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Neonatal and infant mothers' Knowledge, Attitude, and Diaper Hygiene Practices: The Impact of Digital Education in Puducherry

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ABSTRACT

Background: Diaper hygiene means to maintain proper hygiene technique while using diaper in new born babies to infection and diaper rashes. Digital education through podcast which is a spoken audio recording that can be played directly on a media device. The present study was focused to improve the KAP on Diaper Hygiene through audio recorded teaching among the mothers.

Materials and Methods: The Quantitative Research Approach with the Pre-Experimental Research Design was adopted. A convenient sampling technique was used to recruit 50 mothers of infants at Koravallimedu, Puducherry. The structured questionnaires contain four Point Likert's Scale and Observational checklist were used to collect the data. Data were descriptively analyzed with SPSS Inferential Statistical Analysis was performed using the Chi-Square & Paired 't' test. Results with a $p < 0.01$ were considered statistically significant.

Results: The results revealed that there was a statistically significant improvement in the level of knowledge, attitude and practice at p<0. 001.

Conclusion: The study results proved that Digital Education through podcast method was Effective to improve the knowledge, attitude and practice regarding Diaper Hygiene.

Keywords: *Digital Education (Podcast), KAP (Knowledge, Attitude, Practice), Diaper hygiene, Mothers of infant.*

1. INTRODUCTION

Diaper hygiene means to maintain proper hygiene to avoid consequences such as infection and diaper rashes. The use of diaper poses a risk of developing many skin disorders in and around the diapered area if diaper changes are not made frequently. [1],[2]

Diaper dermatitis represent 10 – 20% of skin disorders evaluated by general pediatrician.[3] According to the national ambulatory medical care survey, there were 8.2 million visits for diaper dermatitis in infants the estimated prevalence of diaper dermatitis range is 7– 35%.[4],[5],[6]

The skin of diaper area has special needs to prevent diaper dermatitis, including diaper that absorb urine, as well as products for cleansing and conditioning the skin.[7] Diaper have been used for care of babies since decade to prevent soiling which poses the risk of developing diaper dermatitis.[8]

The podcast is a recorded audio teaching which explains about the Diaper Hygiene to the mothers.[9]

The researcher assessed the impact of Digital Education (podcast) on Knowledge, Attitude and Practice regarding Diaper Hygiene among Mothers of Infant through audio recorded teaching.

2. MATERIALS AND METHODS

Study Design and setting

Pre experimental one group pre and post-test research design was used with Audio recorded teaching (Podcast) which guides the researcher in supportive intervention. The study was conducted in Koravallimedu which was a rural village located in Bahour taluk of Puducherry districts, with population of 2744. In this study, Von Ludwig Bertalanffy model was used as a conceptual framework. This model explained the input, throughput and output of the study. It was obtained by testing of hypotheses and comparison of pre and posttest knowledge, attitude and practice on Digital Education of Diaper Hygiene among Mothers of Infant.

Study Participants and Sampling

The study participants 50 mothers of infants recruited through convenient sampling technique, to collect the data using structured questionnaire which was prepared by the researcher. Sampling frame was developed based on the inclusion and exclusion criteria.

Data Collection tools and techniques

Data were collected through interview method using structured questionnaire which assessed the knowledge, attitude and practice of Diaper Hygiene after obtaining the ethical approval from the concerned authority in Primary Health Center. The subject information data and informed consent were collected from the mothers. The pretest was conducted using structured questionnaire followed by an intervention using Digital Education (Podcast) for 20 minutes which included the concepts on meaning, causes, ways of occurrence, risk factor, signs & symptoms, prevention, management and alternatives to diapers. After one week of intevention, the posttest was conducted.

Pre-Test Assessment

The study procedure was explained to the mother and informed consent was obtained from the participants who are willing to attend the digital teaching on Diaper hygiene. The study was conducted between December 2023 to January 2024.

Intervention

Digital education (podcast method) audio recorded teaching on diaper hygiene was the intervention for the present study. The researcher used this newer technique to improve the Knowledge, Attitude and Practice in mothers that explained the incidence, meaning, causes, symptoms, management and prevention in diaper dermatitis. Digital education using audio recorded teaching on Diaper Hygiene held for 20 minutes which is attended by the recruited mothers. At the end of the session doubts and queries were clarified by the researcher.

Posttest assessment

After one week of interval, to detect the outcome of the intervention, the post-test assessment of knowledge, attitude and practice regarding management and prevention of diaper dermatitis was conducted with the help of same questionnaire which was used for pretest.

Quantitative research approach

Pre-Experimental Research Design

50 mothers of infant

Koravallimedu rural area, Puducherry

Pre-test by structured questionnaire (interview mwthod) of Digital Education on Diaper Hygiene, post-test

Descriptive data analysis (mean, median and standard deviation), Inferential Statistics

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 23, used to analyze the collected data in which descriptive statistics (mean, frequency, percentage and standard deviation) and inferential statistics (correlation co-efficient, paired t-test and chi-square test) were used.

Ethical Consideration

The ethical clearance was obtained from the Institutional Human Ethics Committee, Sri Balaji Vidyapeeth, Puducherry. Permission was obtained from the concerned authorities of community. Informed consent was received from the mothers of infant participating in the study.

3. RESULTS

The data was analyzed based on the objectives and hypothesis of the study using descriptive and inferential statistics

Section-1: Demographic Variables

Table 1: Frequency and percentage distribution of demographic variables of mothers of infant

N=50

S. No	Demographic variables		Frequency N	Percentage %
1	Gender of baby	Male	20	40
		Female	30	60
2	Education of the mother	graduate	24	48
		Higher secondary	26	52
3	Occupation	Private job	14	28
		Housewife	35	70
		Government job	1	2
4	Number of children	1	30	60
		2	20	40
5	Type of family	Join family	24	48
		Nuclear family	26	52
6	Residential area	Urban	-	-
		Rural	50	100
7	Food pattern	Veg	14	28
		Non veg	36	72

The demographic features of the participants were described in Table 1. In terms of gender, 40% (20) of infants are female while 60% (30) are male. Mothers' educational qualifications show that 48% (24) of mothers have graduated and 52% (26) have finished higher secondary. Additionally, 28% (14) and 70% (35) of mothers work in private employment, respectively, whereas 40% (20) of mothers have one child, 60% (30) have two children, and 2% (1) work for the government. 48% (24) were combined families, and 52% (26) were nuclear families. 30% (15) of families live in cities, whereas 70% (35) of families live in rural areas. There are 28% vegetarians and 36% non-vegetarians in terms of eating habits.

Section- 2: Frequency and percentage distribution of Knowledge, Attitude & Practice mothers.

Table 2.1: Frequency and percentage distribution of knowledge level of mothers during pre and posttest.

N=50

Interpretation	Pre-test		Post-test	
	Frequency N	Percentage %	Frequency N	Percentage %
Inadequate	50	100	-	-
Moderate	-	-	-	-
Adequate	-	-	50	100

The above table revealed that 100% (50) have inadequate knowledge before pretest and adequate knowledge after posttest.

Table 2.2: Frequency and percentage distribution of attitude level of mothers during pre and post- test.

N=50

Interpretation	Pre-Test		Post-Test	
	Frequency N	Percentage %	Frequency N	Percentage %
Poor	24	48	-	-
Fair	26	52	-	-
Good	-	-	50	100

The above table revealed that 100% (50) have good attitude after posttest.

Table 2.3: Frequency and percentage distribution of practice levels of mothers during pre and post test

N=50

Interpretation	Pre-test		Post-test	
	Frequency N	Percentage %	Frequency N	Percentage %
Poor	41	82	-	-
Fair	9	18	6	12
Good	-	-	44	88

The above table revealed that 88% (44) of mothers have good practice and 12% (6) of mothers have moderate practice.

Section- 3: Effectiveness of digital education on knowledge, attitude and Diaper Hygiene Practices of mothers of infant.

Table 3.1: Effectiveness of digital education on knowledge regarding diaper hygiene

N=50

Observation	Mean	Standard deviation	Std. Error Mean	Paired Differences	Paired t-test	p value
Pre-test	3.42	1.605	0.227	14.9	58.215	<0.001
Post-test	18.32	0.891	0.126			

The mean value of pre-test score was 3.42 with SD 1.605 and post-test was 18.31 (0.891) the calculated "t" values was 58.215. which shows the improvement in level of Knowledge that was highly statistical at $p < 0.001$

Table 3.2: Effectiveness of digital education on attitude regarding diaper hygiene.

N=50

Observation	Mean	Standard deviation	Std. Error Mean	Paired Differences	Paired t-test	p value
Pre-test	19.76	2.752	0.389	16.7	39.839	<0.001
Post-test	36.46	1.656	0.234			

The mean value of pretest score was 19.76 with SD 2.752 and posttest was 136.46 (1.656) the calculated "t" values was 39.839. which shows the improvement in level of attitude that was highly statistical at $p < 0.001$.

Table 3.3: Effectiveness of digital education on practice regarding diaper hygiene

Observation	Mean	Standard deviation	St Standard Error Mean	Paired Differences	Paired t- test	p value
Pre-test	3.78	0.864	0.122	4.78	24.86	<0.001
Post-test	8.56	0.929	0.131			

The mean value of pretest score was 3.78 with SD of 0.864 and posttest was 8.56 with SD of 0.929 the calculated "t" values was 24.86. which shows the improvement in level of attitude that was highly statistical at $p < 0.001$.

Section- 4: Association between the knowledge, attitude and practice on digital education and selected demographic variable regarding diaper hygiene of mothers.

Table 4.1: Association between the knowledge and selected demographic variable.

N=50

Demography			Practice					MW/KW test	p- value
		Count	Mean	Standard Deviation	Median	Percentile 25	Percentile 75		
Gender of baby	Male	20	19.1	2.69	19	17	21	0.0241	0.0384
	Female	30	20.2	2.75	20	18	21		
	Private job	14	18.79	2.64	18.5	17	20		

Occupation	Housewife	35	20.14	2.78	20	18	22	0.0225	0.0315
	Government job	1	20	--	20	20	20		
Number of children	1	30	20.03	2.98	20	18	23	0.0415	0.0545
	2	20	19.35	2.39	19	18	20		
	Non veg	36	19.81	2.68	20	18	21		

The above table showed that there was a significant association only between mother previous knowledge on diaper hygiene with knowledge on demographic variables that was significant at p-value <0.05.

Table 4.2: Association between the practice and selected demographic variable

N=50

S.NO	Demography			Practice					MW/KW test	p-value
			Frequency	Mean	Standard Deviation	Median	Percentile 25	Percentile 75		
1	Gender of baby	Male	20	19.1	2.69	19	17	21	0.0241	0.0384
		Female	30	20.2	2.75	20	18	21		
2	Occupation	Private job	14	18.79	2.64	18.5	17	20	0.0225	0.0315
		Housewife	35	20.14	2.78	20	18	22		
		Government job	1	20	--	20	20	20		
3	Number of children	1	30	20.03	2.98	20	18	23	0.0415	0.0545
		2	20	19.35	2.39	19	18	20		
		Non veg	36	19.81	2.68	20	18	21		

The table shows that there was significant association between mother previous practice on diaper hygiene with practice on demographic variables that was significant at p-value <0.005.

4. DISCUSSION

The first objective was to assess the knowledge regarding diaper related problems and management among mothers of infant. The majority (26) 86.7% of the mothers had inadequate knowledge, (4) 13.30% had moderate knowledge. In post-test, (24) 80% mothers had sufficient knowledge and (6) 20% mothers had moderately adequate knowledge.

Visscher MO and Clin Dermatol (2018) carried out a pre-experimental study to assess the efficacy of a structured teaching program on the knowledge of mothers of infants (6 to 12 months) regarding the prevention of diaper dermatitis at Sree Balaji

Medical College and hospital in Chennai. A pre-experimental design and an evaluative research approach were employed. The knowledge score on the pre-test was 11.83, the post-test score was 23.87, and the t value was 16.70, which is statistically significant at 0.001. [10]

The second objective of the study was to evaluate the effectiveness of digital education on knowledge, attitude and practice regarding diaper hygiene.

The study found a significant improvement in the knowledge, attitude, and practice of mothers of infants with relation to diaper hygiene. According to the results, digital education (podcast) evaluated the impact of digital education on knowledge, attitude, and practice. The difference between the scores on the pre-test and post-test was more significant ($p<0.001$). Therefore, digital education proved to be a successful approach in raising the knowledge, attitude, and practice of mothers of infants. The pre-test data revealed that the majority of mother (50) 100% had inadequate knowledge, while (26) 52% had a neutral view. Of those with poor attitudes, (24) 48% and (41) 82% have poor practices. Of those who took the post-test, (50) 100% had sufficient knowledge, whereas (9)18% had modest practice with diaper hygiene. (50) 100% had a positive attitude while (44) 88% had behaviours that were positive. (6) 12% have moderate diaper hygiene practices.

A pre-experimental study was carried out in Kasturba Hospital in Manipal, Karnataka, India, by **Kim JS (2022**) to evaluate the efficacy of an awareness campaign on the prevention and management of diaper dermatitis among mothers of infants aged 0 to 1. It exhibited significant changes in practice, attitude, and knowledge. [11]

The third objective of the Study was to associate the level of knowledge, attitude and practice regarding Diaper hygiene among Mothers of infant

The data revealed with regards to demographic variables there was no statistically significant association seen in variables gender of the baby, education of the mother, occupation of the mother, Number of children, type of family, and type of area and food pattern.

The study was supported by **Benitez Ojeda AB, (2018)** conducted a pre-experimental study aimed to assess the effect of health teaching on knowledge and practice of postnatal mother admitted in selected hospital regarding using diaper in children to prevent systemic bacterial infection, Pune. In analysis there was statistically remarkable difference between pre-test & post-test scores on regarding use of diaper in children at p value <0. 00001. There was significant improvement in knowledge ($t=71.3$, $p=0.00$) and practice ($t=46.8$, $p=0.00$) were identified.[12]

Hence it was inferred that there was no significant association between gender of the baby, education of the mother, occupation of the mother, number of children, type of family, type of area and food pattern with knowledge, attitude and practice.

5. CONCLUSION

The present study concluded that through audio recorded teaching (Podcast) regarding diaper hygiene was Effective in preventing the diaper rashes and improved the KAP in mothers of infant. It reveals structured questionary methods and checklist was more effective to assess the diaper hygiene among the mothers of infant.

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Declaration of consent

All consent was taken from the participants and confidentiality was maintained.

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Conflicts of interest

There are no conflicts of interest.

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