

Utilization of Online Mobile Phone Applications for Diagnosis and Evaluation of Quality of Life in Allergic Rhinitis Patients

Tri Wahyuliati¹, Eva Nur Fadila², Asti Widurui³, Imam Marzuki⁴

Author Affiliations

^{1,2,3,4}Medical education program, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta

Corresponding author: tri.wahyuliati@umy.ac.id

Abstract. Chronic rhinitis is inflammation of the nasal mucosa for more than 12 weeks. The prevalence of rhinitis in Indonesia has reached 12.4% and will continue to increase. Chronic rhinitis can affect quality of life, especially daily activities and sleep disorders. This study aims to determine the correlation of the Score for Allergic Rhinitis (SFAR) with the quality of life of sufferers. This research was conducted using observational analytical methods, namely a cross sectional design. The samples used were 46 samples with predetermined inclusion and exclusion criteria. The research instrument uses a quality-of-life questionnaire in the form of statements and Visual Analog Scales (VAS). Data analysis used Shapiro-Wilk for the normality test and contingency coefficient test to determine the correlation between variables. The research results showed a significant correlation between the Score for Allergic Rhinitis and the quality of life of chronic rhinitis sufferers ($p=0.000$). This correlation relationship has one direction and moderate strength ($r=0.567$). The highest quality of life statement, namely 52.17% of respondents, stated that rhinitis complaints would decrease after using medication/nasal spray. And for the VAS parameters, the results showed that the highest number given was 0 for 45.65% of students, which means they did not feel any pain.

INTRODUCTION

Allergic rhinitis (RA) is a collection of symptoms of inflammation of the nasal mucosa that occurs after exposure to allergens which are mediated by Ig E, with the main symptoms being a runny nose, itchy nose and congestion (Bousquet J et al, 2008). RA is a global health problem throughout the world, affecting populations from all countries, all races/ethnicities and from children to the elderly (Yoo et al, 2016). The prevalence of RA varies in several countries, in children reaching 25% of the population and in adults 40%, in Europe the reported prevalence of RA in adult sufferers ranges from 17-28.5%. In England and Western Europe, the prevalence of RA has increased rapidly in the last 4-5 decades, which is thought to be related to industrial and economic development (Asher MI, 2006; Bauchau V, 2004; Gupta R, 2007).

Apart from the classic symptoms of RA in the form of a runny nose, sneezing, itchy and stuffy nose, it is sometimes accompanied by eye complaints, namely itching, redness, tears, or complaints of an itchy palate, mucus in the throat and coughing (Bousquet J et al, 2008). Although RA is not fatal, it is chronic and can affect all age groups, can appear in infancy and last a lifetime, so it requires disease control to avoid complications such as rhinosinusitis. The impact of RA is related to the costs incurred for treatment, and reduces

the sufferer's quality of life, sleep quality, cognitive function, and fitness, which is seen in decreased performance in studying and working (Zuberbier T, 2014).

The number of Indonesian mobile phone users is ranked 5th in the world, in 2017 reaching 100 million, especially those of young/productive age. This opportunity can be utilized to increase sufferers' participation in achieving a more optimal level of health through independent disease control and education regarding the disease they suffer from. The application that has been carried out in preliminary research in several countries in Europe is MASK-rhinitis (MACVIA-ARIA Sentinel Network for allergic rhinitis) using the Allergy Diary application which assesses the symptoms of rhinitis in sufferers, controls the disease and sees the impact of the disease on the patient's life (Bousquet J et al, 2017).

MASK-rhinitis is an application system in electronic devices to monitor allergic rhinitis disease, there are 3 contents of information, namely: daily visual analogue scale (VAS) assessment to control disease progression, CARAT (Control of Allergic Rhinitis and Asthma Test), and e-Allergy screening is a tool for diagnosing asthma and allergic rhinitis using an online tool (Bousquet J et al, 2015).

The incidence of allergic rhinitis in Indonesia varies in several cities, the difference in incidence is caused by several factors, including errors in diagnosis and classification in basic services, as well as the patient's lack

of knowledge of the disease so that they consider the symptoms of rhinitis to be normal. In mild cases, rhinitis patients often treat themselves with over-the-counter medication, and only go to the doctor when their condition is severe. Delay in diagnosis is a serious situation because it results in complications and high treatment costs.

It is necessary to develop a simple online tool that is capable of early diagnosis of allergic rhinitis and provides accurate information when patients need consultation and treatment with a doctor. The Rhinoconjunctivitis Quality of Life Questionnaire (RQLQ) questionnaire designed by Juniper, 1991 has been validated and is widely used in several countries. It is hoped that it can be used to obtain data on the quality of life and active participation of patients online can help doctors to monitor the progress of the disease and the best management. appropriate.

METHOD

The design of this research was a diagnostic test to assess validity by filling out an online questionnaire on 100 populations and carrying out a skin prick test to confirm a definite diagnosis. The reliability of the questionnaire is carried out by filling out the online questionnaire again within 1 month. In the second year, the cross-sectional method analyzed the phenotype and quality of life based on the VAS score of allergic rhinitis sufferers obtained from an online application and used it to help manage the disease.

The subjects in the first study were 100 respondents with symptoms of allergic rhinitis. Meanwhile, in the second year of the study, allergic rhinitis sufferers were examined at PKU Muhammadiyah Yogyakarta Hospital who were willing to fill in the online allergic rhinitis symptom monitor.

RESULTS AND DISCUSSION

TABLE 1. Respondents' Characteristic

	Respondents' characteristic	N	%	Total
Gender	Laki-laki	20	43.48	46
	Perempuan	26	56.52	
Age	20	5	10.87	46
	21	28	60.87	
	22	10	21.74	
	23	2	4.35	
	24	1	2.17	
SFAR	≥7	23	50	46
	<7	23	50	
Kualitas Hidup	Buruk	25	54.35	46
	Baik	21	45.65	

Quality of life consists of 9 statements and VAS Parameters. Quality of life is said to be good if the respondent gets a VAS parameter value <5 and there is no statement that rhinitis complaints interfere with sleep/daily activities. Meanwhile, a respondent is said to have poor quality if the respondent gets a VAS parameter value >5 or at least one statement of complaint that interferes with sleep/daily activities.

In table 2, the statements in the questionnaire describe the respondent's quality of life when rhinitis complaints occur. The results obtained were that the most frequent statement from respondents was 24 students (52.17%) stating that rhinitis complaints would decrease after using medication/nasal spray.

Table 2. Data Distribution of Quality of Life Statements

Quality of life (complaint statement)	Ya	%	Tidak	%
Colds that interfere with daily activities	16	34.78	30	65.22
Sneezing more than 5 times per disturbing episode	11	23.91	35	76.09
A blocked nose that interferes with daily activities	15	32.61	31	67.39
Not sleeping well due to nasal complaints	14	30.43	32	69.57
Quality of life is compromised due to nasal complaints	14	30.43	32	69.57
Requires medication to reduce nasal complaints	10	21.74	36	78.26
Nasal complaints disappear without treatment	15	32.61	31	67.39
Itchy throat/itchy eyes that interfere with daily activities	13	28.26	33	71.74
The complaints decreased after the medicine I took/nasal spray	24	52.17	22	47.83

In table 3, VAS parameters are used to provide an assessment of pain when a complaint is felt. The results obtained were that the highest number given was 0 to 21 students, which means they did not feel any pain.

TABEL 3. VAS Distribution Data for Quality of Life

Quality of life (VAS)	Respondents' characteristic	N	%	Total
VAS	0	21	45.65	46
	1	6	13.04	
	2	6	13.04	
	3	2	4.35	
	4	2	4.35	
	5	2	4.35	
	6	2	4.35	
	7	3	6.52	
	8	2	4.35	
	9	0	0	
	10	0	0	

In table 4, this study using the contingency coefficient test showed that there was a positive correlation value (0.567) between the Score for Allergic Rhinitis and the quality of life of chronic rhinitis sufferers. These results show that the strength of the correlation is categorized as moderate and the direction of the correlation is in the same direction, where the greater the value of one variable, the greater the value of the other variable. It was also found that the significance value was $p = 0.000$, which shows that there is a significant correlation between the Score for Allergic Rhinitis and quality of life. chronic rhinitis sufferers.

TABEL 4. Sfar Correlation Test Results with Quality of Life

Variable	Poor quality of life	Quality live well	Total	Correlation score	Validitas (p value)
SFAR ≥ 7	19	4	23	0.567	0.000
SFAR < 7	6	17	23		
Total	25	21	46		

CONCLUSION

There is a significant correlation between the Score for Allergic Rhinitis and the quality of life of chronic rhinitis sufferers and the correlation figure obtained is 0.567, indicating the strength of the correlation is moderate and in the same direction.

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