



Diarrhea Therapy for Children Under Five at Keputih Health Center Surabaya in 2018

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Abstract: Diarrhea is the second largest contributor to children under five mortality in the world after pneumonia. According to data from the World Health Organization (WHO), there are about 1,7 million cases of diarrhea in children in the world per year which causes the death of around 525.000 children under five. Several studies have stated that the diarrhea management program in Indonesia, namely Lintas Diare, is still not well implemented. The aim of this study is to know the diarrhea therapy for children under five at Keputih Health Center Surabaya in 2018 and to find out whether the therapy given is correct according to Lintas Diare program. This research was conducted by retrospective descriptive observational method using medical records of Keputih Health Center Surabaya. The majority of children under five who received diarrhea therapy were children under one year old, boys, and children with good nutritional status. The rational drug use based on the right indication and right drug selection was found in 61 patients (74,4%), the right dose of zinc in 57 patients (93,4%), the right way of administering the drug in 82 patients (100%), and the right period of treatment in 82 patients (100%). Diarrhea therapy for children under five at Keputih Health Center Surabaya in 2018 was still not completely in accordance with Lintas Diare program.

Index Terms - diarrhea therapy, children under five, primary health center, lintas diare

I. INTRODUCTION

Diarrhea is the second largest contributor to children under five mortality in the world after pneumonia. According to data from the World Health Organization (WHO), there are about 1,7 million cases of diarrhea in children in the world per year which causes the death of around 525.000 children under five [1]. Diarrhea is still a major health problem in developing countries, including Indonesia, which is an endemic area for diarrhea. Although not the biggest contributor of diarrhea cases in Indonesia, East Java Province contributed quite high cases of diarrhea. The first position that contributed the most diarrhea cases in 2017 in East Java was Sidoarjo, Mojokerto, followed by Surabaya [2].

The age group that is the most prone to diarrhea is the age of 2-3 years. Children under five have a high prevalence of diarrhea because they have started getting complementary foods other than breast milk, so there is a possibility of contamination with agents that cause diarrhea. In addition, the increased ability to move and the frequency of children under five putting objects into their mouths, plus the inability to maintain hygiene are also risk factors that support the high prevalence of diarrhea in children under five [3]. For mortality, the main cause of diarrhea still causing high mortality in children under five is due to improper management at home or in health facilities [4]. In dealing with diarrhea, there is an Indonesian government program called Lima Langkah Tuntaskan Diare (Lintas Diare). Lintas Diare program consists of 5 steps which are giving ORS, giving zinc tablets for 10 consecutive days, continuing breast-feeding, giving selective antibiotics, and giving advice to the mother or family [5].

A research by Purnamasari (2014), regarding the evaluation of diarrhea therapy in children at Nguter Health Center, Nguter District, Sukoharjo Regency in 2012, stated that in the evaluation of non-specific pediatric diarrhea therapy at Nguter Health Center, the right indication of drug was only found in 15% of cases and the right drug selection was found in 88% of cases. Indriani's research (2014), on the analysis of the implementation of diarrhea therapy programs at Medan Deli Health Center, Medan Deli District in 2014, stated that the Lintas Diare program did not run optimally due to the lack of direct supervision and guidance from the public health center. A study by Rusdiana et al. (2016) regarding the rationality of prescribing diarrheal drugs in children under five patients at Curug Health Center in 2015, stated that the percentage of rational diarrhea medicine prescription given to children under five at Curug Health Center in 2015 was at 48.5%. There are 51.5% irrational prescription. Based on several research results that have been mentioned, the adherence of health workers to diarrhea management according to the Lintas Diare program has not been implemented properly. Although there have been several similar studies in other region, research on diarrhea therapy for children under five at health center located in Surabaya is still needed because the diarrhea cases in Surabaya are quite high, the level of knowledge is different in each region, and the management of diarrhea in the health center in each region has its strengths and flaws.

II. METHOD

This research was conducted using a retrospective descriptive observational method and was conducted in Keputih Health Center Surabaya from August 2020 to June 2021. This study processed secondary data obtained from medical records of patients of children under five with diarrhea who were treated at Keputih Health Center Surabaya from January 1, 2018 to December 31, 2018. The population of diarrhea patients under five who were treated at Keputih Health Center Surabaya who met the inclusion and exclusion criteria were included in the research sample, then data processing was carried out. The inclusion criterias were (1) diarrhea patients under five, (2) had received diarrhea therapy. The exclusion criteria were (1) patients with bloody diarrhea, (2) incomplete medical records that doesn't contain the needed variable. The sampling technique of this research is purposive sampling by taking samples that are in accordance with certain objectives and considerations. Prior to sampling, this research was approved for ethical feasibility by the Health Research Ethics Committee of Universitas Airlangga School of Medicine with no. 178/EC/KEPK/FKUA/2020.

The variables that were used to collect the data are diarrhea, gender, age, weight, ORS usage, and zinc tablet usage. Data from medical records which were previously stated in the data collection table, were processed descriptively. Then, an analysis of the rationality of drug administration was carried out according to its suitability with the Lintas Diare program.

III. RESULTS AND DISCUSSION

Characteristics of research subjects

This research obtained 128 patients of total sampling, 46 did not meet the inclusion and exclusion criteria due to incomplete medical record data, making the sample in this study 82 patients. Characteristics of subjects that were obtained are age, gender, and nutritional status that was defined by weight for age (BB/U). Age of children less than 1 year is in the first position with 28 patients (34,1%), followed by 25 children aged 1 (30,5%), 19 children aged 2 (23,2%), 7 children aged 3 (8,5%), and 3 children aged 4 (3,7%). The gender of samples in this research consist of 44 boys (53,7%) and 38 girls (46,3%). Sixty nine children (84,1%) that received diarrhea therapy had normal/good nutrition, 7 children (8,5%) had mild malnutrition, 5 children (6,1%) were over nourished, and 1 child (1,2%) had severe malnutrition.

Table 1. Subject characteristics (n=82)

Variable	n	%
Age		
<1 year	28	34,1
1 year	25	30,5
2 year	19	23,2
3 year	7	8,5
4 year	3	3,7
Gender		
Male	44	53,7
Female	38	46,3
Nutritional status		
Severe malnutrition	1	1,2
Mild malnutrition	7	8,5
Normal	69	84,1
Over nourished	5	6,1
Total	82	100,0

Source: Secondary data, 2020

It was found that the majority of children under five who suffered from acute non-bloody diarrhea and received treatment were <1 year old. According to the research from Siziya et al. (2013), it was found that the highest prevalence of diarrhea cases in children under five was at the age of 6-35 months and the prevalence of diarrhea in younger or older group of age was lower. Infants have protection against diarrhea derived from maternal antibody mechanisms against intestinal pathogens derived from breastfeeding. These antibodies are present from 0-6 months of age, so the cases of diarrhea are lower in the age group under 6 months. After children reach the age of over 35 months, the prevalence of diarrhea decreases again due to acquired natural immunity.

The cases of diarrhea are higher in boys than in girls in this research. According to Eka Susanti et al. (2016), boys tend to be more active than girls, a stronger physique allows boys to move more and can cover a wider area. This can be a factor that supports why more boys are exposed to an unsanitary environment so that the cases of diarrhea are higher than girls. Contact with dirty things makes children easily exposed to microorganisms that cause acute diarrhea.

The majority of children that were included as sample had normal/good nutrition. Cases of malnutrition in patients with diarrhea can be a cause or a result of diarrhea. In this study, it was not known whether the malnutrition experienced by a number of children under five occurred before or after suffering from diarrhea.

Rational drug use based on the right indication and right drug selection

Right indication is the administration of drugs based on a specific therapeutic spectrum. Based on the assessment of the rationality of diarrhea treatment at Keputih Health Center Surabaya in 2018, acute diarrhea patients were given 2 kinds of drugs, namely ORS and zinc. From 82 samples that met the inclusion and exclusion criteria, diarrhea treatment was found with the right indication and drug selection criteria in 61 patients (74.4%), and incorrect indication and drug selection in 21 patients (25.6%). These datas can be seen in Table 2.

Table 2. Indication and drug selection

Drugs	Indication	n	%	Correct	Incorrect
ORS	Diarrhea	21	25,6		✓
ORS, Zinc	Diarrhea	61	74,4	✓	
Total		82	100,0	74,4%	25,6%

Source: Secondary data, 2020

Inaccuracy of indication and drug selection was found in prescriptions containing only ORS without zinc in patients with diarrhea indications. According to Lintas Diare program, giving ORS and zinc must be done in the treatment of diarrhea. ORS contains NaCl, KCl, trisodium citrate hydrate and anhydrous glucose which is given to replace fluid and electrolyte loss during diarrhea. Drinking water alone is not enough to replace fluids and electrolytes that are wasted during diarrhea. The content of sodium chloride (NaCl), potassium chloride (KCl), and trisodium citrate hydrate in ORS which is not contained in water plays a role in maintaining electrolyte balance in the body. The intestines can also absorb well the mixture of electrolyte salts and glucose in ORS [11]. According to the Indonesian Ministry of Health, the new formula ORS can reduce stool volume by 25%, reduce nausea and vomiting by 35%, and children do not need to receive intravenous therapy in the hospital [5].

Zinc is given to replace natural zinc in the body which decreases during diarrhea and accelerates healing of diarrhea. In addition, zinc also prevents diarrhea from returning for 2 to 3 months after the child recovers because zinc can increase the body's immune system [5]. Zinc given for 10 days can repair damaged intestinal mucosa and maintain the child's immune system [12]. According to research in 1980-2003, the use of ORS and zinc in the treatment of diarrhea has proven to be more effective and can reduce mortality due to diarrhea in children under five by up to 40% [5].

Rational drug use based on the right dose of drug

Dose of drug is a very important and absolute criteria in the treatment of a disease. Based on the assessment of the rationality of diarrhea treatment at Keputih Health Center Surabaya in 2018, out of 82 samples that met the inclusion and exclusion criteria, 61 samples were obtained to evaluate the dose. The sample is patients who were given zinc. Treatment of diarrhea with the right zinc dose was found in 57 patients (93.4%) and incorrect zinc dose was found in 4 patients (6.6%) as they can be seen in Table 3. ORS administration could not be assessed in this category because there was no data on the degree of dehydration of patients in the medical records at Keputih Health Center Surabaya in 2018. ORS dose depends on the degree of dehydration.

Table 3. Dose of zinc

Zinc dose	Age	n	%	Correct	Incorrect
1x½ tab 20 mg	<6 months	6	9,8	✓	
1x1 tab 20 mg	≥6 months	51	83,6	✓	
1x½ tab 20 mg	≥6 months	4	6,6		✓
Total		61	100,0	93,4%	6,6%

Source: Secondary data, 2020

Zinc given for children is divided into 2 doses depends on the child's age, (1) half tablet of 20 mg zinc in one day for children aged less than 6 months, (2) one tablet of 20 mg zinc in one day for children aged more than or equal to 6 months [5]. In this study, it was found that the prescription of zinc in 4 patients (6.6%) was not correct based from the Lintas Diare program. The prescription shows half tablet of 20 mg zinc in one day and was given to children whose age is more than or equal to 6 months, the right prescription for children more than or equal to 6 months is one tablet of 20 mg zinc in one day.

Rational drug use based on the right way of administering the drug

Table 4. shows that the treatment with the right way of administering the drug was found in 82 patients (100%). ORS and zinc were both taken in the form of an oral solution.

Table 4. Drug administration

Drug	Administration	n	%	Correct	Incorrect
ORS	Oral solution	21	25,6	✓	
ORS, Zinc	Oral solution Oral solution	61	74,4	✓	
Total		82	100,0	100%	0

Source: Secondary data, 2020

The method of taking diarrhea medicines, namely ORS and zinc, was informed to the parents. One pack of ORS was informed to be mixed with 200 cc of water. Children under 1 year old were given 50-100 cc of that oral solution after defecation and children over 1 year old were given 100-200 cc of that oral solution after defecation. Zinc tablets were informed to be dissolved with water or breast milk before being given to the children [5].

Rational drug use based on the right period of therapy

Table 5. shows that the therapy with the right period of medication was found in 82 patients (100%).

Drug	Period	n	%	Correct	Incorrect
ORS	Until diarrhea stops	21	25,6	✓	
ORS, Zinc	Until diarrhea stops 10 days	61	74,4	✓	
Total		82	100,0	100%	0

Source: Secondary data, 2020

ORS was informed to be given until the diarrhea stopped, while zinc was given every day for 10 consecutive days. Giving zinc for 10-14 days has been a requirement determined by WHO and UNICEF since 2004. This is based on research that shows the effectiveness of using ORS with zinc which can reduce mortality from diarrhea by up to 40% [11].

IV. CONCLUSION

The conclusion from this study is diarrhea therapy for children under five at Keputih Health Center Surabaya in 2018 was still not completely in accordance with Lintas Diare program. Some patients with the indications of diarrhea were only given ORS without zinc and several patients were given the incorrect dose of zinc.

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CONFLICT OF INTEREST

The authors declare that they have no conflict interest.

ETHICAL APPROVAL

Health Research Ethics Committee of Universitas Airlangga School of Medicine no. 178/EC/KEPK/FKUA/2020

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