

Designing and validation of proposing evidence-based nursing care guidelines in patients undergoing coronary angiography

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Supplementary file 1. A prepared guideline.

Nursing Diagnosis	
1. Risk of insufficient kidney blood supply in connection with: Hypovolemic shock Sensitivity caused by the contrast material due to renal excretion of the contrast material	
Evaluation criteria	
Measurement of creatinine and blood urea, urinary output, blood pressure, and pulse measurement	
Evidence-based	Nursing actions
1. Check the amount of urine output. 2. 3. Measurement of BUN and Cr due to the contrast agent and nephrotoxic effects, it is better to check kidney function. 4. Fluid intake should be sufficient. .5 The amount of urine output should be checked every hour. .6 Check fluid intake and urinary output .7 In case of kidney failure and high creatinine and urea, the doctor will be notified for hydration therapy and less contrast material.	1. Check the amount of urinary output 2. Examining the patient for vital sign 3. Examination of kidney function 4. Adequate oral and IV fluid intake

	<p>5. Check urinary output every hour</p> <p>6. I&O control</p> <p>7. Interview the patient if there is a history of kidney failure</p>
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Nursing Diagnosis	
2. Possible risk of anaphylactic shock in connection with: Contrast sensitivity	
Evaluation criteria	
increased heart rate decreased blood pressure, cold skin and paleness, itching, nausea and vomiting, cold sweat, shortness of breath, tachypnea	
Evidence-based	Nursing actions
<ol style="list-style-type: none"> 1. Checking the patient's vital signs and if there are symptoms caused by sensitivity to the contrast agent such as itching, nausea, vomiting, etcetera., performance measures such as cardio-respiratory support (epinephrine injection, airway opening, venous catheters) and injecting intravenous fluids, monitoring the patient, checking vital signs). 2. Giving oxygen 3. Advice to the doctor to prescribe antihistamines 	<ol style="list-style-type: none"> 1 .Examination of the patient in terms of sensitivity to contrast material <ul style="list-style-type: none"> • Itching • Wheezing • Dyspnea • Cardiac arrhythmia • Cardiac arrest (sudden or delayed reaction) • Feeling hot • Hives • Nausea • Short breathing • Lower blood pressure

Nursing Diagnosis	
3. Bleeding risk associated with: Coagulation disorder Invasive procedure	
Evaluation criteria	

Bleeding, hematoma, ecchymosis, pallor, change in heart rate and blood pressure, blood oxygen level, change in the level of consciousness, hypovolemic shock, hemorrhagic shock, chest pain

Evidence-based	Nursing actions
<ol style="list-style-type: none"> 1. It is necessary to check coagulation tests and the history of taking drugs affecting the coagulation system, platelets, and anticoagulants. 2. Check the body system for signs and symptoms of bleeding. 3. Patient education increases awareness about how to deal with problems and complications caused by angiography, such as bleeding. The area and the 	<ol style="list-style-type: none"> 1. Examining the patient's coagulation tests before the procedure 2. Patient monitoring before and after angiography (control of vital signs, blood pressure, heart rate, oxygen level, and ECG). 3. Multimedia training in videos and verbal information about how the heart works, angiography, and performing control behaviors during and after angiography. 4. Examining vascular problems such as: <ul style="list-style-type: none"> • Hematoma • Bleeding • Aneurysm

	<ul style="list-style-type: none">• AV Fistula<ul style="list-style-type: none">• Loss of distal pulse• Bruise• Retroperitoneal Bleeding• Thrombosis.• Need for blood transfusion• Ecchymosis• Examining the symptoms of arterial blockage and clot formation, such as temperature, body color, pain, tingling, and numbness.
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<p>and vomiting, so by teaching and encouraging the patient to ask her questions, the intensity of the patient's anxiety and fear can be reduced.</p> <p>2. No food before the procedure to reduce the possibility of nausea and vomiting, and stomach irritation.</p> <p>3. Start feeding the patient to prevent vasovagal shock, which causes the patient to experience symptoms such as low blood pressure and heart palpitations, dizziness, blurred vision, and imbalance. Therefore, it should be done one hour after angiography.</p> <p>4. If the hemodynamic status is stable and the vital signs are normal, it is also done</p> <p>5. First, liquids are given, and in case of tolerance and absence of nausea and vomiting, a surgical diet such as liquids, jelly and porridge, soft, and finally regular is given.</p> <p>6. Taking anti-nausea medicine if necessary</p>	<p>2. Make the patient NPO from 6 to 8 hours before the operation</p> <p>3. Npo patients stay up to 1 hour after angiography</p> <p>4. Resuming the diet gradually if tolerated</p> <p>5. Recommendation to start feeding with liquids gradually if tolerated.</p> <p>6. Recommendation to use anti-nausea medicine with the doctor's opinion.</p>
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Nursing Diagnosis	
<p>5. The possibility of dysfunction of peripheral nerves and blood vessels related to:</p> <p>Vasogenic shock</p> <p>Vascular blockage</p> <p>Damage to nerves and blood vessels</p>	
Evaluation criteria	
Examination of changes in sensation and blood supply	
Evidence-based	Nursing actions
<p>1. Check 6p and compare two organs</p> <p>2. Checking the client's vital signs and neurological status (6p), monitoring the patient, comparing two organs</p>	<p>1. Examination of 6p symptoms in the client:</p> <ul style="list-style-type: none"> • pain • pail • Paresthesia • Paralysis • Pulselessness • pressure <p>2. Checking the neurovascular condition every 15 minutes to an hour</p>

<p>with each other, coldness, pallor, reducing the sensation of pain and vibration, and notifying the doctor.</p> <p>3. Alignment of the body</p> <p>4. The patient is allowed to leave the bed after 2 hours (if the condition is stable)</p>	<p>3. Placing the patient's body in anatomical alignment</p> <p>4. Advice to get out of bed if allowed</p>
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Nursing Diagnosis	
<p>6. Pain associated with: Complete bed rest sandbag Catheterization</p>	
Evaluation criteria	
Uncomfortable feeling, back pain, chest pain, leg pain, decrease in blood pressure and heart rate, restlessness of the patient	
Evidence-based	Nursing actions
<p>1. Pain control is a multidisciplinary approach and a long-term task;</p> <p>2. Each patient's understanding of pain can be different, showing different reactions to pain.</p> <p>3. Restlessness and subsequent changes in vital signs (increased heart rate, decreased blood pressure, and tachypnea) are the first signs of pain in conscious and unconscious patients.</p> <p>4. Changes in vital signs due to the presence of pain in the patient require quick and urgent actions</p> <p>5. Giving the patient a comfortable position can reduce pain in the back and groin area, reducing urinary retention, and increasing the patient's comfort, which are among the benefits of a comfortable position.</p> <p>6. Massage and touch therapy can significantly reduce patients' pain and increase their well-being.</p> <p>7. To help the client to increase activity and relieve chest pain</p> <p>8. Relaxation methods have beneficial effects on pain, mood, and quality of life in people undergoing angiography and</p>	<p>1. Examining the severity of pain quality with the numerical tool VAS.</p> <p>2. Examining the patient's understanding of the quality of pain.</p> <p>3. Patient monitoring.</p> <p>4. Check vital signs every 5 minutes during pain attacks.</p>

<ul style="list-style-type: none"> The consequence of work (fear of prognosis) 	
Evaluation criteria	
Sleep position, sweating, relaxation level, irritability, heart rate, blood pressure, skin color, pupil size	
Evidence-based	Nursing actions
<p>1. Identifying the cause of fear and anxiety with the client's help is effective in treating fear, and at the same time, acknowledging and responding to these fears is the core of care.</p> <p>2. Examining the level of fear and anxiety of the patients before and after angiography using the hospital fear and anxiety questionnaire.</p> <p>3. Using Spielberger's state/trait anxiety inventory scale to determine the body's level of anxiety and physiological state (blood pressure, heart rate, blood oxygen) in the baseline state before, during, and 20 minutes after angiography.</p> <p>4. The Relaxin Benson technique is non-invasive, easy, and does not require special tools and science.</p> <p>5. It is a non-invasive technique in the form of foot, ear, and hand massage that reduces pain and creates an excellent hemodynamic state.</p> <p>6. Aromatherapy has beneficial effects on pain, anxiety, mood, and quality of life in people undergoing angiography. In addition, it affects heart rate, breathing rate, and blood pressure and reduces anxiety.</p> <p>7. Touch and massage therapy reduces fear and anxiety and improves the client's well-being.</p>	<p>1. Examining the client's level of fear and anxiety</p> <p>2. Teaching the patient in various frameworks depending on the level of education, age, and interests, such as peer education before angiography, use of multimedia education</p> <p>3. Music therapy</p> <p>4. Using the Benson relaxation technique</p>

	<p>5. Using the reflexology technique</p> <p>6. Using aromatherapy</p> <p>7. Touch and massage therapy</p>
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Nursing Diagnosis	
<p>8. Urinary retention related to: sandbag Catheterization A feeling of fear and complete bed rest</p>	
Evaluation criteria	
discomfort in urination; urinary retention	
Evidence-based	Nursing actions
<p>1. Assessment of the patient's pain can include heartburn, burning sensation during urination, heartache or pain in the area of the kidneys and bladder contraction, and underlying problems such as urinary tract infection and severe kidney stones.</p> <p>2 . Pain causes urinary retention.</p> <p>3. Regarding cultural beliefs, patients do not want to defecate in bed, which is one of the retention factors.</p> <p>4. Checking the amount of fluid received and urinary output.</p> <p>5. making the patient get out of bed early, increases the satisfaction level of the patients</p>	<p>1. Examining the client in terms of discomfort, heartburn, and urinary retention at 15-minute intervals for one hour.</p> <p>2. Examining the patient's pain and pain control</p> <p>3. Examining the patient's cultural beliefs</p>

<p>and reduces the problems in the urination of patients.</p> <p>6. Supine position and absolute rest of the patients leads to increased back pain, fatigue, and discomfort in urination. During the immobilization period, the patient can raise the bed's head up to 45 degrees.</p> <p>7. Urinary retention is reduced by reducing the time of placing the sandbag on the catheter insertion area (in the third hour after angioplasty and 2 hours after angiography).</p> <p>8. The attending nurse should record the time of the patient's first urination. Prolonging the patient's excretion time may require help through massage or a hot bag. If urinary retention continues, the doctor should be informed .</p> <p>9. Relaxation technique training reduces anxiety, fear, and urinary retention.</p> <p>10. Check and monitor the absorption and excretion of the patient's fluids to show the typical characteristics of excretion.</p>	<p>4. I&O control</p> <p>5. Leaving the patient early after 2 to 4 hours</p> <p>6. Reducing the duration of the supine position in the patient and proper positioning, such as raising the head of the bed</p> <p>7. Reducing the time of placing a sandbag on the catheter insertion area</p> <p>8. Using a hot water bag in the suprapubic area and massaging and listening to the sound of water</p> <p>9. Relaxation training</p> <p>10. Bladder probe in case of continued urinary retention with the doctor's opinion</p>
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