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Antibiotic self-medication among non-medical practitioners in Cirebon city, Indonesia

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Abstract

Objective Antibiotic resistance is a global concern. One of the factors that contribute to antibiotic resistance is antibiotic self-medication. This study aims to describe the type and class of antibiotics in self-medication behaviour among non-medical practitioners in Cirebon City, Indonesia.

Methods A Cross-Sectional study was conducted in the five biggest pharmacies of each Cirebon sub-district. The data were collected by a questionnaire that was filled by respondents. The samples were 261 respondents, recruited by the consecutive sampling technique. The data are presented using descriptive statistics of respondents' characteristics, class and generic name of antibiotics self-medication.

Key findings The three highest class of antibiotics purchased by respondents were penicillins (47.9%), cephalosporins (14.1%) and aminoglycosides (11.9%). From the generic name of antibiotics, most respondents purchased amoxicillin (47.9%), gentamicin (11.9%) and cefadroxil (10.7%).

Conclusions Penicillins were the most purchased class of antibiotics in self-medication, and amoxicillin is the generic name of penicillin that was most widely used in self-medication among non-medical practitioners in Cirebon City, Indonesia. Health promotion and government regulation are needed to increase public awareness to prevent unprescribed antibiotic consumption.

Keywords antibiotic; non-medical practitioners; self-medication

Introduction

Self-medication is the treatment of common health problems with unprescribed medicines without medical supervision. Ideally, self-medication should only be done on over the counter (OTC) drugs. Based on the Indonesia Basic Health Research (Riskesdas) in 2013, about 35.2% of households kept drugs for self-medication, of which 27.8% are antibiotics and 86.1% of these antibiotics are obtained without a prescription.[1] The use of antibiotics without a doctor's prescription can cause an incorrect treatment because non-medical practitioners do not have sufficient competency about the uses, dose, side effects and interactions of the drug. It is not only endangering the individual but also the community because it causes antibiotic resistance.[2]

Antibiotic resistance is one of the most threatening problems in the world, and the number is a continuing increase in all parts of the world. This crisis of antibiotic resistance has to be followed up immediately. World Health Organization (WHO) predicted that the world will face a postantibiotic era if no immediate actions were taken. The postantibiotic era is very frightening because no antibiotic is effective for the treatment of infectious diseases even though for the common infection. Many people will die because of bacterial infections which are effectively treated with antibiotics at this time.[3]

Antibiotic resistance leads to increased mortality and morbidity rate. It also increases the length of hospitalization for infectious diseases case because the treatment becomes ineffective and requires a higher class of antibiotics or multidrug antibiotic treatment.[4] Further, it will impact healthcare costs.[5]

Antibiotic misuse is one of the factors that contribute to antibiotic resistance.[2] Antibiotic resistance occurs naturally, for example through genetic changes. However, the use of antibiotics without indication will speed up the process. It was estimated that Indonesia

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is one of the countries with high rates of antibiotic resistance even though the data were not connected in a national network.[6–9]

There were limited data on the purchase of antibiotics without prescriptions among non-medical practitioners in Cirebon City. This research aims to describe the class and generic name of antibiotics in self-medication behaviour among non-medical practitioners in Cirebon City, Indonesia.

Methods

This study is descriptive research with cross-sectional approach. It was conducted in five biggest pharmacies of each Cirebon sub-district from November 2018 until February 2019. The primary data were collected from people who bought antibiotics at pharmacies without a doctor's prescription, recruited by consecutive sampling. The inclusion criteria of the samples were the Cirebon City resident, >17 years old, can communicate, read and write well. The exclusion criteria were the person who bought antibiotics for resale and has a medical background, for example, doctor, nurse and midwife.

The samples who were matched the criteria were given informed consent. The respondents were asked to fill out a questionnaire containing the characteristics of the respondents (age, gender, occupation and education). The generic name of purchased antibiotics was obtained from the pharmacy data record. Two hundred and sixty-seven persons bought antibiotics without a doctor's prescription, and we excluded six of them who were from a medical background (two nurses and four midwives).

Results

A total of 261 respondents were participated in this study, consist of 123 men (47.1%) and 138 women (52.9%). Based on age, the majority of respondents were 21–40 years old (57.1%), the youngest was 17 years old and the oldest was 67 years old. Majority of respondents occupation is a housewife (27.6%), 24.1% entrepreneur and 14.6% private employee while most respondent's education level was senior high school (34.1%). The characteristics of respondents are shown in Table 1.

Table 2 shows that there were 12 classes of antibiotics purchased by respondents without prescription (penicillin, cephalosporin, quinolone, aminoglycoside, macrolide, tetracycline, lincosamide and others). Most respondents purchased penicillin (47.9%), cephalosporin (14.1%) and aminoglycoside (11.9%). Based on the generic name of antibiotics, most respondents purchased amoxicillin (47.9%), gentamicin (11.9%) and cefadroxil (10.7%).

Table 1 Characteristics of Respondents (n = 261)

Characteristics	Frequency	Percentage (%)
Gender		
Males	123	47.1
Females	138	52.9
Age (years)		
≤20	18	6.9
21–40	149	57.1
41–60	89	34.1
>60	5	1.9
Occupation		
Student	28	10.7
Civil servant	11	4.2
Teacher	27	10.3
Entrepreneur	63	24.1
Housewife	72	27.6
Private employee	38	14.6
Labourer	13	5.0
Retired worker	5	1.9
Others	4	1.5
Education level		
Elementary school and lower	46	17.6
Junior high school	76	29.1
Senior high school	89	34.1
College/university and above	50	19.2

Table 2 The class and generic names of antibiotics in self-medication

No	Class and Generic Name	Frequency	Percentage (%)
1	*Penicillin (47.9%)*		
	Amoxicillin	125	47.9
2	*Cephalosporin (14.1%)*		
	Cefixime	9	3.4
	Cefadroxil	28	10.7
3	*Quinolone (10.4%)*		
	Levofloxacin	20	7.7
	Ciprofloxacin	6	2.3
	Ofloxacin	1	0.4
4	*Aminoglycoside (11.9%)*		
	Gentamicin	31	11.9
5	*Macrolide (6.9%)*		
	Azithromycin	1	0.4
	Erythromycin	17	6.5
6	*Tetracycline (0.4%)*		
	Tetracycline	1	0.4
7	*Lincosamide (3.4%)*		
	Clindamycin	9	3.4
8	*Others (5%)*		
	Chloramphenicol	13	5.0
	Total	261	100

Discussion

World Health Organization gives several steps that can be taken by individuals to prevent and control the spread of antibiotic resistance. One of them is not taking antibiotics without a prescription from certified health professionals.[3] Based on the results of this study, antibiotic self-medication among non-medical practitioners in Cirebon City is common, especially for housewives. This finding is similar to the data of the Indonesia Basic Health Research in 2013 that about 35.2% of households kept drugs for self-medication, including antibiotics.[1] They may buy antibiotics to treat themselves or other family members. They may also buy it for storage and can be consumed if the family member is sick. Further research is needed to explore this.

This study found that almost all of the antibiotic classes were consumed without a doctor's prescription, which are penicillin, cephalosporin, quinolone, aminoglycoside, macrolide, tetracycline, lincosamide and others. It was found that amoxicillin (penicillin class) mostly bought by respondents. Based on this study result, almost half of respondents bought amoxicillin and it may be related to amoxicillin resistance in Indonesia. Several studies in Indonesia have reported the case of amoxicillin resistance to *Helicobacter pylori* (7), *Escherichia coli* (9) and *Streptococcus pneumonia* (8).

There are several factors associated with antibiotic self-medication, including lack of knowledge, suggestion from others, prior experience of using antibiotics and easy access to antibiotics. The people believe that antibiotics should be given immediately in the treatment of fever and it is effective for viral infection. Personal experience on antibiotics makes people take antibiotics when they feel the same symptoms even without medical consultation. The people are also easy to believe in advice from family members and friend who has a high education background to use antibiotics when they are sick. Based on these problems, public education is very needed to prevent antibiotic self-medication.[10–12]

The government has regulated the types of drugs that cannot be sold freely without medical prescription, including antibiotics, but in fact, antibiotics can still be purchased freely in pharmacies. Lack of government control is one of the factors that cause it.[11] The government also focuses more on monitoring the use of antibiotics in health services, compared with community-based.[13,14] A community-based antibiotic resistance control programme and strict control to the implementation of the existing regulations are very needed.

Conclusion

Amoxicillin (penicillin) is the most purchased antibiotic in self-medication among non-medical practitioners in Cirebon City Indonesia. Health promotion is needed to increase public awareness of the danger of antibiotic consumption without doctor supervision (self-medication). Improvement in regulation and control is recommended to prevent antibiotic self-medication.

Declarations

Conflict of interest

The Authors declares that they have no conflicts of interest to disclose.

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Authors' contributions

All process and stages of the research were carried out together by Pratiwi and Handayani, started from the development of ideas, research designs, data collection, analysis, results and manuscript.

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