


A Literature Review: Risk Factors For Respiratory Arrest

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Article Info	ABSTRACT
Keywords : Respiratory arrest, airway obstruction, associated risk factors .	Cardiopulmonary arrest remains a major public health burden in developed countries. A most of the previous studies, have investigated the increasing problem of respiratory mortality. Stopping breathing is also characterized by disruption of pulmonary gas exchange for more than 5 minutes, which can cause permanent damage to vital organs, especially the brain. The aim of the study was to determine the risk factors for respiratory arrest. Method: search for articles for this narrative review using the keywords respiratory arrest, risk factors for respiratory arrest through websites such as PubMed, Google Scholar, ScienceDirect and Elsevier. Results: Risk factors that generally influence the incidence of respiratory arrest are gender, age, comorbidities, duration of hospitalization, and speed of CPR.
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INTRODUCTION

Cardiopulmonary arrest remains a major problem public health especially in developed countries.(1)(2) More than half a million heart attacks occur in the United States each year, and more than 200,000 of them occur in hospitals. (3) Most previous studies, has investigated the increasing number of deaths regarding the problem breathing . (4) Although these studies have identified the case as a major health policy issue, there will be but In general, these studies have not explained the pathophysiological processes and mechanisms that cause death due to respiratory problems . (5)

Stop breathing characterized by no chest movement and respiratory airflow in the patient's body. Respiratory arrest can occur in cases of drowning, stroke, airway obstruction, epiglottitis , drug overdose, electric shock, infarction myocardial , struck by lightning or coma due to various cases. At the beginning of respiratory arrest, oxygen can still enter the blood for a few minutes and the heart can still circulate blood to the brain and other vital organs, if in this situation breathing assistance is given it will be very useful to keep the patient alive and avoid cardiac arrest. (6)

Respiratory arrest is also marked with The presence of impaired pulmonary gas exchange for > 5 minutes can cause permanent damage to vital organs, especially the brain. Cardiac arrest almost always occurs unless cardiac function is maintained. breathing recovered immediately. However, ventilation Aggressiveness can also have negative hemodynamic consequences , especially in the periarrest period and other situations when

cardiac low output . In some cases, the primary goal is to restore adequate ventilation and oxygenation without compromising the tentative cardiovascular situation. (7)

Obesity is one of the major risk factors for respiratory disorders. The accumulation of fat in the upper airway can cause narrowing and tends to close the loose muscles. In addition to obesity, other risk factors include factors such as age. The loss of muscle mass that occurs with aging can result in replacement by fat in the airways , and can causing narrowing. Gender is also a risk factor, as hormones in men can affect the structure of the upper airway, increasing the likelihood of narrowing. Anatomical abnormalities such as a receding lower jaw and chin , enlarged tonsils and adenoids, and a family history can also increase the risk of respiratory disorders . (8)

Use or consumption of alcohol and sedatives can relax the muscles of the upper airway, smoking causes inflammation and narrowing, and medical conditions such as hypothyroidism, acromegaly, Marfan syndrome, and Down syndrome can also worsen respiratory problems. Nasal congestion can also be a risk factor, as it can cause difficulty breathing. (9) Several studies have concluded that these risk factors are very important in preventing and treating respiratory disorders . (10)

Previous researchers have conducted a lot of research into the risk factors for the occurrence of respiratory arrest therefore the aim of this literature review is to provide updated information on the risk factors for respiratory arrest . With understand factor risk the expected We can prevent the occurrence respiratory arrest .

RESEARCH METHODS

The method used in writing this article is a literature review , namely a search for international and national literature conducted using databases such as Pub Med, Google Scholar, ScienceDirect and Elsevier. In the search for journal articles using the keywords *risk factors* , *respiratory arrest* . The selected articles are those using Indonesian and English, original articles (research articles), *article reviews* and the article is fully accessible as well as No There is limitation year publishing journal because of Still lack of research that discusses about factor risk the occurrence respiratory arrest .

RESULTS AND DISCUSSION

Prolonged impairment of pulmonary gas exchange can cause permanent damage to vital organs, especially the brain. However, aggressive ventilation can also have negative hemodynamic consequences, especially in the periarrest period and other circumstances when cardiac output is low. In most cases, the primary goal is to restore adequate ventilation and oxygenation without compromising the tentative cardiovascular situation. Respiratory arrest (and respiratory distress that may progress to respiratory arrest) can be caused by:

- a. Airway Obstruction : Airway obstruction is a serious and life-threatening disorder that occurs when airflow to and from the lungs is partially or completely blocked. It can be caused by a variety of factors, including inhaled foreign objects, swelling of the airways due to allergies or infections, or narrowing of the airways due to medical conditions such as asthma or chronic obstructive pulmonary disease (COPD). Symptoms of airway

obstruction include shortness of breath, wheezing (stridor), coughing, and difficulty breathing. (11)

- b. **Decreased Respiratory Effort** : Decreased respiratory effort is a condition in which a person has difficulty in making effective breathing movements. This can be caused by a variety of factors, including physical exhaustion, respiratory muscle weakness, neurological disorders, or medical conditions such as pneumonia or neuromuscular disease . Symptoms of decreased respiratory effort include rapid, shallow breathing, fatigue, and difficulty breathing effectively. (12)
- c. **Respiratory Muscle Weakness** : Respiratory muscle weakness occurs when the muscles responsible for moving the chest wall and diaphragm experience decreased strength or function. This condition can be caused by a variety of factors, including neurological disorders such as stroke or neuromuscular diseases such as myasthenia gravis. gravis or muscular dystrophy . Symptoms of respiratory muscle weakness can include difficulty breathing, fatigue with activity, and reduced lung capacity. Respiratory muscle weakness can lead to serious complications, including respiratory failure if not treated promptly. (13)

There are several drugs that decrease respiratory effort including opioids and sedative-hypnotics (eg, barbiturates, alcohol; less commonly, benzodiazepines). The combination of these drugs further increases the risk of respiratory depression.(14). Typically, overdose (iatrogenic, intentional, or unintentional) is involved, although lower doses may decrease effort in patients who are more sensitive to the effects of these drugs (eg, elderly patients, deconditioned patients , patients with chronic respiratory insufficiency or obstructive disease and sleep apnea). (15) Respiratory arrest, particularly due to the use of illicit drugs such as opioids, including heroin and fentanyl , is a common cause of out-of-hospital respiratory depression. In hospitalized patients, the risk of opioid-induced respiratory depression is most common in the postoperative recovery period, but some is present throughout the hospital stay and can affect up to 50% of postoperative patients. (16)

Patients with hypoxemia are cyanotic, but cyanosis may be masked by anemia, carbon monoxide poisoning, or cyanide toxicity. Because anemia lowers hemoglobin, reducing the total amount of deoxygenated hemoglobin when the patient is hypoxemic , cyanosis is not as obvious. Carboxyhemoglobin sometimes makes the skin appear red. In cyanide toxicity, patients may not appear cyanotic even though they are functionally hypoxic because cyanide interferes with cellular respiration. Patients treated with high-flow oxygen may not be hypoxemic and therefore may not show cyanosis or desaturation until breathing has stopped for several minutes. In contrast, patients with chronic lung disease and polycythemia may show cyanosis without respiratory arrest. If respiratory arrest remains uncorrected, cardiac arrest will occur within minutes of the onset of hypoxemia , hypercarbia , or both. (17)

Results

Risk Factors Occurrence of Respiratory Arrest

- a. **Gender**

Several studies have shown that most patients are male, with incidence ranging from 51.6 to 72.4%. (18)(19) Although in reality the survival of women is not much different from men, the duration of CPR in women is much longer than in men, causing

neurological damage in women. Gender does not seem to make a difference in survival, according to several cases showing that most patients who experience respiratory arrest are more male than female. (18)

b. Age

In a study, it was found that increasing age from 60 to 70 years can be identified as a statistically significant risk factor for respiratory arrest. In another study, it was found that age is a risk factor for colonization of cardiac arrest associated with patients aged 16 to 59 years and 60 years or more, the risk of colonization increases with age. (18) (19)

c. Accompanying diseases

In a studies state in terms of the most frequently associated comorbidities, the study reported that 48.3% of patients suffered from systemic arterial hypertension , 28% suffered from diabetes mellitus, 15% suffered from heart failure, 7.8% suffered from cancer, and 6.7% suffered from myocardial ischemia , or that HIV infection is the most common comorbidity due to wide geographic disparities in epidemiological profiles. Several other researchers have also mentioned having many comorbidities (heart, multiple, kidney, lung, neoplastic, etc.), found for female gender and heart disease, such as hypertensive arterial disease, without these factors having an effect on survival. (20)

d. Duration of Hospitalization

In research and studies also discuss the duration take care stay also possible increase factor risk the occurrence respiratory arrest . It is stated that take care stay with duration >10 days can increasejan factor risk . The study reported a significant association between duration take care hospitalization and respiratory arrest . (21)

e. Initial CPR rate

In a study it was shown Although in reality the survival of women is not much different from that of men, the duration of CPR in women is much longer than in men, resulting in neurological damage in women. Various studies, including the location of the CPR site , the duration of CPR, the etiology of cardiorespiratory arrest , the initial heart rhythm, and the patient's comorbidities, all affect the patient's chances of survival. In another study , the use of cardiac compression was documented in the medical records of the majority of patients who underwent CPR (98.5%), and only 22.5% of patients achieved spontaneous circulation after receiving cardiac compression. In another study, 12 of 213 patients who received CPR were able to be discharged, indicating that the procedure was safe (5.6%). When CPR was performed, only one in four patients experienced recovery of spontaneous circulation. (21)

CONCLUSION

Based on the results of a review of 23 journals, it is explained that gender , age , disease ... accompanying factors , duration of hospitalization, and speed of CPR are risk factors associated with the occurrence of respiratory arrest .

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