrupted and the condition of uremia or azotemia occurs. Patients who undergo hemodialysis will cause their menstrual cycle to decrease and stop and even their reproductive function will decrease. Because women who suffer from chronic kidney failure for a long time in their bodies will experience an increase in endocrine, prolactin, leptin. These three elements are involved in reducing the secretion of Gonadotropin-releasing hormone (GnRH) in the hypothalamus, which results in estrogen not being able to stimulate Follicle Stimulating Hormone (FSH) and Luteinizing hormone (LH) so that there is no increase in the corpus luteum which will result in changes in pattern. menstruation. Objective: to determine menstrual patterns in women suffering from chronic kidney failure in the hemodialysis room at Tidar Regional Hospital, Magelang City. Method: The research design used was descriptive quantitative with a cross-sectional design involving 27 respondents. Results: 20 respondents (72%) experienced menstrual cycle disorders, 14 respondents (51.9%) experienced oligomenorrhea, 15 respondents (55.15%) experienced hypomenorrhea and almost all patients experienced cycle changes at the beginning of undergoing hemodialysis, 23 respondents (85%). Conclusion: Some respondents experienced changes in menstrual patterns both according to their menstrual cycle and the amount/volume of bleeding.

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Keywords

Chronic renal failure, Hemodialysis, Menstrual patterns

Introduction

Non-communicable diseases (NCDs) sometimes cause problems for patients as there are often no obvious signs or symptoms, requiring early prevention and prompt treatment. Non-communicable diseases (NCDs) are chronic diseases that cause nearly

70% of human deaths worldwide and are not transmitted from person to person. Some types of NCDs include high blood pressure, obesity, asthma, cancer, stroke, chronic kidney disease, and diabetes [1].

According to data from the Centers for Disease Control and Prevention, America has a percentage of Chronic Kidney Failure (CKD) cases reaching 38.1% of 800,000 which is dominated by age > 65 years, female gender 14% and male 12%. Data from the Ministry of Health of the Republic of Indonesia, around 713,783 or 0.38% of the Indonesian population currently experience CKD [2]. In Central Java, it ranks second with 113,045 people. Data from the Ministry of Health in 2019 in this description the number in men is 355,726 people, while in women it is 358,057 people [3].

Patients with kidney failure in the final stage or End Stage Renal Disease (ESRD) will experience a loss of kidney function of up to 90% or more, so that the body's ability to maintain fluid and electrolyte balance is impaired, excretory function becomes inadequate, hormonal function is disrupted and uremia or azotemia conditions occur [4]. Almost all patients with CKD require hemodialysis, although patients receive hemodialysis regularly, hemodialysis cannot completely replace kidney function [3].

There are several complications of End Stage Renal Disease (ESRD) chronic renal failure, one of which in women is the occurrence of menstrual abnormalities. There is an increase in endocrine, prolactin, leptin in women with GGK. These three elements are involved in decreasing the secretion of Gonadotropin-releasing hormone (GnRH) in the hypothalamus, which results in estrogen not being able to stimulate Follicle Stimulating Hormone (FSH) and Luteinizing hormone (LH) so that there is no increase in the corpus luteum which will result in changes in menstrual patterns [5].

Gynecological problems are common in women with chronic kidney disease. Up to two-thirds experience menstrual disturbances. Secondary amenorrhea is seen in 50-100% of patients with end-stage renal disease, of patients who menstruate, 50-80% experience polymenorrhea, oligomenorrhea, or heavy menstrual bleeding [6].

Research conducted at RSUD Waled Cirebon Regency by [7] found that most hemodialysis patients showed changes in their menstrual cycle, namely 36 patients (75%), while 12 (25%) patients showed no changes. The majority of chronic kidney disease respondents who undergo hemodialysis for more than 12 months. Most respondents experienced changes in the menstrual cycle, undergoing hemodialysis there is a relationship between the length of hemodialysis treatment with changes in the menstrual cycle.

This study aims to determine the description of changes in menstrual patterns that occur in women with GGK in the hemodialysis room of RSUD Tidar Magelang. The benefits of this study for nurses provide an overview of changes in menstrual patterns in women with GHGK in the hemodialysis room so that it can provide a reference in the service and care of dialysis patients so that they can achieve better conditions. For researchers, it can be a reference and comparison in conducting further research on the

application of the theory of psychological relationships or factors that influence changes in menstrual patterns in women with GHGK in the hemodialysis room.

Methods

The research method used was descriptive quantitative with a cross-sectional design. The sampling technique is total sampling. To be included in this study must meet the inclusion criteria, among others, are women with GGK who undergo routine hemodialysis either 1x / week or 2x / week, aged 15-49 years while for women with GGK who use hormonal contraceptives are not included in this study because they include exclusion criteria. So that the sample of this study amounted to 27 patients because 3 people could not be included in this study due to the use of hormonal contraceptives. The variable of this study is the change of menstrual pattern in women with GGK in hemodialysis room of RSUD Tidar Kota Magelang.

Data Collection

Data collection was obtained from primary data directly from respondents using a questionnaire sheet. Questions in Questionnaire A consisted of demographic data such as name, age, length of hemodialysis therapy, frequency of hemodialysis, and Questionnaire B which consisted of questions about changes in menstrual patterns that occurred in female patients with GHGK who underwent routine hemodialysis.

Research Instrument

This research instrument is a questionnaire question in the questionnaire This instrument has been tested for validity by [7] using Pearson product moment with the value of the r range on each question 0.618-0.869 which means> 0.396 which is declared valid. While the reliability test by [7] using Cronbach's Alpha, the results of which are 0.859 which means> from 0.60 is declared reliable.

In this study using univariate analysis because it only explains or provides a description and incidence of menstrual patterns in GGK women undergoing hemodialysis which is poured using statistical methods such as frequency distribution and data centering measures such as mean, median, mode and standard deviation.

Ethical feasibility in this study was obtained from the Research Ethics Committee at RSUD Tidar Kota Magelang with the number of Ethical Feasibility Certificate No.047/EC-RSUDTIDAR/IV/2024.

Results

Table 1 shows that the highest age in this study was in the age range of 40-49 years as many as 22 respondents (81.5%). Based on the length of time the respondents underwent hemodialysis therapy, the data showed that as many as 15 respondents (55.6%) underwent hemodialysis in the range of 1-5 years. The highest frequency of hemodialysis was 2x/week as many as 26 respondents (96.3%).

Table 1. Frequency Distribution of Sample Characteristics (n=27)

No	Characteristics	Frequency	Percentage (%)
1	Age		
	30-39	5	18.5
	40-49	22	81.5
2	Length of Time on Hemodialysis		
	< 1 year	7	25.9
	1-5 years	15	55.6
	> 5 years	5	18.5
3	Hemodialysis Frequency		
	1 x/ week	1	3.7
	2 x/ weeks	26	96.3

Source: Primary data processed 2024

Based on Table 2, it is known that the most respondents who did not experience polymenorrhea were 24 respondents (88.9%). The most respondents who experienced oligomenorrhea were 14 respondents (51.9%). The most respondents who did not experience amenorrhea were 17 respondents (63.0%). The most respondents who did not experience hypermenorrhea were 22 respondents (81.5%). The highest number of respondents who experienced hypomenorrhea was 15 respondents (55.6%). The most respondents who experienced changes in the menstrual cycle at the beginning of hemodialysis therapy were 23 respondents (85.2%).

Table 2. Frequency Distribution of Menstrual Patterns (n=27)

No	Menstrual Pattern Disorder	Frequency		Percentage (%)
1	Based on Menstrual Cycle			
	Polymenorrhea	No	24	88.9
		Yes	3	11.1
	Oligomenorrhea	No	13	48.1
		Yes	14	51.9
	Amenorrhea	No	17	63.0
		Yes	10	37.0
2	Based On the Amount of Bleeding			
	Hypermenorrhea	No	22	81.5
		Yes	5	18.5
	Hypomenorrhea	No	12	44,4
		Yes	15	55,6
3	Cycle changes at the beginning of hemodialysis			
		No	4	14.8
		Yes	23	85.2

Source: Primary data processed 2024

Discussion

The results showed that the characteristics of respondents based on age were mostly in the age range of 40-49 years, namely 22 respondents (81.5%). In line with research by [8], the majority of respondents who underwent HD were aged 35 to 44 years with a percentage of 66.7% (22 people).

With increasing age, kidney function decreases because the glomerular secretion rate decreases, thus exacerbating tubular function. The presence of certain risk factors can cause complaints where the decline in kidney function occurs gradually, causing various

symptoms from mild symptoms to severe symptoms called chronic kidney failure (CKD) [4].

Duration of undergoing hemodialysis

Based on the length of time undergoing hemodialysis, most respondents underwent hemodialysis between 1-5 years, namely 15 respondents (55.6%). This research is in line with the research of [8] based on the length of hemodialysis therapy showing that as many as 27 respondents (81.8%) have undergone hemodialysis for more than 12 months. Similarly, research conducted by [7] showed that 29 respondents (60.4%) underwent hemodialysis for a period of 1-5 years.

The length of hemodialysis is influenced by the condition of the kidney failure suffered. Each individual has a different condition so that the length of the hemodialysis process varies. The worse the condition, the longer the hemodialysis process. Chronic renal failure causes the kidneys to gradually lose their function, so that the body can no longer filter toxins optimally. Hemodialysis is needed to replace the function of the kidneys in filtering blood. This condition requires continuous and intensive care, which impacts the patient's overall quality of life. The length of hemodialysis is also affected by the presence of other comorbidities, such as diabetes and hypertension, which worsen kidney function and prolong the need for hemodialysis.

The longer the patient is on hemodialysis, the more willing the patient will be to undergo hemodialysis. This is because respondents are usually at an acceptance level and have most likely been well educated by nurses and doctors about the disease and the importance of regular hemodialysis. The longer the patient undergoes hemodialysis, the more familiar the patient will be with the hemodialysis machine [9].

Frequency of hemodialysis

Based on the results of the study, it was found that the majority of respondents underwent hemodialysis with a frequency of 2 times a week as many as 26 (96.3%). This study is in line with research conducted by [10], which states that at Prof. Dr. Soekandar Mojokerto Hospital the majority of respondents undergo hemodialysis twice a week.

Hemodialysis in Indonesia is generally carried out twice per week because the costs provided by BPJS cover this frequency so that the treatment can be evenly distributed. According to the PENERFI dialysis consensus in 2003 which recommends a hemodialysis duration of 10-15 hours/week with a frequency of 2-3 times/week. While hemodialysis is generally performed twice a week, some patients may require a more frequent frequency to achieve optimal adequacy. One factor that may influence the need for higher frequency is the degree of kidney damage itself. The more severe the impairment of kidney function, the frequency of hemodialysis may increase to remove waste products and maintain fluid and electrolyte balance in the body. Therefore, the frequency of hemodialysis is adjusted based on each individual's condition.

Polymenorrhea

Polymenorrhea is a disorder of menstrual cycles that are shorter than normal (less than 21 days). Hormonal changes caused by suboptimal kidney function can also cause polymenorrhea. These hormonal changes cause the life of the corpus luteum to shorten, so that the menstrual cycle becomes shorter. In addition, polymenorrhea can also be caused by a shorter proliferation stage and secretion stage, or a combination of both [11].

Based on this study, it shows that the most respondents are patients who do not experience polymenorrhea, 24 respondents (88.9%). Hormonal changes caused by suboptimal kidney function can also cause polymenorrhea. In Lin's research (2016), it shows that polymenorrhea is the least menstrual cycle change experienced by patients with end-stage renal failure. Stress and lifestyle have a significant influence on the incidence of polymenorrhea, with the majority of respondents experiencing mild stress.

The cause of polymenorrhea is not only due to chronic disease or long undergoing hemodialysis. Rather, there are other factors that can influence the occurrence of polymenorrhea such as stress and certain lifestyles. Stress has a major impact on various body systems, including the reproductive system, by triggering the release of the hormone cortisol which can disrupt the balance of hormones regulating the menstrual cycle. In addition, stress often leads to sleep disturbances and changes in appetite, which also affect the hormonal and menstrual cycles. Certain lifestyles can also affect the menstrual cycle and cause polymenorrhea.

Oligomenorrhea

Based on the results of the research which showed that respondents who experienced oligomenorrhea or menstrual cycles of more than 35 days were 14 respondents (51.9%). Oligomenorrhea usually occurs due to hormonal balance disorders in the hypothalamic-pituitary-ovarian axis. The hormonal disturbance causes the length of the normal menstrual cycle to lengthen, so menstruation becomes less frequent. Other causes of oligomenorrhea are conditions of stress and depression, chronic illness, patients with eating disorders, excessive weight loss, excessive exercise such as athletes, the presence of estrogen-releasing tumors, abnormalities in the structure of the uterus that inhibit menstrual blood discharge, and the use of certain drugs. The length of the menstrual cycle is influenced by age, weight, physical activity, stress levels, genetics and diet [12].

Oligomenorrhea is often the result of various chronic diseases that affect hormonal function and reproductive organs. Some of the main causes of oligomenorrhea associated with chronic diseases include Polycytis Ovary Syndrome (PCOS), androgen-producing tumors of the ovaries or adrenal glands, cushing syndrome caused by high cortisol levels, hyperthyroidism which disrupts the thyroid gland, prolactinoma which is a tumor of the pituitary gland, uncontrolled diabetes mellitus, congenital adrenal hyperplasia, use of medications such as antipsychotics, antiepileptics, and steroids, and

chronic kidney disease which can cause hyperprolactinemia. In addition, the use of hormonal contraceptives also affects the occurrence of oligomenorrhea [13].

Amenorrhea

Based on the research, it was found that 17 respondents (63.0%) did not experience amenorrhea. Based on the results of research and data analysis of [8], it can be concluded that there is no relationship between the length of hemodialysis and the incidence of secondary amenorrhea in patients with chronic renal failure in Aceh at the dialysis installation of RSUD dr. Zainoel Abidin Banda Aceh. The results showed that the risk of secondary amenorrhea in patients with chronic renal failure who undergo hemodialysis is influenced by many factors, including caused by GGK itself which causes disruption of reproductive hormones and uremia syndrome and other risk factors in the form of psychological status. Amenorrhea occurs due to a disruption in the Hypothalamus-Pituitary-Ovary (HPO) axis. The hypothalamus secretes GnRH which stimulates the production of gonadotropins (LH and FSH), causes follicular and steroid synthesis, then causes endometrial exfoliation. Disruption of this axis can cause an imbalance in hormone secretion which causes amenorrhea [14].

Kidney disease is one of the causes of hyperprolactinemia or excess prolactin hormone in the body. This condition causes disturbances in the menstrual cycle to stop menstruation such as amenorrhea.

The risk of amenorrhea increases in patients with chronic kidney disease who undergo routine and long-term treatment, such as hemodialysis. In addition, the risk of amenorrhea, especially secondary amenorrhea, can increase when a person experiences psychological disorders. Thus, the length of hemodialysis is not the main cause of secondary amenorrhea, as there are many other factors that influence the occurrence of secondary amenorrhea.

Hypermenorrhea

From the results of the study, it was found that the incidence of hypermenorrhea or menstruation for more than 8 days was 5 respondents (18.5) and most of the 22 respondents (81.5%) did not experience hypermenorrhea. Hypermenorrhea is a disorder of menstrual problems that shows excessive menstrual bleeding unlike the norm. A normal menstrual cycle maintains a balance between estrogen and progesterone. These hormones in the body help regulate the formation of the endometrium (inner lining of the uterus), which is secreted monthly during menstruation.

There may be an imbalance in estrogen and progesterone levels resulting in the endometrium developing excessively. When it is finally shed, there is heavy menstrual bleeding. This hormonal imbalance is often seen in adolescents and women approaching menopause. A common cause of irregular periods is uterine fibroids (tumors). Other causes include endometrial cancer inflammation or infection of the vagina, cervix or pelvic organs, polyps (small growths on the wall of the cervix or

uterus), thyroid disease, liver, kidney, or blood disorders, and consumption of blood-thinning medications.

In Miraturrofiah's research [15], the type of menstrual disorder experienced by adolescents in both undernourished, normal, and overnourished status is hypermenorrhea, which is 75% in undernourished status, 41.6% in normal nutritional status, and 80.9% incidence of hypermenorrhea in overnourished status. This finding is similar to research which found that hypermenorrhea is a menstrual disorder with a high incidence rate of 56% of the 124 research samples used [15].

Hypomenorrhea

Based on this study, it shows that respondents who experienced hypomenorrhea were 15 respondents (55.6%). Research conducted by [16] showed that most respondents, namely 12 respondents (60%), experienced hypomenorrhea or less menstrual bleeding. Hypomenorrhea is caused by insufficient endometrial fertility as a result of malnutrition, chronic disease or hormonal disorders.

According to [15], many factors can cause hypermenorrhea, possibly due to the presence of uterine myoma, endometrial polyps or endometrial hyperplasia (thickening of the uterine wall) [15]. Hyperplasia of the uterine wall is often associated with abnormal nutritional status as a result of high levels of reproductive hormones, especially progesterone hormone levels. According to [17] nutritional status can also be influenced by patients with chronic kidney failure who undergo hemodialysis.

Changes in the menstrual cycle at the beginning of hemodialysis

This study shows that 23 respondents (85%) experienced changes in the menstrual cycle at the beginning of hemodialysis. Changes in the menstrual cycle are caused by an imbalance of FSH or LH so that estrogen and progesterone levels are abnormal.

In the research of [18] in India, the occurrence of increased prolactin levels or hyperprolactinemia is caused by uremic toxins in impaired glomerular filtration in patients with chronic renal failure and decreased dopaminergic inhibition of prolactin secretion. This disrupts the menstrual cycle causing amenorrhea and infertility. Side effects such as abdominal pain, dizziness, nausea or vomiting [19].

Based on the results of research by [7], it can be concluded that there is a relationship between the length of hemodialysis therapy and menstrual changes in patients with chronic renal failure undergoing hemodialysis. The treatment period in chronic renal failure patients causes calcium metabolism disorders, disrupts LH secretion and inhibits 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 prolactin hormone which causes hyperprolactinemia so that changes that occur can be secondary amenorrhea [7]. In line with this study, most respondents experienced menstrual changes in both the menstrual cycle and the amount/volume of bleeding.

Limitations

This study has several limitations of researchers that cannot be avoided by researchers, namely:

1. Limited number of research samples because only in the hemodialysis room of RSUD Tidar Magelang. Also, there were no samples in the age range of 15-40 years so that this study was still lacking because it could not describe changes in menstrual patterns in that age range.
2. Data collection techniques using questionnaires tend to be subjective so that the honesty of respondents determines the truth of the data provided.

Conclusions

In this study, the largest number of respondents was in the 40-49 year age range, namely 22 respondents (81.5%). Based on the length of time undergoing hemodialysis therapy, the majority of patients were 1-5 years, 15 respondents (55.6%). For frequency of hemodialysis, the majority of respondents underwent hemodialysis 2x/week, 26 respondents (96.3%). Based on menstrual patterns in women with CKD, almost all patients experienced changes in their menstrual cycle at the start of undergoing hemodialysis, namely 23 respondents (85%). And those who experienced changes in menstrual patterns based on their menstrual cycle were 14 respondents (51.9%) experiencing oligomenorrhea, while based on changes in the amount of bleeding, 15 respondents (55.6%) experienced hypomenorrhea. Female patients with chronic renal failure who undergo routine hemodialysis experience changes in menstrual patterns both according to their menstrual cycle and according to the amount of bleeding.

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