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Relationship Between Nasal Congestion and Learning Concentration in Medical Student

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Abstract

Allergic Rhinitis is not a fatal disease, but it can affect a person's quality of life and interfere with work, including their ability to learn. One of the most frequently complained of symptoms of allergic rhinitis is a blocked nose. The worldwide prevalence of allergic rhinitis affects between 10%-30% of the population. The aim of this study was to determine the relationship between nasal congestion and learning concentration allergic rhinitis sufferers among FK UNISSULA students, Class of 2022.This research is an observational study with a cross sectional design with the sample criteria being students of FK Unissula Class of 2022 and 2023 who suffer from allergic rhinitis and meet the inclusion and exclusion criteria. The inclusion criteria in this research were students of FK Unissula Class of 2022 and 2023 and were willing to be research subjects. The exclusion criteria in this study were students with anatomical nasal abnormalities and those experiencing chronic rhinosinusitis with or without nasal polyps, deviated septum, adenoid hypertrophy, and neoplasms. There were 50 respondents from Unissula Medical Faculty students who suffered from allergic rhinitis. It was found that 38 (76%) students had a blocked nose and 12 (24%) students did not experience a blocked nose. The research results showed that the majority of students experienced severe nasal congestion and the majority of students had good concentration on their studies. The results of the analysis of the relationship between nasal congestion and learning concentration in allergic rhinitis sufferers using the Spearman test obtained p 0.000 with a correlation coefficient of 0.538.The results of the analysis above showed that there was a significant relationship between nasal congestion and learning concentration in allergic rhinitis sufferers.

Keywords*: Allergic Rhinitis; Nasal Congestion; Study Concentration; Students; Faculty of Medicine*

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INTRODUCTION

Allergic rhinitis (AR) is not a fatal disease, but it can affect the quality of life and interfere with work including a person's ability to learn. One of the most commonly complained symptoms of allergic rhinitis is a stuffy nose. A stuffy nose occurs due to a narrowed nasal cavity, so that incoming air is blocked. Blocked air can cause reduced oxygen in the body. Reduced oxygen if it occurs continuously can result in fatigue, headaches, sleep disorders, and cognitive disorders. Oxygen in the body can affect a person's concentration in learning which has an impact on achieving academic achievement. Allergic rhinitis can cause emotional disorders, depression, and impaired social interaction as a result of which a person's academic performance will decrease. (Tanaka & Amaliah, 2020). Disturbed health conditions can cause decreased concentration. Decreased concentration can affect a person's quality of learning, also affecting academic achievement (Admar, 2021).

The prevalence of allergic rhinitis worldwide affects between 10% - 30% of the population. Allergic rhinitis in some parts of the world based on The International Study For Asthma and Allergies in Childhood (ISSAC) phase III has a prevalence of more than 50%. It is estimated that there are 400 million people suffering from allergic rhinitis worldwide (Waruwu et al., 2023). The prevalence of allergic rhinitis in Indonesia is estimated to occur in adults around 10-30% and in children by 40-50% with the largest population occurring between the ages of 15-30 years (Prizarky et al., 2018). Nasal congestion affects 30%-40% of the general population and is one of the complaints often encountered by general practitioners and specialists (Merma-Linares et al., 2023).

Research conducted in Spain found a decrease in student productivity of 22.2% and a decrease in daily activity of 22.0% in people with allergic rhinitis. Research at the Faculty of Medicine, University of North Sumatra on students, out of 26 people suffering from allergic rhinitis, found that 19 people (34.6%) had decreased academic achievement and 7 people (12.7%) experienced increased academic achievement (Admar, 2021). Research conducted on adults in Mexico found that 43 out of 69 people with allergic rhinitis who experienced nasal congestion had difficulty concentrating on learning and 48 of them experienced loss of energy (Merma-Linares et al., 2023).

Nasal congestion that occurs in people with allergic rhinitis can be seen from the accompanying symptoms such as sneezing, nasal discharge, itching in the nose and eyes. Symptoms of nasal congestion usually appear after exposure to allergens and occur in certain seasons. Patients who experience nasal congestion in allergic rhinitis will experience sleep disorders that will have a negative impact on cognitive function, one of which is concentration. Among several theories that affect sleep quality, nasal congestion is one of them (Klimek et al., 2022). Research conducted by Trikojat et al. (2020) found that patients with allergic rhinitis during the flying pollen season, patients will experience a decrease in cognitive reaction speed and will need more effort to control cognitive abilities than healthy control groups (Klimek et al., 2022).

Disturbed concentration can affect a person's learning quality which affects academic achievement (Admar, 2021). Learning concentration is crucial for Medical School students, given the high academic load, complex learning materials, and the demands of clinical skills that must be mastered in a limited time. Furthermore, the intense competition among students makes the ability to focus and absorb information efficiently a key determinant of academic achievement and timely graduation. Based on the explanation above, the researcher is interested in Conducting research on the relationship between nasal congestion and learning concentration in allergic rhinitis sufferers in Faculty of Medicine Unissula students of 2022 and 2023.

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METHOD

This research uses analytical research with a cross sectional research design. The population in this study were all Faculty of Medicine Unissula students. The samples studied in this study were students of Faculty of Medicine Unissula Class of 2022 and 2023 who suffered from allergic rhinitis and met the inclusion and exclusion criteria. The sample size studied was 47 respondents.

The research was carried out at Sultan Agung Islamic University in September 2024. The inclusion criteria for this research were students from the Faculty of Medicine, Unissula class of 2022 and 2023 who suffered from allergic rhinitis and students who were willing to become research subjects. The exclusion criteria were students with anatomical nasal abnormalities and students who experienced chronic rhinosinusitis with or without nasal polyps, deviated septum, adenoid hypertrophy, and neoplasms.

The research instruments used in this study were the SFAR questionnaire which was used to diagnose allergic rhinitis, the NOSE questionnaire to determine the degree of nasal congestion and the learning concentration questionnaire that will be given to FK UNISSULA students of 2022 and 2023 during the research to determine the relationship between nasal congestion and learning concentration students with allergic rhinitis. The concentration questionnaire has been tested for validity and reliability of the research instrument.

The data obtained were analyzed using IBM Statistics SPSS version 26 software. The relationship between nasal congestion and learning concentration of allergic rhinitis sufferers was calculated using the Spearman test. This study obtained a P value = 0.000, meaning that the results of the study were stated to be related. The study was stated to be related if the P value < 0.05 (Gabriella, 2020).

RESULTS AND DISCUSSION

Univariate Analysis Results

Sample Characteristics

Table 1. Characteristics of the Unissula FK Student Sample

Sample characteristics	Nasal Congestion					%
	None	Mild	Moderate	Severe	Very severe	
1. Sex						
- Male	7	1	1	3	2	28
- Female	5	9	7	14	1	72
2. Age						
- 17 years old	0	0	0	1	0	2
- 18 years old	3	0	0	1	0	8
- 19 years old	4	2	5	9	1	42
- 20 years old	4	6	3	6	1	40
- 21 years old	1	2	0	0	1	8
3. Class						
- 2023	4	3	4	8	1	40
- 2022	8	7	4	9	2	60

Based on Table 1, the characteristics of the Unissula Medical Faculty students in this study are known. Based on gender, the majority of respondents were female (72%), while males were male (28%). Based on age, the largest number of respondents was 19 years old (42%), followed

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by 20 years old (40%), and the smallest was 17 years old (2%). Based on class, the largest number of respondents were from the class of 2022, at 60%, followed by 40% from the class of 2023.

Spearman Test Analysis Results

Table 2. Relationship between nasal congestion and learning concentration

Nasal Congestion	Learning Concentration										Nilai *p*	Nilai r
	Very good		Good		Moderate		bad		Very bad			
	N	%	N	%	N	%	N	%	N	%		
None	6	12	4	8	2	4	0	0	0	0	0,000	0,538
Mild	3	6	7	14	0	0	0	0	0	0		
Moderate	1	2	5	10	2	4	0	0	0	0		
Severe	0	0	9	18	8	16	0	0	0	0		
More severe	0	0	1	2	1	2	1	2	0	0		
Total	10	20	26	52	13	26	1	2	0	0		

Table 2 shows the severity of nasal congestion in Unissula Medical Faculty students. Respondents who did not experience nasal congestion were 12% with very good learning concentration, 8% with good learning concentration and 4% with moderate learning concentration. Respondents who experienced mild nasal congestion were 6% with very good learning concentration and 14% with good learning concentration. Respondents with moderate nasal congestion were 2% with very good learning concentration, 10% with good learning concentration and 4% with moderate learning concentration. Respondents who experienced severe nasal congestion were 18% with good learning concentration and 16% with moderate learning concentration.

Respondents who experienced very severe nasal congestion were 2% with good learning concentration, 2% with moderate learning concentration and 2% with poor learning concentration. The Spearman test produced a p value of 0.000 ($p < 0.05$) meaning that nasal congestion is related to the learning concentration of allergic rhinitis sufferers. The results of the research showed that the r value was 0.538 ($0.41 < r < 0.60$) and can be interpreted as indicating that there is a moderate correlation with a positive correlation direction, indicating that the more severe the degree of nasal congestion, the worse the concentration in learning.

Discussion

Based on the results of the study, the characteristics of the sample are known that 28% of respondents are male and 72% of respondents are female. This research data is in accordance with the results of other studies which show that in childhood, the incidence of allergic rhinitis in boys is higher than in girls, but in adolescents and adults, the incidence of allergic rhinitis in women is higher than in men (Nurhaliza & Imanto, 2023).

The age of the most students of the Faculty of Medicine Unissula who suffer from allergic rhinitis is the most 19 years old with a percentage of 42%. The results of the study were obtained in respondents who did not experience nasal congestion, 12% had very good learning concentration, 8% had good concentration and 4% had moderate learning concentration. Patients with complaints of mild nasal congestion, 6% had very good learning concentration and 14% had good learning concentration. Patients with moderate nasal congestion complaints, very good learning concentration 2%, good learning concentration 10% and moderate learning concentration 4%. Patients with severe nasal congestion complaints, good learning concentration 18% and moderate learning concentration 16%.

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Patients with very severe nasal congestion complaints, good learning concentration 2%, moderate learning concentration 2% and poor learning concentration 2%. These data are in line with the research which state the more severe the degree of allergic rhinitis and the duration of the attack can affect the quality of a person's learning because the concentration of a person's learning decreases (Setiabudi et al., 2022). This study found a relationship between nasal congestion and learning concentration of allergic rhinitis sufferers with the Spearman test obtained Sig (2-tailed) 0.000. The correlation coefficient in this study was 0.538 which means that there is a moderate correlation between nasal congestion and learning concentration and the direction of the study is in the same direction meaning that the more severe the degree of nasal congestion, the worse the learning concentration.

These results are in line with research conducted by Admar (2021) which states that symptoms of nasal congestion in allergic rhinitis can interfere with learning concentration and affect a person's cognitive function. Nasal congestion occurs when the nasal passages become narrowed, obstructing airflow and reducing oxygen supply. This condition may result in fatigue, headaches, sleep disturbances, and cognitive impairment, all of which can affect learning concentration. Furthermore, emotional disturbances, depression, and impaired communication associated with allergic rhinitis can also negatively impact academic performance (Tanaka & Amaliah, 2020). This study has limitations, namely that allergy testing was not conducted on the respondents.

CONCLUSION

The conclusion of this study is that there is a significant relationship between nasal congestion and learning concentration in individuals with allergic rhinitis. The strength of this relationship is moderate, indicating a meaningful correlation. The more severe the nasal congestion, the lower the level of learning concentration observed. One limitation of this study is that the allergy history was obtained solely through a questionnaire. Future research is encouraged to include objective allergy testing to strengthen the results.

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