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Research Article

ANTIBIOTIC PRESCRIBING PROFILE FOR PEDIATRIC AT THE PHARMACY OF MEDAN CITY IN 2016

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ABSTRACT

Objective: The aim of this study was to determine antibiotics prescribing profile for pediatric in Medan, Sumatra Utara (Indonesia) in 2016.

Methods: This study was using a retrospective cross-sectional method study which conducted from October to November 2016 with data from July to August 2016. From 93 pharmacies, there are 2195 prescribed for pediatric and 740 (33.71%) prescriptions contained antibiotic. The antibiotic analyzed based on the group, type, duration of administration, and dosage-drug form along with the dose.

Results: The antibiotic that mostly prescribed for pediatric was penicillin (amoxicillin) 329 prescriptions (44.46%). The onset of antibiotic revealed that 581 prescriptions (78.51%) were valid. The dosage form that most prescribed was syrup 230 prescriptions (31.08%). From 278 prescriptions, it showed that 177 (61.67%) prescriptions within an appropriate dose.

Conclusion: It shows that penicillin (amoxicillin) was the most prescribed antibiotic for pediatric in Medan and there are still in appropriate dose selections.

Keywords: Antibiotic, Pediatric, Prescribing profile, Retrospective cross, Pharmacy.

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INTRODUCTION

Infectious disease remains one of the important public health issues, particularly in developing countries. One of the drug mainstays to overcome this problem is antimicrobial including antibacterial, antifungal, antivirus, and antiprotozoal [1]. The antibiotic usage at primary health-care centers in Surabaya was shown to vary widely. 87% (55/63) primary health-care centers antibiotic usage was <4 DDD/1000 patients day, only two primary health-care centers antibiotic usage 6 DDD/1000 patients day [2]. Although the use of antibiotic applies to all ages, antibiotic for pediatric needs special attention [3]. The fact, antibiotic prescribed for pediatric in Indonesia still commonly found (~90%). The indiscriminate use of antibiotics in pediatric will increase the risk of infection, such as eliminating the good bacteria in the body, damaging the imperfect organs, and cause mutation that will lead to antibiotic resistance so antibiotics become less effective in treating. The use of antibiotic for pediatric adjusted to ideal weight according to age and instructions from professional guidance [4]. According to the WHO, the population of pediatric divided into several groups: Preterm newborn infant, term newborn infants (0–28 days), infants and toddlers (29 days to 23 months), children (2–11 years), and adolescents (12–18 years) [5]. Children were highly exposed to antibiotics (66%) than to adults (44%), of which cephalosporin's (30%) and macrolides (14%) were commonly used [6].

METHODS

This study was a descriptive study that used a retrospective method. The antibiotic prescribed list obtained from the 100 pharmacies by direct survey in Medan City. The selection of community pharmacy was done with random sampling method. The study was conducted in October–November 2016.

Based on the health department records, there is 617 (N) pharmacies station in Medan. The number of samples (n) was calculated following Slovin formula: $n=N/(1+N e^2)$ [5]. The study used 0.1 as error tolerance (e) and 86 pharmacies obtain as a minimum sample amount. The researcher included sample amount to 100 pharmacies and obtained 93 pharmacies which has prescribed for pediatric. The selected pharmacies station in 16 of 21 districts, area of Medan.

The study assessed within 2 months (July–August) of prescribed drug utilized in the year 2016 for every selected pharmacies. The study included all antibiotics prescribe for pediatric (under 18 years old) only

Table 1: Antibiotic group that mostly prescribed

No	Antibiotic group	Percentage (%)
1	Penicillin	44.45
2	Cephalosporin	22.29
3	Rifampicin	21.35
4	Macrolide	7.83
5	Sulfonamide	2.02
6	Aminoglycoside	0.81
7	Quinolone	0.67
8	Chloramphenicol	0.54

Table 2: Antibiotic type that mostly prescribed

No	Antibiotic type	Percentage (%)
1	Amoxicillin	44.45
2	Rifampicin	21.35
3	Cefixime	13.24
4	Cefadroxil	9.05
5	Clindamycin	8.37
6	Erythromycin	4.31
7	Cotrimoxazole	2.03
8	Gentamycin	0.81
9	Ciprofloxacin	0.68
10	Thiamphenicol	0.4
11	Chloramphenicol	0.13
12	Azithromycin	0.12

Table 3: Duration of use of antibiotic

No	Antibiotic	Minimum duration (days)	Maximum duration (days)	Duration of use (days)	
				Appropriate (%)	Unappropriate (%)
1	Amoxicillin	2	20	40.94	2.97
2	Amoxicillin clavulanic acid	4	-	0.54	-
3	Azithromycin	4	-	0.13	-
4	Cefadroxil	3	12	5.94	3.10
5	Cefixime	2	15	2.56	10.67
6	Chloramphenicol	5	-	0.13	-
7	Ciprofloxacin	3	10	0.54	0.13
8	Clindamycin	3	10	2.02	1.35
9	Cotrimoxazole	3	12	1.75	0.27
10	Erythromycin	2	25	2.29	2.02
11	Gentamycin	5	7	0.13	0.54
12	Rifampicin	9	50	21.48	-
13	Thiamphenicol	5	6	-	0.40
Total				78.51	21.48

Table 4: Dosage forms of antibiotic that mostly prescribe

No	Dosage form	Percentage (%)
1	Syrup	31.08
2	Tablet	29.86
3	Pulvis	21.35
4	Capsule	11.48
5	Drop	5.4
6	Eye drops	0.67
7	Ointment	0.13

Table 5: Antibiotic dose

No	Antibiotic	Dose	
		Appropriate (%)	Unappropriate (%)
1	Amoxicillin	21.9	34.84
2	Cefadroxil	-	8.71
3	Cefixime	6.9	7.3
4	Ciprofloxacin	1.3	0.34
5	Clindamycin	4.5	-
6	Cotrimoxazole	0.69	1.3
7	Erythromycin	1.04	0.34
8	Rifampicin	1.7	0.34
9	Thiamphenicol	-	0.34
Total		38.32	61.67

from 93 pharmacies and then analyzed based on the antibiotic group, type, duration of use, dosage-drug form, and dose.

RESULTS AND DISCUSSION

Antibiotic group that mostly prescribed from 2.145 patient data, 740 prescriptions are known to had antibiotic administration obtain from 93 pharmacies penicillin (44.45%), along with cephalosporin (22.29%), rifampicin (21.35%), macrolide (7.83%), sulfonamide (2.02%), aminoglycoside (0.81%), quinolone (0.67%), and chloramphenicol (0.54%) as shown in Table 1. The list obtained from this study shown the similarity with the list that published at the Selangor, Malaysia [7].

Antibiotic types

Based on the type, antibiotic that mostly prescribed for pediatric is amoxicillin (44.45%), rifampicin (21.35%), cefixime (13.24%), cefadroxil (9.05%), and clindamycin (8.37%) as shown in Table 2. The list obtained from the study shown the same result with the list that published in Sabang City, Indonesia [8].

Amoxicillin is a broad-spectrum antibiotic which effective against positive and negative Gram bacteria such as *Haemophilus influenza, Escherichia coli,* and *Proteus mirabilis* [4].

Duration of use

The duration of use of antibiotic prescribed for pediatric is shown in Table 3.

Table 3 revealed that 78.51% onset of antibiotics was appropriate according to Mims.com and Indonesia Drug List Book [9,10]. Cefixime had been the highest antibiotic with a just duration of use, it could happen due to lack of treatment give. Antibiotic usually prescribed for several days also must be taken regularly and spent. The amount of antibiotics should be considered to avoid resistance [4]. This list showed the same result with the study done in Bandung where 87.72% of duration of antibiotic use were appropriate.

Dosage form

An antibiotic dosage form that mostly prescribed based on the study was syrup (31.08%), followed by tablet (29.86%), pulvis (21.35%), capsule (11.48%), drop (5.4%), eye drops (0.67%), and ointment (0.13%) as shown in Table 4.

The list obtained from this study shown the same list that published recently at the Gunung Sitoli since the syrup is easily administrated to pediatric, unpleasant taste and odor can be masked with excipients [11,12].

Dose

The study categorized by dose prescription as shown in Table 5.

CONCLUSION

Antibiotic for pediatric that mostly prescribed in Medan, Sumatera Utara, prescribed from 2.145 patient data, 740 prescriptions are known to had antibiotic administration obtain from 93 pharmacies penicillin (amoxicillin) 44.45%, the duration of antibiotic use was appropriate according to Mims.com and Indonesia Drug Book List, antibiotic dosage form that mostly prescribed based on the study was syrup (31.08%), and there is still inappropriate dose in antibiotic prescribed for pediatric.

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AUTHORS' CONTRIBUTION

Hari Ronaldo Tanjung conceived planned and conducted the research. Embun Suci Nasution conducted the research and wrote the manuscript.

CONFLICTS OF INTEREST

There are no conflicts of interest.

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