

Assessing the Impact of a Planned Teaching Program on Maternal Knowledge and Practices for Diarrhea Prevention and Management in Toddlers at Selected Anganwadi Centres in District Karnal

Leena Grover^{1*}, Shakuntla Devi², Rachana²

Abstract

Background of the Study: Diarrheal disease ranks as the second leading cause of child mortality and morbidity globally, primarily stemming from contaminated food and water sources. The World Health Organization has designated childhood diarrhea research as a top priority in achieving the United Nations' Millennium Development Goal. Addressing this condition involves implementing preventive and management measures at home. Therefore, the core aim of this study is to evaluate the effectiveness of a structured educational program in enhancing mothers' knowledge and practices concerning the prevention and management of diarrhea in young children at selected Anganwadi centres in District Karnal. **Methodology:** A quasi-experimental research design was used, and a study was conducted on 100 mothers of toddlers at selected Anganwadi of Karnal with the help of convenience sampling technique. The survey utilized a self-designed interview questionnaire to evaluate the mothers' knowledge, while a checklist was employed to assess their practices. **Results:** The study's findings demonstrated statistically notable enhancements in both the knowledge and practical application of mothers concerning the prevention and management of toddler diarrhea following the structured teaching program. **Conclusion:** The study concluded that the structured teaching program proved to be more effective in enhancing both the knowledge and practices of mothers regarding the prevention and management of diarrhea.

Keywords: Diarrhea, planned teaching program, knowledge, practice, toddler

INTRODUCTION

The well-being of a child is extremely important, as children are the future of our country, and to reach their full potential, they need high-quality health care and services, especially in life's early moments. According to the World Health Organization (WHO), diarrheal illness remains a prominent cause of illness and death among infants and children worldwide, accounting for nearly 1.7 billion cases of childhood diarrhea. Most of these cases stem from contaminated sources of food and water. Globally, approximately 780 million people lack access to improved drinking water, while 2.5 billion lack improved sanitation facilities. In lower-income nations, children under the age of three typically suffer an average of three bouts of diarrhea annually, with each episode depriving the child of essential nutrition crucial for their growth. Consequently, diarrhea has emerged as a significant contributor to malnutrition in contemporary times [1-5].

*Author for Correspondence

Leena Grover
E-mail: leena.grover027@gmail.com

¹Student, Department of Child Health Nursing, College of Nursing, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

²Junior Lecturer, Department of Child Health Nursing, College of Nursing, Pandit Bhagwat Dayal Sharma Post Graduate Institute of Medical Sciences, Rohtak, Haryana, India

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Most fatalities resulting from diarrhea happen in children under 5 years old residing in South Asia and sub-Saharan Africa. Despite this significant impact, advancements are underway. Between 2000 and 2019, there was a 61% reduction in the annual total of deaths among children under 5 due to diarrhea. Many more children could be saved through basic interventions such as exclusive breast feeding, immunization, safe drinking water, sanitation, and hygiene [6–8].

On average, each child under 5 encounters about three cases of acute diarrhea every year. Acute diarrhea ranks as the second most prevalent cause of death (after pneumonia) globally within this age bracket. The occurrence and likelihood of mortality due to diarrheal diseases are highest among infants and decline gradually as children grow older. In resource-limited nations, additional direct effects of diarrhea in children encompass stunted growth, malnutrition, and hindered cognitive development. This condition is not deadly itself yet lack of knowledge, improper practice, and misdirected approach toward the prevention and management of diarrhea leads to lethal complication [9–11].

In a study conducted by Syan E. A. S. et al (2020), they examined the impact of a video-assisted structured teaching program on mothers' knowledge and practices concerning diarrhea prevention in children under five [12]. A sample comprising 410 mothers was included in the study. Before the video-assisted structured teaching program, less than half (47%) of the participating mothers exhibited a poor level of knowledge. However, following the program, 69% of the mothers demonstrated a good level of knowledge. The comparison between mothers' overall knowledge levels before and after the program revealed statistically significant differences ($P < 0.05^*$).

OBJECTIVES OF THE STUDY

- i. Evaluate mothers' understanding and actions related to preventing and handling toddler diarrhea at chosen Anganwadi centres in District Karnal.
- ii. Determine how effective a structured educational program is in enhancing mothers' knowledge and practices in preventing and managing diarrhea.
- iii. Investigate the relationship between mothers' initial knowledge about preventing and managing diarrhea and specific demographic factors.

Hypothesis

- *H1*: There will be a notable variance between the scores of knowledges and practices before and after the test.
- *H01*: There would not be any significant difference between the scores of knowledges and practices before and after the test.
- *H2*: There will be a noticeable connection between the initial knowledge scores and specific demographic variables.
- *H 02*: There would not be any significant correlation between the initial knowledge score and specific demographic variables.

MATERIALS AND METHODS

For this study, a quantitative research method was employed, utilizing a pre-experimental design involving a single group's pre-test and post-test phases. The study enrolled 100 mothers, and data collection occurred from March 13th to April 16th, 2023, following authorization from the Women Child Development Officer of Tehsil Indri (Karnal). A convenient sampling method was deemed suitable for sample selection, considering specific inclusion and exclusion criteria. A self-structured interview questionnaire for knowledge and a checklist for practice were constructed after consulting with the experts and reviewing the literature. For content validity, the tool was submitted to a group of experts in the field of pediatrics and community medicine. Reliability was computed by split-half method with Spearman's Brown Prophecy formula ($r = 2r/1 + r$). The questionnaire consists of three sections. Section 1 consisted of socio-demographic variables which include age of mother and child, gender, education, occupation, and residential status. Section 2 involved 25 multiple choice questions to assess the knowledge of mothers with a score of 1 mark for every correct answer. Section 3 included

20-point checklist to assess the practice with answering yes/no. Tool was prepared in Hindi as well as English language and translation was done by the language experts to establish the validity of translated tool.

Data was collected by the self-structured questionnaire interview method by personally visiting the investigator at each Anganwadi covering the area. Data entry and analysis were conducted through Microsoft Excel and SPSS version 20. Categorical data were described using percentage and frequency distributions, while variables were assessed using mean and standard deviations. Chi-square analysis was employed to establish connections between knowledge and socio-demographic variables. Both descriptive and inferential statistics were utilized to derive the study's outcomes. Ethical clearance was obtained from the institute's ethical committee under letter no. BREC/23/122, and informed consent was obtained from all participants involved in the study.

RESULTS

A total of 100 mothers have participated in the study with a response rate of 100%.

Socio-demographic Characteristics of the Study

In this study, more than half of mothers (53%) were in the age group of < 25 years. Based on the type of family, 55% of mothers were from joint families. Regarding educational status, 48% of mothers were having secondary education. Based on occupation, housewives (83%) were dominant. As per religion, the majority (65%) of mothers were Hindu. Regarding the number of children in the family, 32% of mothers had one child. In terms of monthly income, 63% of mothers were having less than ₹ 10000. Based on residence, 68% of mothers were from rural areas. In view of dietary patterns, 66% of mothers were vegetarian. More than half of the children (56%) were in the age group of 12–24 months. Based on gender, 56% of children were female (Table 1).

Knowledge and Practice of Respondents Regarding Prevention and Management of Diarrhea

This section deals with the classification of respondents in pre-test and post-test knowledge and practice levels on the prevention and management of diarrhea. In the pre-test, 55% of mothers had moderate knowledge followed by 44% of mothers with inadequate knowledge, and 1% with adequate knowledge (Table 2). In the pre-intervention practice, 44% of mothers had poor practice, 56% of mothers had good practice, and no one had excellent practice in preventing and managing diarrhea whereas in post-intervention practice, 51% of mothers had excellent practice, 47% had good practice, and 1% had poor practice regarding the prevention and management of diarrhea (Table 3).

Effectiveness of a Planned Teaching Program in Prevention and Management of Diarrhea

This section demonstrates that the post-test mean knowledge score (mean = 17.1, SD = 2.30) surpassed the pre-test mean knowledge score (mean = 10.26, SD = 2.77). The paired 't' test, with a value of -18.495, indicates a significant statistical difference at a 5% level ($p < 0.05$) between the pre-test and post-test scores, affirming a substantial improvement in knowledge due to the teaching program. Consequently, H1 is supported, and H01 is refuted (Figure 1).

Similarly, the post-test mean practice score (mean = 12.5, SD = 1.5) was notably higher than the pre-test mean practice score (mean = 6.48, SD = 1.6). The paired 't' test value of -25.598, with a significance level of $p < 0.05$, indicates a significant statistical difference between the pre-test and post-test practice scores. This outcome supports H2 and rejects H02 (Figure 2), indicating a substantial enhancement in both knowledge and practice scores due to the teaching program.

Association Between Demographic Variables and Knowledge Level of Respondents in Prevention and Management of Diarrhea

Findings of the analysis of knowledge with the selected demographic variables showed that there was significant association of pre-test knowledge with dietary pattern of family (as per table; $X^2 = 17.04$, $P = 0.02$). Hence, the research hypothesis was accepted for this socio-demographic variable.

Table 1. Frequency and percentage distribution of demographic characteristics of mothers and children.

S.N.	Sample characteristics		Frequency (f)		Percentage (%)
1.	Age of mother (in years)	< 25	53		53%
		26–30	28		28%
		31–35	19		19%
2.	Type of family	Nuclear	39		39%
		Joint family	56		56%
		Extended	4		4%
		Single parent	1		1%
3.	Education of mother	Illiterate	33		33%
		Secondary education	48		48%
		Senior secondary education	14		14%
		Graduate and Postgraduate	5		5%
4.	Occupation of mother	Housewife	83		83%
		Self-employed	16		16%
		Private job	0		0
		Government job	1		1%
5.	Religion	Hindu	65		65%
		Sikh	16		16%
		Muslim	19		19%
		Other	0		0
6.	Number of children in family	One	32		32%
		Two	28		28%
		Three	18		18%
		>Three	22		22%
7.	Monthly income (in ₹)	< 10000	63		63%
		10001–20000	30		30%
		20001–30000	7		7%
		>30001	0		0
8.	Residential status	Rural	68		68%
		Urban	26		26%
		Slum areas	6		6%
9.	Dietary pattern	Vegetarian	66		66%
		Non-vegetarian	28		28%
		Eggetarian	6		6%
10.	Age of child (in months)	12–24	56		56%
		25–36	44		44%
11.	Sex of child	Male	44		44%
		Female	56		56%

Table 2. Classification of respondents on pre-test and post-test knowledge level on prevention and management of diarrhea (N=100).

Knowledge level	Category	Respondents (Pre-test)		Respondents (Post-test)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Inadequate	Less than 50% score	44	44%	0	0
Moderate	51–75% score	55	55%	25	25%
Adequate	Above 75% score	1	1%	75	75%
Total		100	100	100	100

Table 3. Classification of respondents on pre-intervention and post-intervention practice level on prevention and management of diarrhea (N=100).

Practice level	Category	Respondents (Pre-test)		Respondents (Post-test)	
		Frequency(f)	Percentage (%)	Frequency (f)	Percentage (%)
Poor	Less than 50% score	44	44%	1	1%
Good	51–75% score	56	56%	47	47%
Excellent	Above 75% score	0	0	52	52%
Total		100	100	100	100

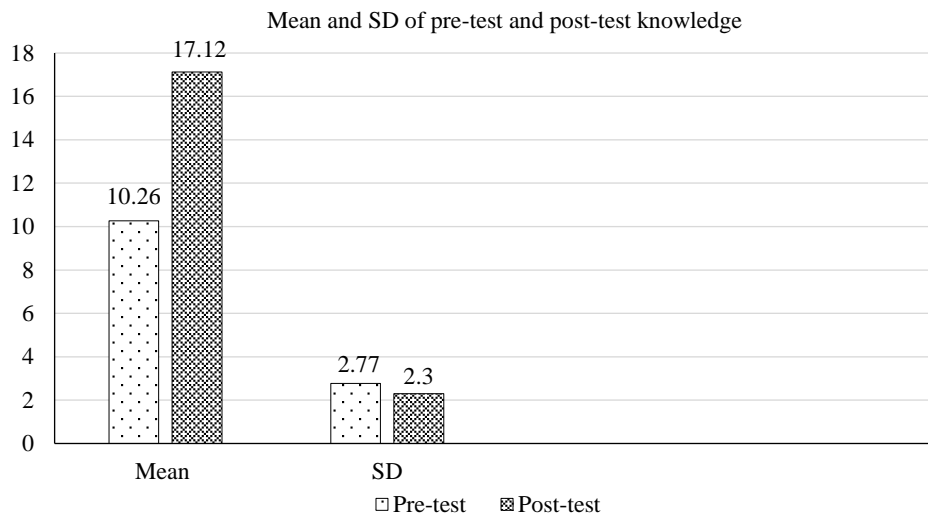


Figure 1. Pre-test and post-test knowledge mean and standard deviation of respondents in prevention and management of diarrhea.

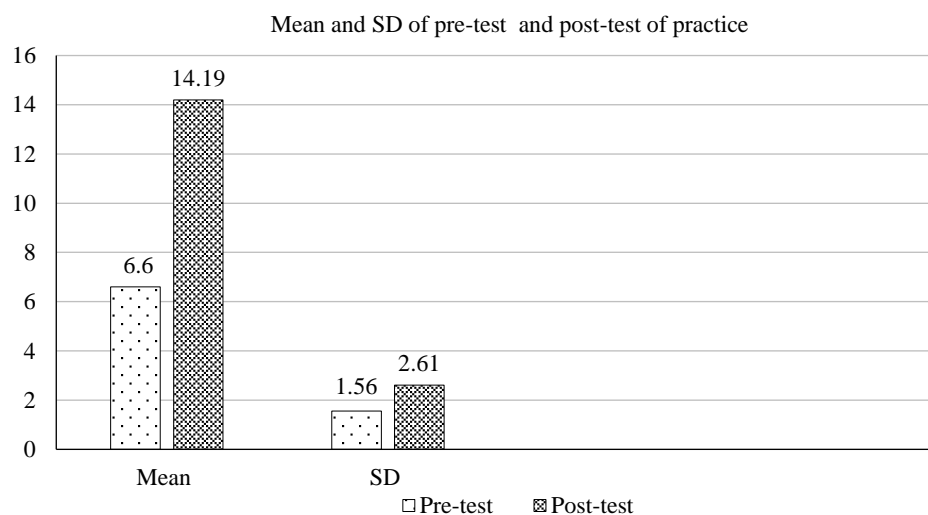


Figure 2. Pre-intervention and post-intervention practice mean and standard deviation of respondents in prevention and management of diarrhea.

Other demographic variables showed a non-significant association between pre-test knowledge and the age of mother ($X^2 = 6.068$, $P = 0.198$), type of family ($X^2 = 2.133$, $P = 0.907$), education status of mother (a $X^2 = 2.856$, $P = 0.827$), occupation of mother ($X^2 = 8.604$, $P = 0.072$), religion ($X^2 = 2.137$, $P = 0.711$), number of children in family ($X^2 = 5.243$, $P = 0.513$), monthly income ($X^2 = 5.465$, $P = 0.243$), residential status ($X^2 = 1.143$, $P = 0.887$), age of child ($X^2 = 1.491$, $P = 5.467$) and sex of child ($X^2 = 1.878$, $P = 0.391$).

DISCUSSION

The findings of the study suggested that it included 100 mothers, of whom the majority (53% of mothers) belong to the age group < 25 years. The greatest proportion, i.e., 55%, were from a joint family. A large proportion, 49%, of mothers with secondary education were housewives. More than half, i.e., 65%, were Hindu. Mostly, 32% had one child. The majority (63%) had less than ₹ 10,000. A large number, i.e., 68%, were rural. The majority, i.e., 66% of mothers, were vegetarian. More than half, i.e., 56% of children in the age group of 12–24 months, and the greatest proportion, i.e., 56%, were from the female category.

In the pre-test, 55% of mothers had moderate knowledge, followed by 44% who had inadequate knowledge, and 1% who had adequate knowledge regarding the prevention and management of diarrhea. On the contrary, in the post-test, 75% of mothers had adequate knowledge, followed by 25% with moderate knowledge, and no one had inadequate knowledge regarding the prevention and management of diarrhea.

Also, in the intervention practice score, 56% of mothers had good practice, followed by 44% of mothers with poor practice, and no one had excellent practice in preventing and managing diarrhea. While in the post-test, 51% of mothers had excellent practice, followed by 47% of mothers with good practice, and 1% had poor practice regarding the prevention and management of diarrhea.

The key findings indicate that the post-test mean knowledge score (mean = 17.1, SD = 2.30) exceeded the pre-test mean knowledge score (mean = 10.26, SD = 2.77), resulting in a paired ‘t’ test value of -18.495, which was statistically significant at a 5% level ($p < 0.05$) and greater than the tabulated value. Likewise, the post-intervention practice mean (mean = 14.9, SD = 2.61) was higher compared to the pre-intervention practice mean (mean = 6.60, SD = 1.56), resulting in a paired ‘t’ test value of -25.598, which was statistically significant at a 5% level ($p < 0.05$) and greater than the tabulated value. Furthermore, the study identified a noteworthy association between the mothers’ pre-test knowledge and their dietary patterns. However, no significant association was observed with other demographic variables.

CONCLUSION

In conclusion, with the help of the mentioned findings, this study evaluates that the effectiveness of planned teaching program on knowledge and practice of mothers in prevention and management of diarrhea. In the pre-test, 55% of mothers had moderate knowledge, 44% had inadequate knowledge, and 1% had adequate knowledge whereas in the post-test, 25% had moderate knowledge and 75% had adequate knowledge.

Furthermore, in the pre-intervention practice, 44% of respondents had poor practice and 56% had good practice on the contrary in the post-test, 52% had excellent practice, 47% had good practice, and 1% had poor practice.

It shows that there is a significant association improvement in knowledge practice of mothers in prevention and management of diarrhea after administration of planned teaching program.

Therefore, I can confidently assert that the structured teaching program effectively enhances mothers’ understanding and implementation of measures for preventing and managing diarrhea.

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