



## INEFFECTIVE BREATHING PATTERN NURSING CARE WITH CHRONIC KIDNEY DISEASES PATIENT

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Case Study

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### ABSTRACT

**Introduction:** Patient with Chronic Kidney Disease (CKD) will get a failure to breathing because of fluid accumulation in the lung. Patients with CKD will not be able to breathe normally, so the main problem that often occurs is an ineffective breathing pattern. This study aims to explore nursing care for patients with ineffective-breathing pattern in patient with CKD at Soegiri Lamongan hospital. **Methods:** The design of this research is qualitative with a case study, the methods of data collection through interviews, observations, physical examinations and documentation studies. The data obtained were analyzed by comparing case reviews and literature reviews. **Results:** The results of the problems for nursing diagnosis that arise are CKD with ineffective-breathing pattern. Interventions that are emphasized and carried out in the field in the case study are providing a semi-fowler/ fowler position, and maintaining oxygen therapy. Final evaluation of nursing diagnoses in patients with problems resolved and goals achieved according to the specified time criteria. **Conclusions:** The study indicated that ineffective breathing pattern can be solved by positioning a semi-fowler or half-sitting position, decrease fluid intake and correcting anemia. Suggestions for nurses to focus in developing science and technology to be applied to all nursing personnel in providing nursing care for ineffective breathing patterns for patients with chronic kidney disease.

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### INTRODUCTION

Shortness of breath is often found in patients with Chronic Kidney Failure (CKD). One of the triggers for shortness of breath is hypertension. Uncontrolled hypertension will cause the arteries around the kidneys to narrow, weaken, and harden. Damage to these arteries will block the blood needed by the tissues, causing the nephrons to not be able to receive the oxygen and nutrients they need (Sumiadi, 2017). If the kidneys are disturbed, then the process of forming red blood cells in the bone marrow will also be disrupted which can cause the amount of oxygen that can be delivered throughout the body to decrease, so that people with CKD cannot breathe normally and experience shortness of breath, and the main problem that often occurs is an ineffective breathing pattern (Muttaqin and Sari, 2014). So far, the description of nursing care for an ineffective breathing pattern in CKD patients has not been explained.

The World Health Organization (WHO) states that the incidence of CKD in the world in 2013 globally was more than 500 million people, an increase of 50% from the previous year. The prevalence of diagnosed CKD in Indonesia is 0.2%. Central Sulawesi occupies the highest place (0.5%) while the prevalence in East Java is 0.3% (Kemenkes, 2013). Based on the Indonesian Renal Registry (IRR) in 2017, 98% of patients with CKD underwent hemodialysis therapy and 2% underwent Peritoneal Dialysis (PD) therapy. While the data in the Dahlia Room RSUD dr. Soegiri Lamongan in the last three years also showed an increase by 4.47% in 2017 to 18.95% in 2018. In 2019 from January to September, patients with CKD ranked first at 14.9%, followed by patients with diabetes mellitus (DM) (13.37%) and gastritis in the third (12.1%).

Chronic kidney failure can be caused by disease from the kidney and outside the kidney (Muttaqin and Sari, 2014). The biggest cause of chronic kidney disease is diabetic

nephropathy (52%), hypertension (24%), congenital disorders (6%), gout (1%), lupus disease (1%) and others (Kemenkes RI, 2018). Long-standing hypertension can cause structural changes in arterioles throughout the body, characterized by fibrosis and hyalinization (sclerosis) of blood vessel walls. One of the target organs of this condition is the kidney. The condition gets worse as more and more scar tissue forms in response to nephron damage. Progressively kidney function decreases drastically, resulting in severe uremic syndrome. One of the severe uremia syndromes is the response to metabolic acidosis, a syndrome of uremia in the respiratory system and nerves that causes ineffective breathing patterns (Muttaqin and Sari, 2014). Ineffective breathing patterns in patients with CKD that are not treated immediately can cause various problems, namely metabolic acidosis, Kussmaul breathing with rapid breathing patterns, respiratory failure, pleural effusion, lethargy, decreased consciousness, increased brain cell edema, cerebral dysfunction, and peripheral neuropathy (Muttaqin and Sari, 2014).

The role of nurses in CKD patients is shown to reduce symptoms that arise and prevent ineffective breathing patterns. These efforts include efforts to regulate drinking, control hypertension and potassium in the blood, prevention of anemia and acidosis, treatment of neuropathy, analysis, and transplantation (Muttaqin and Sari, 2014). Efforts will be made to overcome ineffective breathing patterns, among others, by giving oxygen, semi-Fowler's position or half sitting, limiting the amount of fluid intake, and correcting anemia in CKD patient.

## MATERIALS AND METHODS

This type of research is a qualitative research which includes an intensive study of one research unit, for example a client, family, group, community, or institution. The design of a case study depends on the circumstances of the case but still considers the research factor when this research was conducted in the tuberos room of RSUD dr. Soegiri Lamongan. The data collection techniques used are interviews, observation, documentation. The participants in this study were 4 participants with a diagnosis of CKD with nursing problems ineffective-breathing pattern.

## RESULTS

In the assessment of patient identity, there was no discrepancy between the case review and the literature review. In the case review, it was found that mean of age in 4

patient were 57 year old ( 2 male and 2 female) with a case of chronic kidney disease. That CKD is more common at the age of 49-65 years and men are more at risk than women (Sulistiowati and Indriani, 2015). This is due to the effect of differences in reproductive hormones; lifestyles such as protein consumption, salt, cigarettes, and alcohol consumption in men are higher than women (Muttaqin and Sari, 2014). In the study of the chief complaint and the history of the present illness, there was a gap between the case review and the literature review where the chief complaint and history of the present illness felt by participant was shortness of breath cc.

Mention the main complaints obtained by CKD patients ranging from little urine output to unable to urinate, restlessness to loss of consciousness, no appetite (anorexia), nausea, vomiting, dry mouth, tiredness, bad breath (ureum), and itching of the skin. This can happen because the pH of the blood decreases due to changes in electrolytes and the loss of bicarbonate in the blood so that the complaints most often felt by CKD sufferers are shortness of breath, rapid and deep breathing or what is called Kussmaul breathing (Firdaus and Wahyudi, 2016). In the study of past medical history and family medical history, no discrepancy was found between the case review and the literature review, where based on the case review the patient had a previous history of hypertension and in his family there was hypertension, namely the patient's father. The study of medical history, the patient had a history of acute kidney failure, urinary tract infections, use of nephrotoxic drugs, benign prostatic hyperplasia, and prostatectomy (Muttaqin and Sari, 2014). In addition, there was a history of urinary tract stones, diabetes mellitus, and hypertension in the past which predisposed the cause. Meanwhile, in the family history of hypertension, diabetes mellitus, Chronic kidney failure can be a factor in the occurrence of CKD. This is due to the relationship between hypertension and cyclic CKD. CKD can cause blood pressure to rise and vice versa in the renal arterioles and small arteries with a consequent decrease in blood flow causing ischemia, glomerular damage, and tubular atrophy (Sulistiowati and Indriani, 2015).

Psycho, social, spiritual history found no gap between case review and literature review. In a case review of psycho history, it was found that the patient was anxious about his condition, often grumbled, experienced feelings of helplessness, no strength, fear, anger, irritability. In the socio history, the patient is able to relate well to nurses, family and other

patients and is cooperative with the nursing actions given. While in the spiritual history, patients often pray to Allah SWT to be given a speedy recovery and go home quickly, but since being sick the patient rarely prays 5 times a day. That the psycho, socio, and spiritual history of CKD patients is that patients experience feelings of helplessness, no hope, no strength, rejection, anxiety, fear, anger, irritability, conceptual disturbances. self, and impaired family roles (self-esteem) (Muttaqin and Sari, 2014). This is due to changes in body structure function and the existence of dialysis measures, length of treatment, the high cost of care and treatment for patients with CKD, thus affecting the patient's psycho, socio, and spiritual (Sulistiowati and Indriani, 2015).

Based on the results of the assessment of the patient's nutritional pattern, there was no discrepancy between the case review and the literature review. In the case review, it was found that while in the hospital, the patient received a low-salt, low-purine diet of raw porridge fruit and broth 3 times a day exhausted  $\pm 5$  tablespoons, drank  $\pm 1$  glass of water every day (drinking limited to  $\pm 100$ -200 cc/24 hours), decreased appetite, nausea but not vomiting. In a literature review, according to Muttaqin & Sari (2014) it was found that the diet of CKD patients was low in purines and low in salt. In the nutritional pattern, the patient experiences nausea/vomiting, poor appetite/anorexia, inability to eat, weight loss, poor skin turgor, sweating. This is due to the occurrence of gastrointestinal responses, namely urea in the gastrointestinal tract and inflammation of the gastrointestinal mucosa, which causes ammonia breath, stomatitis, and gastric ulcers so that patients experience nausea and vomiting (LeMone and Bauldoff, 2016).

Based on the results of the study of the patient's elimination pattern, there was no discrepancy between the case review and the literature review. In the case review, it was found that while in the hospital, the patient urinated through a tube with a urine capacity of  $\pm 100$  cc/3 hours, dark yellow in color and defecated 1 time in 3 days Solid consistency. According to the theory of Muttaqin & Sari (2014) in CKD patients, namely a decrease in urine output <400 ml per day until anuria and diarrhea secondary to ammonia breath. So that there is no gap between the patient and the theoretical review. This can occur due to decreased renal perfusion resulting in a decrease in the amount of urine output. Due to the compensatory response to sodium and water retention, the sodium level in the urine will also decrease (LeMone and Bauldoff, 2016).

In the study of activity patterns, no gaps were found between the case review and the literature review. In the case review, it was found that while in the hospital the patient said his body was weak, tired, and tired since 2 days ago, while in the hospital the patient was lying in bed more often so that ADL activities were assisted by his family and nurses. That some CKD patients experience weakness, malaise, and limited joint motion. This is due to the hematological response, namely in CKD there is a decrease in erythropoietin production. Retained metabolic toxins further suppress red blood cell production and lead to a shortened red blood cell life span (Muttaqin and Sari, 2014). Lack of nutrients (iron and folate) causes anemia. The anemia causes manifestations such as fatigue, weakness, depression, and impaired cognition. While the neurological, musculoskeletal and urea responses in muscle tissue cause muscle cramps, physical weakness, restless leg syndrome, and burning feet syndrome (LeMone and Bauldoff, 2016).

In the study of personal hygiene patterns, there was no discrepancy between the case review and the literature review. In the case review, it was found that while in the hospital the patient was assisted by his family to take a bath 2 times a day, brush his teeth and change clothes after bathing. In accordance with the literature review according to Muttaqin and Sari, (2014) which states that CKD patients do not experience a self-care deficit, but patients in meeting their needs are assisted by their families. This is due to physical and muscle weakness that causes CKD patients to experience activity intolerance (Sulistiowati and Indriani, 2015).

Based on the examination using a head to toe physical examination, there was no discrepancy between the case review and the literature review. In the case review, the results of the physical examination focused on the chest/thoracic examination, namely 1) Inspection: flat shape, symmetrical chest movement, intercostal muscle pull, respiratory rate 28x/minute, and fast and shallow breathing rhythm (Kussmaul) 2) Palpation : vocal fremitus right and left are the same, no lumps, no tenderness 3) Percussion: resonant lung sounds, dull heart sounds 4) Auscultation: additional breath sounds wheezing, single S1/S2 heart sound. In accordance with a literature review according to Muttaqin and Sari, (2014) on chest examination there are Kussmaul breathing, rapid breathing patterns, and shortness of breath. This is due to uremic syndrome in the respiratory system which can cause pulmonary edema, pleurisy, and Kussmaul breathing. But on Participant that

occurs only Kussmaul breathing without pulmonary edema and pleurisy (LeMone and Bauldoff, 2016).

Based on the supporting examination, there is a gap between the case review and the literature review. In the case review, only laboratory and ECG examinations were performed. Meanwhile, in the literature review, according to Muttaqin and Sari, (2014), the main supporting examinations are laboratory tests (ESR, urea and creatinine, hyponatremia, hypocalcemia and hyperphosphatemia, alkaline phosphate, hypoalbuminemia and hypocholesterolemia, blood sugar, hypertriglyceridemia, metabolic acidosis). While other supporting examinations are plain abdominal radiographs, IVP, ultrasound, renogram, and EKG. This is because not all supporting examinations were used in the case of CKD suffered by Participant.

Based on the results of the therapeutic assessment, there was no discrepancy between the case review and the literature review. In the case review, the patient was given ceftriaxone injection 2x1 g/IV, omeprazole injection 2x50 mg/IV, lasix injection pump 5 mg/24 hours (0.5), nebule ventolin/8hours, amlodipine 1x10mg/oral, codeine 2x10 mg/oral. According to Muttaqin and Sari, (2014) patients with chronic renal failure receiving beta blocker drug therapy, alpha methyl dopa, and vasodilators to reduce salt intake in controlling hypertension must be careful because not all kidneys are accompanied by sodium retention. This is because the patient has received antihypertensive drug therapy and diuretic drugs. Antihypertensive drugs are useful for reducing cardiovascular risk and slowing the deterioration of nephron damage by reducing intraglomerular hypertension and glomerular hypertrophy.

## DISCUSSION

Nursing intervention is part of the nursing process stage which includes nursing goals, determination of outcome criteria, determination of action plans that will be given to patients to solve problems experienced by clients and the rationale of each action plan to be carried out (Nursalam, 2014b). In nursing intervention there is a gap between case review and literature review. In the case review, the intervention performed on Participant with an ineffective breathing pattern, including: 1) Explain to the patient and the patient's family about the causes and how to overcome shortness of breath 2) Adjust the patient's position in semi-Fowler's position, unless there are contraindications 3) Collaborate on giving

oxygen 4) Help the patient practice deep breathing and effective coughing 5) Observation of TTV every 8 hours 6) Observation of breathing pattern, breathing rhythm, presence of nostril breathing, presence of accessory muscles of breath, SpO2) Collaboration with the medical team in administering: nebulized ventolin/8 hours, syring pump lasik 5 mg/24 hours (0, 5), Codeine 2x10 mg / orally. While the interventions in the literature review according to Muttaqin (2014) are 1) Inform and client about relaxation techniques 2) Collaboration in administering drugs (eg bronchodilators) 3) Adjusting the position of the semi-Fowler patient 4) Collaboration with giving oxygen 5) Observing breath sounds and breathing patterns. Inappropriate interventions, namely in case reviews, TTV observation interventions are given every 8 hours and help patients practice deep breathing and effective coughing. This is because the interventions taken in the case review are adjusted to the advice of doctors and nurses, patient conditions, and facilities at the hospital (Sulistiowati and Indriani, 2015).

The implementation of the first day provides education to patients and their families about the causes and ways to overcome shortness of breath. In patients, the implementation carried out was providing explanations to patients and their families about the causes and ways to overcome shortness of breath, adjusting the patient's semi-Fowler position, unless there were contraindications, collaborating with oxygen, observing TTV every 8 hours, observing breathing patterns, breathing rhythm, the presence of nostril breathing, the presence of respiratory accessory muscles, collaborated with the medical team in giving: nebul ventolin/8 hours, lasik syringe pump 5 mg/24 hours (0.5), Codeine 2x10 mg /oral. This shows that there is a gap between the intervention and the implementation of the intervention, that is, no action is taken to help the patient practice deep breathing and effective coughing, because it is more comfortable with the Fowler's position. Fowler's position can increase lung expansion thereby reducing shortness of breath with the procedure of providing a semi-Fowler's position or a half-sitting position with a 90 degree position. The purpose of providing an effective position in patients with shortness of breath is to reduce oxygen consumption and maximal lung expansion, as well as maintain comfort. The stability of the breathing pattern is characterized by physical examination in the form of a normal respiratory rate, no hypoxia, changes in breathing patterns, and airway



obstruction (Kozier, Erb, Berman, & Snyder, 2011).

The implementation of the second day to the fourth day was carried out according to the intervention, only one point was omitted, namely providing an explanation to the patient and the patient's family about the causes and ways to overcome shortness of breath. This is because in the nursing evaluation, the patient and the patient's family already understand and are able to re-explain the causes and ways to overcome shortness of breath. The implementation on the third day carried out nursing actions to adjust the position of the semi-Fowler patient, collaborate in giving oxygen, observing TTV every 8 hours, observing breathing patterns, breathing rhythms, the presence of nostril breathing, the presence of respiratory accessory muscles because seen from the evaluation. The last patient's condition was RR within normal limits (16-20x/minute), patent airway, vesicular breath sounds, normal breathing pattern, regular breathing rhythm, no additional breath sounds (Muttaqin and Sari, 2014).

The success in achieving nursing goals was assessed and needed to modify nursing goals or interventions. Evaluation is expected in the nursing diagnosis of ineffective breathing patterns, namely the breathing pattern is effective again and does not feel short of breath anymore. While in the case review after nursing care actions were carried out for 3 times 24 hours, the results were obtained, namely the nursing diagnosis of ineffective breathing patterns, the goal was achieved and the intervention was stopped. At the evaluation stage, there was no gap between the case review and the literature review because the patient's condition had improved after giving the semi-Fowler/Fowler position, giving oxygen, correcting anemia, and monitoring fluid intake. The problem was resolved because the patient said he was no longer short of breath, the general condition of the patient was good, vesicular breath sounds, no additional breath sounds, regular rhythm, no nostril breathing, no use of intercostal retractions, RR 20x/minute, temperature 36.8°C, pulse 88x/min, BP 160/100mmHg, and SpO2 100%. In the literature review, the criteria for an ineffective breathing pattern are said to be resolved if the RR is within normal limits (16-24x/minute), patent airway, vesicular breath sounds, normal breathing pattern, regular breath rhythm, and no additional breath sounds. KRS patients on the fifth day are given discharge planning, namely: 1) Advise patients to control regularly, 2) Advise patients to do HD therapy regularly every Tuesday and Friday, 3) Drugs:

recommend taking medication on time, do not take traditional medicines and vitamins without a doctor's instruction, if you feel there are side effects from the medicine, immediately check with the hospital, 4) Diet: maintain a diet as recommended by the doctor, such as consuming high-calorie, low-protein, and low-salt foods. Drinking is limited to  $\pm$  100-200cc/24hours. Don't get used to holding your pee. Maintain a normal weight. Weigh regularly. Avoid alcoholic drinks, 5) Exercise: recommend exercising slowly and doing more vigorously to make the heart stronger and lower blood pressure. Do some activities that have been scheduled together, 6) manage stress and get enough rest

## CONCLUSIONS

Patient with fluid accumulation in CKD can cause ineffective-breathing pattern. It can be solved by positioning a semi-fowler or half-sitting position, limiting fluid intake and correcting anemia. For nurses to focus in developing science and technology to be applied to all nursing personnel in providing nursing care for ineffective breathing patterns for patients with CKD.

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