

PHARMACIST'S STRATEGIES IN TREATING ASTHMA BRONCHIALE OUTPATIEN

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ABSTRAK

Asma adalah salah satu masalah kesehatan utama dunia. Gejala asma yang sebenarnya dapat diobati dan dikendalikan sehingga mencegah serangan yang serius. Apoteker perlu memainkan perannya dalam *pharmaceutical care* (pelayanan kefarmasian) yang bertujuan untuk menemukan sistem perawatan kesehatan yang diperlukan untuk meningkatkan nilai terapi obat kompleks dan signifikan obat morbiditas dan mortalitas terkait, berfungsi untuk meningkatkan hasil farmakoterapi dan kualitas hidup pasien asma. Persepsi pasien terhadap kesehatan dan penyakit terkait juga sangat penting untuk efektifitas perawatan farmasi. Penelitian ini bertujuan untuk mempelajari peran apoteker dalam perawatan farmasi dalam pengobatan rawat jalan asma bronkial. Jenis penelitian ini adalah *cross-sectional*. Jumlah responden 22 Pasien. Data diperoleh dengan wawancara langsung untuk mengumpulkan data, disertai dengan pengamatan dari pasien. Hasil: jumlah *drug-related problems* (DRPs) adalah 20 kasus (*problem based*) dan 23 kasus (*caused-based*). Kelas obat yang menyebabkan DRPs terbanyak adalah beta-2 agonis. Persepsi subjektif dari gejala yang dialami oleh sebagian besar pasien dengan asma adalah : sesak napas (100%), suara mengi (90%), kelelahan dan kesulitan tidur (85%). Aspek kognitif penyakit yang dirasakan oleh pasien mengenai identitas, penyebab penyakit dan menyembuhkan atau mengendalikan penyakit adalah benar, tetapi tentang konsekuensi dan timeline masih kurang. Penelitian ini menunjukkan bahwa peran apoteker dalam perawatan farmasi pada pasien asma rawat jalan memiliki sifat konseling langsung ke pasien dan pemantauan. Pemantauan pasien secara teratur dan analisis terjadinya DRPs untuk membantu pasien mendapatkan pengobatan yang efektif, aman dan rasional.

Kata kunci: asma, pelayanan kefarmasian, *drug-related problems*, persepsi sakit

ABSTRACT

Asthma is one of the major health problems in the world. Actual asthma symptoms can be treated and controlled, so that most patients can prevent the onset of symptoms throughout the day, to prevent a serious attack. Pharmacists play a role in pharmaceutical care that aims to find health care system needed to improve drug therapy of complex and significant value of drug-related morbidity and mortality, functions to improve pharmacotherapy outcomes and quality of life of patients with asthma. The patient's belief about health and illness and related behaviors are also very important to the effectiveness of pharmaceutical care. Objective research to study the role of pharmacists in pharmaceutical care in the treatment of outpatient asthma bronchiale. The type of study was cross-sectional. The number of respondents recruited was 22 patients. In this study data were obtained by direct interview using a form of data collection, accompanied by observations of the patients. Result research Patients involved in this study were 22. The total numbers of DRPs were 20 cases (problem-based) and 23 cases

(cause-based). The class of drugs causing most DRPs was beta-2 agonist. The subjective perceptions of symptoms experienced by the majority of patients with asthma were: shortness of breath (100%), wheezing sound (90%), fatigue and difficulty sleeping (85%). The cognitive aspect of illness perceived by the patients regarding identity, cause of illness and cure or control was correct, but those concerning consequences and timeline were still lacking. This study demonstrates that the role of pharmacists in pharmaceutical care in ambulatory asthma patients has a nature of direct counseling to patients and monitoring. Monitoring of patients on a regular basis and analysis of the occurrence of drug-related problems might help the patients to get effective, safe and rational treatment.

Keywords: *asthma, pharmaceutical care, drug related problems, illness perception*

INTRODUCTION

Asthma is still one of the major health problems in the world [1]. Although new drugs and evidence-based guidelines have been developed in recent years, but no major changes in morbidity and mortality asma [2]. Guidelines for the treatment of asthma recommend the involvement of patients greater role in their treatment [3].

According to data from WHO (World Health Organization), at 15 million people experience disability-adjusted life years (DALYs) annually due to asthma, representing 1% of the total disease burden global [1]. SKRT (Survei Kesehatan Rumah Tangga) also states that asthma including 10 major causes of morbidity and mortality in Indonesia.

In 1986, SKRT found that asthma and COPD (chronic obstructive pulmonary disease) ranked 5th out of 10 causes of morbidity. SKRT's data in 1992, asthma and COPD is the 4th leading cause of death (mortality). While in 1995, the prevalence of asthma of 13/1000, compared with chronic bronchitis and obstructive lung 11/1000 2/1000 [4].

The National Asthma Education and Prevention Program (NAEPP) defines asthma as a chronic inflammatory disorder of the airways in which many cells and

cellular elements play a role. In individuals with asthma, inflammation causes recurrent episodes of wheezing, shortness, chest tightness, and cough [1].

Actual asthma symptoms can be treated and controlled, so that most patients can prevent the onset of symptoms throughout the day, to prevent a serious attack [4]. In the patients with asthma treatment, pharmacists play a role in pharmaceutical care. Elkhansa Abdelhamid et al. research on pharmaceutical care in hospitals of patients with asthma, in the Shaab Teaching Hospital in Sudan. In this study using a prospective method, randomized sampling, controlled study involving 100 patients with asthma (the intervention group (60) and control group (40)), the study concluded that the intervention of the pharmacist in pharmaceutical care can have a positive effect on asthma-related outcomes on patient [5].

The practice of pharmaceutical care aims to find health care system needed to improve drug therapy of complex and significant value of drug-related morbidity and mortality caused by the drug used [6]. Therefore, the introduction of pharmaceutical care is needed in developing countries to increase the resolution of problems drug related (drug related problems / DRPs) [7].

DRPs can lead to unwanted outcomes that increase morbidity and mortality. Bootman (2007) examined outcomes in outpatient DRPs caused in the United States. Results of outcomes caused DRPs found that patients who have failed therapy (23%), patients who are experiencing new medical problems (11%), patients who have failed therapy and new medical problems (7%), patients receiving drug therapy at least of experience one DRPs (>40%) [7]. Pharmaceutical care can be an appropriate strategy to prevent and control morbidity and mortality caused DRPs [8].

Pharmaceutical care functions to improve pharmacotherapy outcomes and quality of life of patients. Therefore, pharmacists need to carry out its role in pharmaceutical care to assess the presence of drug-related problems (DRPs) in the treatment of patients [9] with identifying and correcting potential causes that caused the problem in pharmacotherapy [10, 11] to prevent and control drug-related morbidity and mortalitas [6].

Procedures to identify and intervene in actual and potential DRPs, done with the awareness that all the drug at risk of DRPs is an important element of drug therapy and can contribute to reducing morbidity and mortality. Optimization of therapy by preventing DRPs will affect health care costs, potentially saving lives and improving quality of life pasien [12].

Self-management of asthma can reduce the incidence and improve the quality of life of pasien [13, 14]. The ability of self-management should be developed through patient education about asthma therapy by health accuracy. Pharmacists can provide education by providing information on asthma treatment, demonstrate how to use inhaled medications and peak flow meters, helping patients to understand their asthma

management plan, and monitor the use of medical treatment [15].

DRPs that have been analyzed data can be used as an illustration in providing CIE (Communications, Information, and Education) in patients with asthma according to the pharmaceutical care. Understanding the patient's belief about health and illness and related behaviors are very important to the effectiveness of pharmaceutical care [16].

In Germany, Schulz et al. conducting a study on 173 patients (intervention group of 101 patients and control groups were 63 patients). Peak flow rate values higher achieved in the intervention group after 6 months, but not at 12 months. However, inhaler technique, medication knowledge, and quality of life was higher in the intervention group after 12 months [2]. Maltese studies report that community pharmacy based asthma education program checkers monitoring has a positive effect on quality of life, peak expiratory flow values, inhalation technique, adherence to therapy and the number of patients who entered the hospital [17].

This research aims not only to know what can happen DRPs in patients with asthma outpatient (patients with asthma who have chronic asthma therapy), and also know the perception of asthma patients to asthma and asthma treatment she had received, including consequences, timeline, personal control, treatment control, identify, concerns, emotions, and illness comprehensibility [18]. So by knowing the DRPs and the perception of asthma patients, it can be used as a strategy for the preparation of an IEC to achieve optimal asthma treatment.

METHOD

This research method is descriptive analytic study which is a non experimental cross sectional (for drug-related data collection problems (DRPs) outpatients at the hospital) that is the way data is collected at a single time point only.

Identification Research Variable

Depending variable consists of drug-related problems (DRPs), the causes of DRPs and the perceptions of patients to disease and asthma treatment. Free variables consist of: a history of previous illness, the results of laboratory tests, drugs therapy. Controlled variables consisted of asthma patients who undergo outpatient treatment in respiratory polychlinic Adi Husada Undaan Wetan Hospital, Surabaya.

Population and Sample

The study population was patients with asthma who are undergoing outpatient treatment and meet the criteria for research, in hospitals (in clinical medicine) during the study.

Samples are asthma patients who are undergoing outpatient treatment and fulfilled the criteria, can be found by investigators and were willing to be a sample of research, in hospitals (in clinical medicine) during the study.

Inclusion criteria for the outpatient sample: (1) Patients asthma with aged ≥ 18 years and came to the polychlinic in Adi Husada Undaan Wetan Hospital to undergo outpatient treatment during the study, (2) Patients who are willing to participate in the research sample. Criteria exclusion (for the perception of asthma) [18]: women

pregnant/lactating, patients who have other respiratory diseases (such as chronic obstructive pulmonary disease/COPD, emphysema, tuberculosis/TB), patients with mental disorders, patients with hearing loss.

Data Collection

In this study data were obtained by direct interview using a form of data collection, accompanied by observations of the patient.

RESULT AND DISCUSSION

RESULT

Research to obtain data of patients with asthma outpatient (chronic asthma) was undertaken during November 16th, 2010 until January 15th, 2011 against asthma patients who undergo outpatient treatment at the Hospital. The number of respondents (sample) collected by 22 people, of the total population of the study as many as 23 people in which researchers found when respondents came to the clinic treatment of disease in the hospital. One person cannot be used as a sample of the research because it is not treated at the clinic when researchers are not in place. The sex of the study sample consisted of 10 male sex (45%) and 12 are female (55%). Age of the study sample varied with sample minimum age 19 years and maximum age of 70 years of research samples. The average age of the study sample was 35,10 years. Of the 22 samples studies suffer from asthma 45.44% between 11-20 years; 22.73% for more than 20 years; 22.73% between 2-5 years, 4.55% between 6-10 years, and 4.55 % for less than one year.

Table 1. The types of DRPs Based on Problems in Sample with Chronic Asthma

Primary Domain of DRPs based The Problems		Problems	Recomendation	Frequency		Percent (%)
Treatment effectiveness	Effect of drug treatment not optimal	Theophylline as a therapy of chronic asthma. Data from theophylline effectiveness as long-term controller is still lacking, and still have a small effect as the controller's first choice. And its effectiveness is smaller than LABA (long acting B2 agonist), so theophylline used as additional therapy when symptoms of asthma has not been controlled with inhaled glucocorticosteroids.	Discuss with doctor about appropriate treatment in accordance with the guidelines.	4	5	25
		The use of NSAIDs (ketoprofen) in patients with asthma can cause asthma exacerbations, although it's a individual effect.		1		
	Untreated indication	Not getting treatment as a reliever. Reliever used in all stage of chronic asthma therapy as a rapid bronchoconstriction in acute symptoms, so it's needed all patients with asthma on chronic asthma therapy.		1	5	25
		Not getting antiplatelet in patients with hypertension. Antiplatelet as primary prevention to prevent cardiovascular risk, including people with age> 40 years or who have additional risk factors (family history of CVD, hypertension, smoking, dyslipidemia, or albuminuria.		2		
		Not getting lipid drug (Statins) in patients with hypertension, in which statins work to CVD outcomes in patients. In patients with chronic diseases such as diabetes mellitus also have an increased lipid abnormalities, which can contribute to the risk factors of CVD.		2		

Table 1. The types of DRPs Based on Problems in Sample with Chronic Asthma (Continue)

Primary Domain of DRPs based The Problems		Problems	Recomendation	Frequency		Percent (%)
Adverse Reaction	Adverse drug event (non-allergic)	Fatigue because of losartan (ARB). Losartan, one of which is used by asthma patients in this study, serves as a less risky antihypertensive ARBs (Angiotensin Receptor Blocker). Is a non-peptide antagonist losartan, competitive and selective angiotensin II receptor. Mechanism of action of losartan is a reversible binding with AT1 and AT2 receptors and by blocking the effects of vasoconstriction and aldosterone secretion of angiotensin II. Fatigue arising from the use of losartan is possible because the effect of inhibition of aldosterone secretion. If too large decreases the secretion of aldosterone, fluid and electrolyte balance will be disturbed and manifestations that often appear among other tired.	Conduct regular monitoring and implementation of the CIE to the patient.	1	3	15
		Dizziness due to the use of salbutamol (short-acting B2 agonist). ADR in the form of dizziness caused by salbutamol likely caused by smooth muscle relaxing effect of salbutamol. Relaxation effect arises because β_2 receptor stimulation. Receptor β_2 not only found in the respiratory tract but also found in bone and muscle blood vessels of the heart. Excessive stimulation of β_2 receptors (mainly located in vascular smooth muscle of the heart) will cause vasodilating blood vessels in the heart that can cause a decline in blood pressure. Manifestations that arise from decreased blood pressure is one of them is a headache.		1		
		Dry mouth because of salbutamol (short-acting B2 agonist)		1		

Table 1. The types of DRPs Based on Problems in Sample with Chronic Asthma (Continue)

Primary Domain of DRPs based The Problems		Problems	Recomendation	Frequency		Percent (%)
Treatment Costs	Drug treatment more costly than necessary	Formoterol (long acting B2 agonist) was used as a reliever. Salbutamol is used in the treatment of asthma because of the effects of rapid bronchodilating, making it suitable for use in the event of an acute attack and is the drug of choice for asthma attacks.	Discuss with doctor about appropriate treatment in accordance with the guidelines.	3	3	15
Others		Drug interactions between Diltiazem (calcium channel blocker) and Theofilin (Potential)	Perform regular monitoring of patients.	1	4	20
		Drug interactions between Salbutamol (short acting B2 agonis) dan Theofilin (Potensial)		2		
		Salbutamol (short-acting B2 agonist) as a reliever that is used is the oral form (Actual)		1		
Total					20	100

A controlled asthma is asthma in which symptoms of shortness of breath, wheezing, coughing, etc. can be removed so as not to interfere with activity so that patients can move normally. Spirometry and Peak Flow Meter can help to diagnose asthma and assess the control asma [1, 19]. Based on interviews with outpatient asthma patients, 45,45% claim to be obedient in taking the medicine according to doctor's instructions so that his asthma control, 9,09% said no obedient in using the medicine so often symptoms occur, while 45,05% did not know.

Of 22 samples of the study patients who say they adhere to the use of medication as many as 10 peoples (45.45%), and 2 (9.09%) said they had low adherence (non-adherent) to the treatment. Stage asthma based on outpatient treatment received by patients when interviewed by investigators, according to Global Initiative for Asthma in 2009. It is shown variations in the sample experienced asthma stage of

research. Most of the research sample is at stage 1 (68,18%). Followed by in stage 3 (13,64%), in stage 2 (9,09%), unknown (9,09%), and in stage 4 and 5 (0%). Two study samples were classified as stage unknown because of asthma medication used could not be classified under the Global Initiative for Asthma in 2009.

Third ADRs caused by salbutamol and losartan are said to be actual because it appears the clinical manifestations in patients with asthma. To support this allegation Naranjo scale used to ascertain whether the clinical manifestations that emerges is the ADRs or not. From the calculation Naranjo scale, both drugs provide the same value of 4 that are interpreted as possible ADRs (possible ADRs). The evidence to support this allegation was not so strong because of limitations in this study is the limited amount of research samples and data obtained based on the patient's memory so

that there are some data that cannot be obtained.

According to Odgen (2007), cognitive perception of pain is a picture of the patient against disease by identifying five dimensions [24] the identity, consequences, cause of illness, timeline, and cure or control. The results showed that the subjective perception of symptoms experienced by the majority of patients with asthma are: shortness of breath (100%), wheezing sound arises (90%), fatigue and difficulty sleeping (85%). According to Elaine N. Marieb (2004), if there is disorder of the airways or excess mucus production can lead to wheezing sounds (Whistling sound), this shows the difficulty in breathing and wheezing sound associated with asthma. If there is difficulty in breathing, the body's cells deficient supply of oxygen, which causes the body becomes tired. Sore throat have also been associated with disease asma [25].

Patient Perceptions Regarding Impact and Results of Diseases (Consequences) showed that most patients (65%) answered asthma affects the activity. In fact, patients with asthma do have limitations in activity. Therefore, if it has been known to any activity which may cause asthma, patients should be given counseling prior to taking the medicine as prevention of attacks asma [1]. If patients rarely take medicine, using inhalers in the wrong way, and improper dosage can trigger asthma attack so as to provide impact and results deteriorate if not treated immediately. Thus, should immediately be referred to the hospital.

Patient Perceptions Regarding the causes of disease (Cause of Illness) showed that the three top factors that cause disease in a row their asthma is heredity, environmental

pollution, and patterns/eating habits. Heredity/genetics is a family disease history of patients who had suffered from asthma. Heredity/genetics it is one of the dominant causes of asthma. Environmental pollution consisting themselves of cigarette smoke, motor vehicle fumes, factory smoke, and free radicals is one of the causes of the attacks asma [1]. Perceptions of Patients Against Asthma How Long Will Lasts (Timeline) indicates that only a few patients (8 of 20 people) who know the disease of asthma will last forever. 10% of patients respond within days and 20% of patients respond within a few years of his asthma disease will be cured. Many of them do not yet know that his asthma disease can occur at any time and not unexpected. The rest are those who do not know/doubtful (30%) in the answer. Asthma do not know the word "cured", because it is not curable and can arise at anytime [1].

Treatment for asthma therapy are classified as a reliever or controller. Reliever is a medication that is used when necessary that is fast to reduce bronchoconstriction and reduce acute symptoms that accompany it. While the Controller is a medication that is used daily in the long term to keep asthma under clinical control over the effect of anti inflammation [1]. Perceptions Regarding the Treatment of Patients Can Help The disease (Cure or Control) showed that most patients (15 of 20 patients) said the disease asthma is controlled.

There is a patient believes that the medication used to help overcome his asthma attacks (15 of 20 people). While the data indicated the majority of patients experience frequent asthma symptoms in 1-2 times a month (10 of 20 people). This is one feature of control asthma [1].

Table 1. The types of DRPs Based on Problems in Sample with Chronic Asthma

Primary Domain of DRPs based The Problems		Problems	Recomendation	Frequency		Percent (%)
Treatment effectiveness	Effect of drug treatment not optimal	Theophylline as a therapy of chronic asthma. Data from theophylline effectiveness as long-term controller is still lacking, and still have a small effect as the controller's first choice. And its effectiveness is smaller than LABA (long acting B2 agonist), so theophylline used as additional therapy when symptoms of asthma has not been controlled with inhaled glucocorticosteroids.	Discuss with doctor about appropriate treatment in accordance with the guidelines.	4	5	25
		The use of NSAIDs (ketoprofen) in patients with asthma can cause asthma exacerbations, although it's a individual effect.		1		
	Untreated indication	Not getting treatment as a reliever. Reliever used in all stage of chronic asthma therapy as a rapid bronchoconstriction in acute symptoms, so it's needed all patients with asthma on chronic asthma therapy.		1	5	25
		Not getting antiplatelet in patients with hypertension. Antiplatelet as primary prevention to prevent cardiovascular risk, including people with age> 40 years or who have additional risk factors (family history of CVD, hypertension, smoking, dyslipidemia, or albuminuria.		2		
		Not getting lipid drug (Statins) in patients with hypertension, in which statins work to CVD outcomes in patients. In patients with chronic diseases such as diabetes mellitus also have an increased lipid abnormalities, which can contribute to the risk factors of CVD.		2		

Table 1. The types of DRPs Based on Problems in Sample with Chronic Asthma (Continue)

Primary Domain of DRPs based The Problems		Problems	Recomendation	Frequency		Percent (%)
Adverse Reaction	Adverse drug event (non-allergic)	Fatigue because of losartan (ARB). Losartan, one of which is used by asthma patients in this study, serves as a less risky antihypertensive ARBs (Angiotensin Receptor Blocker). Is a non-peptide antagonist losartan, competitive and selective angiotensin II receptor. Mechanism of action of losartan is a reversible binding with AT1 and AT2 receptors and by blocking the effects of vasoconstriction and aldosterone secretion of angiotensin II. Fatigue arising from the use of losartan is possible because the effect of inhibition of aldosterone secretion. If too large decreases the secretion of aldosterone, fluid and electrolyte balance will be disturbed and manifestations that often appear among other tired.	Conduct regular monitoring and implementation of the CIE to the patient.	1	3	15
		Dizziness due to the use of salbutamol (short-acting B2 agonist). ADR in the form of dizziness caused by salbutamol likely caused by smooth muscle relaxing effect of salbutamol. Relaxation effect arises because β_2 receptor stimulation. Receptor β_2 not only found in the respiratory tract but also found in bone and muscle blood vessels of the heart. Excessive stimulation of β_2 receptors (mainly located in vascular smooth muscle of the heart) will cause vasodilating blood vessels in the heart that can cause a decline in blood pressure. Manifestations that arise from decreased blood pressure is one of them is a headache.		1		
		Dry mouth because of salbutamol (short-acting B2 agonist)		1		

Table 1. The types of DRPs Based on Problems in Sample with Chronic Asthma (Continue)

Primary Domain of DRPs based The Problems		Problems	Recomendation	Frequency		Percent (%)
Treatment Costs	Drug treatment more costly than necessary	Formoterol (long acting B2 agonist) was used as a reliever. Salbutamol is used in the treatment of asthma because of the effects of rapid bronchodilating, making it suitable for use in the event of an acute attack and is the drug of choice for asthma attacks.	Discuss with doctor about appropriate treatment in accordance with the guidelines.	3	3	15
Others		Drug interactions between Diltiazem (calcium channel blocker) and Theofilin (Potential)	Perform regular monitoring of patients.	1	4	20
		Drug interactions between Salbutamol (short acting B2 agonis) dan Theofilin (Potensial)		2		
		Salbutamol (short-acting B2 agonist) as a reliever that is used is the oral form (Actual)		1		
Total					20	100

DISCUSSION

Drug groups causing most DRPs are a B2 agonist drug class. B2 agonist serves as a reliever that is used in every stage chronic asthma therapy as a rapid bronchoconstriction in acute symptoms [1], so the reliever (e.g. salbutamol) is required by all asthma patients in chronic asthma therapy. The five dimensions above have revealed a wide range of patient pain perception. Perception of pain patients about identity, cause of illness, and cure or control is right, while on the Consequences and the timeline is still lacking. By knowing a person's perception of his illness, the pharmacist in Pharmaceutical Care to do the counseling, information, and education (CIE) regarding knowledge about asthma and its treatment in order to achieve optimal drug therapies that improve the quality of life of patients. It can also be developed efforts of health promotion strategies and approaches that are good for reducing the number of patients affected by asthma attacks.

The implementation of the necessary pharmaceutical planning to be done on an outpatient:

1. Against other health personnel (doctor) to discuss appropriate treatment in accordance with the Global Initiative for Asthma Guidelines (2009).
2. Implementation of CIE of patient-related:
 - a. Compliance with drug use
 - b. Recognizing the signs of drug side effects of the most mild and common, to the heavy
 - c. Recognize the patient's asthma control condition
 - d. Recognizing the triggers for each patient

Need to conduct further research related to pharmaceutical care practice in asthma patients, asthma patients both outpatient and inpatient in order to serve as the evaluation and improvement of pharmaceutical care practice widely.

Table 2. The types of DRPs Based on Causes in Sample with Chronic Asthma

Primary Domain of DRPs based The Causes		Causes	Recommendation	Frequency		Percent (%)
Drug Selection	Innapropriate drug	The use of NSAIDs (ketoprofen) in patients with asthma can cause asthma exacerbations, although individual behavior.	Discuss with doctor about appropriate treatment in accordance with the guidelines.	1	1	4.35
	Drug interaction	Drug interactions between Diltiazem (calcium channel blocker) and Theofilin (Potential). Drug interactions between Diltiazem and Theophylline potentially occur. Giving calcium channel blockers to patients using theophylline are normally not caused adverse effect on asthma control, although the smallest changes can occur at serum levels of theophylline. The mechanism of this interaction is believed that diltiazem can decrease theophylline metabolism in the liver, possibly by inhibition of P450 isoenzyme cytochrome CYP1A2.	Perform regular monitoring of patients.	1	3	13.04
		Drug interactions between salbutamol (short-acting B2 agonist) and Theofilin (Potential). Drug interactions between salbutamol (B2Agonis) and Theofilin potentially occur. The use of theophylline and beta-agonists and useful for asthma therapy, but the potentiation of adverse effects may occur, the most serious condition is the occurrence of hypokalemia and tachycardia, especially in the use of high doses of theophylline. Securities that can happens is the effect on heart rate or levels of potassium. B2 agonists can cause hypokalemia especially when given parenterally or nebulized. Effect of potassium level decrease of drug interactions is not identified.		2		

Table 2. The types of DRPs Based on Causes in Sample with Chronic Asthma (Continue)

Primary Domain of DRPs based The Causes			Causes	Recomendation	Frequency		Percent (%)
	More cost-effective drug available	Formoterol (long acting B2 agonist) was used as a reliever	Discuss with doctor about appropriate treatment in accordance with the guidelines.	1	7	30.43	
		Theophylline as a therapy of chronic asthma		4			
		Fenoterol (long acting B2 agonist) was used as a reliever		2			
	Synergistic/ preventive drug required and not given	Not getting treatment as a reliever		1	5	21.74	
		Not getting antiplatelet in patients with hypertension		2			
		Not getting your lipid drug (Statins) in hypertensive patients		2			
Drug Form	Inappropriate drug form	Ketoprofen (NSAIDs) are used as an analgesic. The use of NSAIDs (ketoprofen) in patients with asthma can cause asthma exacerbations, although the nature individual. Therefore more secure if the use of NSAIDs in the topical form not systemic.	Discuss with doctor about appropriate treatment in accordance with the guidelines.	1	2	8.70	
		Salbutamol (short-acting B2 agonist) as a reliever that is used is the oral form. Salbutamol is indicated for reliever should not be used in oral form, but are inhaled. This is because the benefits from the use of inhalation, where the effects to the respiratory tract will be faster, and the concentrations were relatively smaller than that of systemic side effects that can be generated relatively smaller.		1			
Patient	Patients forget to use / consume drugs		Implementation of CIE	2	2	8.70	
Others		Fatigue because of losartan (ARB) (Actual)	Conduct regular monitoring and implementation of the CIE to the patient.	1	3	13.04	
		Dizziness due to the use of salbutamol (short-acting B2 agonist) (Actual)		1			
		Dry mouth because of salbutamol (short-acting B2 agonist) (Actual)		1			
TOTAL					23	100	

CONCLUSION AND SUGGESTION:

The role of pharmacists in pharmaceutical care in ambulatory asthma patients is a direct counseling to patients and monitoring the use of medications for ambulatory (able to use PMRs/Patient Medication Records). Monitoring treatment of patients on a regular basis and analyze the occurrence of drug-related problems that would/could/have been experienced by patients taking optimal treatment, effective, safe and rational.

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