

## The Effect of Intervention on Semi Fowler and Fowler Positions on Increasing Oxygen Saturation in Heart Failure Patients

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### Abstract

**Introduction:** In Indonesia, data from the 2013 Basic Health Study showed the prevalence of heart failure was 0.3%, an estimated 530,068 people based on a doctor's diagnosis. Cardiovascular disease is a disease that interferes with the function of the heart and blood vessels, clinical symptoms in patients with congestive heart failure (CHF) include dyspnea, orthopnea, dyspnea and paroxysmal nocturnal dyspnea (PND), pulmonary edema, ascites, pitting edema, weight gain and even shock. cardiogenic. **Method:** The method used in this research is an experimental research method. The type of research used is quasi-experimental (quasi-experimental). **Objective:** The purpose of this study was to determine the effect of semi-Fowler and Fowler positions on increasing oxygen saturation in heart failure patients at Sumedang Hospital. **Results and Discussion:** The first output shows the difference in oxygen saturation of the rear half-fowler of 45 and 90, on the rear half-fowler an average of 94.25, the minimum and maximum values of 90-97, Then to catch the rear bird of 90 the average is 96.50 and min and max are 93-99. **Conclusion:** The effect of half fowler and fowler positions given by Sumedang Hospital to increase blood oxygen saturation in heart failure patients with a value of 90.50. For the second half of Fowler's 45°, get the values, min 90 and max 97 and mean 94.25.

**Keywords:** Semi Fowler; Congestive Heart Failure; Oxygen Saturation;

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### **Introduction**

The death rate from heart disease is recorded as 17.3 million people die from cardiovascular disorders, and more than 23 million people die every year with the same disorder (Yusvita & Nandra, 2018). Common diseases encountered are coronary heart disease, hypertension, stroke, and heart failure (Rotger et al., 2013). Heart failure is one of the fastest growing cardiovascular diagnoses (Lavine & Schilling, 2014)

Data obtained in the world 17.5 million people (31%) of the 58 million deaths caused by heart failure. Of all these figures, the Asian continent has the highest rank of heart failure deaths, with 276.9 thousand people. Indonesia is ranked second in Southeast Asia with a total of 371 thousand people (Mahanani et al., 2017)

In Indonesia, basic health research data in 2013 (Kemenkes, 2013) showed the prevalence of heart failure was 0.3% or an estimated 530,068 people based on a doctor's diagnosis. 19%) while based on diagnosis/symptoms, the highest estimated number of heart failure patients is in West Java Province as many as 96,487 people (0.3%) (Kemenkes RI, 2014). Cardiovascular disease is a disease that interferes with the function of the heart and blood vessels. Almost everyone who has a disease that interferes with heart function will eventually have an impact on the emergence of Congestive Heart Failure (CHF), where the heart is unable to pump blood to meet the needs of the tissue for metabolism and cause symptoms of congestion (Brunner et al., 2014)

include dyspnea, orthopnea, dyspnea deffort, and paroxysmal nocturnal dyspnea (PND), pulmonary edema, ascites, pitting edema, weight gain and even cardiogenic shock (Suharto et al., 2020). The effects of congestive heart failure (CHF), will be very at risk of disrupting lung function, one of which is pulmonary edema or accumulation of fluid in the lungs, which can inhibit the process of oxygen exchange, so that oxygen is lacking throughout the body and will interfere with respiratory function and cause a person to become sick. with heart failure will feel shortness of breath (dyspnea) (Brunner et al., 2014)

Shortness of breath is a compensatory mechanism of heart failure that can cause oxygen saturation to decrease below normal levels (Waladani et al., 2019). If the level of oxygen in the blood is low, oxygen is unable to penetrate the walls of red blood cells carried by hemoglobin to the left heart and is flowed into the peripheral capillaries a little. So that the oxygen supply is disrupted, the blood in the arteries lacks oxygen which can cause a decrease in oxygen saturation (Agustina et al., 2022)

A decrease in oxygen saturation causes the oxygen saturation value to be below normal limits. The value of oxygen saturation is a measure of how much percentage of oxygen is able to be carried by hemoglobin, because hemoglobin binds to oxygen to form oxyhemoglobin (Sudaryanto, 2017). Done by breathing exercises, effective coughing, and chest physiotherapy, giving nasal oxygen, masks, administering bronchodilator drugs and positioning (Wahidati et al., 2019)

One of the nursing interventions that can be done is the provision of a semi-Fowler position. The semi-Fowler's position or commonly referred to as the half-sitting position can help expedite the airway to the lungs so that oxygen will easily enter. This will easily

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increase oxygenation at the time of inspiration or inhalation of the patient. With the increase in oxygen in the body, the oxygen carried by red blood cells and hemoglobin also increases, so that oxygen saturation also increases (Muttaqin, 2009)

In patients with Congestive Heart Failure on a change in position, with the results showing that from the head up position to the semi-Fowler and Fowler positions, the average oxygen saturation value tends to increase (Khasanah, 2019). The results show that there is a difference in oxygen saturation between these positions. In addition, Safitri and Andriyani's research (Safitri & Andriyani, 2011) on the effectiveness of giving the semi-fowler position to asthma patients in class III inpatients at Moewardi Hospital, Surakarta, showed that there was a difference in shortness between before and after being given the semi-fowler position. Another study conducted by Wahyuningsih, Khasanah, & Susanti (2017), in CHF patients treated at the ICCU, the results showed that there were differences between *respiratory rate*, oxygen saturation and complaints of shortness of breath in the initial position by giving the semi-Fowler position 45° and Fowler 90°.

Data from Sumedang Hospital with cases of heart disease (CHF) in inpatient installations in January - April 2019 there were as many as 132 patients. This number is the third highest number of patients diagnosed with CHF heart failure. In addition, data on the mortality rate of CHF heart failure patients in January - April 2019 contained 10 patients. This number is the highest number of deaths from heart disease. From the results of a preliminary study conducted by researchers by observing patients diagnosed with CHF who were treated in the HCU room, it was found that 5 of 8 patients were more comfortable when resting in a sitting position, and 3 of 8 patients stated that they were more comfortable at rest in a half position. sit. The average oxygen saturation in these 8 patients ranged from 92 - 98%. Meanwhile, based on the research journal Bernardi et al (2008) "*effect of breathing rate on oxygen saturation and exercise performance in chronic heart failure*" said that the value of oxygen saturation in CHF patients ranged from 91 - 95%.

Based on the description above, the researcher is interested in examining the effect of the intervention of semi-Fowler and Fowler positions on increasing oxygen saturation in heart failure patients.

This study aims to determine the effect of semi-Fowler's and Fowler's positions on increasing oxygen saturation in heart failure patients at Sumedang Hospital. The location of the research is in the HCU room of the Sumedang General Hospital. The time used to conduct research is on July 22 – August 05, 2019.

### **Methods**

The method used in this study is the experimental research method. The type of research used is quasi-experimental (quasi-experimental) with a *pre-test-post-test one group design* experimental group was given Fowler and semi-Fowler positions and then measured the value of oxygen saturation before and after the intervention. (Jaedun, 2011)

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**Table 1**

**Research Design**

Pretest	Intervention 1	Intervention 2
X	Y1	Y2

Description:

- X : before giving the position (pre-test)  
 Y1 : after giving the semi fowler position 45  
 Y2 : after giving Fowler position 90°

The population in this study was CHF heart failure patients in the HCU room at Sumedang Hospital with a population of 42 people or respondents, based on data taken from the hospital (researcher's place) in January to April 2019.

The sampling technique used in this study used *Non-probability sampling* with the *Consecutive sampling*, namely the selection of samples by determining subjects who meet the research criteria to be included in the study for a certain period of time, so that the required number of clients is met (Nursalam, 2019) as follows:

$$n = \frac{N \cdot (Z)^2 \cdot p \cdot q}{d \cdot (N - 1) + z \cdot p \cdot q}$$

Description:

- n : estimated size of research respondents  
 N : population size estimate  
 Z : standard normal value for = 0.05 (1.96)  
 P : estimated proportion, if unknown is assumed to be 50%  
 q : 1-p (100%-p)  
 d : selected error rate (0, 05)

$$\begin{aligned}
 &= \frac{42 \cdot (1,96)^2 \cdot 0,5 \cdot 0,5}{0,05(42-1) + 1,96 \cdot 0,05 \cdot 0,05} \\
 &= \frac{40,3368}{2,05 + 0,49} \\
 &= \frac{40,3368}{2,54} \\
 &n = 15,88
 \end{aligned}$$

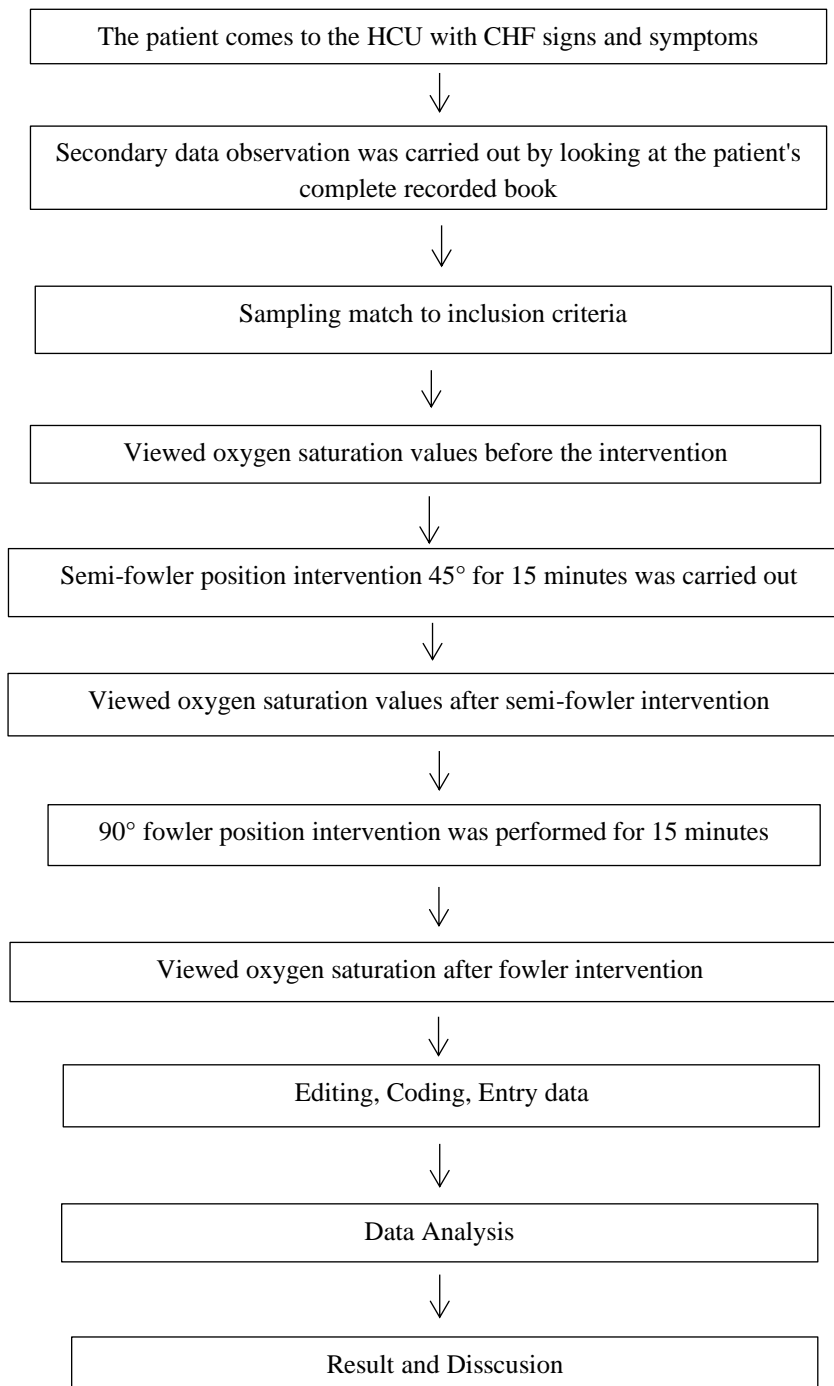
So, the number of samples obtained is 15.88 rounded to 16, so the sample of this study is 16 respondents. Primary data were obtained from the results of research in the HCU inpatient room at Sumedang Hospital by observing the oxygen saturation value of 16 respondents with CHF grades I and II January-April 2019. In this study, the research instrument used a calibrated pulse oximeter at the Sumedang Regional General Hospital,

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with calibration No. 17000217. The validity and reliability test of this study was using existing research instruments at Sumedang General Hospital which had been calibrated

### **Research flow**

**Figure 1**  
**Research Flow**



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### Results and Discussion

Results of this study aimed to assess the effect of the semi-Fowler and Fowler position intervention on increasing oxygen saturation in heart failure patients at Sumedang Hospital in 2019. The data was generated from an observation sheet consisting of CHF class/stage, pre-test SaO<sub>2</sub> value, semi-SaO<sub>2</sub> value. Fowler 45°, and SaO<sub>2</sub> Fowler value 90°. Data collection was carried out on 22 July – 05 August 2019 obtained 16 respondents who met the inclusion criteria

#### 1. Univariate analysis

Characteristic description of oxygen saturation values before positional intervention (pre-test). Description of oxygen saturation values before position intervention (Pre-test) in heart failure patients. The results of these calculations can be seen in the following table:

**Table 2**

Frequency distribution of SaO<sub>2</sub> values before positional action (pre-test) in heart failure patients

Oxygen saturation value	N	Percentage (%)
< 95% Abnormal	14	87.5%
95 % Normal	2	12.5%
Total	16	100%

Source: *The results of primary data processing 2019*

In table 2, can seen that the value of oxygen saturation before the position intervention (pre-test), obtained results 14 (87.5%) respondents had oxygen saturation values were not normal (<95%) and 2 (12.5%) respondents had normal oxygen saturation values (>95%).

Characteristic description of oxygen saturation value after intervention in 45° semi-Fowler position (post-test 1). Description of oxygen saturation value after intervention in 45° semi-Fowler position (post-test 1), in heart failure patients. The results of these calculations can be seen in the following table:

**Table 3**

Table of the frequency distribution of the SaO<sub>2</sub> value after the 45° semi-Fowler position (post-test) was performed in heart failure patients

Oxygen saturation value	N	Percentage (%)
< 95% Not normal	9	56.2%
95% Normal	7	43.8%
Total	16	100%

Source: *The results of primary data processing 2019*

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In table 3, it can be seen that the oxygen saturation value after the intervention semi-Fowler position 45° (post-test 1), the results obtained 9 (56.2%) respondents had abnormal oxygen saturation values (<95%) and 7 (43.8%) respondents had normal oxygen saturation values (>95 %).

Characteristic description of oxygen saturation value after intervention in Fowler's position 90° (post-test 2). Description of oxygen saturation value after intervention in Fowler's position 90° (post-test 2), in heart failure patients. The results of these calculations can be seen in the following table:

**Table 4**

Table of frequency distribution of SaO<sub>2</sub> values after 90° Fowler's position (post-test) in heart failure patients

Oxygen saturation value	N	Percentage (%)
< 95% Not normal	1	6.2%
> 95% Normal	15	93.8%
<b>Total</b>	<b>16</b>	<b>100%</b>

Source: *The results of primary data processing 2019*

In table 4 it can be seen that the oxygen saturation value after the intervention Fowler's position 90° (post-test 2), it was found that 1 (6.2%) respondent's had abnormal oxygen saturation values (<95%) and 15 (93.8%) respondents had normal oxygen saturation values (>95%)

Characteristic description of oxygen saturation values based on delta increase. Description of oxygen saturation values before and after positional intervention (pretest-posttest) in heart failure patients. The results of these calculations can be seen in the following table:

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Table 5

Table of Frequency Distribution of SaO<sub>2</sub> Values Based on Delta Increases

Description of				CHF	Oxygen saturation value Pre-post-test 1	Oxygen saturation value Post-test 1-post-test 2				
No.	R	A	G	Stage	SaO <sub>2</sub> pre test	Post Semi fowler 45°	(%)	Post Semi Fowler 45°	Post Fowler 90	(%)
1.	Mr. D	59	M	I	95	96	1 (1.0%)	96	98	2 (2.1%)
2.	Mrs. D	62	F	I	92	94	2 (2.1%)	94	97	3 (3.1 %)
3.	Mr. A	57	M	I	91	93	2 (2.1%)	93	95	2 (2.1%)
4.	Mr.	47	M	I	90	95	5 (5.4%)	95	97	2 (2,1%)
5.	Mrs. E	71	F	I	92	94	2 (2.1%)	94	97	3 (3.1%)
6.	Mr.S	67	M	I	91	96	5 (5.4%)	96	96	0 (0%)
7.	Mrs.	63	F	II	95	97	2 (2.1%)	97	98	1 (1.0%)
8.	Mr. U	70	M	II	93	95	2 (2.1%)	95	99	4 (4.2%)
9.	Mrs. L	64	F	II	94	97	3 (3.1%)	97	98	1 (1.0%)
10.	Mr. T	56	M	II	90	93	3 (3.1%)	93	96	3 (3.1%)
11.	TN. S	64	M	II	90	94	4(4.2%)	94	96	2 (2.1%)
12.	Mr.O	67	M	II	88	92	4 (4.2% )	92	95	3 (3.1%)
13.	Mrs.A	75	F	II	89	94	5 (5.4%)	94	96	2 (2.1%)
14.	Mrs.U	45	F	II	85	95	11(11, %)	95	97	2 (2.1%)
15.	Mr.	56	M	II	88	93	5 (5.4%)	93	96	3 (3.1%)
16.	Mrs.	63	F	II	85	90	5 (5,4%)	90	93	3 (3.1%)
<b>Mean</b>					<b>90.50</b>	<b>94.25</b>	<b>3.81</b>	<b>94.25</b>	<b>96.50</b>	<b>2.25</b>
<b>Minimum</b>					<b>85</b>	<b>90</b>	<b>1</b>	<b>90</b>	<b>93</b>	<b>0</b>
<b>Maximum</b>					<b>95</b>	<b>97</b>	<b>11</b>	<b>97</b>	<b>99</b>	<b>4</b>

Source: Results of primary data processing 2019

Information: R = respondent  
A = Age  
G = gender



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Table 5 shows that the oxygen saturation value before position intervention (pretest) obtained a minimum value of 85 and a maximum of 95, and the Mean value of 90.50 for the 45° post semi-Fowler results obtained values, Minimum 90 and Maximum 97 and Mean 94.25. So that the delta value of the increase in SaO<sub>2</sub> from the pretest results to the post semi-Fowler 45° (post 1) is obtained with a value of Minimum 1 and Maximum 11, Mean 3.81.

Then for the oxygen saturation value from post semi fowler 45° (post 1) to post fowler 90° (post 2), the values obtained are Minimum 90 and Maximum 97 and Mean 94.25. For the results of post fowler 90° (post 2), the minimum value is 93, maximum 99, and the mean is 96.50 so that the delta value increases from post 1 (post semi fowler 45°) to post 2 (post fowler 90°) the minimum value is 0, Maximum 4 and Mean 2.25.

Overview of oxygen saturation values based on CHF grade. Description of oxygen saturation values before and after positional intervention (pretest-posttest) in heart failure patients. The results of these calculations can be seen in the following table:

**Table 6**  
Distribution Table of Pre-Post Test Oxygen Saturation Values Based on CHF Class

Intervention	SaO <sub>2</sub>	CHF		N
		Class I	Class II	
Pre-test	Normal (≥95%)	1 (6.2%)	1 (6.2%)	16 (100%)
	Abnormal (<95%)	5 (31.2%)	9 (56.2%)	
Post semi-Fowler	45° Normal (≥95%)	4 (25.0%)	4 (25.0%)	16 (100%)
	Abnormal (<95%)	2 (12.5%)	6 (37.5%)	
Post Fowler 90°	Normal (≥95%)	6 (37.5%)	9 (56.2%)	16 (100%)
	Not normal (<95%)	0 (0%)	1 (6.2%)	

Source: Results of data processing 2019

In table 6 it can be seen that the value of Oxygen Saturation before and after position intervention (pre-post) based on CHF class/stage. The results of the Oxygen Saturation value before giving the position (pre-test) to CHF respondents, obtained 9 respondents (56.2%), were in CHF class/grade II with Oxygen saturation <95% (abnormal). In the post semi-Fowler oxygen saturation value of 45°, 6 respondents (37.5%), were in class/grade II with oxygen saturation <95% (abnormal). Then for the post-Fowler oxygen saturation value of 90°, 9 respondents (56.2%), were in class/grade CHF II with an oxygen saturation value of 95% (normal).

## 2. Bivariate Analysis

The right statistical test to see the effect of the semi-Fowler and Fowler position intervention on increasing oxygen saturation in heart failure patients at Sumedang

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Hospital in 2019 used the Wilcoxon test bivariate analysis (Nursalam, 2015) to see the closeness of the effect with the quasitests results experiment because the results of the normality test of the percent data were not normally distributed and the following results were obtained:

**Table 7**

Wilcoxon Sign Rank Test results on positioning to increase oxygen saturation (pre-post Test)

	N	Mean (minimum-maximum)	P
SaO2 pre-test	16	90.50 (85-95)	0.025
SaO2 post Semi fowler	16	94.25 (90-97)	

Source: Results of primary data processing 2019

### Interpretation of results:

The first output section shows the difference between Saturation pre-test oxygen with post-semi-Fowler oxygen saturation 45°, in the pre-test the Mean value was 90.50 with a value of 85-95 for the minimum and maximum, then for the results after being given a 45 semi-Fowler position, the Mean value was 94.25 with a value of 90-97 for the minimum and maximum. The *test statistics* shows the results of the Wilcoxon test, obtained a significant value of  $p = 0.025 < (0.05)$  thus it is concluded that there is a significant difference between before the pre-test and after giving the semi-Fowler position 45°.

**Table 8**

Wilcoxon Sign Rank Test results on positioning to increase oxygen saturation (pre-post Test)

	N	Mean (minimum-maximum)	P
SaO2 post semi fowler	16	94.25 (90-97)	0.005
SaO2 post fowler 90°	16	96.50 (93-99)	

Source: Results of primary data processing 2019.

The first output section shows the difference between oxygen saturation post semi fowler 45 with post fowler 90, in post semi fowler obtained a Mean value of 94.25 with a value of 90-97 for the minimum and maximum, then for the post fowler 90 obtained a Mean value of 96.50 with a value of 93-99 for the minimum and maximum. The *test statistics* shows the results of the Wilcoxon test, obtained a significant value of  $p = 0.005 < (0.05)$  thus it is concluded that there is a significant difference between (post 1) semi-Fowler position 45° and (post 2) fowler position 90°.

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### **Discussion**

#### **1. Univariate results of oxygen saturation values before position intervention (Pretest).**

Based on table 3, it can be seen that the oxygen saturation value before the position intervention (pre-test), obtained the results that 14 (87.5%) respondents had abnormal oxygen saturation values (<95%) and 2 (12.5%) respondents have normal oxygen saturation values (> 95%). Then it can be seen in table (4.1.5) that almost most of the oxygen saturation values are in CHF class/grade II respondents with the results of 9 respondents (56.2%), with Oxygen saturation <95% (abnormal). These results are in accordance with the theory quoted from (Yanci, et al 2013) said the *American Heart Association* in grade II patients found structural heart damage but without showing signs and symptoms of heart failure, usually in patients with myocardial infarction, coronary arteries that can trigger an increase in heart failure. *preload* and may exacerbate pulmonary congestion. The average value of oxygen saturation in CHF class II patients is in the range of 84-88%. (New York Association NYHA).

Univariate results of Oxygen Saturation value after intervention in the 45° semi-Fowler position (Posttest 1). In table 3 it can be seen that the oxygen saturation value after the intervention of the semi-Fowler position was 45° (post-test 1), it was found that 9 (56.2%) respondents had abnormal oxygen saturation values (<95%) and 7 (43, 8%) respondents had normal oxygen saturation values (>95%). Then it can be seen in table (6) In the post semi-Fowler oxygen saturation value of 45°, 6 respondents (37.5%) were in class/grade II with oxygen saturation <95% (abnormal). These results are in line with the results of research conducted by Sudoyo, Setiyohadi, and Alwi, (2009) which stated that at the semi-Fowler position the gravitational force of blood circulation is lower because the direction of circulation is horizontal so it is not too against gravity and does not pump too much. Slow backflow makes the increase in the amount of fluid that enters the lungs decrease, so that the air in the alveoli is able to absorb oxygenated air.

#### **2. Univariate results of Oxygen Saturation value after intervention in Fowler's position 90° (post 2).**

In table 4 it can be seen that the oxygen saturation value after the intervention in the Fowler's position was 90° (post-test 2), it was found that 1 (6.2%) respondent's had abnormal oxygen saturation values (<95%) and 15 (93.8 %) respondents had normal oxygen saturation values (>95%). It can be seen in table (6) that almost all post-Fowler oxygen saturation values of 90° were obtained by 9 respondents (56.2%), being in CHF II class with an oxygen saturation value of 95% (normal). These results are in accordance with the theory put forward by Cheever & Hinkle, (2014) that in CHF patients with pulmonary edema, the recommended position is the 90° Fowler position because it allows the chest cavity to expand widely and lung expansion increases. This condition can cause oxygen intake to improve so that the respiratory process returns to normal. And in line with the research of Wahyuningsih, Khasanah, and Susanti (2017) which shows that changes in respiratory status are better in Fowler's position.

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### 3. Bivariate results pretest post test

The results of Bivariate analysis using the Wilcoxon test showed that there was a difference in the results of SaO<sub>2</sub> pretest, to semi-Fowler's 45°, to Fowler's 90°. The difference in the value of oxygen saturation (SaO<sub>2</sub>) was seen between before the intervention (pre-test) to the post Semi-Fowler 45° with the results (*p value 0.025*) and the results from post semi fowler 45 to post fowler 90 with the result (*p value 0.005*). Surtiningsih (2019) regarding the study of *oxygen saturation and respiration of patients with congestive heart failure in changing positions*. Yudono in *differences , repertoire* results shows that there is a difference in SaO<sub>2</sub> between these positions (*p value 0.002*), the difference in SaO<sub>2</sub> value is seen between the *head-up* position and the *fowler position* (*p value 0.033*). difference in the SaO<sub>2</sub> value of CHF patients between the *head-up*, *semi-fowler*, and *fowler* a statistically significant and contrary to the results of research conducted by Anisa, Utomo, Utami (2018) regarding his research on the *effect of changing position on breathing patterns in patients with respiratory disorders*, the results of this study obtained normal oxygen saturation values >95% in the low fowler position as many as 11 respondents, there are 14 respondents in the semi-Fowler position, and 13 respondents in the standard Fowler position, so it can be concluded that there is a normal saturation change >95% at the low fowler position to the semi-Fowler position and the semi-Fowler position to the standard fowler position with *p value 0.311* >  $\alpha(0, 05)$  it can be concluded that there is no significant effect between the low fowler's position, the semi-fowler's position, and the standard fowler's position.

### Conclusion

Based on the results of research on 16 respondents, regarding the research on the effect of semi-Fowler and Fowler positions on increasing oxygen saturation in heart failure patients at Sumedang Hospital in 2019, the oxygen saturation value before position intervention (pretest) obtained a minimum value of 85 and a maximum of 95, and Mean value 90.50. For the post semi-Fowler 45°, the values obtained are Minimum 90 and Maximum 97 and Mean 94.25. and the delta value of the increase in SaO<sub>2</sub> from the results of the pretest to post semi-Fowler 45 (post 1) with a value of Minimum 1 and Maximum 11, Mean 3.81, so it can be concluded that there is a significant effect between before the intervention position (pretest) to semi fowler 45 (post 1).

The oxygen saturation value from post semi fowler 45 (post 1) to post fowler 90 (post 2) obtained values, Minimum 90 and Maximum 97 and Mean 94.25. For the post fowler 90° (post 2), the minimum value is 93, the maximum is 99, and the mean is 96.50 and the delta value increases from post 1 (post semi fowler 45°) to post 2 (post fowler 90°) the minimum value is 0, Maximum 4 and Mean 2.25, so it can be concluded that there is a significant effect after the 45° semi-Fowler intervention (post 1) to 90 Fowler intervention (post2).

The value of oxygen saturation shows that there is a significant difference between the results of the pre-test SaO<sub>2</sub> to semi-Fowler's 45°, and from semi-Fowler's 45° to Fowler's 90°. The difference in the value of oxygen saturation (SaO<sub>2</sub>) was seen between

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before the intervention (pre-test) to the post Semi-Fowler 45° with the results (*p value 0.025*) and the results from post semi fowler 45 to post fowler 90 with the result (*p value 0.005*)

**Referensi**

- Agustina, M., Zainuri, I., & Pratiwi, C. J. (2022). *PENGARUH PEMBERIAN PROGRESSIVE MUSCULAR RELAXATION (PMR) TERHADAP KADAR SATURASI OKSIGEN PADA PASIEN TBC DI RUANG ISOLASI TBC RSU ANWAR MEDIKA KRIAN SIDOARJO*.
- Brunner, L., Smeltzer, S., Bare, B., Hinkle, J., & Cheever, K. (2014). Brunner & Suddarth's Textbook of Medical-surgical Nursing: Suzanne C. Smeltzer...[et Al.]: Wolters Kluwer Health.
- Jaedun, A. (2011). Metodologi penelitian eksperimen. *Fakultas Teknik UNY*, 12.
- Kemenkes, R. (2013). Riset kesehatan dasar; RISKESDAS. *Jakarta: Balitbang Kemenkes RI*, 2013, 110–119.
- Khasanah, S. (2019). Perbedaan Saturasi Oksigen dan Respirasi Rate Pasien Congestive Heart Failure pada Perubahan Posisi. *Jurnal Ilmu Keperawatan Medikal Bedah*, 2(1), 1–13.
- Lavine, K., & Schilling, J. (2014). Evaluation of acute heart failure. *Cardiology Subspecialty Consult (3rd Ed)*. Philadelphia: Wolters Kluwer, 71–72.
- Mahanani, A. R., Jadmiko, A. W., & Ambarwati, W. N. (2017). *Gambaran Kualitas Hidup pada Pasien Gagal Jantung Kongestif di Kota Surakarta*.
- Muttaqin, A. (2009). *Pengantar Asuhan Keperawatan Dgn Gangguan Sistem Kardiovaskular*. Penerbit Salemba.
- Nursalam, N. (2019). *Konsep dan Penerapan Metodologi Penelitian Ilmu Keperawatan* (87). Stikes Perintis Padang.
- Rotger, M., Glass, T. R., Junier, T., Lundgren, J., Neaton, J. D., Poloni, E. S., van't Wout, A. B., Lubomirov, R., Colombo, S., & Martinez, R. (2013). Contribution of genetic background, traditional risk factors, and HIV-related factors to coronary artery disease events in HIV-positive persons. *Clinical Infectious Diseases*, 57(1), 112–121.
- Safitri, R., & Andriyani, A. (2011). Keefektifan Pemberian Posisi Semi Fowler Terhadap Penurunan Sesak Nafas pada Pasien Asma di Ruang Rawat Inap Kelas III RSUD dr. Moewardi Surakarta. *Gaster*, 8(2), 783–792.

Sudaryanto, W. T. (2017). Hubungan Antara Derajat Merokok Aktif, Ringan, Sedang dan Berat dengan Kadar Saturasi Oksigen dalam Darah. *Interest: Jurnal Ilmu Kesehatan*, 6(1).

Suharto, D. N., Agusrianto, A., Manggasa, D. D., & Liputo, F. D. M. (2020). Posisi Tidur dalam Meningkatkan Kualitas Tidur Pasien Congestive Heart Failure: Sleep Position in Improving Sleep Quality of Congestive Heart Failure Patients. *Madago Nursing Journal*, 1(2), 43–47.

Wahidati, H. W., Dwiningsih, S. U., & Putrono, P. (2019). The Effectiveness of Tripod Position and Pursed Lips Breathing to Enhance Oxygen Saturation in Patients With COPD. *Jendela Nursing Journal*, 3(2), 68–76.

Waladani, B., Putri, P. A. K., & Rusmanto, R. (2019). Analisis Asuhan Keperawatan pada Pasien Congestive Heart Failure dengan Penurunan Curah Jantung. *Proceeding of The URECOL*, 878–882.

Yusvita, F., & Nandra, N. S. (2018). *Gambaran Tingkat Risiko Penyakit Jantung dan Pembuluh Darah pada Pekerja di PT. X*. 15(2), 267–275.

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