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Evaluation of Parents' Adherence in Giving Antibiotics on Respiratory Tract Infections (RTI) and Factors Associated with Adherence.

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ABSTRACT

Parents' adherence in giving antibiotics plays an important role in therapeutic management of pediatric patients with respiratory tract infections and can avoid antibiotic resistance. The aims of this research are to evaluate parents' adherence in giving antibiotic and factors associated with adherence. This research is conducted involving respondents from a primary health care center in Andalas, Padang who attended during April to August 2015. Adherence measurement has been done using pill counting method and MMAS (Morisky Medication Adherence Scale) containing 4 questions. By pill counting method, 43 respondents (65.15%) were found to be adherent in giving the antibiotic and 23 respondents (34.85%) were not. Assessment adherence using MMAS obtained 23 respondents (34.85%) had a high adherence, 31 respondents (46.97%) had a medium adherence, and 12 respondents (18.18%) had a low adherence. In this research, respondents are categorized as adherent if the rest of the antibiotics up to 20% and a score of MMAS are 0. Statistical analysis using Chi-square test, Fisher test and Kolmogorov-Smirnov have been done to investigate respondent and patient characteristic, and parents or patients habit factor associated with adherence. It can be concluded that from 66 recruited respondents, 23 respondents (34.85%) were adhere in giving antibiotic to patients. Factors associated with adherence are busy respondent, forgetful, patient seemed to recover, and patient cannot swallow.

Keywords: Adherence, Antibiotic, Pediatric, MMAS

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INTRODUCTION

Respiratory Tract Infections (RTI) are infections that often occur in the community. In Indonesia the case of RTI occur as many as 6 million episodes. RTI is a leading cause of patient visits to health centers (40% - 60%) and hospitals (15% -30%) [1]. According to National Family Health Survey in 2004, pneumonia was the first cause of mortality. Meanwhile, according to the results of Health Research in 2007, pneumonia was the second leading cause of infant death after diarrhea [1]. Based on data of pediatric patients with RTI in 2014 at the Community Health Center Padang, West Sumatra, the largest number of RTI patients was found in the Puskesmas Andalas sub-district Eastern Padang, as many as 5,365 patients. Whereas pediatric patients suffering from pneumonia for 3,077 patients.

Antibiotics are used for the treatment of RTI. The achievement of a therapeutic goal of treatment is not only influenced by factors caused by health personnel, but also influenced by the patient's attitude towards treatment. A positive attitude of patients to the treatment is indicated by patient adherence. The impact of patient non-adherence is the declining health status of the patient, the requiring additional consultation and medications, as well as increasing the treatment cost, whether directly or indirectly [2].

In the use of antibiotic therapy, patient adherence in taking the medication is strongly emphasized. If the patient is non-adherence in using antibiotics, the risk for developing drug resistance is rising [3]. Resistance is a condition when a strain of bacteria resistant to certain antibiotics. This occurs when antibiotics lose the ability to control or kill bacterial growth effectively [4].

Objectives

To evaluate parents' adherence in giving antibiotic for the treatment of Respiratory Tract Infections (RTI) and determain the factors associated with adherence.

METHODOLOGY

This study was a descriptive analysis with cross-sectional method by consecutive sampling questionnaires for parents or guardians who are willing to become respondents. Data were collected prospectively from April to July 2015 and analyzed statistically. The population in this study was pediatric patients with RTI at Health Center of Andalas Padang City. The samples were outpatients with the following inclusion criteria:

- Patients with RTI at Health Center of Andalas Padang City from April to July 2015
- Patients receiving antibiotic
- Patients who are willing to become respondents proven by signing the Informed Consent form.

The level of patients' adherence was assessed by using the questionnaire of Morisky Medication Adherence Scales with four item questions (MMAS-4) with Cronbach alpha values of 0.61 and pill counting. The respondents were asked to answer yes/once or not for every questions of the questionnaire. If they answered yes/once the score was 1. However, they did not respond the score was 0. The level of adherence with this questionnaire was grouped into three: high level of adherence was given when the MMAS-4 scored 0, moderate level when the scores was 1-2, and low level of adherence when the scores 3-4[5]. For the assessment of adherence using pill counting method, the parameter was used to calculate the remaining antibiotics received from the pharmacy. Patients were declared as adherent when taking at least 80% of the overall antibiotics [6]. The factors that affect nonadherence in parents of pediatric patients identified by using some questions on questionnaire. Nonadherence may be influenced by several factors. These factors are regard to the attitude of the parents and factors related to the child's attitude.

Operational definitions

- Adherence: The behavior of the patient to take the minimum limit of 80% of antibiotics [6] and the high compliance category on the assessment of compliance using MMAS-4 [5].
- Pill Counting: a method of drug adherence assessment by calculating untaken medications.

- Pediatrics: Pediatric patients aged ≤ 7 years
- Respondents: Parents or guardian of pediatric patients with respiratory tract infections who received antibiotics prescription willing to be interviewed.

RESULTS AND DISCUSSION

Adherence can simply be defined as the extent to which patients follow the instructions they are given for prescribed treatments [7]. This definition was somewhat extended by the WHO as 'the extent to which a person's behavior – taking medication, following a diet and/or executing lifestyle changes – corresponds with agreed recommendations from a health care provider [8].

This study was conducted at Health Center of Andalas Padang City, where the most cases of RTI in pediatrics were found. The study conducted from April to July 2015 found 93 pediatric patients with respiratory tract infections patients as the samples, where only as many as 66 patients met the inclusion criteria of the study.

Table 1: Parent's Adherence based on MMAS-4

Adherence (score)	Number of respondents (people)
Low (3-4)	12
Medium (1-2)	31
High (0)	23
Total	66

Table 2: Parent's Adherence based on Pill Counting

	Untaken Antibiotics	Number of respondents (people)
Adherence	0-20%	43
Non-Adherence	>20%	23
	Total	66

These numbers of samples were distributed in the level of adherence of using antibiotics using MMAS-4, in which as many as 23 patients (34.8%) were considered adherence and 43 patients (65.2%) were considered non-adherence. They were declared as adherent patients when MMAS-4 score was 0 (categorized as high compliance rate), and has a maximum of 20% untaken antibiotics.
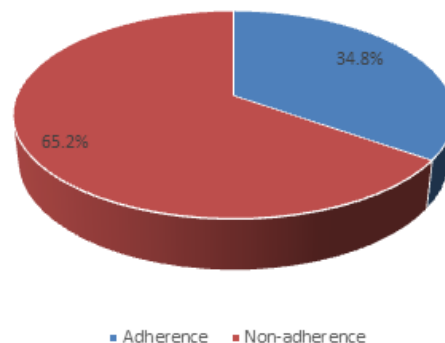
Figure 1: Percentage of Adherence assessment using MMAS-4 and pill counting

The assessment of patient adherence in this study was conducted using pill counting method and Morisky Medication adherence Scale with 4 items of questions. The method of calculating the remaining drug and adherence assessment has also been carried out by Muljabar, S.M, in 2014. After the evaluation with both methods, it was found that as many as 43 patients (65.2%) were non-adherent in this short-term antibiotic therapy [9].

There are a wide variety of factors which determine patients' adherence. They can be generally categorized as follows: [10], [11]

- Patient-related factors, Healthcare system and provider-related factors
- Treatment-related factors
- Condition-related factors
- Cost-related factors
- Socio-economic & demographic factors

Based on the results still found a fairly high percentage of the non-adherence with antibiotic use in pediatric patients with RTI it is also supported by the results of research conducted by Muljabar in 2014. In addition, pediatric patients adherence on using antibiotics greatly influenced by the role of parents. A study on parental beliefs about medications and medication adherence among urban children with asthma carried out by Conn Km, et.al. (2005) revealed that 75% of parents strongly believed that their child's medications were necessary for their health and 34% had strong concerns about the medications. Only 22% of parents reported being completely adherent with medications. Parents with greater concern about medications were more likely to have poor adherence ($p < 0.05$)[12].

There are several factors that affect the non-adherence of parents of pediatrics patients on respiratory tract infections in giving antibiotics to their child. On this study showed that some of these factors are busy parent ($p = 0.015$), forgotten ($p = 0,000$), the child seems to recover ($p = 0,000$), and the child can not swallow ($p = 0.041$).

CONCLUSION

It can be concluded that from 66 recruited respondents, 23 respondents (34.85%) were adhere in giving antibiotic to patients. Factors associated with adherence are busy respondent, forgetful, patient seemed to recover, and patient cannot swallow.

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