

The Effectiveness Of Administering Oral Honey Against The Degree Of Dehydration In Children With Acute Diarrhea In Malang, Indonesia

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Abstract: Diarrhea is a bowel disorder that is marked by more than 3 times a day with liquid stool consistency, can be accompanied by mucus or blood. The results of laboratory studies and clinical trials, pure honey has a bactericidal activity that can be against some organisms enteropathogenic. The purpose of this research is to know the effectiveness of administering honey against a decline in the degree of dehydration in children with acute diarrhea in Lavalette Hospital Malang. This research using a quasi experimental design by pretest and posttest one group design with 24 respondents using accidental sampling. The effectiveness of oral honey to the degree of dehydration in children with acute diarrhea showed by the decreasing of the dehydration level before and after being given a treatment of honey on treatment group. The dehydration level decreases before and after the pharmacological action (intravenous administration) in the control group as much as in acute diarrhea patient.

Keywords: acute, child, diarrhea, dehydration, honey.

1. Introduction

Diarrhea is a defecation/bowel containing more than 3 times a day with the consistency of liquid stool, can be accompanied by blood and/or mucus. Based on the characteristics of the population, age group of children under five is the group with the highest suffering from diarrhea. The most devastating of diarrhea is quite a lot and continuously. Because of contracted vomiting, loss of fluid and body salt becomes more severe. Damage from diarrhea and vomiting, which is called the worst gastroenteritis by children who are malnourished and early childhood. The loss of fluid and salt from the body is called dehydration, the earliest manifestation of dehydration is thirst and irritability. The abdomen enlarges and the mucous membranes of the mouth become dry. The skin becomes dry and not elastic, eyes slightly sunken. A sufficient dehydration stage can kill a child [1]. Diarrhea is a worldwide problem. Like most other childhood diseases, the disease is much more prevalent in developing countries, which is 12.5 times more in the unpublished (WHO) mortality chart. Among the many forms of diarrheal diseases, which are confirmed by children under five years old (especially susceptible), which, according to the severity of their clinical manifestations are corella, rotavirus infection, and dysentery [2]. In developing countries, diarrhea is still one of the major causes of morbidity and mortality in children. The average number of children in the world is divided under five years and due to diarrhea is 440,000 people. In Indonesia overall, the average child is affected by 1.3 episodes of diarrhea with 3.2 million deaths per year [3]. Based on the index quintile of ownership, the higher the high diarrhea in the population. Farmers/fishermen/labourers have a portion of employment (7.1%), whereas sex and residence show not much different. The incidence of diarrhea in Indonesia is 6.7 percent. The five provinces with the highest incidence of diarrhea were Aceh (10.2%), Papua (9.6%), Jakarta (8.9%), South Sulawesi (8.1%), and Banten (8.0%) tables 3.4.5). Characteristics of infant diarrhea occurring at 12-23 months (7.6%), male (5.5%), live in rural areas (5.3%), and the lowest quintile

crop index group (6.2%) Based on the characteristics of the population, the toddler age group is the highest group suffering from diarrhea. Based on the index quintile of ownership, the higher the high diarrhea in the population. The farmer/fisherman/labourer has the highest interest of the employment group (7.1%), while the sexes and the residence indicate that is not much different [4]. Diarrhea disease is one of the environmental-based diseases, where the clean water and defecation also unhealthy human behaviour is the cause of 13 diseases. Cases of diarrhea can cause death at the time of Extraordinary Occurrence. In 2008 in East Java there were 989, 869 cases of diarrhea with a proportion of reserves of 39.49% (390, 858 cases). There are 13 districts/cities that reported cases of diarrhea outbreaks with the number of patients 699 and 14 deaths that occurred in 28 districts and 35 villages. Efforts to overcome diarrhea is done by using oralit and use of infusion inpatient, counseling to society to improve healthy and healthy life behavior in everyday life and also role of care in management of diarrhea because with the right and fast at household level it is expected to reduce the occurrence of severe dehydration cases that can achieve death [3]. Preliminary study conducted by the researchers on the year of 2016, taken from data medical record Lavalette Hospital Malang, diarrhea patients including 10 inpatients, there is an average of 32 people every month who suffer from diarrhea, patients who come with the number of months in the last 3 months. The world community of different cultures and religions has known honey as a kind of high-value supplement. From laboratory studies and clinical trials, pure honey has a bactericidal activity that can fight some enteropathogenic organisms, including species from *Salmonella* sp., *Shigella* sp., and *E. coli*. Clinical trials of honey delivery in children with gastroenteritis have been investigated. The researchers replaced glucose (111 mmol / l) in oral rehydration fluids containing standard electrolytes as recommended by WHO/UNICEF, the mean recovery time of patients (ages 8 days to 11 years) had a significant decrease. Other studies examined honey as a prebiotic in 2002, compared the growth rate of *Biobacterium* spp. which

in culture by giving honey from clove plants experienced similar growth compared to media containing fructooligosaccharide (FOS), galactooligosaccharide (GOS), or inulin. However, when compared with the media of growth control, it is quite significant [5]. This study aims to determine the effectiveness of oral honey to the degree of dehydration in children with acute diarrhea.

2. Methods

This research uses quasi experimental method with non-equivalent control group design. quasi-experimental method is an experimental research method using a control group but does not fully control the external variables that influence the research. In this study, the subjects were divided into 2 groups, the treatment group that received standard therapy (infusion fluid) and oral honey therapy therapy amounted to 12 children performed with the dosage of giving oral supplementation of honey by an officer 22 ml per day, evenly divided into 3 times each 7, 5ml (at 7:00, 15:00, 21:00) with dilution using sterile mineral water up to 10 cc in each delivery. The control group who did not get oral honey supplementation and only received standard therapy (infusion fluid) amounted to 12 children. Results before and after the intervention were compared to see the difference in the degree of dehydration of the patient. A sample of this research is 24 children divided into 2 groups, that is 12 people intervention group and 12 control group who experienced diarrhea in child room Lavalette Hospital Malang. Sampling technique taken by a researcher in this research is the technique of Non-Probability Sampling by sampling method by accidental sampling.

3. Result

3.1. Characteristics of respondents based on the causes of diarrhea

This study found that in honey group and standard therapy there are 5 people (41, 7%) where virus become cause of diarrhea, 4 (33.3%) people where food poisoning cause diarrhea, and 3 (25%) people as cause of diarrhea, whereas in the control group there are 6 people (50%) where the virus causes diarrhea, 4 (33.3%) people where food poisoning as the cause of diarrhea, and 2 (16.7%) cause diarrhea (Figure 1).

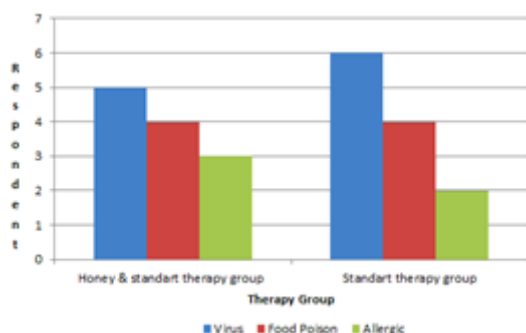


Figure 1: Distribution causes of diarrhea respondents in Lavalette Hospital, Malang.

3.2 Level of dehydration before (pre) and after (post) administration of honey and standard therapy in the intervention group.

The degree of dehydration before (pre) and after (post) provision of honey and standard therapy in the intervention group at Lavalette Hospital Malang can be seen on table 1.

Table 1: Degrees of dehydration before (pre) and after (post) Provision of honey and standard therapy in the intervention group

Respondent	N	Mean	Min	Max	CI 95%
Before giving honey and standard therapy	12	4.33	2	6	3.17 – 5.49
After giving honey and standard therapy		2.33	1	4	1.76 – 2.89

Based on table 1 above it is known that the average dehydration degree in pre-intervention is 4.33 whereas in post-intervention 2.33, the lowest dehydration level in pre-intervention 2 whereas in post-intervention 1, the highest dehydration degree in pre-intervention 6 whereas post-intervention 4, pre-intervention 3.17 - 6.49 whereas in post-intervention 1.76 - 2.89.

3.3 Levels of dehydration before (pre) and after (post) standard therapy in the control group

The degree of dehydration before (pre) and after (post) standard therapy in the intervention group at Lavalette Hospital Malang can be seen on table 2.

Table 2: Degrees of dehydration before (pre) and after (post) provision of standard therapy in the control group

Respondent	N	Mean	Min	Max	CI 95%
Before standart therapy	12	4.41	2	6	3.58 - 5.24
After standart therapy		3.33	1	5	2.59– 4.06

Based on data above, it is known that the average dehydration degree in pre-control is 4.41 while in post control 3.33, the lowest dehydration degree in pre-control 2 whereas in post control 6, the highest dehydration degree in pre-control 1 whereas post control 5, pre-control 3.58 - 5.24 while in the control post 2.59 - 4.06.

3.4 Dehydration degrees before (pre) and after (post) results in honey group and control group.

The dehydration test results before and after intervention in honey group and before and after intervention control group at Lavalette Hospital can be seen on table 3.

Table 3: Table 3 Dehydration test results before and after intervention in honey group and before and after intervention control

Dehydration Degrees	N	Mean	Standart Deviasi	Standar Error	p Value
Before Honey	12	5.91	1.08	0.31	.006
After Honey	12	3.08	1.16	0.33	
Before Control	12	4.83	1.26	0.36	.005
After Control	12	3.41	1.31	0.37	

The average value of dehydration degree before and after given honey in the intervention group changed from the pre-intervention score with an average of 5.9 decreased post-intervention average 3.1 and standard deviation pre-intervention 1.1 and post-intervention 1.2. At a mean value of dehydration degree before and after in control group had a change of pre-control value with mean value 4.8 decreased post control average 3.4 and standard deviation of pre-control 1.26 and post control 1.31. There is a significant relationship the value of dehydration degree of the honey group between before and after given honey in getting p value = 0.006 < 0.05 which means there is a decrease of dehydration level before and after given honey in a group of honey intervention. In the control group comparison between before and after getting p -value = 0.005 < 0.05 which means there is a decrease in dehydration level between before and after done in the control group.

3.5 Dehydration degree after the honey group and control group

The analysis using Mann Whitney obtained data that there is a significant difference between the honey group and the control group with the value of p -value = 0.026 > 0.05 which means there is a decrease in dehydration level before and after the honey given intervention groups and control groups.

4. Discussion

4.1 Degrees in children with acute diarrhea before and after standard therapy and honey

The results showed that there was effect of honey and standard therapy on diarrhea patients wherein Table 1 above it was found that the average dehydration degree in pre-intervention was 4.33 while in post-intervention 2.33, the lowest dehydration level in pre-intervention 2 whereas in post-intervention 1, highest dehydration in pre-intervention 6 whereas post-intervention 4, with pre-intervention confidence level 3.17 - 6.49 whereas in post intervention 1.76 - 2.89. A clinical test of honey delivery in children with gastroenteritis. The researchers replaced glucose (111 mmol / l) in oral rehydration fluids containing standard electrolytes as recommended by WHO/UNICEF, the mean recovery time of patients (ages 8 days to 11 years) had a significant decrease. Other studies examined honey as a prebiotic in 2002, compared the growth rate of *Biobacterium* spp. which in culture by giving honey from clove plants experienced similar growth compared to media containing fructooligosaccharide (FOS), galactooligosaccharide (GOS), or inulin. However, when compared with the media of growth control, it is quite significant [4]. The antibiotic treatment (honey contains antibiotics that can inhibit bacterial growth) offers benefits that can reduce the duration of the disease and increase the likelihood of early clinical cure [6]. According to research from the German Institute for Quality and Efficiency in Health Care for mild diarrhea, some experts advise people to eat foods that have special microorganisms such as bacteria or yeast in them. It is believed to reach the intestines and help the body fight the germs that cause diarrhea. These microorganisms are often called "probiotics". Honey also has a low pH. Wilcoxon test showed that there was an influence of the intervention group of honey giving a decrease of dehydration level before and after being given honey. got value p -value = 0.006 < 0.05 which means H_0 rejected means there is a decrease in

dehydration level before and after being given honey therapy. So, it can be concluded that the provision of honey can reduce the degree of dehydration in diarrhea patients. Researchers believe that giving honey can help to reduce the rate of dehydration in children with diarrhea [7]. The decreased degree of diarrhea in pediatric patients with acute diarrhea can be pharmacological and non-pharmacological measures. The pharmacologic action is the provision of standard therapy given at the hospital during infusion fluid. For non-pharmacological measures can be given oral honey supplementation [8].

4.2 The degree of dehydration in children with acute diarrhea before and after standard therapy and no honey (control group)

The results showed that there was an effect on the control group on diarrhea patients (table 2) that the average dehydration degree in pre-control 4.41 while in post control 3.33, the lowest dehydration degree in pre-control 2 whereas in post control 6, the highest dehydration degree in pre-control 1 whereas post control 5, with a pre-control level of 3.58 - 5.24 while in the finger hand relaxation post 2.59 - 4.06. Intravenous fluids containing only electrolytes, no intravenous fluids of any kind contain vitamin or composition that resembles daily food [9]. This infusion fluid cannot be used as a substitute for daily food or vitamins to refresh the body. So, a big mistake if this intravenous fluid is used instead of food. There are several reasons why many doctors advise patients to be given intravenous fluids or infusions: Replacing the wasted body fluids. The human body 50-60% consists a liquid. To work maximal our body needs that much fluid. Vomiting patients, diarrhea, and severe bleeding, a lot of body fluids are wasted so that many tissues are dehydrated or dehydrated. Giving infusion fluid is the most important therapy to maintain the volume of body fluids so that the body does not lack fluid and certain it to maintain electrolyte balance. For this reason, doctors usually will still provide infusion even if the body is not in a state of dehydration [11]. The result on control group there was a decrease in dehydration degree but unlike the treatment group given honey (table 3). The result shows that there is a difference of result in decreasing of dehydration value p -value = 0, 006 < 0, 05 meaning H_0 is rejected meaning there is effectivity of dehydration level before and after standard therapy. The result of this research is $p = 0, 006$ ($p < 0, 05$). It shows that the standard therapy of infusion can reduce the rate of dehydration in children with diarrhea. Decreased dehydration in children with acute diarrhea may be performed by pharmacological measures of parenteral administration of fluids (administration of intravenous fluids). In the control group there was a decrease of dehydration degree but unlike the treatment group given honey.

4.3 The effectiveness of oral honey to the degree of dehydration in children with acute diarrhea.

The results obtained (table 4) p -value = 0, 026 > 0, 05 which means H_0 accepted means there is no significant difference between giving honey and standard therapy and standard therapy before and after the intervention. Patients who experienced diarrhea in the intervention group were given a standard treatment of honey and orally and in the control group were given standard therapy and did not use honey. The researchers replaced glucose in oral rehydration fluids

containing standard electrolytes as recommended by WHO/UNICEF, the average recovery time of the patients (ages 8 days to 11 years) decreased significantly. Other studies that tested honey as prebiotic in 2002 compared the growth rate of *Biobacterium* spp. which in culture by giving honey from clove plants experienced similar growth compared to media containing fructooligosaccharide (FOS), galactooligosaccharide (GOS), or inulin. However, when compared with the media of growth control, it is quite significant. In contrast to previous studies, the honey in this study replaced the composition of glucose in oral rehydration fluids [4]. Santoso [10] explained that the degree of dehydration due to diarrhea is divided into three, namely: without dehydration, usually children feel normal, no fuss, can still play as usual. Generally, because the diarrhea is not severe, the child still wants to eat and drink as usual. Dehydration mild or moderate, causing the child fussy or anxious, eyes slightly sunken, skin turgor still back quickly when pinched. Dehydration weight, child apathy (awareness of cloudy), eyes sunken on the skin turgor pinch back slowly, breath fast, the child looks weak. According to the researchers, the provision of standard therapy and honey as effective when used to reduce the degree of dehydration. This technique can be used as a non-pharmacological treatment of diarrhea patients [12].

5. Conclusions

The effectiveness of oral honey to the degree of dehydration in children with acute diarrhea showed by the decreasing of the dehydration level before and after being given a treatment of honey on treatment group. The dehydration level decreases before and after the pharmacological action (intravenous administration) in the control group as much as in acute diarrhea patient. Provision of standard therapy without honey in patients with acute diarrhea can also reduce the level of dehydration but not as effective as the addition of honey.

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