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Effectiveness of Self-Instructional Module on Knowledge of Mothers Regarding Special Vaccines against Communicable Disease for Under-Five Children in a Selected Urban Community at Mangalore

Laijy Francis[1], John Shine[2]

[1]Corresponding Author
[2]Lecturer, Wollega University, Nekemte, Ethiopia

Abstract: ***Children are innocent, trusting and full of hope. Their childhood should be joyful and loving. Their lives should mature gradually, as they gain new experiences. The aim of this study was to assess the effectiveness of self-instructional module on knowledge of mothers regarding special vaccines against communicable diseases for under-five children in a selected urban community at Mangalore. Objectives of the study: 1) To determine the mean pre-test knowledge level of mothers regarding special vaccines against communicable disease for under-five children. 2) To determine the mean post-test knowledge level of mothers regarding special vaccines against communicable disease for under-five children. 3) To identifythe effectiveness of SIM on knowledge of mothers regarding special vaccines against communicable disease for under-five children in terms of gain in mean post - test knowledge score. 4) To find out the association between mean pre - test knowledge scores and selected demographic variables. Methods: An evaluative approach with one group pre-test post-test design was adopted for the study. Through non-probability purposive sampling technique 60 samples were selected. A structured knowledge questionnaire was used to assess the knowledge of mothers on special vaccines against communicable disease for under-five children. Data was analysed using descriptive and inferential statistics. Result: Findings of the present study reveal that in the pre-test of the mothers 15% obtained inadequate knowledge score, 81.7% obtained moderate and 3.3% had adequate knowledge score. In the post-test 98.3% obtained adequate knowledge score and 1.7% obtained moderate knowledge score.Paired 't' test showed that there was significant improvement between pre-test and post-test knowledge with 't' value of 26.5 (t_{59}=1.67, P<0.05). The calculated chi square values of education of the mother (3.077) and number of children (6.240) were found significant. However, the chi square value of other variables such as age of mother (1.493), age of the child (0.00), type of family (1.017) and income of the family (2.032) are not found significant at 0.05 level of significant. Therefore, there is no association between the pre-test knowledge score and the selected demographic variable except education of the mother and number of children. Interpretation and conclusion: Mothers must know about special vaccines to prevent communicable diseases for their under-five children. The study findings revealed that the knowledge score of mothers were less before the introduction of self-instructional module. The self-instructional module facilitated them to gain more knowledge about special vaccines against communicable diseases for under-five children which were evident in post test knowledge scores. Hence self-instructional module was an effective strategy for providing information and to improve knowledge of mothers which was well appreciated and accepted by the mothers.***

Keywords: Effectiveness; knowledge level; special vaccines; communicable diseases; mothers of under-five children; self-instructional module

1. Introduction

Childhood is very precious period in human life. It requires more care and protection from the diseases. Diseases of early childhood preventable by vaccination remain a serious problem in developing countries. Vaccination is a boon in the prevention of most common communicable disease in the childhood.[1]

The Government of India recommends and provides some vaccines as per the Expanded Program of Immunisation (EPI). These vaccines include the BCG, oral polio vaccine, DPT (both primary and booster), measles and tetanus toxoid. Hepatitis B and MMR are included in some states. Apart from these there are a few mandatory and optional vaccines that can be classified as vaccines not covered under EPI but recommended by The Indian Academy of Paediatrics or IAP (the national body of Paediatricians). This includes: Rotavirus vaccination for below 6 months old, Haemophilus influenza B (Hib) vaccine, Influenza vaccine, Varicella (Chickenpox) vaccine at 15-18 months, Hepatitis A vaccination, Human Papilloma Virus vaccine and Meningococcal Vaccine.[2]

Thousands of children still die from vaccine-preventable diseases each year. So there is a need for early detection and proper administration of immunisations in appropriate dose at accurate time.[13] The mortality rate of under-five children is still 49/1000 live births in India and in Karnataka it is 48/1000 live births. The major cause of death is vaccine-preventable diseases such as neonatal tetanus, measles, TB, diphtheria, pertusis and polio. Infectious diseases are now the world's biggest killer of children and young adults.[3]

This area of study has been selected because even today the mortality of under-five children is high and it is mainly due to diseases that can be prevented. Hence the need was felt to identify the learning needs of mothers and educate them

regarding immunisation by introducing self-instructional module and promoting the health of under-five children which in turn reduces child mortality.

2. Methods and Materials

2.1 Title of the study

Effectiveness of self-instructional module on knowledge of mothers regarding special vaccines against communicable disease for under-five children in a selected urban community at Mangalore.

2.2 Objectives of the study

1) To determine the mean pre-test knowledge level of mothers regarding special vaccines against communicable disease for under-five children.
2) To determine the mean post-test knowledge level of mothers regarding special vaccines against communicable disease for under-five children.
3) To identify the effectiveness of SIM on knowledge of mothers regarding special vaccines against communicable disease for under-five children in terms of gain in mean post - test knowledge score
4) To find out the association between mean pre - test knowledge scores and selected demographic variables.

2.3 Hypotheses

The following hypothesis will be tested at a .05 level of significance.

H_1: There is significant difference between mean pre-test and post-test level of knowledge scores among mothers regarding special vaccines against communicable disease for under-five children.
H_2: There is significant association between pre-test level of knowledge with selected demographic variables.

2.4 Research Approach

Quantitative evaluative research approach was adopted for this study in order to accomplish the envisaged objectives.

2.5 Research Design

The design can be represented as follows:

Subjects	Pre-test	Treatment	Post-test
Mothers	O_1	X	O_2

O_1: Pre-test on knowledge of under-five mothers regarding special vaccines against communicable disease by using knowledge questionnaire.
X: Administration of self-instructional module
O_2: Post-test on knowledge of under-five mothers regarding special vaccines against communicable disease by using knowledge questionnaire.

2.6 Setting of the study

The study was conducted in a selected urban community at Mangalore, India

2.7 Population

The population in the study comprised of all the mothers of under-five children in a selected community at Mangalore.

2.8 Sampling

- **Sample:** The sample for the study comprised of mothers of under-five children who resides in a selected community at Mangalore, and those who fulfil the inclusion criteria.
- **Sample Size:** The sample size for this study was 60 mothers.

2.9 Sampling technique

- In this study purposive sampling is used to select the sample because of economy of time, money, access and feasibility.

Inclusion criteria
The study will include the
- Mothers of any age group who have under-five children.
- Mothers of under-five children who are mentally and physically fit to reveal the data.
- Mothers of under-five children who can speak and understand Kannada/English.

Exclusion criteria
Mothers who have already attended educational programme on vaccinations against communicable diseases.

Variables

Independent variable: Self-instructional module on special vaccinations against communicable disease.

Dependent variable: Knowledge of mothers of under-five children regarding special vaccination against communicable disease.

Extraneous Variable: In this study, it refers to age of mother, education, age of children, number of children, family income and type of family.

2.10 Sample Size Estimation

The actual sample size of the study was determined by using single population proportion formula.

$$n = \frac{(Za/2)^2\ p\ (1-p)}{d^2}$$

Where n = estimated sample size
Za/2 = Critical value at 95% confidence level of certainty (1.96)
P = prevalence
d = marginal error (0.05).

A prevalence rate of 8% will be used for this study which is obtained from the similar study conducted in Indore, India. [4]

$$n = \frac{(1.96)^2 \times 0.08(1-0.08)}{(0.05)^2} = 58$$

As per the sample size calculated, researcher decided to select 60 samples for the study.

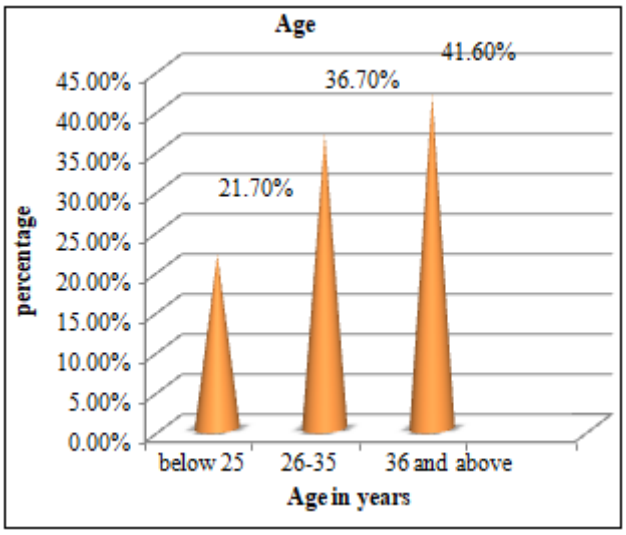
3. Results and Discussion

Section I: Demographic characteristics

Frequency and percentage distribution of samples according to demographic variables, n=60

Sl. No. Demographic variable	Frequency	Percentage
1. Age		
a. Below 25 years	13	21.7
b. 26 – 35 years	22	36.7
c. Above 36 years	25	41.6
2. Education		
a. No formal education	3	5
b. Primary and secondary	38	63.3
c. Graduate and above	19	31.7
3. Number of children		
a. One	11	18.3
b. Two	25	41.7
c. 3 or more	24	40
4. Age of the child		
a. 0 -12 months	2	3.3
b. 1 – 2 year	53	88.3
c. 3- 5 year	5	8.3
5. Type of family		
a. Nuclear	21	35.0
b. Joint	27	45.0
c. Extended	12	20.0
6. Income of the family		
a. Below Rs. 5000/month	16	26.7
b. Rs. 5001 – 10000	15	25.0
c. Above Rs. 10000	29	48.3

Age

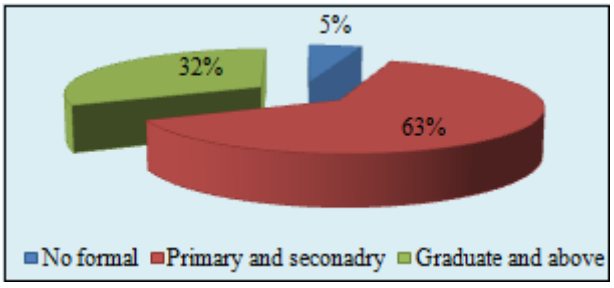


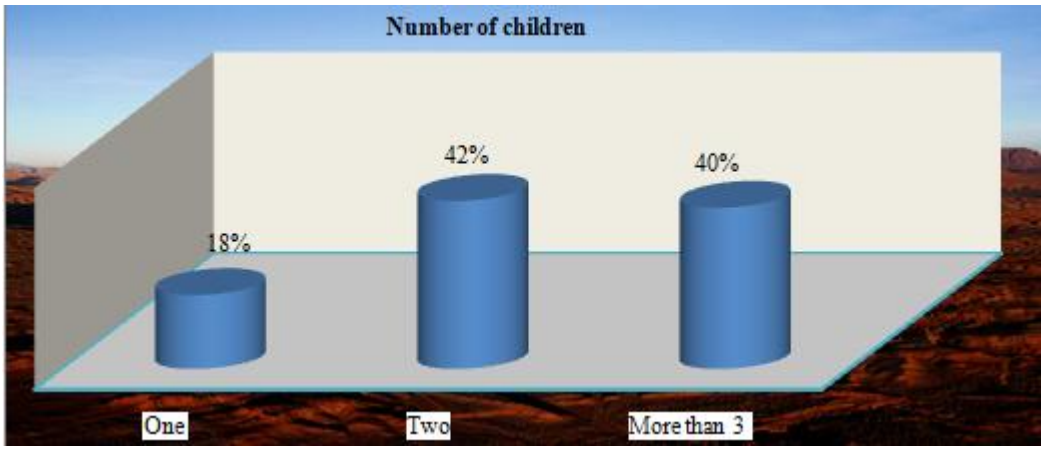
Pyramid diagram showing the distribution of the samples according to their age

Education

Pie diagram showing the percentage distribution of the samples according to their level of education

Number of children





Cylindrical diagram showing percentage distribution of samples according to the number of children

Section II: Assessment of pre-test level of knowledge among mothers of under-five children regarding special vaccines against communicable disease

Pre-test level of knowledge

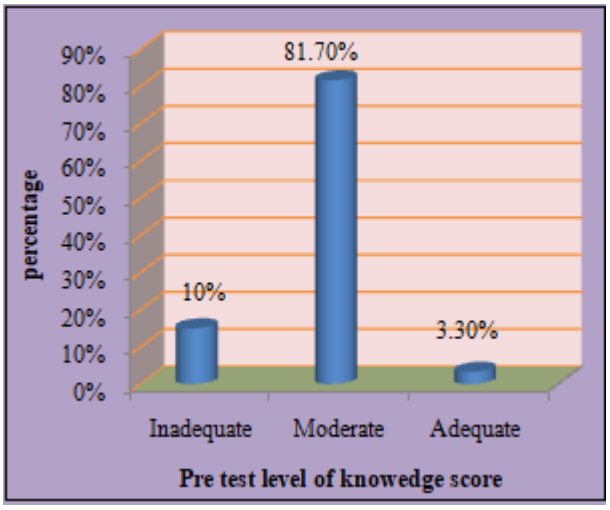
The total knowledge score obtained by the subjects are arbitrarily graded as follows:

Knowledge Score	Percentage	Grade
0-9	0-33	Inadequate
10 - 18	34-66	Moderately adequate
19 - 27	67-100	Adequate

Maximum score: 27

Frequency and percentage distribution of pre-test knowledge scores of mothers, n=60

Knowledge score	Level of knowledge	Frequency	Percentage
0-9	Inadequate	9	15
10 - 18	Moderately adequate	49	81.7
19 - 27	Adequate	2	3.3



Cylinder diagram showing the level of pre-test knowledge scores of samples on special vaccines against communicable disease.

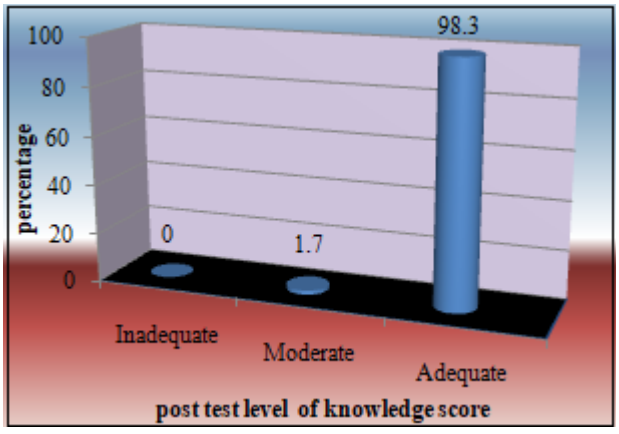
Section III: Assessment of post-test level of knowledge among mothers of under-five children regarding special vaccines against communicable disease

Post-test knowledge score of mothers

Frequency and percentage distribution of post-test knowledge score of mothers

n=60

Knowledge score	Level of knowledge	Frequency	Percentage
0-9	Inadequate	0	0
10 - 18	Moderately adequate	1	1.7
19 - 27	Adequate	59	98.3



Cylinder diagram showing the level of post-test knowledge scores of samples on special vaccines against communicable disease

Range, mean, median, mean percentage and standard deviation of pre-test and post-test knowledge score of mothers

n=60

	Range	Mean	Mean percentage	Median	Standard deviation
Pre-test	5 - 19	12.40	45.93	12	3.163
Post-test	9 - 25	22.23	82.35	22	1.817

Section IV: Effectiveness of self-instructional module on knowledge regarding special vaccines against communicable disease among mothers of under-five children

To find the significance of mean difference between pre-test and post-testknowledge scores the following null hypothesis is stated:

H_{01}: There is no significant difference between mean pre-test and post-test knowledge scores among mothers regarding special vaccines against communicable disease at 0.05 level of significance.

Mean, Mean difference, standard deviation and 't' value between pre-test and post-test knowledge scores, n=60

Parameter	Mean	Mean diff.	SD	df	't' value
Pre–test	12.40	9.83	3.163	59.00	26.53
Post–test	22.23		1.817		

t_{59}=1.67,P<0.05

The calculated 't' value 26.53 is greater than the table value 1.70. Hence null hypothesis is rejected and the research hypothesis is accepted.

Section V: Association of pre-test knowledge score among mothers with selected demographic variables

To find the association of the pre-test knowledge score with demographic variables, the following null hypothesis was formulated:

H_{02}: There is no significant association of the pre-test knowledge scores with selected demographic variables.

Chi-square was computed to test the hypothesis.

Chi-Square value of pre-test knowledge scores with selected demographic variables, n=60

Demographic variables	Knowledge score		χ^2 value	Significance
	< median	≥median		
1. Age				
a) < 25 years	7	6	1.493	Not significance
b) 26 -35 years	8	14		
c) > 36 years	13	12		
2. Education				
a) No formal education	21	17	3.077	Significant
b) Primary & secondary	7	15		
c) Graduate and above	18	14		
3. Number of children				
a) One	8	3	6.240	Significant
b) Two	13	12		
c) Three or more	7	17		
4. Age of the child				

Demographic variables	Knowledge score			
	< median	≥median	χ^2 value	Significance
a) 0-12 months	12	15	0.000	Not significant
b) 1-2 years	14	14		
c) 3-5 years	2	3		
5. Type of family				
a) Nuclear	4	17	1.017	Not Significant
b) Joint	8	19		
c) Extended	4	8		
6. Income of the family				
a) < 5000	8	8	2.032	Not Significant
b) 5001-10000	11	18		
c) >10000	9	6		

The data presented in Table 9 shows the association of knowledge score of subjects with demographic characteristics. The chi- square value of education of the mother (3.077), and number of children (6.240) are significant. However, the chi square value of other variables such as age of mother (1.493), age of the child (0.00), type of family (1.017) and income of the family (2.032) are not found significant at 0.05 level of significant. Therefore there is no association between the pre-test knowledge score and the selected demographic variable except education of the mother and number of children. Therefore the null hypothesis (H_{02}) is accepted except for education of the mother and number of children.

4. Discussion

The distribution of mothers according to their demographic variables reveals that most of the patients 25 (41.6%) were aged above 36 years of age. Majority of the mothers (63.3%) had primary or secondary education. Twenty-seven (45%) of them were living in joint family.The findings of the study are consistent with a study conducted to assess the effectiveness of planned teaching programme on knowledge regarding immunisation among antenatal mothers at selected villages of Waghodia Taluka. In this study majority 46 (76.3%) of hypertensive patients were above 30 years of age, 45 (76.7%) belonged to nuclear family and 41 (68.3%) have primary education.[5]

Findings of the present study reveal that in the pre-test of the mothers 15% had inadequate knowledge score, 81.7% obtained moderate and 3.3% had adequate knowledge score.The above findings are consistent with the descriptive study conducted on knowledge, practice and attitude regarding vaccination among mothers in Iran, 2005. Study findings revealed that among 95.5% of respondents nearly half (51.4%) of the mothers had average knowledge about vaccination of the children.[6]

5. Conclusion

Findings of the present study reveal that in the pre-test of the mothers 15% obtained inadequate knowledge score, 81.7% obtained moderate and 3.3% had adequate knowledge score. In the post-test 98.3% obtained adequate knowledge score and 1.7% obtained moderate knowledge score. Paired ‘t’ test showed that there was significant improvement between pre-test and post-test knowledge with ‘t’ value of 26.5 (t_{59}=1.67, P<0.05).

The chi-square value of education of the mother (3.077), and number of children (6.240) are significant. However, the chi square value of other variables such as age of mother (1.493), age of the child (0.00), type of family (1.017) and income of the family (2.032) are not found significant at 0.05 level of significant. Therefore there is no association between the pre-test knowledge score and the selected demographic variable except education of the mother and number of children.

6. Acknowledgement

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