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Relationship between Nasal Congestion and Quality of Life of Allergic Rhinitis Patients

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Abstract

Nasal congestion is the most common complaint complained of by allergic rhinitis sufferers. Symptoms of nasal congestion in allergic rhinitis can affect a person's quality of life, resulting in decreased work productivity, academic and social success. Based on previous research, the prevalence of allergic rhinitis is 10 to 30% of the world population, where nasal congestion is the most frequently reported symptom with a prevalence of 60%. The aim of this study was to determine the relationship between nasal congestion and the quality of life of allergic rhinitis sufferers among FK Unissula students. This research is an analytical research with a cross sectional design with sample criteria of Unissula Medical Faculty students Class of 2022 and 2021 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 2021 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 FK Unissula students who suffered from allergic rhinitis. It was found that 31 (62%) students had a blocked nose and 19 (38%) students did not experience a blocked nose. The research results showed that the majority of students experienced mild nasal congestion and the quality of life for the majority of students was good. The results of the analysis of the relationship between nasal congestion and the quality of life of allergic rhinitis sufferers using the Spearman test obtained p 0.048 with a correlation coefficient of 0.281. The results of the analysis above showed that there was a significant relationship between nasal congestion and the quality of life of allergic rhinitis sufferers.

Keywords: *Allergic Rhinitis; Nasal congestion; Quality of Life; Student; Faculty of Medicine.*

INTRODUCTION

Allergic rhinitis (RA) is not a life-threatening disease, but the symptoms that appear can affect the quality of life such as socializing, quality of sleep, studying and other activities, as well as other activities that require immediate treatment (Sanggita, 2022). Nasal congestion is the most common complaint complained of by allergic rhinitis sufferers. Symptoms of a blocked nose can block the passage of air, so people who experience these symptoms may feel frustrated, lack concentration and tired (Prizarky, 2018). Symptoms of nasal congestion in allergic rhinitis can affect a person's health status which in turn affects a person's quality of life because it can cause fatigue, pain, headaches, confusion, sleep disturbances and cognitive disorders which can ultimately affect work productivity, academic and social success (Tanaka & Amaliah, 2020).

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According to data from the American Academy of Asthma & Allergy Immunology (AAAAI), the prevalence of allergic rhinitis is 10 to 30% of the world population, 23 to 30% of the population in Europe, and 12 to 30% of the population in the United States (Zahra et al., 2023). In the United States, 1 in 7 adults aged 18 years and over or around 14% have been diagnosed with nasal allergies (Prizarky, 2018). The prevalence of allergic rhinitis in Indonesia is around 10-30% in adults and 40-50% in children. The largest population is aged between 15 and 30 years (Muthia Zahra, 2023). Based on data from the Department of Ear, Nose, Head and Neck Surgery (THT-KL) Cipto Mangunkusumo Hospital, nasal congestion was found to be the most frequently reported symptom (64%). Prizarky's research (2018) found that nasal congestion was the most frequently reported symptom, with 60% of respondents experiencing nasal congestion. According to a study (Zahra et al., 2023), it was found that 39 of 60 allergic rhinitis sufferers (65%) had a poor quality of life and 21 of the remaining 60 (35%) had a good quality of life.

Rhinitis Allergies are known to affect a person's quality of life, it was found that 65% of allergic rhinitis sufferers had poor quality of life and 35% had good quality of life(Muthia Zahra and et al., 2023). Research conducted by Maoua et al. (2019) found that allergic rhinitis has a negative impact on quality of life and work productivity. The percentage of overall quality of life is2.71±1.31 with the most affected domains being practical problems (needing to rub eyes and blowing one's nose repeatedly) and activity limitations (routine activities, recreational activities and sleep).The overall percentage of work disruption is48.88% ± 34.5% and the percentage of activity disorders was 44.71 ± 35.41%. Overall activity impairment is associated with severe nasal congestion. A cross-sectional study conducted on medical students in Saudi Arabia found that allergic rhinitis had a significant negative impact on the academic performance and quality of life of medical students. The prevalence of allergic rhinitis in medical students was 39.9%. Students with allergic rhinitis had a low GPA ($p<0.001$). Most students experience attention deficit disorder, sleep disorders, and cognitive disorders such as daytime fatigue, frustration, apathy, and impulsivity. These limitations and disruptions have a significant impact on students' quality of life (Almalki et al., 2023).This study aims to determine the relationship between nasal congestion and the quality of life of allergic rhinitis sufferers in Unissula Medical Faculty students.

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 2021 who suffered from allergic rhinitis and met the inclusion and exclusion criteria. The sample size studied was 50 respondents.

The research was carried out at Sultan Agung Islamic University in January 2024. The inclusion criteria for this research were students from the Faculty of Medicine, Unissula class of 2022 and 2021 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 WHOQOL-BREF questionnaire to determine the quality of life which consists of 4 domains, namely physicial health, psychology, social relationship, and environmental. Questionnaires will be given to FK Unissula students during the research.

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Data analysis uses correlative analysis through hypothesis testing which has been carried out with SPSS for Windows ver.26. The correlative test analysis used is the Spearman test which is used to determine the relationship between nasal congestion and the quality of life of allergic rhinitis sufferers along with the correlation with a p value <0.05, which means there is a relationship between nasal congestion and the quality of life of allergic rhinitis sufferers.

RESULTS AND DISCUSSION

Univariate Analysis Results

Sample Characteristics

Table 1. Characteristics of the Unissula FK Student Sample

Sample Characteristics	Nasal congestion				%
	There isn't any	Light	Currently	Heavy	
1. Gender					
- Man	5	4	6	0	30
- Woman	14	10	6	5	70
2. Age					
- 18 years	0	0	1	0	2
- 19 years old	7	8	4	1	40
- 20 years	9	3	7	4	46
- 21 years	3	3	0	0	12
3. Nasal congestion	19	14	12	5	100
Total	19	14	12	5	100

Based on Table 1, the characteristics of FK Unissula students in this study are known. Based on gender, the results showed that male respondents were 30% and female respondents were 70%. Respondents aged 18 years were (2%), aged 19 years were (40%), aged 20 years were (46%), and aged 21 years were (12%). According to rhinitis sufferers who experienced nasal congestion, 10% of respondents experienced severe nasal congestion and 38% of respondents who did not experience nasal congestion.

Spearman Test Analysis Results

Table 2. Relationship between nasal congestion and quality of life

Nasal congestion	Quality of Life						p value	r value
	Good		Currently		Bad			
	N	%	N	%	N	%		
There isn't any	12	63	7	37	0	0	0.048	0.281
Light	3	21	8	58	3	21		
Currently	8	66	2	17	2	17		
Heavy	1	20	0	0	4	80		
Amount	24	48	17	34	9	18		

Table 2 shows the severity of nasal congestion for FK Unissula students. Respondents who did not experience nasal congestion were 63% with good quality of life and 37% with moderate quality of life. Of the respondents who experienced a mild degree of nasal congestion, 21% had good quality of life, 58% had moderate quality of life, 21% had poor quality of life.

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Respondents with moderate nasal congestion were 66% with good quality of life, 17% with moderate quality of life, 17% with poor quality of life. 20% of respondents who experienced severe nasal congestion had good quality of life and 80% had poor quality of life. The Spearman test obtained a p value of 0.048<0.05, which means that nasal congestion is related to the quality of life of allergic rhinitis sufferers. The research results of the r value of 0.281 (0.20 < r < 0.39) can be interpreted to mean that there is a weak correlation with the direction of the correlation having a positive sign indicating that the more severe the degree of nasal congestion, the worse the quality of life.

Table 3. Relationship between Nasal Congestion and Domain 1 (Physical Health Aspects) Quality of Life

Nasal congestion	Domain 1 (Physical Health Aspects)								Mark p	Mark r
	Very good		Good		Currently		Bad			
	N	%	N	%	N	%	N	%		
There isn't any	7	37	7	37	5	26	0	0		
Light	2	14	3	21	6	43	3	21		
Currently	0	0	8	67	2	17	2	17	0.009	0.364
Heavy	0	0	1	20	3	60	1	20		
Amount	9	18	19	38	16	32	6	12		

Table 3. Shows the relationship between nasal congestion and domain 1 (physical health aspects) of the quality of life of FK Unissula students. Respondents who did not experience nasal congestion in terms of their physical health were found to be 37% very good, 37% good and 26% moderate. Respondents with mild degrees of nasal congestion found the physical health aspect to be 14% very good, 21% good, 43% moderate and 21% poor. Respondents with moderate degrees of nasal congestion found 67% good physical health aspects, 17% moderate and 17% poor. Respondents with severe degrees of physical health were found to have 20% good, 60% moderate and 20% poor. The Spearman test which was carried out to determine the relationship between nasal congestion and domain 1, namely the physical health aspect, obtained a p value of 0.009 and an r value of 0.364, which means that nasal congestion is related to physical health. The results of the analysis showed a weak correlation with a positive correlation direction indicating that the more severe the degree of nasal congestion, the worse the physical health.

Table 4. Relationship between Nasal Congestion and Domain 2 (Psychological Aspects) Quality of Life

Nasal congestion	Domain 2 (Psychology)								p value	r value
	Very good		Good		Currently		Bad			
	N	%	N	%	N	%	N	%		
There isn't any	3	16	8	42	7	37	1	5		
Light	2	14	2	14	6	43	4	29		
Currently	0	0	6	50	5	42	1	8	0.057	0.271
Heavy	0	0	1	20	1	20	3	60		
Amount	5	10	17	34	19	38	9	18		

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Table 4. Shows the relationship between nasal congestion and domain 2 (psychological aspects) of the quality of life of FK Unissula students. Respondents who did not experience nasal congestion in the psychological aspect were found to be 16% very good, 42% good, 37% moderate and 5% poor. Respondents with a mild degree of nasal congestion found that the psychological aspect was 14% very good, 14% good, 43% moderate and 29% poor. Respondents with moderate degrees of nasal congestion found 50% good psychological aspects, 42% moderate and 8% poor. Respondents with severe degrees found 20% good psychological aspects, 20% moderate and 60% bad. Domain 2 is a psychological aspect, with p of 0.057 and r of 0.0271, which means that nasal congestion is not related to psychological aspects.

Table 5. Relationship between Nasal Congestion and Domain 3 (Social Relationship Aspects) Quality of Life

Nasal congestion	Domain 3 (Social Relationship Aspects)								p value	r value
	Very good		Good		Currently		Bad			
	N	%	N	%	N	%	N	%		
There isn't any	3	16	9	47	7	37	0	0	0.001	0.446
Light	1	7	2	14	9	64	2	14		
Currently	0	0	3	25	8	67	1	8		
Heavy	1	20	0	0	0	0	4	80		
Amount	5	10	14	28	24	48	7	14		

Table 5. Shows the relationship between nasal congestion and domain 1 (physical health aspects) of the quality of life of FK Unissula students. Respondents who did not experience nasal congestion in the social relations aspect were found to be 16% very good, 47% good, and 37% moderate. Respondents with a mild degree of nasal congestion found that the social relations aspect was 7% very good, 14% good, 64% moderate and 14% poor. Respondents with moderate degrees of nasal congestion found 25% good aspects of social relations, 67% moderate and 8% poor. Respondents with a severe degree found that the social relations aspect was 20% very good and 80% poor. The results in domain 3 regarding aspects of social relations obtained p of 0.0001 and r of 0.446, which means that nasal congestion is related to social relations. The results of the analysis showed a moderate correlation with a positive correlation direction indicating that the more severe the degree of nasal congestion, the worse the social relations.

Table 6. Relationship between Nasal Congestion and Domain 3 (Environmental Aspects) Quality of Life

Nasal congestion	Domain 4 (Environmental Aspects)										Mark *p*	r value
	Very good		Good		Currently		Bad		Very bad			
	N	%	N	%	N	%	N	%	N	%		
There isn't any	6	32	9	47	3	16	0	0	1	5	0.066	0.262
Light	1	7	4	29	6	43	2	14	1	7		
Currently	1	8	8	67	1	8	2	17	0	0		
Heavy	1	20	0	0	3	60	1	20	0	0		
Amount	9	19	21	42	13	26	5	10	2	4		

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Table 6. Shows the relationship between nasal congestion and domain 4 (environmental aspects) of the quality of life of FK Unissula students. Respondents who did not experience nasal congestion in environmental aspects were found to be 32% very good, 47% good, 16% moderate, 5% very bad. Respondents with mild degrees of nasal congestion found that the environmental aspect was 7% very good, 29% good, 43% moderate, 14% bad, and 7% very bad. Respondents with moderate degrees of nasal congestion found that environmental aspects were 8% very good, 67% good, 8% moderate and 8% poor. Respondents with a severe degree obtained 20% very good environmental aspects, 60% moderate, and 20% poor. The results in domain 4, namely environmental aspects, obtained p of 0.066 and r of 0.262, which means that nasal congestion is not related to environmental aspects of quality of life.

Discussion

Based on the results of research on sample characteristics, it is known that 30% of respondents are male and 70% of respondents are female. This data is in accordance with previous research conducted by Nurhaliza and Imanto (2022) shows that in childhood, the incidence of allergic rhinitis is higher in boys than in girls, but in adolescents and adults, the incidence of allergic rhinitis is higher in girls compared to boys.

The highest age of Unissula Medical Faculty students who suffer from allergic rhinitis is 20 years old with a percentage of 46%. The research results showed that respondents who did not experience nasal congestion had a good quality of life of 63% and a moderate quality of life of 37%. Of patients with complaints of mild nasal congestion, 21% had good quality of life, 58% had moderate quality of life, and 21% had poor quality of life. Of patients with complaints of moderate nasal congestion, 66% had good quality of life, 17% had moderate quality of life, and 17% had poor quality of life. Patients with complaints of severe nasal congestion tend to experience poor quality of life by 80% and good quality of life by 20%. This is in accordance with research by Komnos et al., (2019)stated that a high allergic rhinitis score results in poor quality of life, where the most frequently experienced symptom of allergic rhinitis is a blocked nose.

This research found a relationship between nasal congestion and the quality of life of allergic rhinitis sufferers using the Spearman test, which obtained a Sig (2-tail) of 0.048. The correlation coefficient in this study was 0.281, which means there is a weak correlation between nasal congestion and quality of life and the direction of the research is in the same direction, meaning that the more severe the degree of nasal congestion, the worse the quality of life. The results of this research are in accordance with research that has been carried out Dabrowsing-bien et al., (2021)which states that there is a relationship between nasal congestion and the quality of life of allergic rhinitis sufferers. The higher the NOSE and VAS scores, the worse the quality of life.

The research results according to table 4.3 regarding the relationship between nasal congestion and domain 1 (physical health) quality of life were found in respondents who did not experience nasal congestion, the most physical health aspects were very good and good with a percentage of 37%. Respondents with a mild degree of nasal congestion had at most 43% moderate physical health. Respondents with a moderate degree of physical health had the highest percentage of good with a percentage of 67%, with a moderate degree of physical health the highest was moderate with a percentage of 60%. The Spearman test that was carried out obtained a p value of 0.009 and an r value of 0.364, which means there is a relationship between nasal congestion and physical health and quality of life with a weak correlation. This is in accordance with research by Tanaka and Amaliah (2020)states that allergic rhinitis sufferers who experience symptoms such as sneezing, itchy nose, rhinorrhea and nasal congestion can cause limitations in aspects of life, namely the physical aspect.

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The research results are in accordance with table 4.4 regarding the relationship between nasal congestion and domain 2, namely psychological aspects. It was found that respondents who did not experience nasal congestion had the most-good psychological aspects with a percentage of 42%. Respondents who experienced a mild degree of nasal congestion received a moderate psychological aspect with a percentage of 43%. Respondents who experienced a moderate degree of nasal congestion received good psychological aspects with a percentage of 50%. Respondents who experienced severe nasal congestion had a bad psychological aspect with a percentage of 60%. The Spearman test that was carried out obtained a p value of 0.057 and an r value of 0.271, which means that there was no relationship between nasal congestion and psychological aspects of quality of life. This can be caused by the severity of nasal congestion in this study, namely mostly mild degrees and the patient's own history of comorbidities and can be influenced by other diseases. This is in accordance with research conducted by Bedolla-Barajas et al., (2019)which state that atopic conditions are not the only cause of anxiety or depression, the cause is highest in patients suffering from chronic diseases such as cardiovascular disease, chronic respiratory disease, and can be caused by skin diseases and digestive diseases. Other factors that need to be explored are difficult experiences in the past, family life, history of anxiety and depression, social relationships, and life difficulties.

The research results according to table 4.5 regarding the relationship between a blocked nose and domain 3, namely the social relationship aspect, showed that 47% of the social relationship aspect was good in respondents who did not have a blocked nose, 64% of the social relationship aspect was moderate in respondents with a mild degree of nasal congestion. Respondents with a moderate degree of nasal congestion had moderate social relationships with a percentage of 67%. Respondents with severe nasal congestion had poor social relations with a percentage of 80%. The Spearman test that was carried out obtained a p value of 0.001 and an r value of 0.446, which means that there was a relationship between nasal congestion and aspects of social relations on quality of life with a moderate correlation. This is in accordance with research Tanaka and Amaliah (2020) which state that a blocked nose in allergic rhinitis sufferers can cause limitations in aspects of life such as social relationships.

The research results are in accordance with table 4.6 regarding the relationship between nasal congestion and domain 4, namely environmental aspects. It was found that respondents did not experience nasal congestion most of the time in the environmental aspect, with a percentage of 47%. Respondents with mild nasal congestion had the most environmental aspects as moderate with a percentage of 43%. Respondents with a moderate degree of nasal congestion had at most 67% good environmental aspects. Respondents with a severe degree of nasal congestion were 60%, the environmental aspect was moderate. The Spearman test that was carried out obtained a p value of 0.066 and an r value of 0.262, which means that there was no relationship between nasal congestion and environmental aspects. This is in accordance with research Tanaka and Amaliah (2020) claiming that a blocked nose can cause limitations in aspects of life such as the environment.

This study has research limitations, namely that anterior rhinoscopy and allergy tests were not carried out on research respondents, the condition of the nose and history of allergy tests were only asked through a questionnaire. This research also did not carry out shared perceptions with respondents before filling out the questionnaire. In future research, anterior rhinoscopy, allergy testing and perception similarities can be carried out before filling out questionnaires to respondents in order to strengthen the research results.

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CONCLUSION

The conclusion of this study is that there is a significant relationship between nasal congestion and the quality of life of allergic rhinitis sufferers with a positive correlation. The more severe the degree of nasal congestion, the worse the quality of life.

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