Research Article

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A Study to Evaluate the Effectiveness of Old Rice Water on Diarrhoea Among Children (3-6 Years) At Institute of Child Health and Research Centre, GRH, Madurai.

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ABSTRACT

Background: Diarrhoea remains a leading cause of morbidity and mortality in children, particularly in developing countries. Traditional remedies like old rice water have been used in some regions as a supplementary treatment for diarrhoea, but its efficacy has not been thoroughly evaluated. Aim of the Study: The aim of the study is to evaluate the effectiveness of old rice water in reducing diarrhoea severity among children aged 3-6 years at the Institute of Child Health and Research Centre, GRH, Madurai. Methodology: This quantitative, evaluative study follows a pre-experimental one-group pretest-posttest design. The sample consists of 40 children diagnosed with diarrhoea, selected using a non-probability consecutive sampling technique. The intervention, old rice water, was administered for two days, and diarrhoea severity was assessed using the Vesikari Clinical Scoring System. Result: The study found a significant improvement in diarrhoea severity, with most children showing a reduction in diarrhoea levels post-intervention. The majority of children who initially had moderate diarrhoea showed a shift to mild diarrhoea by the posttest. Significant associations were observed between religion, mother's occupation, and condition of the child with the treatment's effectiveness. Conclusion: The study concludes that old rice water is an effective and cost-efficient intervention for managing diarrhoea in children, particularly in resource-constrained settings. Further research is recommended to explore its long-term effectiveness and potential for use in diarrhoea prevention programs.

Keywords: Diarrhoea, old rice water, children.

INTRODUCTION

Children, especially those under the age of five, represent a highly vulnerable group when it comes to health, with diarrhoeal diseases being one of the leading causes of death in this age group. Diarrhoea, which is typically caused by infections from contaminated food, water, or poor hygiene, leads to severe dehydration and malnutrition, and is responsible for over 525,000 child deaths globally each year. In India, children make up about 12% of the population, with many living in rural, tribal, or slum areas where access to proper healthcare and sanitation is limited, making them even more susceptible to diseases.

Rice is a major dietary staple in India, providing the primary source of energy for many. When rice is fermented to make rice water, it becomes rich in amino acids, vitamins, minerals, prebiotics, and probiotics, which can significantly improve gut health. Rice water promotes the growth of beneficial gut bacteria like Lactobacillus, which helps inhibit harmful pathogens, balance pH levels, and improve digestion. Additionally, it enhances nutrient absorption, improves immunity, and supports the body's ability to rehydrate by replenishing essential minerals such as potassium, calcium, and iron. This makes fermented rice water not only an effective natural remedy for diarrhoeal diseases but also a valuable tool in maintaining overall child health and nutrition.

NEED FOR THE STUDY

Gastrointestinal diseases, particularly diarrhoea, are a major public health issue in India, especially among children under five. Diarrhoea causes over 300,000 child deaths annually in the country, with the highest prevalence in rural areas, where poor sanitation and hygiene are key risk factors. Dehydration from diarrhoeal fluid loss is the major cause of death, with the disease peaking during summer and rainy seasons. Studies show that oral rehydration therapy (ORT) is commonly used, but more effective treatment alternatives are needed. Rice-based ORS has shown promise, as it is inexpensive, widely available, and provides essential nutrients and electrolytes for rehydration, making it an ideal solution for rural populations. The use of rice water as an ORS not only helps combat dehydration but also improves recovery from diarrhoeal diseases, offering a practical, low-cost remedy to reduce mortality and morbidity.

MATERIALS AND METHODS

Study Design and Participants

The study adopted a pre-experimental design. The study was conducted at the Government Rajaji Hospital, Madurai. The target population included children aged 3-6 years diagnosed with diarrhoea, and the accessible population was those receiving treatment at the specified hospital. A total of 40 children who met the inclusion criteria were selected using a convenient sampling technique.

Inclusion Criteria

All the children in the age 3-6 years with diarrhoea on the second day of admission, without severe dehydration, and with mild or moderate dehydration, were included. Caregivers willing to administer old rice water to their children were also part of the inclusion criteria.

Exclusion Criteria

Children with diarrhoea associated with severe vomiting (more than twice), severe malnutrition, shock, or unconsciousness were excluded from the study.

Tools

The research tool consisted of socio-demographic data such as the child's age, gender, religion, type of family, and details about the caregivers, such as their education and occupation. Section B included clinical variables such as the child's weight, immunization status, stool characteristics, vital signs, and co-morbidities. Section C used the Vesikari Clinical Scoring System to assess the severity of diarrhoea, categorizing it as mild, moderate, or severe based on the score.

Data Collection Procedure

Data was collected between 04/07/2022 and 14/08/2022. After obtaining informed consent, pretest data on diarrhoea severity was collected using the Vesikari Clinical Scoring System. The children were administered old rice water according to the severity of their diarrhoea (10 ml/kg for mild and 50 ml/kg for moderate diarrhoea) three times a day for two days, along with routine treatment. Posttest data was collected on the third day.

Data Analysis

Descriptive statistics (frequency and percentage) summarized socio-demographic and clinical variables. Paired t-tests assessed the effect of old rice water on diarrhoea, and chi-square tests examined associations with socio-demographic and clinical factors.

RESULTS

Demographic Variables

The study included 40 children aged 3-6 years, with 52.5% being female. Most children were Hindu (72.5%) and lived in urban (40%) or semi-urban (35%) areas. A majority (82.5%) had appropriate weight for their age, and 90% were immunized. Most fathers were self-employed (50%) and mothers were homemakers (65%). Family income primarily ranged from Rs. 10,001 – Rs. 20,000 (47.5%).

Clinical Variables

The clinical profile showed 70% of children had watery stools, and 82.5% had yellowish stool color. The majority (62.5%) presented as thirsty, restless, or irritable, while 87.5% had normal urine output and vital signs. Only 5% of children had malnutrition as a co-morbidity.

Level of Diarrhoea

In the pretest, 77.5% had moderate diarrhoea, and 22.5% had mild diarrhoea. After the intervention with old rice water, 95% showed mild diarrhoea, indicating a significant reduction in severity.

Comparison of Pretest and Posttest

Post-intervention, 95% of children had mild diarrhoea, compared to 22.5% in the pretest, showing a significant improvement in the level of diarrhoea after treatment with old rice water.

Association

The test found the significant associations were found between religion, occupation of the mother, and condition of the child with improved diarrhoea outcomes. Consistency of stool and odour of stool also showed significant associations, with watery and unpleasant stools linked to more severe diarrhoea. Other variables like age, gender, and vital signs did not significantly affect diarrhoea severity.

Table 1 Social demographic variables of the participants (n = 40)

Socio-Demographic Variables	Frequency (f)	Percentage (%)
Age of the Child		
3 years	10	25
4 years	12	30
5 years	10	25
6 years	8	20
Gender		
Male	19	47.5
Female	21	52.5
Religion		
Hindu	29	72.5
Christian	8	20
Muslim	2	5
Others	1	2.5

Place of Domicile		
Urban	16	40
Semi-urban	14	35
Rural	10	25
Family type		
Nuclear family	17	42.5
Joint family	13	32.5
Extended family	10	25
Education Status of the Father		
Non-formal education	1	2.5
Primary education	6	15
Secondary education	13	32.5
Higher Secondary education	8	20
Diploma and above	12	30
Education Status of the Mother		
Non-formal education	4	10
Primary education	2	5
Secondary education	10	25
Higher Secondary education	14	35
Diploma and above	10	25
Occupation of the Father		
Self-employed	20	50
Private	11	27.5
Government	3	7.5
Others	6	15

Occupation of the Mother		
Homemaker	26	65
Self-employed	7	17.5
Government	5	12.5
Others	2	5
Family Income per Month		
< Rs. 10,000	13	32.5
Rs. 10,001 – Rs. 20,000	19	47.5
Rs. 20,001 – Rs. 30,000	5	12.5
> Rs. 30,001	3	7.5
Source of Drinking Water		
Corporation water	19	47.5
Bore well water	14	35
Pond water	0	0
Others	7	17.5
Habit of Hand Washing Before Eating		
With plain water	26	65
With soapy water	14	35
No habit of hand washing	0	0
Dietary Habit		
Vegetarian	8	20
Mixed	32	80
Toilet Facility		
Open air defecation	9	22.5
RCA type latrine	21	52.5
Western type	10	25

Habit of Hand Washing After Toileting		
With plain water	2	5
With soapy water	38	95
No habit of hand washing	0	0

Table 2: Clinical demographic variables of the participants (n = 40)

Clinical Variables	**Frequency (f)**	**Percentage (%)**
Weight of the Child		
Appropriate for age	33	82.5
Overweight for age	4	10
Malnourished	3	7.5
Breastfeeding		
Below 6 months	5	12.5
6 months - 1 year	14	35
1 year - 1½ years	15	37.5
Not given	6	15
Immunization		
Vaccinated	36	90
Not vaccinated	4	10
Consistency of the Stool		
Pasty stool	9	22.5
Watery stool	28	70
Severe watery stool	3	7.5
Colour of the Stool		
Yellowish	33	82.5
Greenish	7	17.5
Reddish	0	0

Odour of the Stool		
Normal	17	42.5
Fishy odour	14	35
Unpleasant odour	9	22.5
Condition of the Child		
Normal	15	37.5
Thirsty, restless, or irritable	25	62.5
Lethargic, unconscious	0	0
Urine Output		
Normal	35	87.5
Oliguria	4	10
Anuria	1	2.5
Vital Signs		
Within normal range	35	87.5
Mild deviation within normal range	4	10
Moderate deviation within range	1	2.5
Severe deviation within range	0	0
Co-morbidity		
Malnutrition	2	5
Children with carcinoma	0	0
HIV Infection	0	0
None	38	95

Table 3: Level of diarrhea. (n = 40)

Level of Diarrhea	Pretest (f)	Pretest (%)	Posttest (f)	Posttest (%)
Mild (<7)	9	22.5	38	95
Moderate (7-10)	31	77.5	2	5
Severe (>11)	0	0	0	0

Table 4: Comparison of mean score on the level of diarrhea among children. (n = 40)

Level of diarrhoea	Mean	Mean difference	Standard deviation	't' value (p - value)
Pretest	7.10	5.50	0.78	t=25.964 P= 0.000*** (VHS)
Post-test	1.60		1.52	

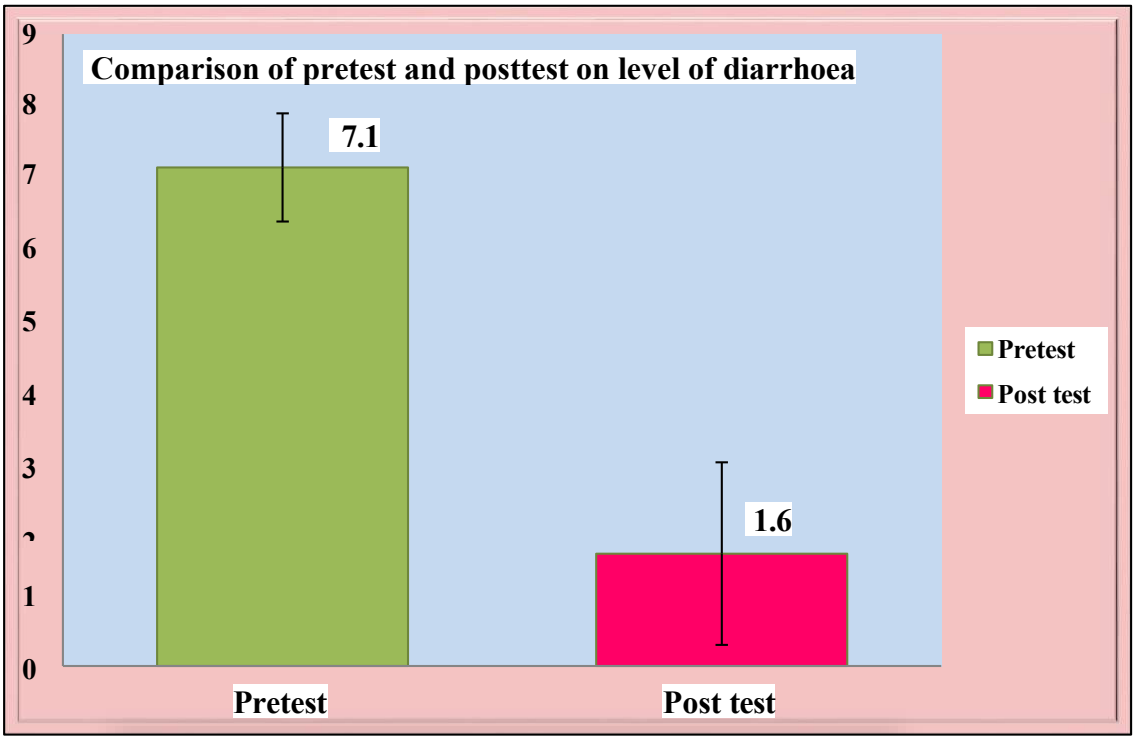

Figure 1: Comparison of pretest and post-test mean, standard deviation and mean difference of diarrhoea among children

Table 5: Association with their socio demographic variables.

Socio-Demographic Variables	Mild (<7)	Moderate (7-10)	Severe (>11)	χ^2	p Value
Religion				21.57	0.000 (VHS)
Hindu	29 (76.3%)	0	0		
Christian	7 (18.4%)	1 (50%)	0		
Muslim	2 (5.3%)	0	0		
Others	0	1 (50%)	0		

Occupation of the Mother				9.231	**0.026 (S)***
Homemaker	25 (65.8%)	1 (50%)	0		
Self-employed	7 (18.4%)	0	0		
Government	5 (13.2%)	0	0		
Others	1 (2.6%)	1 (50%)	0		
Habit of Hand Washing After Toileting				8.985	**0.003 (S)***
With plain water	1 (2.6%)	1 (50%)	0		
With soapy water	37 (97.4%)	1 (50%)	0		
Consistency of Stool				8.664	**0.029 (S)***
Pasty	9 (23.7%)	0	0		
Watery	27 (71.1%)	1 (50%)	0		
Severe watery	2 (5.3%)	1 (50%)	0		
Odour of Stool				7.251	**0.044 (S)***
Normal	17 (48.7%)	0	0		
Fishy odour	14 (36.8%)	0	0		
Unpleasant odour	7 (18.4%)	2 (100%)	0		

Table 6: Association with their clinical variables

Clinical Variables	Mild (<7)	Moderate (7-10)	Severe (>11)	χ^2	p Value
Condition of the Child				**8.509**	***0.050 (S)****
Normal	13 (34.2%)	2 (100%)	0		
Thirsty, Restless, or Irritable	25 (65.8%)	0	0		
Lethargic, Unconscious	0	0	0		

DISCUSSION:

The study demonstrated that old rice water effectively reduced the severity of diarrhoea in children aged 3-6 years. In the pretest, 77.5% of children had moderate diarrhoea, while 22.5% had mild diarrhoea. After the intervention, 95% of the children showed mild diarrhoea, indicating a significant improvement in their condition. Demographic factors such as religion, occupation of the mother, and condition of the child were significantly associated with better diarrhoea outcomes. Clinical factors like consistency and odour of the stool also correlated with diarrhoea severity. The results suggest that old rice water is a promising, cost-effective intervention for managing diarrhoea in children, particularly in resource-limited settings.

CONCLUSION:

The study concluded that old rice water is an effective and cost-efficient treatment for reducing the severity of diarrhoea in children aged 3-6 years. The intervention led to significant improvement in the children's condition, with most showing a reduction in diarrhoea severity. Demographic factors such as religion,

mother's occupation, and condition of the child, along with clinical factors like stool consistency and odour, were found to influence the effectiveness of the treatment. Overall, old rice water proved to be a valuable natural remedy for managing diarrhoea, especially in resource-limited settings.

RECOMMENDATION:

It is recommended to incorporate old rice water as a supplementary treatment for diarrhoea in children, particularly in resource-constrained areas. Further studies should explore its long-term effectiveness and potential in preventing dehydration. Health education programs should also promote hygiene and proper nutrition alongside natural remedies like rice water.

JOURNAL REFERENCE:

1. Booth, 1. W. & Harries, J. T. Oral rehydration therapy: an issue of growing controversy. Journal of tropical pediatrics, 28: 116-123 (1982).
2. Chatterjee, A. et.al. Evaluation of a sucrose/electrolyte solution for oral rehydration in acute infantile diarrhoea. Lancet, 1: 1333-1335 (1977).
3. Field, M. New strategies for treating watery diarrhea. New England journal of medicine, 297: 1121-1122 (1977).
4. Hirschhorn, N. et al. Decrease in net stool output in cholera during intestinal perfusion with glucose containing solutions. New England journal of medicine, 279: 176-181 (1968).
5. Hirschhorn, N. & Denny, K. M. Oral glucose electrolyte therapy for diarrhea: a means to maintain or improve nutrition? American journal of clinical nutrition, 28: 189-192 (1975).
6. International study group, A positive effect on the nutrition of Philippine children of an oral glucose electrolyte solution given at home for the treatment of diarrhoea. Bulletin of the World Health Organization, 55: 87-94 (1977). 756
7. Meeuwisse, G. W. High sugar worse than high sodium in oral rehydration solutions. Act a paediatrica Scandinavica, 72: 161-166 (1983).
8. Meenakshi.N. Mehta. (2004). ORS Controversies and Perspectives. Journal of Indian pediatrics Vol.31
9. Molla, A. M. ET AL. Rice-powder electrolyte solution as oral therapy in diarrhoea due to Vibrio cholerae and Escherichia coli. Lancet, 1: 1317-1319 (1982).

10. Nalin, D. R. ET AL. Effect of glycine and glucose on sodium and water absorption in a patients with cholera. Gut, 11: 768-772 (1970).
11. Nikhil Thapar. ,IAN SANDERSON.(2004).Diarrhoea in children: an interface between developing and Developed countries. The Lancet. Vol.363. issue. 9409. Pg.641–53
12. Palmer, D. L. et al. Comparison of sucrose and glucose in the oral electrolyte therapy of cholera and other severe diarrheas. New England journal of medicine, 297: 1107-1110 (1977).
13. Patra, F. C. et al. Is oral electrolyte solution superior to glucose electrolyte solution in infantile diarrhoea? Archives of disease in childhood, 57: 910-912 (1982).
14. Sandhu, B. K. ET AL. Oral rehydration in acute infantile diarrhoea with a glucose polymer electrolyte solution. Archives of disease in childhood, 57: 152-154(1982).
15. Schultz, S. G. Sodium-coupled solute transport of small intestine: a status report. American journal of physiology, 233: E249-254 (1977).
16. World Health Organization. Treatment and prevention of acute diarrhoea. Guidelines for the trainers of health workers. Geneva, 1985.
17. Washington Bangle Radio. (2010). 4 Billion annual cases of diarrhoea in India-attributed poor water sanitation. News – Health 141.

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