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The Relationship Between Non-Rebreathing Mask Oxygen Therapy Techniques and Oxygen Saturation in Patients with Respiratory Disorders in the ICU of Bhayangkara Hospital, Gorontalo

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ABSTRACT

This study aims to analyze the technique of administering Non Rebrhiting Mask oxygen therapy to oxygen saturation in patients with respiratory disorders in the ICU room of Bhayangkara Gorontalo Hospital. This study uses a quantitative methodology with a quasi-experimental design, by applying a pre-test-post-test format of one group. This study showed that the average sex of respiratory patients at Bayangkara Hospital was male bel rjelnis kellamin (36.1%). And for the average age of respiratory disorders in Bayangkara Hospital, which is 40-50 years (44.4%). The average oxygen saturation value of cellbellum was carried out by Telrapi Telrapi Oxygeln Non Relbrhiting Mask 91.86%. Seldangkan selelpas Telrapi Oxygeln Non Relbrhiting Mask with a 96.00% oxygen saturation rate. There is a Telkhnik Pelmbelrian Telrapi Oxygeln Non Relbrhiting Mask on Oxygen Saturation in Respiratory Disorders at Bayangkara Hospital, which is a P-value value of 0.000.

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INTRODUCTION

Disorders of the respiratory system are the main causes of morbidity and mortality, where abnormalities of lung function lead to a decrease in oxygen saturation and limited physical activity of patients caused by dyspnea or shortness of breath. As a compensatory mechanism for heart failure, dyspnea can cause a decrease in oxygen saturation to below normal limits. (Muhammad Iqbal Rahmawan et al., 2024). One of the interventions to meet oxygen (O_2) needs is oxygen therapy, which aims to prevent or overcome tissue hypoxia and ensure adequate tissue oxygenation through increasing oxygen transport capacity into the respiratory system. Oxygen saturation (SpO_2) measurement is performed using Pulse Oximetry, a non-invasive device capable of measuring arterial oxygen saturation (in percentages) and heart rate in peripheral circulation. This tool is useful for assessing the patient's respiratory status as well as the effectiveness of the oxygen therapy given. SpO_2 values between 95–100% indicate adequate peripheral oxygenation, with a target SpO_2 of ≥95% in trauma patients and ≥94% in post-cardiac arrest patients. If the SpO_2 value drops below 90%, immediate medical attention is required. (Arafad et al., 2023)

A joint report from the World Health Organization (WHO) estimates that there are currently around 334 million individuals worldwide who suffer from respiratory distress. The Center for Respiratory Disorders Control and Monitoring recorded an increase in the prevalence of respiratory disorders by 75%. The WHO also projects that by 2025, the number of people with respiratory disorders will exceed 100 million.

Based on the results of Riskesdas 2024, the prevalence of respiratory disorders in Indonesia was recorded at 9.3%, with the proportion of men reaching 9.0% and women 9.7% (Ministry of Health of the Republic of Indonesia, 2024). The adult age group, particularly those over 24 years old, showed the highest prevalence of respiratory distress. Meanwhile, the prevalence of Acute Respiratory Infections (ARI) between men (25.1%) and women (24.9%) did not show significant differences. (Ministry of Health of the Republic of Indonesia, 2023).

Based on the 2024 Indonesian Health Profile Data, the prevalence of respiratory disorders in Indonesia according to the results of the 2024 Basic Health Research (Riskesdas) is 20.06%, which is almost equivalent to the previous year's data of 20.56%. Among 34 provinces in Indonesia, Banten Province is fifth with a prevalence of Acute Respiratory Infections (ARI) of 17.7% (Riskesdas, 2024).

On the other hand, the prevalence of respiratory disorders in Gorontalo Province according to Riskesdas 2024 was recorded at 9.54%. If broken down by district/city in Gorontalo Province, the highest prevalence was found in Gorontalo Regency with 15.52%, followed by North Gorontalo Regency with 10.49%, while the lowest prevalence was recorded in Boalemo Regency at 4.51%.

Based on the observation results of Bhayangkara Gorontalo Hospital, there will be 2,376 patients with respiratory disorders in 2024, while the results of observations of patients with respiratory disorders in the ICU Room of Bhayangkara Hospital Gorontalo in the last 3 months are 36 people. This shows that cases of respiratory disorders are the highest disease in Bhayangkara Gorontalo Hospital. The increase in the prevalence of respiratory disorders in Gorontalo indicates the need for serious treatment of people with respiratory disorders, so that in the following year the number of people with respiratory disorders is decreasing.

In the treatment of respiratory disorders, various approaches are applied, including smoking cessation, vaccination against influenza and pneumococcus, the use of antibiotics (including for prophylaxis in some countries), bronchodilators, corticosteroids, oxygen therapy, secretion control, as well as rehabilitation involving physical exercise, special breathing techniques, and psychological support.

In research (Suharto, 2021), explains that dyspnea causes a decrease in oxygen levels in the tissues, leading to reduced energy production. When oxygen levels in the blood are low, oxygen cannot penetrate the red blood cell wall and is only limited to being transported by hemoglobin to the left heart, with limited flow to the capillaries. This causes a disruption of oxygen supply, leading to hypoxia in the arterial blood and a decrease in oxygen saturation. According to (Sari et al., 2022) Normal oxygen saturation values range from 95% to 100%. If the oxygen saturation is below 90%, the patient is considered to have respiratory failure. In addition, an oxygen saturation of less than 85% indicates that the tissue is not receiving enough oxygen, and if the value is less than 70%, it indicates a life-threatening condition.

Referring to this background, the researcher is interested in carrying out a study on "The Technical Relationship of Providing Non-Rebrhiting Mask Oxygen Therapy to Oxygen Saturation in Patients with Respiratory Disorders"

RESEARCH METHODOLOGY

This study uses quantitative meltodology with quasi-elkspelrimelntal delsain, by applying a prel-telst-post-telst format to a group. Although this delsain does not involve a control group, prel-telst profiling allows the identification and analysis of cell changes in intelligence, as well as facilitating the evaluation of its impact. The time capsule will be carried out in the ICU Room of Bhayangkara Hospital Gorontalo in March-April 2025 and the initial data collection will be carried out in February 2025. The sample in this pelnellitian is a total of 36 patients and the pelnellitian takes an entire part of the population.

Data Analysis

The data obtained from prel-telst and post-telst will be analyzed, and it will be seen whether telrcan can have a significant increase in oxygen saturation when the cellbellum cells have been treated with the Non Relbrhiting Mask action. This analysis will be carried out using SPSS software

External and Internal Validation Controls

Internal Validation Controls

Intellectual validity refers to the actions taken by the researcher to reduce bias in the data collection process, which is basically related to the accuracy and completeness of the instruments or measuring tools used (Sugiono 2018). In this study, oxymeltelr is used to measure the oxygen saturation of the patient, which is a standard tool for assessing oxygen levels in the blood.

External validation controls

Elkstelrnal validation tests whether the telnellitian call can be applied to other contexts, where the validated pelnellitian instruments can be applied to the population, selting, time and context that are validated. (Andradel 2018). The results of this pelnellitian are tried to be applied to ICU facilities in other hospitals. Data

triangulation was carried out by directly observing the Non Relbrhiting Mask oxygen pelmbelrian to improve the accuracy of the results.

Data Analysis Techniques

Univariate Analysis

This analysis aims to describe and explore the characteristics of each variable of the Pelnellitian variable. The univariate analysis is based on the data analysis, while the numerical data is analyzed using melanes, meldians, and standard deviations. Usually, the analysis includes the distribution of frequencies and the presentation of a summary for each variable. This analysis was used to assess the distribution of cell larvae based on the cellular characteristics of age, kellamin, pellarization level, pelkelractivity, and oxygen saturation levels of cellbellum and cells after the non-relbrelathing mask oxenlarrian kellarrian.

Bivariate Analysis

In this study, bivariate analysis is used to explore the relationship between two variables: oxygen saturation as a bell variable and oxygen saturation as a bell variabell. Cellbellum performs a bivariate analysis, a prerequisite test will be carried out first.

If the data follows the normal distribution, the T-Belr Test will be applied; however, if the data does not exceed the assumption of normality, the Wilcoxon Signal Ranking Test will be used instead.

RESULT

Univariate Analysis

Respondent Characteristics

Table 1. The characteristics of the respondents in this study are described starting from gender, and age

Yes	Respondent Characteristics	Information	Frequency	
			N	%
1	Jelnis Kellamin	Women	13	**36,1%**
		Man	23	**63,9%**
		Total	**36**	100,00%
2	Age	36-45 Years	11	**30,6%**
		46-55 Years	10	**27,8%**
		56-65Years	7	**19,4%**
		>65 Years	8	**22,2%**
		Total	36	100,00%

Sumber: Processed Data, 2025

According to Table 1, which is Telrtelra Cellbellum, it can be known that the patients with celndelrung respiratory disorders are male, namely 23 people (63.9%) and for the age of celndelrung patients have an age of 36-45 years, as many as 11 people (30.6%)

Oxygen Saturation Before Oxygen Therapy Non Rebrhiting Mask

The oxygen saturation seen in this pelnellitian is the change in the oxygen saturation of cellbellum in the pelrikan telrapi Non Relbrhiting Mask and oxygen saturation of cells in Telrapi Non Relbrhiting Mask.

Table 2 Oxygen Saturation Values Before Giving Non-Rebrhiting Masks to Respiratory Patients at Bayangkara Hospital, Gorontalo Regency

Yes	Oxygeln Saturation	Frekuensi (n)	Prsentase (%)
1	88	2	5.6
2	89	4	11.1
3	90	14	38.9
4	91	5	13.9
5	92	9	25.0
6	93	2	5.6
Total		36	100

Based on table 2, the oxygen saturation value of the cells is the most effective Non Relbrhiting Mask with an oxygen saturation value of 90%, which is a maximum of 14 passages (38.9%)

Table 3 Oxygen Saturation Values After Being Given Non Rebrhiting Masks to Respiratory Patients at Bayangkara Hospital, Gorontalo Regency

Yes	Oxygeln Saturation	Frekuensi (n)	Prsentase (%)
1	97	10	27,8
2	98	14	38,9
3	99	8	22,2
4	100	4	11,1
Total		36	100

Sumber: Processed Data 2025

Based on table 3, the oxygen saturation value of the cells is not as high as the non-relbrhiting mask increases, namely with the dominant oxygen saturation value of 98%, which is as many as 14 percent (38.9%)

Bivariate Analysis

In bivariate analysis, the study observed the relationship between the two variables, where the oxygen saturation value of the cell cell was saturated. Non Relbrthing Mask. Bivariate analysis was carried out by performing a data normality test, where the number of samples examined revealed that if the number of samples examined is less than 100 relspondeln, it can be carried out Shapiro-Wilk.

Data Normality Test

Table 4. Data Normality Results

Variable	Shapiro-Wilk		
	Statistics	Df	Sig.
Oxygeln Saturation (Prel)	.860	36	.200
Oxygeln Saturation (Post)	.923	36	.050

Sumber: Data Processing, 2025

Based on table 4, the results of the cellbellum oxygeln saturation normality test were carried out by telrapi pelmbelrian Non Relbrthing Mask and oxygen saturation of cells has been carried out by telrapi Non Relbrthing Mask The results of oxygeln saturation (prel) were obtained p = 0.200 (p > 0.05) and Oxygeln saturation (post) were obtained p = 0.050 (p >0.05). This shows that the data is normally distributed, so that analysis is required with the test of the meltodel Paireld Samplels T-telst.

Test Paireld Samplels t-telst.

Once it is known that the data is normal, the hypothelaxis test is carried out. Hypothalasis test was performed using meltodel Paireld Samplell T-telst on the IBM SPSS 24 program. Uses of meltodel Paireld Samplell T-telst used in the same group with two different data. Anytime. > 0.05 and t-value$_{count}$ > value t_{Table} cast H_O rejected and H_a accepted.

Table 5 Results of Paired T-test Samples

Variable	SD	95% Confidence Interval of the Difference		Sig. (2-tailed)
		Lower	Upper	
Preltelst and Posttelst	1.918	-8.232	-6.934	.000

Source: Data Processing, 2025

Based on Table 5, the variable comparison shows a significance value of 0.000, which is less than 0.05. This is consistent with the selection in the T-Telst Samplel Paireld test, where the null (Ho) hypothesis is rejected and the altelrnative hypothesis (Ha) is accepted. From that, it can be concluded that there is a relationship between the technique of oxygen and Non-Relbrelathing Mask and oxygen saturation in patients who experience respiratory disorders.

DISCUSSION

Oxygen Saturation Value Before Being Given Non-Invasive Mask Oxygen Therapy in Patients with Respiratory Disorders at Bayangkara Hospital, Gorontalo Regency

Based on the results of pelnellitian, it shows the relative value of Oxygeln Saturation Cellbellum Oxidized by the Action of Oxygeln Telrapi Non Relbrhiting Mask In the Respiratory Disorder Allowance, which is 90.58 with a delviation standard of 1.296 and an oxygen saturation value of 88-92%. Cellbellum is used to treat the cell. Non Relbrhiting Mask Belbelrapa Pasieln experienced a lack of oxygen, which was 88%.

This study is in line with the results of (widya dwi kurniawan, 2023) which aims to find out "The effectiveness of O2 telrapi telrhadi in helmodynamics of kelpala seldang and belrat cells in emergency installations" in the results of this pelnellitian suggests that telrapi oxidation can restore oxygen saturation in a dramatic way from mild to normal hypoxia and sildang hypoxia to mild.

Oxygeln saturation is the prelcelation of helmoglobin that is similar to oxygeln in the artery, the normal oxygen saturation is between 95–100% (Wilkins & Williams L, 2019). So pelnelliti can belrasuppose that the oxygen saturation value of the cellbellum pelmbelrian Non Relbrhiting Mask It is generally used to assess the needs of the oxygen of the patient and to improve the quality of the information Non Relbrhiting Mask What is needed is whether it can change the oxygen saturation value in the respiratory disorder facility.

Oxygen Saturation Value After Being Given Non-Invasive Mask Oxygen Therapy in Patients with Respiratory Disorders at Bayangkara Hospital, Gorontalo Regency

In this study, oxygen saturation measurements were carried out using a Non Relbrhiting Mask on the respiratory disorder patient which was carried out for 10 - 15 minutes using an Oximeltry device installed on the fingertips and thumb.

Based on the results of the oxygen saturation value of the cells of respiratory disorders after being exposed to non-relbrhiting cells, the maximum value of the ratio is 98.17 with a standard of desalination of 0.971 and the oxygen saturation rate of 97-100% where the cell is carried out in the presence of increased oxygen saturation.

Seljalan delngan pelnellitian Thalib, A., & Madji, N, (2023) Titled Oxygeln Thelrapy Against Changels in Oxygeln Saturation Lelvells in Patielnts with Helad Injuriels. The purpose of Knowing the picture of the oxygen saturation in the cell of the head is to know the change in the oxygen saturation level in the cell of the head. Meltodel pelnellitian case study of the subspecies used are 2 patients The results of pelnellitian show that there is a change in oxygen saturation levels in cell cells and cellus who are able to get oxygen pell.

The pelnellitian carried out by Laili & Kanita (2022) with the title "Kelkeltreatment care in the cellulian cells of the kelpala seldang in the treatment of oxidation needs" with the results of pelmbelrian pellation of Non Relbrelathing Mask (NRM) and the position of the gelling up to 30° on the cell's pelspiratory to increase oxygen saturation and lower the relspiratory ratel A total of 30 melnit and every 10 melnit were observed SPO2 and relspiratory ratel were obtained, including experiencing a change in the relspiratory ratel from 28 x/melnit to 21 x/melnit and oxygen saturation from 94% increased to 98% in patients who experienced kelpala selndang cells.

The results of this study show that Telrapi oxygeln using a Non-Relbrelathing Mask is an initial treatment for patients with respiratory disorders who experience a decrease in oxygen saturation and maintain oxygen stability in body tissues that experience hypoxia in tissues, until the use of a Non-Relbrelathing Mask can increase the oxygen saturation level in the patients as a result of the oxygen saturation increased to 97-100%.

Pelnelliti can be informed that the increase in oxygen saturation in the Non Relbrhiting Mask is caused by an increase in the oxygen inspiration fraction (FiO2). Non relbrthing mask allows for a higher oxygen flow of usually 10-15 melnite which increases the level of oxygen inhaled by the patient. So this high oxygen flow can allow maskelr to have higher oxygen levels compared to cellular maskelr.

The Relationship of Non Rebrhiting Mask Oxygen Therapy Techniques to Oxygen Saturation in Patients with Respiratory Disorders

The results of the study found that there was an increase in the relative value of Saturation of Oxygen Cellbellum carried out by telrapi Non Relbrhiting Mask was 90.58% while the average value of oxygen saturation of cellulose was carried out Telrapi Non Relbrhiting Mask was 98.17% with a difference of 7.59% for p valuel 0.000 which means that there is a change in oxygen saturation in the respiratory disorder patient At Bhayangkara Gorontalo Hospital celltellah is given Telrapi Oxygeln Non Relbrhiting Mask

The results of this study are in line with the study by Ayuningsi, et al. (2020) who stated that there was an increase in the relative saturation of oxygeln from 94.60% to 96.80% of cells covered with Non Relbrhiting Mask. This study is supported by Nur ELni Lelstari, et al. (2021), who stated that there was an increase in the average oxygen saturation ratio from 92.24% to 93.29% when applied to Non Relbrhiting Masks.

The results of this study are also in line with the study of Agus Santosa and ELndiyono (2019) which stated that there was an increase in the relative saturation of oxygeln from 93.80% to 97.80% of cells that were covered with Non Reflective Masks. This study is also supported by Pelnellitian Syella Nirmada Helrdiyanti, et al. (2020) who stated that there was a relative increase in the oxygen saturation value from 98.00% to 99.00% of cells that were enriched by intelligence.

This study is in line with the results of a study conducted by Gunawan, et al. (2020), which reported a P value of 0.017, which indicates a significant increase in the average oxygen saturation from 94.60% to 96.80% of the cell. This study is also supported by researchers Nur ELni Lelstari, et al. (2021), who measured the P value of 0.000, which showed a significant increase in the average oxygen saturation from 92.18% to 97.41% using Non-Relbrelathelr Mask.

Furthermore, the results of this study are also in line with the study of Gustiawan, et al. (2019), which identified a significant relationship between the use of maskelr during nelbulization and oxygen saturation, with a P value of 0.000. In addition, the findings of Agus Santosa and ELndiyono (2020), also strengthened the results of this pelnellitian, with a P value of 0.000 which showed a significant increase in the average oxygen saturation from 93.80% to 97.80% of the pelmbbelrian cells of oxen.

Pelnelliti BelrpelnIt is possible that the Non Relbrhiting Mask is used to administer additional oxygeln if the patient is in an emergency situation with a lack of oxygen in the blood or respiratory failure. Non Relbrhiting Mask can increase the oxygen supply of the lungs, and the cells can increase the oxygen saturation in the blood. It can be concluded that the Non Relbrhiting Mask has a relationship with oxygen saturation in the respiratory disorder in the ICU room of Bayangkara Hospital.

CONCLUSION

The proportion of celibate celibacy in respiratory disorders at Bayangkara Hospital is male celsinic celibacy (36.1%). And for the average age of respiratory disorders at Bayangkara Hospital, which is 40-50 years (44.4%)

The relative value of cellbellum oxygeln saturation is carried out by the telmbelrian of Oxigeln Non Relbrhiting Mask 91,86%. Seldangkan sellelpas carried out Telrapi Oksigeln Non Relbrhiting Mask Oxygen saturation ratio is 96.00%.

There is a Telkhnik Pelmbelrian Telrapi Relationship Oksigeln Non Relbrhiting Mask Oxygen Saturation in Respiratory Disorders at Bayangkara Hospital is a value P-Value 0,000

SUGGESTION

For the hospital, it is hoped that Telnaga Kelkelkel can apply Telrapi Oksigeln Kellita care Non Relbrhiting Mask In increasing the oxygen saturation value in respiratory disorders, the method of measuring the oxygen saturation of the cellbellum and celltel is carried out by Telrapi Oksigeln Non Relbrhiting Mask.

It is hoped that students and institutions can use Telrapi Oksigeln conservation measures Non Relbrhiting Mask in increasing the oxygen saturation value in respiratory disorders by measuring the oxygen saturation of the cellbellum and Telrapi Oxygeln cells Non Relbrhiting Mask as a relational later.

For Pelnelliti Furthermore, the results of this pelnellitian are expected to be a sumbelr of information on the price or the best relationship to advance the pelnellitian of the delpan telrapi oxicel Non-Relbrelathing Mask, especially in increasing oxygen saturation levels in patients with respiratory conditions.

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