

Effect of illness perception on improving asthma symptoms with omega-3 fish oil therapy: Pre-post design

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ABSTRACT

Perception of asthma can affect the patient's self-management and outcome treatment. The outcome is not only determined by symptoms, but also by illness perception. Omega-3 in fish oil has a potential effect on asthma. The study aimed to determine the effect of illness perception on improvement symptoms with fish oil, measured by Asthma-Control-Test (ACT). This research was pre-post test design and purposive sampling, used 1 g daily fish oil then followed-up after 4 weeks, conducted in March 2017–January 2018. The relationship between ACT value and illness perception using chi square test. The study sample consisted of 26 patients. The effectiveness of omega-3 showed that there was significant difference of symptoms after the therapy. It can be concluded there was effect of illness perception relationships related to symptoms. Most of the highest illness perception regarding symptoms and symptoms related to asthma respondents experienced on the individual values, related to symptoms are fixed. While the influence of illness perception on symptoms that got significant results was how long the asthma suffered, and the illness perception on causes of asthma that were significant to changes in asthma symptoms. Omega-3 fish oil was effective in improving asthma symptoms, but the influence of illness perception must also be a concern.

INTRODUCTION

Asthma is a heterogeneous disease, characterized by chronic inflammation of the airways that involves inflammatory cells that cause episodic symptoms, such as wheezing, shortness of breath, chest tightness, and cough. The number of asthma sufferers in the world reached 334 million. Asthma prevalence in various countries ranges from 1% to 18% of the population (Global Initiative for Asthma, 2017). In Indonesia, especially in the province of East Java, the prevalence of asthma has reached 5.1%, and it is estimated that the prevalence of asthma will continue to increase with increasing age up to 5.6% in the age range of 15–24 years (Badan Penelitian dan Pengembangan Kesehatan Departemen Kesehatan Republik Indonesia, 2013). Asthma in

Indonesia is not known with certainty, but an estimated 2%–5% of Indonesia's population suffer from asthma (Oemiati *et al.*, 2010).

Symptoms of asthma can be mild and do not interfere with activity but can also be permanent. Symptoms also vary because of the limited degree of asthma air flow (Krishnan *et al.*, 2012). Symptoms of asthma can have a negative impact on quality of life because they cause limited daily activities, affect psychologically, and the patient's social life that affects the education and career of the patient (Hossny *et al.*, 2017).

The changes in asthma symptoms can be observed using a questionnaire that focuses on changes in asthma symptoms, such as the Asthma Control Test (ACT) (Moamary *et al.*, 2012) which has been widely used in monitoring asthma treatment. Asthma therapy aims to prevent/ relieve symptoms to reduce the risk of acute attacks and tissue damage, to improve the quality of life (Braido, 2013; Global Initiative for Asthma, 2017).

Synthetic drugs can cause adverse drug reaction (ADR). During this time, asthma treatment focuses on therapy with long-term synthetic drugs, which can cause problems such as: aminophylline has narrow therapeutic range that risks causing ADR (Barnes,

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2010; Lorensia *et al.*, 2012; Tyagi *et al.*, 2008), long-acting beta-agonist monotherapy could cause aggravate asthma exacerbations (Billington *et al.*, 2017), or inhaled corticosteroids caused oropharyngeal candidiasis (Global Initiative for Asthma, 2017).

Omega-3 include of docosahexaenoic acid (DHA) and eicosapentaenoic fatty acids (EPA), are polyunsaturated found mainly in fish oil (Mickleborough and Lindley, 2014). Omega-3 has beneficial effects on chronic inflammatory diseases, including chronic obstructive pulmonary disease and asthma (D'Auria *et al.*, 2014; Miyata and Arita, 2015). Research shows that consumption of fish at least 2–3 times/week can increase level of omega-3 (British Dietetic Association, 2017), thereby reducing the risk of asthma (Rosenkranz *et al.*, 2012). Anti-inflammatory effects on EPA is competitive with arachidonic, has potential effect to reduce respiratory inflammation and bronchoconstriction in asthma (Han *et al.*, 2015; Thien *et al.*, 2002). Drug effects are individual, and asthma research is now beginning to pay attention to genetic influences in the treatment (Davis *et al.*, 2015; Fotenko, 2011; Ortega *et al.*, 2015). Previous studies have been carried out in Caucasian races (D'Auria *et al.*, 2014; Mickleborough and Lindley, 2014; Miyata and Arita, 2015), but there is no strong evidence on Indonesian society as a different Asian race than abroad.

Previous research by Lorensia and Lisiska (2011) states that perceptions of asthma can affect patients' self-management behavior, thus affecting their treatment outcomes. The results of asthma therapy are not only determined by symptoms or lung function, but also the illness perception that patient has, is the patient's subjective beliefs and emotional response to the disease. Many studies have shown that the perception of disease has a large share of therapeutic results, so the conclusion that disease perception that reflects the patient's personal control of the disease for positive results is asthma control (Kaptein *et al.*, 2010). Research on the role of illness perception in medical conditions has grown rapidly in recent years. This is the beginning of the development of a scale to measure disease beliefs, such as the illness perception questionnaire (IPQ), and then by strong associations can be found a relationship between patient perceptions of their disease and the results of their behavior. Chronic diseases like asthma are quite a burden on patients and have a significant impact on their quality of life. Illness perception has been shown to have an important association with outcomes in various acute and chronic diseases (Petrie *et al.*, 2007). The study aims to see illness perception toward their asthma by using the IPQ and see the effect of omega-3 fish oil on asthma control measured using the ACT.

METHODS

Design study

This study used a pre-post test design method. This study used data collection techniques with the ACT questionnaire to see the clinical symptoms of asthma. Each research sample was given fish oil. The intervention provided was a fish oil product circulating in Indonesia. This fish oil was given to patients at once daily doses, then followed up after 4 weeks. The recommended dose of fish oil containing omega-3 was 1–5.4 g per day (Calder, 2012). Hence, in this study, fish oil with a dose of 1.0 g was chosen.

Ethical committee approval

Ethics testing has been conducted at the University of Surabaya with No. 011/KE/I/2017.

Variable research and the measuring instrument

The independent variable of this study was fish oil, while the dependent variable of this study was symptoms of asthma and pulmonary function, with controlled variables in accordance with inclusion and exclusion criteria.

Symptoms of asthma

Asthma symptoms were measured using the ACT questionnaire. ACT is a specific instrument in assessing asthma control in chronic asthma patients. Consisting of five questions that included limited activity, long periods of tightness, symptoms of asthma at night, frequency of use of reliever drugs, and level of asthma control that was calculated for 4 weeks. Each question was given a choice of answers to five-Likert scale (Global Initiative for Asthma, 2017; Moamary *et al.*, 2012). Asthma symptoms were measured twice, namely: at week 0 (before giving intervention) and at week 4 (after giving intervention).

The initials that will be used as follows:

ACT0 : ACT value at week 0, ie before getting fish oil therapy containing omega-3

ACT4 : ACT value at week 4, which is after receiving fish oil therapy containing omega-3 for 4 weeks (1 month)

Illness perception

Illness perceptions were formed from initial experiences with episodes related to disease and how to respond to pain and discomfort from other people and the environment (Kaptein *et al.*, 2010). Measurement of illness perception could be described by five dimensions in cognitive representation of illness, including: (1) Identify (patient label used to describe illness and symptoms they experience as part of a disease); (2) Consequences (expected effects and outcomes of illness); (3) Cause (personal idea about the cause of the disease); (4) Timeline (how long the patient believes that the disease will last); and (5) Cure or Control (explains what patients believe that they can recover or recover from their illness) (Calder, 2012; Tiemensma *et al.*, 2016).

Population and sample

The population of this study were adult asthma patients (>18 years) in Surabaya. The sample (subject) of the study were collected by purposive sampling that fulfill the criteria, namely (inclusion and exclusion criteria): not having chronic diseases that could affect respiratory function (such as: chronic respiratory disease, heart disease, and chronic renal failure); Do not smoke or consume alcohol; and not using routine asthma medication.

The sample size in this study was at least 26 people. Sample size calculation method uses equations:

$$n = \frac{Z^2 \cdot P \cdot Q}{d^2}$$

$$Z = 1.96$$

$$P = 0.017 \text{ (Badan Penelitian dan Pengembangan Kesehatan Departemen Kesehatan Republik Indonesia, 2013)}$$

$$Q = 1 - P = 1 - 0.0262 = 0.983$$

$$d = 0.05$$

Then, the study sample size (*n*) is minimal for each group in this study was 25.67 ~ 26 people.

Data analysis method

Asthma symptoms would be tested for normality of data distribution using the Shapiro–Wilk test. If the *p* value > 0.05, it can be concluded that the data is normally normal distributed and then followed by paired *t*-test to determine the effect of illness perception on and clinical symptoms. The relationship between ACT value and illness perception using chi square test.

RESULTS AND DISCUSSION

Data collection was conducted in March 2017–January 2018. The data obtained in this study were obtained illness perception and ACT questionnaire that given at before and after fish oil intervention. Of the number of subjects initially involved the research, there were two peoples who were dropped out due to allergies to fish oil (red spots appeared on the face after the second week of getting fish oil therapy) and others because he had to going out of the city so cannot take therapy again. Until the end of the study, there were 26 respondents who followed the complete research series.

Respondents in this study were grouped according to gender, age, and treatment history (Table 1). The highest gender was women (73%) compared to men (27%). The most age of this study was at the stage of late adolescence (17–25 years) (96.15%). For the treatment, history of many respondents using inhaled short acting beta-2 agonists (26.31%) in step 1 (Global Initiative for Asthma, 2017) (Table 1).

The effectiveness data of omega-3 fish oil using ACT questionnaire showed that there was significant difference [*p* value (0.041) < 0.05] of symptoms based on ACT value before [normality test: *p* (0.558) > 0.05] and after therapy [normality test: *p* (0.460) > 0.05], used analysis of variance one-way test.

In Table 2, the influence of illness perception related to the symptoms of the ACT value. Obtained the results of the *p* < 0.05, Ho was rejected so there was the influence of illusion perception relations related to the significant symptoms of the ACT value.

Illness perception will affect asthma patients’ behaviour and self-management from the disease. This data can inform health care providers about patients’ psychosocial responses to their asthma; they are responsive to the changes in clinical meetings or through self-management intervention training. Exploring the patient’s illness perception, therefore, is an important component of good clinical care (Kaptein *et al.*, 2010). One of the factors that influence self-management is illness perception which is a cognitive picture of the patient about his illness (Gibbons *et al.*, 2013). This picture is identified through five dimensions, namely, identity, consequences, cause of illness, timeline, and cure or control (Kaptein *et al.*, 2010; Morris *et al.*, 2002; Petrie *et al.*, 2007). By knowing one’s perception of the disease, it can be done by providing education and further information to patients. In addition, efforts can be made to develop strategies for health approaches and promotion that are good for reducing the number of patients who are exposed to asthma attacks and participating in improving the quality of life of patients.

In Table 3, most of the highest illness perception regarding symptoms and symptoms related to asthma respondents experienced on the individual values, related to symptoms are fixed, namely, questions number 1 (7 respondents), number 2 (9 respondents), number 3 (10 respondents), number 4 (9 respondents), while in question number 5, the highest value rises (11 respondent). In the symptom associated with asthma, the highest value is still in question number 1 (6 respondents), number 2 (8 respondents), number 3 (8 respondents), number 4 (7 respondents), while in question number 5 is up (9 respondents).

The influence of illness perception on asthma on ACT values that got significant results was B2, namely, how long the asthma suffered by patients with a *p* value < 0.05 (0.018), Ho was rejected then there is a significant difference between the influence

Table 1. Frequency distribution of research subject character.

Characteristics		Frequency (n = 26)	Percentage (%)
Gender	Man	7	27.00
	Woman	19	73.00
Age (years)	Late teenagers (17–25)	25	96.15
	Early adult (26–35)	1	3.85
	Late adult (36–45)	0	0
	Medical history		
	Oral short-acting beta-2 agonist	8	21.05
	Inhaled short-acting beta-2 agonist	10	26.31
	Oxygen	1	2.63
	Not using any medication	3	7.89
	ral corticosteroids (only used when symptoms worsen)	1	2.63
	Metilsantin oral (only used when symptoms worsen)	3	11.53
	Other	8	21.05
Step treatment for asthma (1)	Step 1	26	100

Table 2. Effect of illness perception regarding symptoms and symptoms related to asthma experienced by respondents on the ACT value.

Illness perception	Number of asthma symptoms	Change in ACT Value			<i>p</i> value
		Decrease (n = 5)	Increase (n = 15)	Fixed (n = 6)	
Symptoms experienced by patients	0	0	0	1	0.018
	1	0	0	0	
	2	0	1	1	
Four highest symptoms: A4, A6, A9, A12	3	3	4	0	
	4	2	10	4	
	Total		26		
Relationship with asthma symptoms experienced by patients	0	0	0	0	0.329
	1	0	0	0	
	2	1	2	1	
Four highest symptoms: A4, A6, A9, A12	3	2	6	1	
	4	2	7	4	
	Total		26		

p > 0.05, Ho is accepted meaning there is no significant difference, *p* < 0.05, Ho is rejected meaning there is a significant difference
A4 = difficulty breathing/tightness, A9 = when breathing is sound (wheezing), A12 = difficulty sleeping, A6 = tired, Increase = there is an increase in the change in ACT value between before and after being given fish oil, Fixed = no change in ACT value between before and after fish oil was given, Decrease = there was a decrease in the change in ACT value between before and after fish oil was given.

Table 3. Distribution of frequency of illness perception regarding symptoms and symptoms related to asthma respondents experienced on the individual values in ACT.

No.	Illness Perception	No.1			No.2			No.3			No.4			No.5			
		Number of asthma symptoms	Decrease	Increase	Fixed	Total	Decrease	Increase	Fixed	Total	Decrease	Increase	Fixed	Total	Decrease	Increase	Fixed
A1	Symptoms experienced by patients	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1
	Four highest symptoms:	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A4,A6,A9,A12	2	0	0	2	2	0	0	2	2	0	0	2	2	0	1	2
	Total	3	2	0	5	7	0	1	6	7	2	1	4	7	1	4	2
	Total	4	4	5	7	16	2	5	9	16	4	3	9	16	0	11	5
A2	Relationship with Asthma Symptoms experienced by patients	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Four highest symptoms:	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A4,A6,A9,A12	2	0	0	4	4	0	0	4	4	1	1	2	4	0	4	0
	Total	3	2	2	5	9	1	2	6	9	1	2	8	9	1	6	2
	Total	4	4	3	6	13	1	4	8	13	2	4	7	13	4	2	7
	Total	6	6	5	15	26	2	6	18	26	3	6	17	26	5	4	17

No.1 = ACT questions limitations of respondent activities, No.2 = ACT questions frequency of respiratory shortness of respondents, No.3 = ACT questions arise symptoms of asthma at night or respondent morning, No.4 = ACT questions frequency of use of asthma medicines respondents, No.5 = ACT questions level of asthma control, Increase = there is an increase in the change in ACT value between before and after being given fish oil, Fixed = no change in ACT value between before and after fish oil was given, Decrease = there was a decrease in the change in ACT value between before and after fish oil was given.

of illness perception related to how long the disease asthma suffered from ACT values (Table 4).

In Table 5, the influence of illness perception on causes of asthma on the ACT value. The results of C1–C17 p value > 0.05 , H_0 was accepted so there was no significant difference in static. Except for C3 with a p value < 0.05 , H_0 was rejected, so the relationship between the causes of asthma and the ACT value was statistically significant.

Patient perception is a cognitive picture of patients with their disease by identifying five dimensions, namely, identity, consequences, cause of illness, timeline, and cure or control. These five dimensions are as follows:

Patient perception regarding labels/symptoms used to describe the disease (identity)

The results showed that subjective perceptions of the symptoms of the disease were mostly experienced by asthma patients: shortness of breath (92.31%), wheezing (92.31%), fatigue (80.77%), and insomnia (76, 92%). This is consistent with asthma symptoms that do occur. Whistling sound is caused by a disturbance in the respiratory tract or excessive mucus production. If there is difficulty in breathing, then the body's cells experience a lack of O₂ supply, which can cause difficulty sleeping or waking at night, while also causing the body to become tired. While sore throat, nausea, abdominal pain, joint stiffness, eye pain, headache, dizziness, and weight loss are symptoms that are not related to asthma. However, the possibility of these symptoms can be caused by side effects of drugs used by the patients (Shaharum *et al.*, 2012).

Patient perception regarding the impact and results of diseases (consequences)

Most respondents (50.00%) answered that the asthma affects activity. In reality, asthma patients do have limitations in their activities. Therefore, if it is known what activities can cause asthma, patients should be given counseling to take the medicine first as a prevention of the occurrence of an asthma attack (Global Initiative for Asthma, 2017).

The patient's perception of the cause of the disease (cause of illness)

The three highest factors causing their asthma in a row are hereditary factors, viruses, germs, and bacteria, and decreased immunity. Hereditary/genetic factors are a family history of patients who have had asthma. Heredity/ genetics is indeed one of the causes of dominant asthma. Some viruses that cause infections, such as Rhinovirus, have a relationship to recurrence of wheezing in childhood. But, the reality of wheezing in adulthood occurs because of various conditions and not all wheezing conditions in adulthood are an indication of asthma (Global Initiative for Asthma, 2017).

Patient perception of how long asthma will last (timeline)

Asthma does not recognize the word “cured,” because it cannot be cured and can appear at any time. Symptoms of asthma can last forever (Global Initiative for Asthma, 2017). The results showed that only a few patients (8 of 26 people) who knew asthma

Table 4. Effects of illness perception on asthma on ACT values.

No.	Perceptions related to asthma illness perception	Answer category	Change in ACT value			Total	p value
			Decrease (n = 5)	Increase (n = 15)	Fixed (n = 6)		
B1	How much asthma affects activity	Not affect at all	0	0	0	0	0.210
		Little influence	3	3	0	6	
		Doubtful	0	1	0	1	
		Enough Affect	1	7	5	13	
		Very influential	1	4	1	6	
		Total		26		26	
B2	How long will asthma be suffered by the patient	Just a few days	0	1	1	2	0.018
		Several months	1	0	0	1	
		Doubtful	3	2	3	8	
		Several years	1	5	1	7	
		Forever	0	7	1	8	
		Total		26		26	
B3	The patient feels that his asthma is	Not controlled at all	0	3	0	3	0.155
		Little controlled	1	5	0	6	
		Doubtful	1	2	2	5	
		Controlled	3	4	4	11	
		Perfect control	0	1	0	1	
		Total		26		26	
B4	Treatment done	Not helpful	0	0	0	0	0.155
		A little help	0	4	1	5	
		Doubtful	2	3	0	5	
		Help	3	7	4	14	
		Very helpful	0	1	1	2	
		Total		26		26	
B5	How often do patients experience asthma symptoms	Never	0	1	1	2	0.155
		1-2× a month	1	1	0	2	
		Don't know (suddenly appears)	4	11	5	20	
		1-2× a week	0	2	0	2	
		Every day	0	0	0	0	
		Total		26		26	
B6	Patients feel anxiety/ anxiety about asthma	Not at all worried	0	1	0	1	0.155
		A little worried	2	7	3	12	
		Doubtful	0	1	2	3	
		Worry	3	5	1	9	
		Very worried	0	1	0	1	
		Total		26		26	
B7	Understanding of asthma	Do not understand	1	1	0	2	0.155
		Understand a little	0	4	1	5	
		Doubtful	0	3	1	4	
		Understand	4	6	4	14	
		Really understand	0	1	0	1	
		Total		26		26	
B8	Asthma affects patient emotions	Does not make me emotional	1	5	0	6	0.155
		A little emotion	0	3	1	4	
		Doubtful	2	2	1	5	
		Emotion	2	3	3	8	
		Very emotional	0	2	1	3	
		Total		26		26	

(continued)

Table 4. (continued)

No.	Perceptions related to asthma illness perception	Answer category	Change in ACT value			Total	p value
			Decrease (n = 5)	Increase (n = 15)	Fixed (n = 6)		
B9	Asthma affects patient finance	Not affect at all	3	5	2	10	0.155
		Little influence	0	6	2	8	
		Doubtful	0	1	1	2	
		Influence	1	3	1	5	
		Very influential	1	0	0	1	
		Total			26		

p > 0.05, Ho is accepted meaning there is no significant difference,

p < 0.05, Ho is rejected meaning there is a significant difference

Increase = there is an increase in the change in ACT value between before and after being given fish oil, Fixed = no change in ACT value between before and after fish oil was given, Decrease = there was a decrease in the change in ACT value between before and after fish oil was given.

Table 5. Effects of illness perception on causes of asthma on ACT values.

No.	Causes of asthma	Answer category	Change in ACT value			Total	p value
			Decrease (n = 5)	Increase (n = 15)	Fixed (n = 6)		
C1	Stressful or anxious	SD	0	4	0	4	0.379
		D	2	1	0	3	
		Do	0	1	1	2	
		A	1	7	3	11	
		SA	2	2	2	6	
		Total			26		
C2	Descent / genetic	SD	0	2	0	2	0.379
		D	1	1	0	2	
		Do	0	1	0	1	
		A	1	4	3	8	
		SA	3	7	3	13	
		Total			26		
C3	Germs, viruses, infections	SD	0	0	0	0	0.031
		D	0	1	0	1	
		Do	2	5	0	7	
		A	3	5	4	12	
		SA	0	4	2	6	
		Total			26		
C4	Pattern or eating habits	SD	0	1	0	1	0.618
		D	0	2	1	3	
		Do	1	5	3	9	
		A	3	4	1	8	
		SA	1	3	1	5	
		Total			26		
C5	Bad luck	SD	2	3	1	6	0.115
		D	2	6	1	9	
		Do	0	6	3	9	
		A	1	0	1	2	
		SA	0	0	0	0	
		Total			26		

(continued)

Table 5. continued

No.	Causes of asthma	Answer category	Change in ACT value			Total	p value
			Decrease (n = 5)	Increase (n = 15)	Fixed (n = 6)		
C6	Bad care in the past	SD	2	3	0	5	0.578
		D	3	7	2	12	
		Do	0	4	3	7	
		A	0	1	0	1	
		SA	0	0	1	1	
		Total			26		
C7	Environmental pollution	SD	0	0	0	0	0.473
		D	1	0	0	1	
		Do	0	1	0	1	
		A	3	11	4	18	
		SA	1	3	2	6	
		Total			26		
C8	My own behavior	SD	0	0	0	0	0.719
		D	0	3	1	4	
		Do	1	4	2	7	
		A	3	7	2	12	
		SA	1	1	1	3	
		Total			26		
C9	Always think negatively	SD	1	2	0	3	0.271
		D	3	8	1	12	
		Do	0	4	3	7	
		A	0	1	1	2	
		SA	1	0	1	2	
		Total			26		
C10	Family problems	SD	3	3	1	7	0.465
		D	1	6	1	8	
		Do	1	4	1	6	
		A	0	1	2	3	
		SA	0	1	1	2	
		Total			26		
C11	Too much work	SD	0	2	0	2	0.271
		D	1	2	0	3	
		Do	1	4	3	8	
		A	2	4	2	8	
		SA	1	3	1	5	
		Total			26		
C12	Emotional feeling	SD	0	3	0	3	0.344
		D	2	2	0	4	
		Do	1	4	2	7	
		A	2	4	4	10	
		SA	0	2	0	2	
		Total			26		
C13	Aging / increasing age	SD	2	3	2	7	0.640
		D	2	7	1	10	
		Do	0	4	3	7	
		A	1	1	0	2	
		SA	0	0	0	0	
		Total			26		

(continued)

Table 5. continued

No.	Causes of asthma	Answer category	Change in ACT value			Total	p value
			Decrease (n = 5)	Increase (n = 15)	Fixed (n = 6)		
C14	Alcohol consumption	SD	0	6	2	8	0.144
		D	1	3	0	4	
		Do	2	4	4	10	
		A	2	2	0	4	
		SA	0	0	0	0	
	Total		26		26		
C15	Smoke	SD	0	5	1	6	0,473
		D	1	1	0	2	
		Do	1	1	0	2	
		A	1	4	2	7	
		SA	2	4	3	9	
	Total		26		26		
C16	Due to injury / accident	SD	2	5	2	9	0.463
		D	2	6	1	9	
		Do	1	4	3	8	
		A	0	0	0	0	
		SA	0	0	0	0	
	Total		26		26		
C17	Decreased immunity	SD	0	0	0	0	0.666
		D	0	0	0	0	
		Do	2	3	2	7	
		A	3	7	3	13	
		SA	0	5	1	6	
	Total		26		26		

No.1 = ACT questions limitations of respondent activities, No.2 = ACT questions frequency of respiratory shortness of respondents, No. 3 = ACT questions arise symptoms of asthma at night or respondent morning, No. 4 = ACT questions frequency of use of asthma medicines respondents, No. 5 = ACT questions level of asthma control, Increase = there is an increase in the change in ACT value between before and after being given fish oil, Fixed = no change in ACT value between before and after fish oil was given, Decrease = there was a decrease in the change in ACT value between before and after fish oil was given, SD = strongly disagree, D = disagree, Do = doubtfully, A = agree, SA = strongly agree.

$p > 0.05$, Ho is accepted meaning there is no significant difference.

$p < 0.05$, Ho is rejected meaning there is a significant difference.

would last forever. Many research subjects do not know that asthma can occur at any time and unexpected.

Patient perceptions regarding medication that can help disease (cure or control)

The results showed that most patients (11 of 26 patients) said their asthma had been controlled. Subjects argued that the treatment used helped overcome the asthma attack (14 of 26 people). This is one of the characteristics of controlled asthma (Global Initiative for Asthma, 2017).

Fish oil containing omega 3 consisting of EPA and DHA suppresses the production of arachidonic acid through the arachidonate 5-lipoxygenase (ALOX5) pathway. Arachidonic acid is a substrate for the synthesis of eicosanoids which produces an inflammatory mediator consisting of cysteinyl leukotriene, prostaglandin, and thromboxane. This mediator is involved in the bronchoconstriction process and increases mucus in the respiratory tract in asthma patients. EPA-enriched fish oil can inhibit the

Table 6. Effects of illness perception on asthma on ACT values.

No.	Answer Category	Change in ACT value		
		Decrease	Decrease	Decrease
1	Descent/genetic (C2)	4	7	5
2	Germ, virusi, infection (C3)	1	4	2
3	Decreased body immunity (C17)	0	5	1

Increase = there is an increase in the change in ACT value between before and after being given fish oil. Fixed = no change in ACT value between before and after fish oil was given. Decreases = there was a decrease in the change in ACT value between before and after fish oil was given.

production of leukotriene C4 which is competitive with arachidonic acid which functions as the ALOX5 substrate. EPA can also suppress allergic responses in asthma by inhibiting arachidonic acid that produces leukotrienes. Leukotrienes and prostaglandin E2 contribute to the formation of immunoglobulin E, an antibody that plays a role in the allergic response. This usually increases in asthma patients (Ogden, 2012).

In Table 6, about the influence of Illness Perception related to asthma on the ACT value, the highest answer was on offspring / genetic and ACT value rose by seven respondents.

In conducting research, there are still weaknesses and shortcomings, although researchers have tried their best to make research results perfect.

Researchers realize that the limitations of research include:

1. The inclusion criteria of respondents such as heart and kidney history data were not obtained accurately. Because when the respondent said that there was no history of the heart and kidneys was not supported by the results of the doctor's checking first using electrocardiogram.

2. The type of fish oil used in this study is fish oil originating from abroad. Researchers use this type of fish oil because the dose is in accordance with the desired dose of fish oil which is 1.0 g. Therefore, respondents feel less comfortable consuming fish oil which is considered quite large because some respondents commented on the soft capsule which is quite large.

CONCLUSION

The effectiveness data of omega-3 fish oil using ACT questionnaire showed that there was significant difference (p value (0.041) < 0.05) of symptoms based on before and after therapy. There was an effect of illness perception relationships related to asthma symptoms. Most of the highest illness perception regarding symptoms and symptoms related to asthma respondents experienced on the individual values, related to symptoms are fixed. While the influence of illness perception on asthma on ACT values that got significant results was how long the asthma suffered, and the illness perception on causes of asthma that were significant to changes in asthma symptoms.

LIST OF ABBREVIATIONS

ACT	Asthma control test
ADR	Adverse drug reaction
ALOX5	Arachidonate 5-lipoxygenase
DHA	Docosahexaenoic acid
EPA	Eicosapentaenoic fatty acids
IPQ	Illness perception questionnaire

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

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