Research Article

Correlation of illness perception, asthma control, and lung function value to the quality of life of asthma outpatients

Nadia Aisah Mayzika[1]*, Asri Wido Mukti[1]

1 Department of Pharmacy, Faculty of Health Science, University of PGRI Adhi Buana, Surabaya, Indonesia

* Email: nadiaamayzika@gmail.com Telp: (+62) 852-5057-5074

ARTICLE INFO	ABSTRACT
	Asthma is a heterogeneous disease and chronic inflammation of the respiratory tract that has an impact on the decreased quality of life. The design of this research is non-experimental cross-sectional. The variables of this study are illness perception, control of asthma, lung function values, and life quality of asthma patients. The relationship of asthma control, illness perception, lung function value, and life quality of asthma patients can be seen with structural equation modeling using Smart-PLS software. The results are only control of asthma affects life quality, where the coefficient value is 0.511, which is positive and significant (p = 0,000). Lung function value and asthma quality indicate that lung function has a positive relationship direction seen from the coefficient value of 0.306 but not significant (p = 0.061). The correlation between illness perception and life quality of asthma was negative, where the coefficient value was - 0.142 and not significantly different (p = 0.332). This means that the direction of the relationship is reversed; it means the quality of life of asthmatic patients, which affects illness perception by 14.2%. The conclusion is that the life quality of asthmatic patients is influenced by the control of asthma and lung function. But it's different from illness perception, where there is a negative relationship between illness perception and life quality of asthma patients. Which means illness perception affects the life quality of asthma patients.

INTRODUCTION

Asthma is a chronic inflammatory disease of the respiratory tract with symptoms of coughing, tightness in the chest, and episodic wheezing due to airway obstruction. This results in decreased quality of life, decreased productivity, absenteeism in schools, increased health costs, the risk of hospitalization, and even death (Ministry of Health, 2008).

Although it has a low fatality rate, cases of asthma

are classified as a common disease in the community. According to records of the World Health Organization (WHO) that the rate of sufferers of asthma reaches 100-150 million people, and it is known that asthma sufferers continue to increase every year to reach 180,000 people each year. Other sources say that asthma patients have reached 300 million people worldwide and have continued to increase over the past 20 years. If it is not prevented and handled correctly, it is estimated that there will be an even higher prevalence in the future and disrupt child development and the quality of life of patients (Direktorat Bina Farmasi Komunitas dan Klinik, 2007).

Asthma can restrict daily activities due to physical limitations, emotions, and social life (Supianto, Musawaris & Yanti, 2015). Symptoms caused by asthma can be mild and do not interfere with activities, but can also be sedentary, and the consequences can affect daily activities. The clinical signs that are caused also vary due to level of limited asthma airflow which differs as well (Imelda, Faisal & Wiwien, 2007), causing an inability to recognize and prevent triggers that can cause disturbed airways, life-threatening and can cause asthma disorder, respiratory failure and even death (World Health Organization, 2015).

Asthma management is a long-term treatment that will be significantly influenced by the patient's self-management. Self-management of a patient will be substantially affected by illness perception because the perception of each results in different individual responses from one individual to another. Based on previous research at a private hospital in Surabaya found that the symptoms of illness that were often experienced by patients were in the form of shortness of breath, wheezing, fatigue, and sleeping difficulty. The impact of asthma affects activity. The highest causes of asthma are heredity, environmental pollution, and eating habits. Only a small proportion of patients know that asthma lasts forever and the patients believe that the medication that has been used so far can help control their asthma. Similar research is needed to determine the profile of perceptions of asthma outpatient (chronic asthma) with different backgrounds, namely in community areas (pharmacies) because patients in community areas tend to seek treatment at different doctors. This thing distinguishes the condition of asthma patients in hospital outpatients who tend to come from the same doctor (Lorensia, Yulia & Wahyuningtyas, 2016).

The goal of asthma treatment is to keep asthma under control for a long time and improve the quality of life of asthmatic patients. Horne et al. reported that controlled asthma was characterized by the existence of asthma symptoms during the day or night, the absence of an asthma attack, no visit to the doctor due to asthma, the need to use asthma medication was reduced, lung function approached normal values, and did not experience any drug side effects. (Gurková, Popelková, & Otipka, 2015).

In asthma patients, life-related to health is a subjective experience for each patient. This depends on the impact of the disease and its management on life quality. So life quality of asthma patients will be worse than normal patients (Imelda et al., 2007).

In a study conducted by Kheir, Emmerton, and Shaw, (2001) in assessing the impact of pharmaceutical services on asthma patients, it was shown that pharmacist training and support could improve the life quality of asthma patients. Improved life quality was measured by the *Asthma quality of life questionnaire* (AQLQ). This method used to measure functional disorders in adult asthma patients (Juniper et al., 1999). In a previous study conducted by Imelda et al. (2007) using AQLQ on 130 patients of mild, moderate, and severe chronic asthma showed asthma category affects life quality in patients with a moderate level of asthma compared to mild level while life quality is not affected by severe asthma patients compared to moderate degrees.

RESEARCH METHOD

This research method is non-experimental with a cross-sectional research design. This research variable is disease perception assessed by the IPQ questionnaire, asthma control determined by the ACT questionnaire, pulmonary function values assessed by peak flow meter values, and quality of life scores for asthma patients as measured by the AQLQ questionnaire.

The sample of this study was outpatient asthma patients at a pharmacy in Surabaya. The instrument for data collection is in the form of a questionnaire that has been tested for reliability. The sampling technique used is nonprobability sampling, which is purposive by following the inclusion and exclusion criteria. Data from asthma control level, disease perception, lung function value, and the quality of life for asthma patients can be seen using structural equation modeling analysis using Smart-PLS software.

Table 1.   Respondents in this study were grouped by gender, age, and treatment history

Characteristics		Amount	Percentage (%)
Gender	Male	7	27
	Female	19	73
Age (years)	Late teenagers (17-25)	25	96,15
	Early Adults (26-35)	1	3,85
	Late Adults (36-45)	0	0
History of Ashtma Treatment based on GINA (2019)	Agonis b-2 oral brief work	8	21,05
	Agonis b-2 inhalation brief work	10	26,31
	Oxygen	1	2,63
	Not currently using any medicines	3	7,89
	Oral corticosteroids (only used if symptoms worsen)	1	2,63
	Oral methylanthanthine (only used if symptoms worsen)	3	11,53
Non-Asthma Treatment History	Antibiotic	1	2,63
	Antihistamine	2	7,69
	Mucolithic	2	7,69
	Vitamin	3	11,53
Step of Treatment of Asthma based on GINA (2019) Step 1 26 100	Step 1	26	100
	Step 2	0	0
Job	Students	26	100

Table 1.   Analysis of Structural Equation Modeling

No	Description	Coefficient Value	T Value	P Value
1	Lung Function and Illness Perception	-0,329	1,731	0,084
2	Lung Function and Control of Asthma	0,368	1,961	0,050
3	Lung Function and Life Quality	0,306	1,879	0,061
4	Illness Perception and Life Quality	-0,142	0,971	0,332
5	Control of Asthma and Illness Perception	-0,019	0,097	0,923
6	Control of Asthma and Life Quality	0,511	3,579	0,000

RESULTS AND DISCUSSION

It can be seen (Table 1) that the highest number of asthma patients is women compared to men. The risk of asthma in boys is higher than girls, but with maturity, that risk can be reduced while the risk of asthma in women will be the same in childhood and adulthood.

According to Global Initiative for Asthma (GINA) (2019), the prevalence of men is lower than women. The cause is still unknown because various supporting studies are still being carried out until now. At birth, the size of a man's lungs is smaller than a woman's lungs, but after adulthood, the growth is more significant. The presence of progesterone and estrogen hormones can cause a high risk of asthma in women during and after puberty (GINA, 2019). Asthma patients in this study were mostly in the late adolescent category, with ages 17-25 years with work as students (United Nation Childrens Fund, 2011). Wijnhoven, Kriegsman, Snoek, Hesselink, and De Haan (2003) stated that the level of education of higher asthma patients has a better life quality than asthma patients who have a lower level of education. Therefore in this study, the work factor is controlled by involving respondents who are students. This research also states that according to their

treatment history, all patients were on stage 1. This means that all patients were taking medication when experiencing asthma symptoms worsened and were not using daily asthma control medications (GINA, 2019).

Figure 1 and Table 2 present the results of structural models of lung function variables, asthma control, and pain perception of the life quality of asthmatic patients. Table 2 provides information that only asthma control affects the quality of life where the coefficient value is 0.511, which is positive and significant (p = 0,000). The result explains that control of asthma has a significant influence on the life quality of asthma patients up to 51.1%. The result is following the Study of The Epidemiology and Natural History of Asthma: Outcomes and Treatment Regimens (TENOR) by Chen et al. (2007), which states that the level of asthma control is significantly related to life quality (p <0.0001, r = 0.49).

The life quality for asthma patients will have poor asthma control. Asthma with poor asthma control can affect daily life and can be fatal. So that it can reduce the life quality of asthma patients, patients with reasonable asthma control generally experience a mild clinical sign of asthma and significantly affect the life quality of asthma patients (Bhaskara, Bakhtiar & Moerad, 2018).
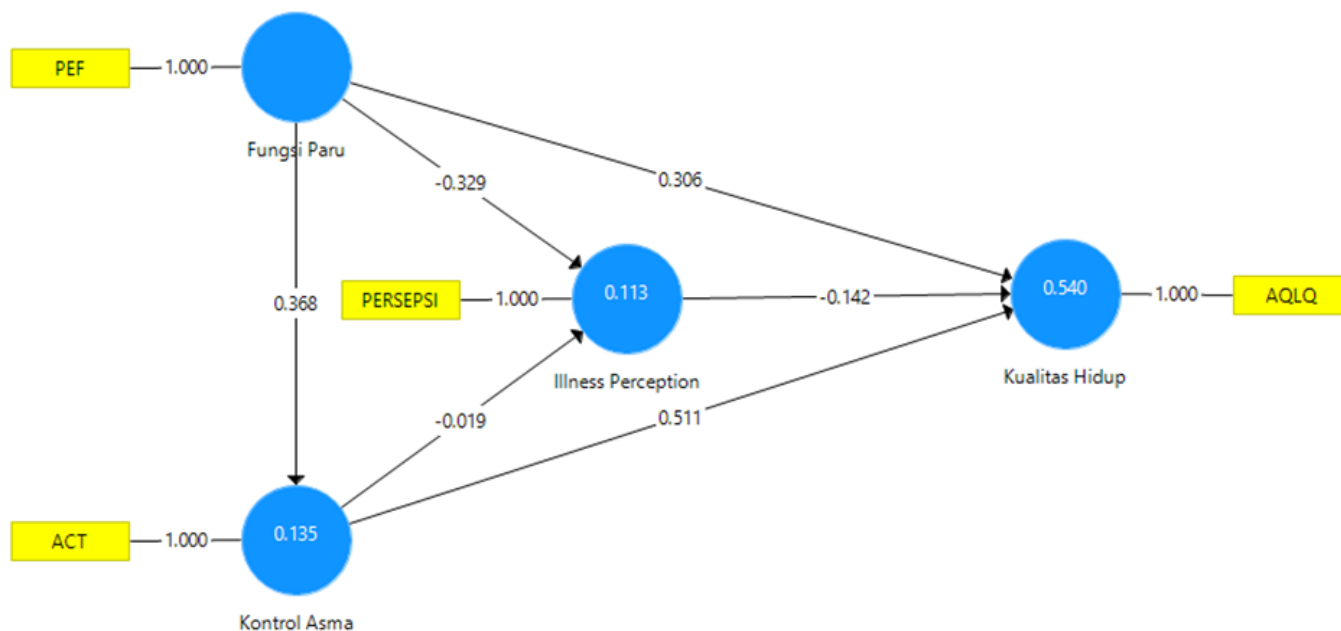
Figure 2. Structural Equation Modeling Analysis.

Lung function value and asthma quality indicate that lung function has a positive relationship direction seen from the coefficient value of 0.306 but not significant (p = 0.061). This means that lung function provides an effect of 30.6% on the life span of asthma patients. Some other studies mention that there is a strong correlation between the life quality of asthma patients and the value of lung function. Patients with proper lung function, have clinical symptoms, and quality of life are the same as the average population. In other conditions, patients with reduced lung function more often experience clinical symptoms. However, asthma patients with reduced lung function and the clinical sign can accept the situation so that it only has a mild impact on the patient's life quality. According to Ford et al. (2003), research, gender influences lung function and life quality. Where the female patient has a risk of reduced lung function and affects life quality, both physically and mentally, and limited activity (Imelda et al., 2007).

Table 2 also explains that the correlation between illness perception and asthma life quality is negative where the coefficient value is -0.142 and not significantly different (p = 0.332), which means that the direction of the relationship is reversed, namely the quality of life of asthmatic patients which affects illness perception by 14.2%. Illness perception also affects asthma patients in overcoming and self-

management of the disease. One of the factors that influence self-management is illness perception, which is a cognitive picture of a patient about his illness. This picture is identified through five dimensions, namely identity, illness cause, timeline, consequences, cure, or control (Kucukarslan, Plumley, Chang & Ueda, 2014). By knowing someone's perception of the disease it can be done providing education and further information to patients. Besides, efforts can be developed to approach strategies and promote good health to reduce the number of patients affected by asthma attacks and take part in improving the life quality of asthmatic patients. Besides, the patient's perception also plays an essential role in the success of therapy because the perception in patients results in different individual responses from one individual to another individual. Therefore, besides the suitability factor of the drug used, we must also pay attention to the perception of the patient himself (Lorensia et al., 2016).

CONCLUSION

The conclusion from this study, the life quality of asthma patients is influenced by asthma control and lung function. But it is different from illness perception, where there is a negative correlation between illness perception and life quality of asthma patients, which means illness perception life quality of asthmatic patients.

REFERENCES

Bhaskara, Y., Bakhtiar, R., & Moerad, E. B. (2018). Hubungan Tingkat Kontrol Asma dengan Kualitas Hidup Pasien Asma di Klinik Paru RSUD Abdul Wahab Sjahranie Samarinda. *Jurnal Kedokteran Mulawarman, 5*(2), 1-10.

Chen, H., Gould, M. K., Blanc, P. D., Miller, D. P., Kamath, T. V., Lee, J. H., ... & TENOR Study Group. (2007). Asthma control, severity, and quality of life: quantifying the effect of uncontrolled disease. *Journal of Allergy and Clinical Immunology*, *120*(2), 396-402.

Direktorat Bina Farmasi Komunitas dan Klinik. (2007). Pharmaceutical Care Untuk Penyakit Asma. Jakarta, Indonesia: Departemen Kesehatan Republik Indonesia.

Ford, E. S., Mannino, D. M., Homa, D. M., Gwynn, C., Redd, S. C., Moriarty, D. G., & Mokdad, A. H. (2003). Self-reported asthma and health-related quality of life: findings from the behavioral risk factor surveillance system. *Chest*, *123*(1), 119-127.

Global Initiative for Asthma. (2019). *Global Strategy for Asthma Management and Prevention*, 2019. Retrieved from www.ginasthma.org.

Gurková, E., Popelková, P., & Otipka, P. (2015). Relationship between asthma control, health-related quality of life and subjective well-being in czech adults with asthma. *Central European Journal of Nursing and Midwifery, 6*(3), 274-282.

Imelda, S., Faisal, Y., & Wiwien, H. W. (2007). Hubungan derajat asma dengan kualitas hidup yang dinilai dengan asthma quality of life questionnaire. *Majalah Kedokteran Indonesia, 57*(12), 435-444.

Juniper, E. F., Guyatt, G. H., Epstein, R. S., Ferrie, P. J., Jaeschke, R., & Hiller, T. K. (1992). Evaluation of impairment of health related quality of life in asthma: development of a questionnaire for use in clinical trials. *Thorax, 47*(2), 76-83.

Kheir, N., Emmerton, L., & Shaw, J. (2001). Can pharmacists influence the health-related quality of life of patients with asthma?: The New Zealand Pharmaceutical Care experience. *Journal for scientific research. Medical sciences/Sultan Qaboos University, 3*(2), 69.

Kucukarslan, S., Plumley, D., Chang, A., & Ueda, A. (2014). Intending to adhere or to not adhere:

Results from an experiment in healthy subjects testing illness perceptions and behavioral intentions in asthma. *Research in Social and Administrative Pharmacy, 10*(1), 239-245.

Lorensia, A., Yulia, R., & Wahyuningtyas, I. S. (2016). Hubungan Persepsi Penyakit (Illness Perception) dengan Kontrol Gejala Asma pada Pasien Rawat Jalan. *Media Pharmaceutica Indonesiana, 1*(2), 92-99.

Ministry of Health. (2008). *Keputusan Menteri Kesehatan Republik Indonesia Nomor 1023/ MENKES/SK/XI/2008 tentang Pedoman Penyakit Asma, 3 November 2008*. Jakarta, Indonesia: Author.

Supianto, M. J., Musawaris, R. F., & Yanti, S. N. (2015). Hubungan Derajat Asma Persisten dan Kualitas Hidup Pasien Asma Dinilai dengan Asthma Quality Of Life Questionnaire (AQLQ). *Jurnal Vokasi Kesehatan, 1*(3), 80-84.

United Nations Children's Fund. (2011). *The state of the world's children 2011: Adolescence an age of opportunity*. New York, NY: Authors.

World Health Organization. (2015). *Physical Activity and Adults*. Retrieved from https://www.who.int/dietphysicalactivity/factsheet_adults/en/.

Wijnhoven, H. A., Kriegsman, D. M., Snoek, F. J., Hesselink, A. E., & De Haan, M. (2003). Gender differences in health-related quality of life among asthma patients. *Journal of asthma*, *40*(2), 189-199.