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Application Of Pharmaceutical Care In Pharmacy: A Specifical Study On Asthma Patients

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Abstract. Data showed that 235 million people suffer from asthma with death rate more than 80% in developing countries. The pharmacist's role in managing asthma is to overcome drug-related problems that arise, provide information and counseling, motivate patients to adhere the treatment and assist in Medication Record. This study aims to determine the effect of the application of pharmaceutical care on drug therapy problems, adherence, therapeutic outcomes and quality of life in asthma patients. Data were carried out based on observation, interviews, and through filling questionnaires by asthma patients who redeem prescriptions at Apotek Dety Jl. Kapten Muslim No. 45A Medan from July to November 2020 who met the inclusion criteria. Number of DRP incidents obtained according to PCNE V9.0. Data were analyzed statistically used the Friedman and Wilxocon test. The result showed that There was a significant decrease in the problem group after the intervention was carried out by 93.3%. Based on the results of the study it can be concluded that the application of pharmaceutical care in asthma patients has a significant effect on reduced drug therapy.

Keyword: Asthma, DRP, Pharmaceutical care

Abstrak. *Data menunjukkan 235 juta orang menderita asma dengan angka kematian lebih dari 80% terjadi di negara-negara berkembang. Peran apoteker dalam penanganan penyakit asma adalah mengatasi masalah terkait obat yang mungkin timbul, memberikan informasi dan konseling, memotivasi pasien untuk patuh dalam pengobatan serta membantu dalam pencatatan medication record. Penelitian ini bertujuan untuk mengetahui pengaruh penerapan asuhan kefarmasian terhadap masalah terapi obat, kepatuhan, outcome klinis dan kualitas hidup pada pasien asma. Pengumpulan data dilakukan berdasarkan observasi, wawancara, dan melalui pengisian kuesioner oleh pasien asma yang menebus resep di Apotek Dety Jl. Kapten Muslim No. 45A Medan periode Juli-November 2020 dan memenuhi kriteria inklusi. Data berupa jumlah kejadian DRP yang diperoleh menurut PCNE V9,0. Data yang diperoleh dianalisis secara statistik menggunakan uji friedman dan wilxocon. Hasil menunjukkan penerapan asuhan kefarmasian dapat digunakan untuk mengidentifikasi masalah obat pasien asma di apotek yang dibuktikan melalui Uji Wilcoxon Signed Ranks dengan nilai p<0,05, dapat meningkatkan kepatuhan yang terbukti pada penurunan kepatuhan pasien kategori rendah sebelum intervensi sebesar 61,1% dan mencapai 0% setelah intervensi dan dapat meningkatkan outcome pasien asma di apotek yang dibuktikan dari peningkatan nilai APE sebelum dan sesudah intervensi sebesar 16,36% dan dapat meningkatkan kualitas hidup sebelum intervensi kategori sedang (88,9%) menjadi kategori baik (83,3%) setelah intervensi. Dari hasil penelitian dapat disimpulkan bahwa penerapan asuhan kefarmasian*

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pada pasien asma memiliki pengaruh yang signifikan terhadap penurunan masalah terapi obat, peningkatan kepatuhan, outcome klinis dan kualitas hidup pasien.

Kata Kunci: asma*, masalah obat, asuhan kefarmasian*

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1. Introduction

Asthma is a chronic respiratory disease characterized by increased reactivity to various stimuli and airway obstruction which can return spontaneously or with appropriate treatment. According to WHO in 2019, around 235 million people suffer from asthma with a death rate of more than 80% occurring in developing countries. Based on data from the Centers for Disease Control and Prevention in 2018 in the United States, the prevalence of asthma by age group is 7.7% in adults and 7.5% in children, based on gender, 6.2% for men and 9.1% female, and based on race 7.6% white race and 10.6% black race [1].

Basic Indonesian Health Research in 2018 found the prevalence rate of asthma at all ages in Indonesia was 2.4%. Meanwhile, the incidence of asthma in North Sumatra is 1.0%. The incidence of asthma in women tends to be higher than men (Ministry of Health, 2018). Pharmacy is a pharmacy service facility where pharmacists are practicing pharmacy. The pharmacy as a pharmaceutical service facility is directly responsible to patients in relation to the pharmaceutical preparations they obtain and is an important concern because it is oriented towards improving the patient's quality of life. To improve the quality of pharmaceutical services at pharmacies, we need a standard that can be used as a reference in pharmaceutical services at pharmacies. This pharmaceutical service standard has been regulated in the Minister of Health's Regulation through Pharmaceutical Service Standards at Pharmacy Number 73 of 2016 [2].

Pharmaceutical Care is defined as the pharmacist's direct responsibility in providing drugs to improve the quality of life of patients, which is a philosophy of practice for pharmacists as well as a standard for providing pharmaceutical services to patients. The philosophy of practice in this pharmaceutical service system leads to patient-oriented pharmaceutical care. Thus, pharmacists as professionals are required to increase knowledge, skills, and behavior changes so that they can interact directly with patients [2]. The pharmacist's role in managing asthma is to overcome drug-related problems that may arise, provide information and counseling, motivate patients to adhere to treatment and assist in recording for medication (Medication Record). Pharmacists in this case can help manage asthma by directing patients suspected of having asthma to check themselves, motivating patients to comply with treatment, providing information and counseling and assisting in recording for reporting [3].

About 45-75% of injuries that arise due to drug therapy problems are preventable and Pharmacists are the most appropriate health professionals to identify and treat drug-related problems. This is a great opportunity in an effort to improve the quality of the health system considering that the number of incidents can be reduced [4].

Based on the description above, the researcher is interested in conducting research related to the implementation of pharmaceutical care in asthma patients at one of the pharmacies in Medan.

2. Material and Methods

2.1 Study Design

The study was conducted using a comparative experimental method with a prospective cohort study design in asthma patients who bought their prescriptions at the Dety Pharmacy Jl. Captain Muslim No. 45A Medan in the period July-November 2020 and met the study inclusion criteria. Data collection was carried out based on observation, interviews, and through filling out questionnaires by patients. Data in the form of the number of DRP events obtained according to PCNE V9.0, the data obtained were analyzed statistically using the Friedmann and Wilxocon test and presented in tabular form.

2.2 Sample

Experimental and comparative research requires a sample of 15-30 respondents (Borg et al., 2007) Gay et al. (2009) also stated that experimental and comparative research required a sample of 30 respondents [6,7]

Inclusion criteria

patients who have been diagnosed for more than 2 months who redeem the prescription at the Dety Pharmacy Captain Muslim street No. 45A Medan, Patients aged 13 years and over, Asthma patients with persistent asthma category, asthma patients with or without comorbidities, and patients willing to participate in the study.

2.3 Data analysis

The data obtained in this study were statistically analyzed using the Friedman and Wilxocon method.

3. Results and Discussions

3.1 Patients characteristic

The demographic data of the patients studied included gender, patient age, education and occupation. The results of the distribution of patient demographic data can be seen in Table 1.

Table 1. Patient Characteristics

Patient Characteristics		Total	
		n (36)	Percentage (%)
Gender	Male	15	41.7
	Female	21	58.3
Age	26-35	5	13.9
	36-45	3	8.3
	46-55	6	16.7
	56-65	16	44.4
	>65	6	16.7
Education	Bachelor	20	55.6
	Senior high school	14	38.9
	Junior high school	2	5.6
Occupation	Housewife	6	16.7
	Government employees	7	19.4
	Enterprenuer	13	36.1
	Etc	10	27.8

Data from the demographic study of patients based on age in Table 1 shows that the most asthma sufferers were aged 56-65 as many as 16 people (44.4%). This result is in accordance with Andayani's research (2014) which reported that 83% of asthma patients in Indonesia are 18-60 years old and 17% are> 60 years old. Pangestuti, et al. (2015) stated that the decrease in respiratory function in terms of the value of the Forced Expiratory Volume in one second w (FEV_1) has a significant relationship with age level. From the age of 35 to 40 years, the mean reduction in FEV1 was 25–30 ml / year and those over 70 years of age had a decrease of 60 ml / year.

Drug related problems are an event or situation that involves drugs and can actually or potentially interfere with the desired results (PCNE, 2019). Based on the results of statistical analysis using the Wilcoxon test, the number of DRPs incidents showed a significant difference of $p < 0.05$ ($p = 0.00$) in the pretest and posttest, which means that there was an effect of the application of pharmaceutical care on Drug Related Problems (DRPs) before and after the intervention. DRPs in this study are the cumulative total group of problems (problems / P) with groups of causes (causes / C). Drug related problems (DRPs) have the potential to contribute to morbidity and mortality in asthma [8]. The average DRPs problems per patient before and after the intervention can be seen in table 2 below

Table 2. Average DRP problems per patient before and after the intervention

Average DRP problems per patient		Uji Wilcoxon
Pretest	*Post test*	*Asymp.Sig*
0.42±0.500	0.03±0.167	p= 0.00

Basically, a problem is defined as an unexpected or unforeseen event or circumstance that is, or may have gone wrong, with medication. There are 3 main domains in the problem section, namely: 1) The clinical effect of the drug is not as expected or absent, 2) The patient has ADR at normal doses or from a toxic reaction, 3) It seems that there is nothing wrong in the treatment, but there are other problems that related to the drugs used. Based on the results of this study, for the problem group (problems / P), the average P statistical analysis results before the intervention (pre-test) was 0.42 ± 0.500, while after the intervention (post test) it decreased to 0.03 ± 0.167. In the P average normality test before and after the intervention was statistically tested using the Kolmogorov-Smirnov test with a p value <0.05, which means that the data was not normally distributed, the Wilcoxon Signed Ranks Test was performed with a p value <0.05 (p = 0.00) so it can be concluded that there is a significant difference in the P average before and after the intervention. The significant difference can be seen from the decrease in the percentage of problem groups (Problems / P) after the intervention was carried out by 93.3%.

Table 3. Causes of DRPs(P) Before and After Intervention

Code	Cause of DRPs	Total of causes (%)		Total decrease (%)
		Pretest	Post Test	
P	DRPs Problem	15 (100%)	1 (100%)	93.3
P.1	Effectivity	13 (86.7%)	1 (100%)	92.3
P 1.2	Drug effect is not optimum	13 (86.7%)	1 (100%)	93.3
P.3	Etc	2 (13.3%)	0 (0%)	100
P.3.3	Unclear causes	2 (13.3%)	0 (0%)	100

The problem group that caused the highest DRP was the suboptimal drug effect (86.7%). This is in accordance with Zhu's (2019) study where DRP was identified, especially at the patient level, drug selection, and drug use process, and this accounted for 73.5% of the cause so that the effect was not optimal. This shows that the patient's drug use, doctor's prescription, and drug administration can all affect the effect of the drug, so medication counseling by pharmacists is needed. After interviewing clinical pharmacists with patients, it was found that many patients had insufficient knowledge of drugs and poor inhaler use skills leading to poor control of asthma attacks [9,10].

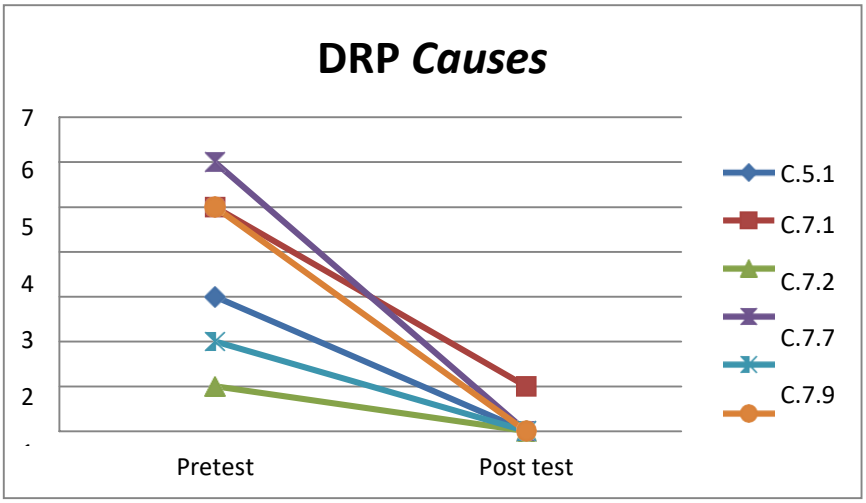

Figure 1. Causes of the incidence of DRPs before and after the intervention

Based on the results of the study, the problem group that caused the highest DRP was C.7 related to patients at 63.63% consisting of C.7.1 (22.7%), C.7.2 (4.5%), C.7.7 (27 , 7%) and C.7.9 (9.09%), the cause of DRP can be related to the patient and the symptoms of the disease, based on PCNE (2019) patient-related treatment problems can occur due to several things, namely patients using / taking less drugs than prescribed. or not taking medication at all, the patient is using / consuming more drugs than prescribed, the patient is abusing the drug (unregulated overuse), the patient is taking unnecessary drugs, the patient is taking food that interacts with the drug, the patient is storing drugs inappropriately , the time interval or dose is not correct, the patient gives / uses the drug in the wrong way and the patient cannot use the drug directly. Inadequate drug dosage means that the drug does not reach the MEC (minimum effective concentration) so that it does not have an effect, this is because the dose is too low for the desired effect, the drug use interval is too long, interactions occur that cause reduced bioavailability, and the duration of the drug is too short [10]. The identification, prevention and management of DRP is at the core of pharmaceutical care. Support from policy makers, ministries of health, universities, health care professionals, and researchers is needed and strongly recommended to improve the pharmaceutical practice of identifying, preventing and managing DRP [11].

5. Conclusion

Pharmaceutical care can be used to identify drug problems for asthma patients in pharmacies, there is a significant difference in the average P before and after the intervention ($p < 0.05$) with a decrease in the percentage of DRP problems (93.3%) and DRP causes (95%) after intervention.

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REFERENCES

[1] NSHC, "Asthma surveillance data". 2018. Available from: http://www.cdc.gov/asthma/asthmadata.htm. Assessed: January 2020.

[2] Kemenkes RI, "*Peraturan Menteri Kesehatan Republik Indonesia Nomor 73 Tahun 2016 tentang Standar Pelayanan Kefarmasian di Apotek*. Kementerian Kesehatan. p67-69.2016

[3] Global Initiative for Asthma (GINA), "Global Strategy for asthma management and prevention – Update 2015". 2015. Available from:www.ginasthma.com. Assessed: January 2020

[4] H.R. Tanjung, A. Sarriff, dan U. Harahap, "Analisa Cost of Illness Akibat Penggunaan NSAIDS di Sebuah Apotek di Kota Medan, Indonesia". *Jurnal Ilmiah manuntung*, vol. 1, no.1. pp. 52-56. 2015.

[5] EDQM, *Pharmaceutical Care: Policies and Practices for a Safer, More Responsible and Cost-Effective Health System*. Europe: Council of Europe. p. 7-9. 2012

[6] J.A. Bellanti, R.A. Settipane, "Relievers, controllers, and inhaler technique: A physician-patient challenge", Allergy Asthma Proc, vol.37, no. 5, pp:347- 349. 2018

[7] A.U. Khan, I. Ali, R. Zafar, & A. Khalil, A. "Identification of drug related problems and pharmacist 's interventions in asthmatic patients at a private tertiary care facility-Pakistan", *Archives of Pharmacy Practice*, vol. 6, no. 2,pp. 33–37. 2015

[8] V.GPress, V.M. Arora, K.C. Trela, R. Adhikari, FJ, Zadravecz, C. Liao, et al. "Efectiveness of interventions to teach metered-dose and Diskus inhaler techniques: a randomized trial", *Ann Am Thorac Soc*, vol.13, no.6, pp. 816–24. 2016

[9] RF. Shah, RM. Gupta, (2017). "Video instruction is more efective than written instruction in improving inhaler technique". *Pulm Pharmacol Ther*, vol.46, no.pp. 16–9. 2017

[10] K. Iliovska, Z. Sterjev, A.K. Nestorovska, & M.P. Bull, "Pharmaceutical care in the treatment of pediatric asthma: the role of community pharmacist" *Review Paper.* Pages 6-7. 2020.

[11] Y. M. Al-Worafi, "Drug-related problems. In Drug Safety in Developing Countries" pp. 105-117, Academic Press. 2020