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The Rationality of Antibiotic Prescription in Acute Upper Respiratory Infection Patients in Baun Puskesmas, Kupang Regency in 2020

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ABSTRACT

Acute upper respiratory tract infection is an infectious disease caused by microorganisms, one of which is bacteria, so antibiotics are given. Rational use of antibiotics can provide benefits for recovery and does not provide harm that can cause problems or threats to the patient's health. Inappropriate administration of antibiotics can harm patients, one of which is antibiotic resistance. The purpose of this study was to obtain an overview of the rationale for prescribing antibiotics in patients with acute upper respiratory tract infections at the Baun Health Center, Kupang Regency, in 2020. This study was conducted using a descriptive non-experimental study with retrospective medical record data collection and guidelines from PERMENKES No. .5 of 2014 concerning Clinical Practice Guidelines for Doctors in Primary Health Care Facilities and KMK HK.02.02/MENKES/514/2015 concerning Clinical Practice Guidelines for Doctors in First Level Health Care Facilities to determine the accuracy of indications, drug accuracy, patient accuracy, and accuracy dose. The results showed 100% correct indication, 90.3% right drug, 100% right patient, 65% right dose, and 55.3% rational use of antibiotics.

Keywords: *Acute upper respiratory tract infection, antibiotics, rationality, right indication, right drug, right patient, right dose.*

INTRODUCTION

Antibiotics are one of the most widely used drugs because of their ability to inhibit or kill bacteria. The World Health Organization (WHO) reports that people in 49 countries consumed more than 50% of antibiotics in 2019. The use of antibiotics was 89.21% [1]. Assessment of rational drug use is based on the 4T standard, namely the right indication, the right drug, the right patient, and the right dose [2]. Acute Respiratory Infection (ARI) is an infectious disease caused by microorganisms that enter and infect the respiratory tract. ARI is caused by viral, bacterial, fungal, and parasitic infections. The most common pathogens that cause ARI are viruses and bacteria. Anatomically, ARI is divided into upper ARI and lower ARI. According to Basic Health Research (RISKESDAS) data in 2018, the prevalence of ARI in Indonesia is 4.4%, of which East Nusa Tenggara (NTT) ranks third with a percentage of 7.3% [3]. The diagnosis of ARI can be established through history taking, physical examination, and support that assists in providing therapy based on the causative pathogen. Antibiotic therapy is given to ARI patients infected with bacteria [4; 5].

Rational administration and use of antibiotics can provide benefits for healing without causing harm that can cause problems or threats to sufferers. Irrational administration of antibiotics will increase drug side effects, morbidity, mortality, waste of money, and antibiotic resistance, resulting in losses for sufferers. Antibiotic resistance occurs when the response of bacteria to antibiotics changes. The bacteria causing ARI were

resistant to cefadroxil, amoxicillin, and ciprofloxacin as much as 70.25%, 68.03%, and 43.03%. The ampicillin and cefotaxime were resistant to bacteria that cause ARI as much as 86.26%; 59.09% [6].

Antibiotic therapy is needed to treat diseases caused by bacterial infections. Antibiotics must be effective, safe, and rational in achieving the desired treatment goals. Regarding research on the use of antibiotics in patients with ARI, Aulia got the results of rational use of antibiotics in the form of 9.4% with 9.4% right dose, 27% right patient, 27.5% right drug, and 39% right indication. Research by Hanifah also obtained data on the use of appropriate antibiotics, including 0% rational, 0% right dose, 18% right drug, 38% right indication, and 100% right patient. The results of this study indicate that there are still cases of inappropriate use of antibiotics in patients with ARI. A doctor's error often causes the inappropriate use of antibiotics in prescribing antibiotics even though there is no bacterial infection. Irrational antibiotic prescribing will harm sufferers and increase the prevalence of drug-related problems in Indonesia [1; 7].

This basis prompted me to conduct a study to assess the rationality of prescribing antibiotics in patients with acute upper respiratory tract infections at the Baun Health Center, Kupang Regency, in 2020 with guidelines from PERMENKES No. 5 of 2014 concerning Clinical Practice Guidelines for Doctors in Primary Health Care Facilities and KMK HK. 02.02/MENKES/514/2015 concerning Guidelines for Clinical Practice for Doctors in First Level Health Care Facilities. Based on this background, this study's problems were formulated: What are the characteristics of patients, patterns of use of antibiotics, and rationality of prescribing antibiotics in patients with acute respiratory infections at the Baun Health Center, Kupang Regency, in 2020? The aim of the study, namely to obtain an overview of the rationale for prescribing antibiotics in patients with acute upper respiratory infections at the Baun Health Center, Kupang Regency, in 2020.

LITERATURE REVIEW

Acute Respiratory Infection (ARI) is an acute infection that attacks one or more parts of the respiratory tract from the nose to the alveoli, including the adnexa (sinuses, middle ear cavity, and pleura) [8]. According to WHO, ARI is an infectious disease transmitted from human to human and is caused by microorganisms that cause various symptoms, both mild and severe, lasting up to 14 days. ARI is classified anatomically into upper ARI and lower ARI. Acute upper respiratory tract infections include rhinosinusitis, pharyngitis, laryngitis, tonsillitis, and otitis. Acute lower respiratory tract infections include bronchitis, bronchiolitis, and pneumonia [8; 9].

The prevalence of ARI according to the diagnosis of health workers in NTT in 2013 was 19.2%, while in 2018, it was 7.30% [10]. The prevalence of ARI in Kupang Regency in 2013 was 38.3%, whereas, in 2018, it was 9.09% [11]. The prevalence of ARI from 2013-2018 has decreased, but according to the Kupang District Health Office in 2020, the prevalence of ARI has increased from year to year, namely 546 cases in 2017, 756 cases in 2018, and 1027 cases in 2019. A study conducted by Aulia (2018) showed the prevalence of acute upper respiratory tract infections at the Dirgahayu Public Health Center, Kotabaru Regency, South Kalimantan pharyngitis 21.3%, tonsillitis 16%, otitis media 2.1% [12].

Microorganisms that cause ARI are viruses, bacteria, fungi, and parasites. The most common pathogens that cause ARI are viruses and bacteria. Viruses that cause ARI are around 50-60%, and the most frequent are Rhinovirus, Influenza virus, Adenovirus, Enterovirus, and Coronavirus. The bacteria that cause ARI are about 20-30%, and the most common are Chlamydia pneumoniae, Streptococcus pneumoniae, Haemophilus influenzae, and Moraxella catarrhalis [7]. The fungi that cause ARI around 10% include Cryptococcus neoformans, Pneumocystis jirovecii, Aspergillus niger, Aspergillus flavus, Aspergillus fumigatus, and Candida albicans. Parasites that cause

ARI <10% are Entamoeba histolytica, Pneumocystis carinii, and Ascaris lumbricoides. The risk factors are age, gender, behavior, nutritional status, and environment [13].

Infected individuals spread microorganisms through inhalation when coughing, sneezing, or talking. Microorganisms will enter the respiratory tract and pass through the mechanical defense system (ciliary epithelium and mucus), humoral (antibodies and complement), and cellular (leukocytes, macrophages, lymphocytes, and cytokines). Physiologically, the respiratory tract defense system will clear microorganisms through mucus and dispose of them using a mucociliary elevator. Then they will be phagocytosed by macrophages and neutrophils and transported to the lymph nodes to initiate the body's immune response. IgA is secreted to prevent microorganisms from adhering to the epithelium of the upper respiratory tract. IgM and IgG are secreted in the lower respiratory tract that appears in the fluid lining the alveoli. IgM and IgG activate efficient complement and produce C3b to enhance phagocytosis.

In the presence of host susceptibility factors due to defects in innate immunity (neutrophils and complement), humoral immunodeficiency and virulence of microorganisms can increase the incidence of infection. Microorganisms that colonize will form biofilms, thereby providing increased resistance to host defense mechanisms. When microorganisms can pass through the body's defense system, they will infect the upper and lower respiratory tract [6; 14].

Rhinosinusitis is inflammation of the paranasal sinuses, usually accompanied or caused by rhinitis. The main complaint of patients with rhinosinusitis is nasal congestion, accompanied by pain or pressure in the face, purulent discharge into the anterior or posterior nose, which often goes down the throat (post nasal drip), accompanied by systemic symptoms such as fever and lethargy. On physical examination using anterior rhinoscopy, the nasal mucosa was edematous and hyperemic, and greenish-yellow mucopurulent discharge appeared in the nasal cavity and middle meatus. Posterior rhinoscopy revealed postnasal drip [15].

Pharyngitis is inflammation of the pharyngeal wall. Viral pharyngitis can cause symptoms and signs such as fever, rhinorrhea, nausea, sore throat, difficulty swallowing, and on physical examination, the pharynx and tonsils are hyperemic. Bacterial pharyngitis gives symptoms and signs in the form of severe headache, vomiting, fever with a high temperature, rarely accompanied by cough, and on physical examination, enlarged tonsils, pharyngeal and tonsillar hyperemia, and exudate on the surface are visible. Symptoms and signs of patients with fungal pharyngitis include sore throat, painful swallowing, and on physical examination, white plaques appear in the oropharynx and hyperemic pharyngeal mucosa [16].

Laryngitis is inflammation of the vocal cords and larynx, accompanied by systemic symptoms (fever, malaise), local symptoms such as hoarseness to no sound at all (aphonia), pain when swallowing or speaking, symptoms of laryngeal obstruction, dry cough, and over time accompanied by thick phlegm. Physical examination of a patient with laryngitis reveals hyperemic and edematous laryngeal mucosa, especially above and below the vocal cords [17]. Tonsillitis is inflammation of the palatine tonsils. Bacterial tonsillitis can cause sore throat, painful swallowing, fever with high temperature, lethargy, pain in the ear (otalgia) and swollen tonsils, hyperemia, detritus (on physical examination), follicular, lacunae or covered by the pseudo membrane), submandibular glands swelling and tenderness. Viral tonsillitis can give symptoms in the form of a common cold or sore throat, and a physical examination of the oral cavity reveals small sores on the palate and tonsils [18].

Otitis media is a suppurative infection of the middle ear canal, and respiratory tract infections can cause blockage in the eustachian tube so that microorganisms can

enter the middle ear. Symptoms include fever, acute ear pain (otalgia), and discharge from the ear (otorrhoea). Symptoms of otitis media also appear based on stage, namely the stage of tubal occlusion, making the patient feel full or painful, and hearing is reduced. The hyperemic and suppurative stages give symptoms of increasingly intense ear pain, fever, fussiness, restlessness, vomiting, and loss of appetite. At the stage of perforation, otorrhoea has occurred. Symptoms begin to improve at the resolution stage, i.e., hearing returns to normal, discharge decreases, and eventually dries up [19]. Management of ARI is divided into pharmacological management and non-pharmacological management based on the guidelines in PERMENKES No. 5 of 2014 concerning Clinical Practice Guidelines for Doctors in Primary Health Care Facilities and KMK HK.02.02/MENKES/514/2015 concerning Clinical Practice Guidelines for Doctors in Service Facilities First Level Health [20].

The use of antibiotics as much as 89.21%, and it is not in accordance with the tolerance limit for giving antibiotics in non-pneumonia ARI, which is as much as 20% as determined in the indicators for rational drug use. The high number of antibiotics allows the occurrence of irrational antibiotics, which can lead to the incidence of antibiotic resistance [3]. Antibiotic resistance occurs because antibiotics are not effective against bacteria. Antibiotic resistance occurs naturally (innate) or acquired (acquired). Natural resistance occurs when bacteria are resistant from the start, or the nature of the antibiotic is lacking or inactive against a bacterium. Acquired resistance occurs in bacteria that were initially sensitive and then turned into resistant. The occurrence of antibiotic resistance is caused by excessive and inappropriate use of antibiotics. Bacteria exposed to antibiotics for a long time will cause selective pressure on bacteria to acquire resistance. Antibiotic resistance is a global problem because it can prolong the duration of infection, worsen the patient's condition, and waste money [14; 21].

Antibiotic resistance is a global health problem, so several researchers have conducted research to determine the incidence of antibiotic resistance, especially antibiotic resistance in patients with ARI. The incidence of antibiotic resistance in three bacteria that cause ARI, namely Haemophilus influenzae, which was resistant to clarithromycin (5.3%), ampicillin (10.5%), cefaclor (11.2%) and sulfamethoxazole/trimethoprim. (100%). Streptococcus pneumoniae was resistant to amoxicillin/clavulanate (12.5%), clarithromycin (18.7%), cephalosporins (18.7% - 31.3%), penicillin G (31.3%), azithromycin (50%), and sulfamethoxazole/trimethoprim (100%). Moraxella catarrhalis was resistant to cefuroxime (4.3%), cefixime (4.3%), and ciprofloxacin (4.8%). The bacteria causing ARI were resistant to the antibiotics cefotaxime (63.64%) and ampicillin (86.36%) [16; 22].

Inappropriate use and administration of antibiotics can cause side effects and lead to antibiotic resistance. A study conducted by Sadewa found that ceftriaxone was administered incorrectly. Ceftriaxone is the drug of choice for people with pneumonia, but researchers found that ceftriaxone was given to people with pharyngitis. Researchers also reported inappropriate administration of cefixime. Cefixime is given to sinusitis and pharyngitis/tonsillitis patients who do not use cefixime treatment [4; 23].

Ceftriaxone and cefixime are third-generation cephalosporin antibiotics. Cephalosporins are broad-spectrum antibiotics with bactericidal properties and contain beta-lactams. This drug inhibits bacterial cell wall synthesis by inhibiting the third-step transpeptidase reaction in a series of cell wall formation reactions. Ceftriaxone is administered intramuscularly and intravenously in an adult dose of 1-4g/24 hours and a dose in children of 50-100 mg/kg/day in 2 doses. Cefixime is given orally to adults or children weighing >50 kg at a dose of 200-400 mg daily in 1-2 doses,

and in children weighing <50 kg, given an oral suspension of 8 mg/kg/day. Care should be taken in administration because ceftriaxone and cefixime are contraindicated in patients with hypersensitivity to cephalosporins or penicillins. Most of the cephalosporins are excreted through the kidneys, so care should be taken in giving them to patients with kidney disorders. Side effects include hypersensitivity, diarrhea, nausea, and vomiting [24].

Research by Sadewa also found that the administration of amoxicillin was not properly dosed in ARI patients. Giving too much or too little can cause the desired therapeutic result not to be achieved. Amoxicillin belongs to the broad-spectrum penicillin group, is bactericidal, and functions to inhibit the formation of mucopeptides required for synthesizing microbial cell walls. Amoxicillin is given orally in an adult dose of 3 x 250-500 mg and in children, 20-40 mg/kg/day in 3 doses. Contraindicated in patients with hypersensitivity to penicillins or cephalosporins. Side effects include hypersensitivity reactions, diarrhea, and neurotoxicity if excessive doses are given [26].

RESEARCH METHOD

The research design used was descriptive non-experimental research with retrospective data collection. The research will be conducted at the Baun Health Center in Kupang Regency and will be carried out from April to June 2021. All patients with acute upper respiratory infection at the Baun Health Center in Kupang Regency in 2020. Patients diagnosed with acute upper respiratory infection at the Baun Health Center in Kupang Regency in 2020 fulfill inclusion criteria. The sample size was determined using the Slovin formula, as shown below:

$$n = \frac{N}{1 + N\,(e)^2}$$

Description:

n = Sample size or number of samples

N = Population size

e = Percentage of precision level due to error sampling is still tolerable (5% = 0.05)

$$n = \frac{520}{1 + 520\,(0{,}05)^2}$$

$$n = 226$$

The sample size of 520 populations determined using the Slovin formula is 226. Sampling was carried out using the Non Probability Sampling technique using the type of purposive sampling, namely the determination of the sample based on certain considerations where the sample must meet the inclusion criteria. The variables in this study used the independent variable (free) and the dependent variable (bound). The independent variables include patients with acute upper respiratory tract infections, and the dependent variable is the suitability of the administration and use of drugs in patients with acute upper respiratory tract infections. The instruments in this study used medical records and guidelines from PERMENKES No. 5 of 2014 concerning Guidelines for Clinical Practice for Doctors in Primary Health Care Facilities and KMK HK.02.02/MENKES/514/2015 regarding Guidelines for Clinical Practice for Doctors at Level Health Service Facilities. First. Data collection used secondary data, namely data obtained from medical records of patients with acute upper respiratory tract infections in 2020 at the Baun Health Center, Kupang Regency. This study uses univariate analysis to describe the frequency distribution of each variable that produces quantitative data (percentage) and qualitative data (descriptive) with analysis techniques based on 4T criteria (right indication, right drug, right patient, and right dose) and rational drug use.

RESULT AND DISCUSSION

In a study conducted at the Baun Health Center, Kupang Regency, the number of acute upper respiratory infections in 2020 was 226 cases. The data that has been collected will be analyzed to look for patient characteristics, patterns of antibiotic use, and

the accuracy of administration and use of antibiotics seen from the 4T criteria, namely the right indication, the right drug, the right patient, and the right dose.

Patient characteristics include age, gender, and patient diagnosis, which can be seen in table 1.

Table 1. Characteristics of patients with acute upper respiratory tract infections at the Baun Health Center, Kupang Regency, in 2020

Characteristics	Number of Patients	%
Age		
14 years	16	7,1%
5 - 9 years	48	21,2%
10 - 19 years	34	15%
20 - 44 years	74	32,7%
45 -59 years	28	12,4%
>59 years	26	11,5%
Total	226	100%
Gender		
Female	134	59,3%
Male	92	40,7%
Total	226	100%
Diagnosis	109	48,2%
Rhinosinusitis	101	44,7%
Pharyngitis	16	7,1%
Tonsillitis		
Total	226	100%

Based on table 1, the highest number of patients at the Baun Health Center in Kupang Regency was between 20-44 years old, with a total of 74 patients (33%), and the smallest number were patients with an age range of 1-4 years with a total of 16 patients (7%). The results of this study are in accordance with the research conducted by Firza et al., which found that the most age range of patients with acute upper respiratory tract infections was the age range of 20-44 years, with a total of 148 patients (33.48%). Individuals aged 20-44 years are in the productive age group with a higher activity level outside the home, so they are more susceptible to exposure to ARI pathogens. Research conducted by Benua et al. gave different results; namely, the age most susceptible to ARI is children or toddlers. This happens because the immune system is still weak and not perfect [27].

According to this study, there were more female patients than male ones in this puskesmas who had acute upper respiratory tract infections. Patients who identified as female comprised 134 patients (59.3%), while those who identified as male made up 92 patients (40.7%). The highest number of cases of acute upper respiratory tract infection occurred in women compared to men, the number of female cases was 247 patients (55.88%), and the number of male cases was 195 (44.11%) [28]. This happens because of differences in the shape of the anatomy, physiology, and hormonal system in women and men. Differences in work, lifestyle, exposure, vulnerability, and use of health facilities are mostly carried out by women. The gender differences are not related to the incidence of ARI because this disease can occur in anyone regardless of gender, age, ethnicity, race, religion, and social status.

In this study, it was found that the diagnosis of acute upper respiratory tract infection at the Baun Health Center, Kupang Regency, in 2020 was rhinosinusitis, pharyngitis, and tonsillitis, where microorganisms caused the disease, one of which was bacteria, so antibiotics could be given [29]. The pattern of antibiotic use in this study looked at the administration of antibiotics in monotherapy or combination with patients and the type of antibiotics given.

Table 2. The pattern of antibiotic use in patients with acute upper respiratory tract infections at the Baun Health Center, Kupang Regency, in 2020

Antibiotics	**Number of Patients**	**%**
Monotherapy		
Amoxicillin	202	89,4 %
Cefadroxil	22	9,7 %
Ciprofloxacin	1	0,4 %
Co-trimoxazole	1	0,4 %
Total	226	100 %

All patients were given antibiotic monotherapy. Giving antibiotics as monotherapy can reduce side effects and minimize the risk of drug interactions. The most frequently used type of antibiotic at the Baun Health Center, Kupang Regency was amoxicillin (89.4%), and the least used were ciprofloxacin (0.4%) and cotrimoxazole (0.4%). The most common use of antibiotics in ARI cases was amoxicillin (51.92%). This is in accordance with the PERMENKES guideline No. 5 of 2014 concerning Clinical Practice Guidelines for Doctors in Primary Health Care Facilities and KMK HK.02.02/MENKES/514/2015 concerning

Clinical Practice Guidelines for Doctors in First Level Health Care Facilities, which recommends the antibiotic amoxicillin, Ciprofloxacin, and cotrimoxazole are the right drugs of choice for patients with acute upper respiratory tract infections. These guidelines do not recommend the administration and use of cefadroxil for patients with acute upper respiratory tract infections [20; 21].

Table 3. Percentage of the accuracy of administration and use of antibiotics in patients with acute upper respiratory tract infections

Criteria	Appropriate		Inappropriate	
	Number	%	Number	%
Indication Accuracy	226	100%	0	0%
Drug Accuracy	204	90,3%	22	9,7%
Patient Accuracy	266	100%	0	0%
Dosage Accuracy	147	65%	79	35%
Percentage of rationality	125 patient (55,3%)			

The accuracy of the indication was assessed from the suitability of the diagnosis of acute upper respiratory tract infection with the administration of antibiotics. The right indication is seen from whether or not the patient is given antibiotics. Antibiotics can be given if a bacterial infection causes signs and symptoms in patients with acute upper respiratory tract infections. Based on the results of this study, there were 226 patients (100%) with correct indications. This is in line with the research conducted by Abidatul, which obtained 100% accuracy of indications in ARI patients who were given antibiotics. An indication accuracy of 81.73% in ARI patients who were given antibiotics. Inappropriate indications occur because the administration of antibiotics is not in accordance with the guidelines and is given to patients infected with the virus [4, 30].

The accuracy of the drug is assessed from the selection of drugs in accordance with the drug of choice from the PERMENKES guideline No. 5 of 2014 and KMK HK. 02.02/MENKES/514/2015. Table 4.3 shows that the administration of antibiotics in patients with acute upper respiratory tract infections resulted in the correct drug results in 204 patients (90.3%), while the wrong drug was administered to 22 patients (9.7%). A study conducted by Aulia also obtained correct drug results of 27.5% in ARI patients who were given antibiotics. Medication inaccuracy occurs due to the administration of antibiotics that are not in accordance with the treatment guidelines used. It was found that the administration of the antibiotic cefadroxil was found in patients with pharyngitis and tonsillitis, which the guidelines did not recommend. According to the treatment guidelines, antibiotics, amoxicillin, and erythromycin are given for bacterial pharyngitis. Patients with bacterial tonsillitis were given antibiotics penicillin G benzathine, amoxicillin, and erythromycin [17; 20; 21].

The accuracy of the patient was seen from the use of antibiotics in accordance with the patient's physiological and pathological conditions, and no contraindications were found in the patient. This study obtained results from as many as 226 patients (100%) included in the right patient. This study is in line with Abidatul's (2019) research, which obtained 100% accurate patient data in ARI patients who were given antibiotics. This shows that the use of antibiotics given to the patient is in accordance with the patient's condition [4; 31].

The accuracy of the dose is assessed from the amount of dose given, the frequency of administration, and the duration of antibiotic administration in accordance with the guidelines of PERMENKES No. 5 of 2014 and KMK HK. 02.02/MENKES/514/2015. Based on the study results, 147 patients (65%) had the right dose, while the wrong dose was 79 patients (35%). This is in line with Sadewa's research (2017) which obtained data on the right dose of 2% in ARI patients who were given antibiotics. This study found that dose inaccuracies were more common in children because the determination of the dose was adjusted according to body weight and age, then compared to the standard guideline therapy. Administration of over- or under-dosing to patients leads to inaccuracies in dosing [32].

Based on the results of the right indication, the right drug, the right patient, and the right dose, it showed that there were 125 patients (55.3%) of patients with acute upper respiratory tract infection at the Baun Health Center, Kupang Regency, who received rational treatment (55.3%) and 101 patients who received irrational treatment. 44.7%). Aulia also obtained data on the rational use of antibiotics in 9.4% of ARI patients. This is not in accordance with the calculation of the percentage of rational drug use in government basic health service facilities (Puskesmas) in 2019, with a target of rational drug use of 70%. The inaccuracy is caused by antibiotics not being included in the drug of choice for patients with acute upper respiratory tract infections and inappropriate dosing for children [17; 33].

Table 4. The rationale for giving antibiotics by age and sex

Characteristics	Appropriate		Inappropriate	
	Number	%	Number	%
Age				
14 years	1	0,4%	15	6,6%
5 - 9 years	0	0%	48	21,2%
10 - 19 year	13	5,8%	21	9,3%
20 - 44 years	64	28,3%	10	4,4%
45 -59 year	24	10,6%	4	1,9%
>59 years	23	10,2%	3	1,3%
Total	125	55,3%	101	44,7%
Gender				
Female	89	39,3%	45	19,9%
Male	36	16%	56	24,7%
Total	125	55,3%	101	44,7%
Percentage of rationality	125 patient (55,3%)			

Based on the data in table 4.4, the age group receiving rational treatment is the age group 20-44 years with 64 patients (28.3%), and the age group receiving irrational treatment is the age group 5-9 years with 48 patients (21, 2%). This study also found that the female gender received more rational treatment for as many as 89 patients (39.3%), while the male gender received more irrational treatment for 56 patients (24.8%). Irrational administration of antibiotics occurs because of the administration of drugs and doses that are not in accordance with the guidelines used. It was found that the administration of the antibiotic cefadroxil was found in patients with pharyngitis and tonsillitis, which the guidelines did not recommend. This study found that dose inaccuracies were more common in children because the dosage was adjusted according to age. Based on the results of this study, it is necessary to monitor and evaluate the prescriptions given to patients to comply with the guidelines used to avoid the irrational administration of antibiotics [34].

CONCLUSION

Characteristics of patients with acute upper respiratory tract infections at the Baun Health Center, Kupang Regency, seen from the most age range from 20-44 years, namely 74 patients (32.7%), where acute upper respiratory tract infections were more common in women as many as 134 patients (59.3%) and the most common diagnosis was rhinosinusitis in 109 patients (48.2%). The most common pattern of antibiotic use in patients with acute upper respiratory tract infections at the Baun Health Center, Kupang Regency, was amoxicillin monotherapy, with a total of 202 patients (89.4%). The administration and use of antibiotics in patients with acute upper respiratory tract infections at the Baun Health Center in Kupang Regency showed 100% correct indication, 90.3% correct drug, 100% correct patient, 65% correct medicine, and 55.3% rational use of antibiotics. The age group that received rational treatment was the age range of 20-44 years, with as many as 64 patients (28.3%), and the female gender received more rational treatment, namely 89 patients (39.3%). Thus, it is hoped that the results of this study can be a reference for the development of medical science in the proper and rational administration and use of antibiotics.

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