Vol 1 No 3 December 2023
e-ISSN 2988-7283

Original Research

Application of Honey Therapy to Decrease Stool Frequency in Children with Diarrhea: A Case Study

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Abstract

Diarrhea is characterized by the presence of watery bowel motions that occur three or more times within 24 hours. Inadequate management of diarrhea in children might lead to fatality. One method involves administering honey treatment to decrease the frequency of bowel movements. The objective was to elucidate the implementation of a way to reduce bowel movement frequency. The design involved a case study conducted on two toddlers suffering from diarrhea. The solution involved administering honey therapy three times daily for five days. Data analysis and presentation in case studies were conveyed through written text, which presented the facts in a narrative format. The use of honey therapy resulted in a reduction in the frequency of bowel movements in subjects 1 and 2. The post-intervention frequency of bowel movement in subject 1 was three times per day, with a mushy consistency. In subject 2, it was four times per day, again with a mushy consistency. Nurses at the Community Health Center (Puskesmas) can offer guidance on using honey therapy to parents whose children are suffering from diarrhea.

Keywords: Diarrhea, Honey Therapy, Stool Frequency, Consistency

INTRODUCTION

Diarrhea is characterized by the presence of bowel movements that are more watery than usual, occurring three or more times during a 24-hour timeframe. Diarrhea is an environmentally transmitted disease resulting from infection with microorganisms such as bacteria, viruses, parasites, protozoa, and transfer through the ingestion of fecal matter. Diarrhea can impact individuals of all age cohorts, encompassing toddlers, children, and adults from many social strata (World Health Organization, 2017).

In 2015, the global incidence of diarrhea was 688 million cases, resulting in 4,999,000 fatalities among children under the age of 5. Annually, there are approximately 1.7 billion deaths, with over 525,000 occurring in children and toddlers (WHO 2017 in Husniati 2018). According to Kementerian Kesehatan RI (2019), In Indonesia, the high occurrence of diarrhea leads to a mortality rate of 25.29%, with 100,000 children succumbing to this condition, as reported by the World Health Organization (WHO). The mortality rate due to diarrhea in children aged 4-11 years was 25.5%. The primary factor contributing to a 40 to 60% mortality

rate in children suffering from diarrhea is the failure to practice proper hand hygiene, resulting in contamination with the viral pathogen known as rotavirus (Rahayuningrum & Irman, 2020). According to Dinas Kesehatan Provinsi Riau (2019), In Riau province, the frequency of diarrhea was 7.5%, which places it twentieth among the 33 provinces. At the Karya Wanita Health Center, were 107 children infected with diarrhea.

The initial signs of diarrhea in children include irritability, restlessness, elevated body temperature, reduced appetite, loose stool (potentially containing mucus and blood), anal sores, dehydration (which can lead to a decrease in blood volume, rapid and weak pulse, accelerated heart rate, low blood pressure, and ultimately shock), weight loss, reduced skin elasticity, sunken eyes and fontanelle, as well as dry mouth and skin (El Sinta B et al., 2019).

It is imperative to employ appropriate management techniques for diarrhea. Various therapy options include administering Oral Rehydration Solutions (ORS), providing nutrient-rich substances, conducting intravenous rehydration, and administering zinc. Honey is a supplementary therapy that can be used to cure diarrhea. Honey has significant advantages, particularly in the treatment of diarrhea, as it can effectively combat a range of bacterial or microbial illnesses. Honey's antimicrobial properties and rich nutrients make it a suitable substitute for replenishing lost bodily fluids (Nurmaningsih & Rokhaidah, 2019).

Honey possesses significant advantages in the field of medicine. Another advantage of honey is its ability to aid in replenishing bodily fluids depleted due to diarrhea. Honey in rehydration fluids enhances potassium and water absorption while maintaining salt uptake steadily. It aids in restoring impaired intestinal mucosa, promotes the development of new tissue, and functions as an anti-inflammatory agent (Andayani & Barat, 2020; Eteraf-Oskouei & Najafi, 2013).

Ramalivhana et al. (2014) said that Honey extract can also suppress the proliferation of bacterial species responsible for stomach infections, such as C. Frundii, P. Shigelloides, and E. Coli. Honey possesses antibacterial properties due to many chemical substances, such as flavonoid group inhibitors, glycosides, and polyphenols. The antibacterial effect of these organic compounds is achieved through the following mechanisms: poisoning the protoplasm, damaging and penetrating the cell wall, precipitating microbial cell proteins, and inhibiting the metabolic processes of microorganisms, such as Escherichia coli, which is one of the causes of diarrhea. During this period, there is frequently a surge in bacterial resistance to drugs. No bacterial resistance to honey has been documented, thereby establishing honey as an up-and-coming antibacterial agent against bacteria (Dewi et al., 2017).

According to the introduction, the authors aim to utilize honey therapy to decrease the frequency of bowel movements in children suffering from diarrhea. This case study aimed to assess Honey Therapy's efficacy in reducing bowel movement frequency in children with diarrhea at Puskesmas Karya Wanita in Pekanbaru City.

METHODS

The method used was a case study. The frequency of bowel movements will be compared before and after honey therapy. The subject of this case study was a child suffering from diarrhea, with a total subject of two clients obtained randomly according to the incision determined by the researchers. The criteria of incision used were children experiencing diarrhea, aged 3-5 years, not given drugs other than Oral Rehydration Solutions (ORS), children do not experience allergies to honey, children do not experience complications, the child's general condition was good and not dehydrated, and the child and parents are willing

to be respondents. In comparison, the exclusion criterion in this study was not present in the data collection.

The intervention for both clients was the provision of honey three times a day (08.00, 13.00, and 18.00 WIB) for five days with a dose of 5 cc each. The instrument used an observation sheet regarding bowel movement frequency for 24 hours. Data analysis and data presentation in case studies were presented textually with the facts set out in the text and were narrative. The case study place was the Working Area of Karya Wanita Health Center in Pekanbaru City. The research time was dated in April 2022.

RESULTS

Table 1 indicated that both respondents were five years old, had received full immunization, and were administered ORS medication. The first client's child was observed to have poor hygiene, with a noticeable unpleasant odor emanating from the child's residence. Additionally, the second client's mother admitted to infrequent handwashing when feeding her child.

Table 1. Respondent Characteristics

Characteristics	Subject 1	Subject 2
Age	Five years	Five years
Sex	Boy	Boy
Type of Disease	Diarrhea	Diarrhea
Education	Kindergarten	Kindergarten
Parent's Occupation:		
Father	Farmers	Farmers
Mother	Housewife	Housewife
History of Current Illness	Diar rhea	Diarrhea
Past Medical History	-	Upper respiratory tract infection
Medication	Ors	Ors
Eating and Drinking Patterns	Eat three times a day, morning ½ portion, afternoon one portion, evening one portion. Drink in the morning one glass, afternoon one glass, evening one glass	Eat three meals daily: 1 serving in the morning, one in the afternoon, and one in the evening. Drink one in the morning one glass, one in the afternoon two glasses, and one in the evening, one glass.
Sleep Pattern	Nine hours	Eleven hours
Activity Pattern	Normal activities	Normal activities
Hygiene patterns	The front of the client's house smells terrible; the client often pees in front of the house.	The client's mother did not wash her hands when feeding the client.
Immunization	Complete	Complete

ORIGINAL RESEARCH

The preliminary evaluation of this study was carried out on April 14, 2022, at 08.00 WIB in Karya Wanita Village, utilizing the allow-anamnesis technique. Observation, intervention with the patient's family, and documentation were employed to gather the data. The examination was conducted over two consecutive days, specifically on April 14th and 15th, 2023. The data analysis was performed by categorizing both subjective and objective data. Regarding the initial topic, the mother reported that the child had bowel movements eight times per day, characterized by a watery texture, without any presence of blood, nausea, or vomiting. The mother said that the child tended to urinate near their residence, resulting in an unsanitary and malodorous front yard. The patient exhibits objective signs of weakness, including dry mucosa, reduced skin elasticity, a capillary refill time of less than 3 seconds, and intestinal peristalsis occurring at a rate of 20 times per minute. The patient has been administered oral rehydration solution (ORS) from the health facility.

In the second subject, the mother reported that the child had eight episodes of liquid bowel movements per day without any presence of blood, nausea, or vomiting. The mother admitted to infrequently practicing hand hygiene before feeding the child. The patient exhibits objective signs of weakness, including dry mucosa, reduced skin elasticity, a capillary refill time of less than 3 seconds, and intestinal peristalsis occurring 18 times per minute. The patient received the health center's oral rehydration solution (ORS).

On the first day, the intervention involved observing and documenting the hue of fecal excretions. The initial patient exhibited a bowel movement frequency of eight times per day, characterized by a liquid consistency. Initially, a dosage of 5 cc of honey was administered thrice daily. Honey distribution occurs at 08.00, 13.00, and 18.00 WIB. Following the administration of the intervention, a subsequent examination revealed that the individual experienced a frequency of defecation of eight occurrences per day, characterized by a liquid consistency. The objective data monitoring shows that the infant exhibits signs of weakness, with a capillary refill time (CRT) of less than 3 seconds and intestinal peristalsis occurring at a rate of 20 times per minute. Furthermore, it has been determined that the child was not allergic to honey.

On the second day of honey therapy, it was observed that the frequency of feces remained unchanged at eight times per day. This condition was caused by the mother's failure to practice proper hand hygiene before feeding the infant. The situation occurs due to the mother being inundated with the responsibility of caring for a sick child while also seeing her second child, aged two years old. The child's propensity for random urination also exhibited a decline after receiving education on the initial day.

By the third day of honey therapy, bowel movement frequency fell to six times per day, characterized by a liquid nature. This condition was because the mother already had a caregiver for her young child, allowing her to avoid exhaustion and concentrate on tending to the sick child. The objective data indicated that the child exhibited signs of weakness, with a capillary refill time (CRT) of less than 3 seconds, intestinal peristalsis occurring at a rate of 18 contractions per minute, and normal skin turgor and moist lip mucosa. On the fourth day of honey therapy, it was seen that the frequency of bowel movements decreased to five times a day, and the nature of the stool became more liquid. The child's objective data indicated that the child appeared weak, with a capillary refill time (CRT) of less than 3 seconds, intestinal peristalsis of 18 contractions per minute, and normal skin turgor and moist lip mucosa. On the fifth day of honey therapy, it was seen that the frequency of bowel movements decreased to three times a day, and the nature of the stool became soft. The child's objective data indicated that the child appeared weak, with a capillary refill time (CRT) of less than 3 seconds,

intestinal peristalsis occurring at a rate of 10 times per minute, and normal skin elasticity and moist lip mucosa. The toddler has also developed an increased appetite.

The second patient exhibited a frequency of defecation of eight times per day, characterized by a watery consistency. Initially, a dosage of 5 cc of honey was administered thrice daily. Honey distribution occurs at 08:00, 13:00, and 18:00 WIB. Following the administration of the intervention, a subsequent examination revealed that the individual experienced a frequency of defecation of eight occurrences per day, characterized by a liquid consistency. The objective data monitoring indicates that the child exhibits signs of weakness, with a CRT (capillary refill time) of less than 3 seconds and intestinal peristalsis occurring at a rate of 18 contractions per minute.

Furthermore, it has been determined that the child does not have an allergic reaction to honey and is experiencing a decreased appetite. On the second day of honey therapy, it was seen that the frequency of bowel movements had reduced to seven times per day. The condition occurred as the mother had acquired the knowledge of how to cleanse her hands effectively. On the third day of honey therapy, it was seen that the frequency of bowel movements fell to six times a day, and the nature of the stool became liquid. The child's objective data indicated that the child appeared weak, with a capillary refill time (CRT) of less than 3 seconds, intestinal peristalsis of 17 contractions per minute, and normal skin turgor and moist lip mucosa.

The frequency of bowel movements remained consistent on the fourth day of honey therapy, as the client regurgitated honey during the intervention at 18:00 in the afternoon. On the fifth day of honey therapy, it was seen that the frequency of bowel movements decreased to four times a day, and the nature of the stool became mushy. The child's objective data indicated that the child appeared weak, with a capillary refill time (CRT) of less than 3 seconds, intestinal peristalsis occurring nine times per minute, and normal skin turgor and moist lip mucosa. The toddler has also developed an increased desire for food.

The research findings on the first subject, namely the mother's report, indicate that the infant had three bowel movements each day, characterized by a soft texture. The objective findings include moist lip mucosa, a healthy appearance of the infant, a capillary refill time (CRT) of less than 3 seconds, intestinal peristalsis occurring ten times per minute, and elastic skin turgor. Additionally, the child has exhibited an increased appetite. In the second case, the mother reported that the infant had four bowel movements each day, characterized by a soft and mushy texture. The objective findings include moist lip mucosa, a well-rested appearance of the infant, a capillary refill time of less than 3 seconds, intestinal peristalsis occurring nine times per minute, and elastic skin turgor. Additionally, the child has exhibited an increased eating.

DISCUSSIONS

The research findings indicate that implementing interventions for five days led to a decrease in the frequency of bowel movements. This case study is in line with Nurmaningsih and Rokhaidah (2019); the findings of the study demonstrated a decline in the occurrence of bowel movements among toddlers aged 1-5 years in the experimental group. The experimental group exhibited a more rapid reduction in bowel movement frequency than the control group. The experimental group receives standard therapy from the Community Health Center (puskesmas) together with honey therapy, while the control group receives regular treatment but is closely monitored.

According to Herawati (2017), This study examines the impact of administering honey on mitigating the occurrence of diarrhea in toddlers at Rokan Hulu Hospital, Riau. The study involved 14 participants, separated into two groups: a control group of 7 individuals and a case group of 7 individuals. The frequency of bowel movements in the case group decreased rapidly from 7.5 to 2.1 times, but the control group experienced a slower decline from 7.5 to 3.2. Meanwhile, according to the study of Lusiana et al. (2021), honey was administered as a treatment for diarrhea in preschool children aged 3-5 years. The study had a single participant. The client's bowel movements decreased from 5 times to 3 times within three days.

Following a consistent administration of honey therapy for five days, there was a progressive reduction in frequency observed in both participants daily. Nevertheless, during the investigation conducted on the two participants, there was no marked reduction in bowel movement frequency. According to interviews with the mothers of both subjects, the mother of subject 1 said that her child regularly eats fast food items such as sausages, nuggets, and flavored beverages near their residence. This is in line with the research of Rangkuti et al. (2020), who found a correlation between the consumption of street food and the occurrence of diarrhea among students at MI Nurul Fadhila Setia. The research found that many schoolchildren experience illness and require toilet breaks as a result of consuming street food. Researchers conducted a survey at the clinic and found that many children sought medical treatment due to consuming street food. Within two months, a total of 56 children experienced episodes of diarrhea.

Honey possesses antibacterial properties that can effectively combat diarrhea. Moreover, honey can alleviate constipation and diarrhea issues in children, mitigate infections, and shorten the duration of diarrhea. Honey contains antibiotics that can effectively combat diarrhea-causing bacteria. It also exhibits bactericidal properties against many enteropathogenic organisms, such as Salmonella, Shigella, and E. coli. Honey's antibacterial activities are affected by its high osmolarity, low water content, low pH, and increased acidity. Honey has a substantial sugar concentration, elevating osmotic pressure and effectively impedes the proliferation and maturation of bacteria (Andayani & Barat, 2020). Honey therapy can effectively decrease the frequency of bowel movements in children experiencing diarrhea without any associated complications. Honey can serve as a supplemental therapy for children with diarrhea.

Research has investigated using honey therapy as a supplementary treatment to reduce the frequency of bowel movements in children suffering from diarrhea. Multiple studies have demonstrated encouraging outcomes regarding the utilization of honey in the treatment of acute infantile diarrhea. In a study conducted by Elnady et al. (2011), it was found that infants suffering from acute diarrhea saw a notable reduction in the frequency of bowel movements and an improvement in the texture of their stools when treated with pure honey alongside oral rehydration solution(ORS)(Elnady et al., 2011). In a study conducted by Haffejee and Moosa, it was shown that the use of honey resulted in a decrease in the length of time a person experienced diarrhea, a faster recovery, and a shorter hospital stay for children with acute diarrhea (Mahyar et al., 2022). A different clinical study demonstrated that honey reduced the duration of bacterial diarrhea without extending the duration of non-bacterial diarrhea. This suggests that honey can be safely utilized as a replacement for glucose in an oral rehydration solution that includes electrolytes (Haffejee & Moosa, 1985). The efficacy of honey in treating diarrhea has been attributed to its antibacterial, anti-inflammatory, and antiviral characteristics(Ifalahma et al., 2023).

Nevertheless, it is crucial to acknowledge that although these trials demonstrate encouraging outcomes, additional research using bigger sample sizes is advised to ascertain

the complete efficacy and safety of honey therapy in diminishing stool frequency in children with diarrhea(Elnady et al., 2011).

Overall, the evidence indicates that honey therapy could serve as an excellent supplementary treatment to reduce the frequency of bowel movements in children suffering from diarrhea. Nevertheless, further comprehensive research is required to ultimately prove its efficacy and safety in this particular setting.

CONCLUSIONS

This case study investigation observed a reduction in the frequency of bowel movements in patients who had honey treatment for five days. The patient received three administrations on a single day, each consisting of a five cc dose. Using honey therapy can serve as a viable complementary treatment for youngsters suffering from diarrhea. Nurses can offer parental education to mitigate the frequency of bowel movements during episodes of childhood diarrhea.

ACKNOWLEDGEMENT

We want to express our sincere gratitude to all those who contributed to the completion of this study.

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