Impact of Instructional Programme on Knowledge Regarding Protein Energy Malnutrition among the Mothers of Preschool Children from Selected Rural Areas of Karnataka: A Pilot Study

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Abstract: Background of the study: According to World Health organization (WHO), protein energy malnutrition refers to "an imbalance between the supply of protein and energy and the body's demand for them to ensure optimal growth and function". It is a major public health problem in India. It affects particularly the preschool children (<6 years) with its direct consequences ranging from physical to cognitive growth and susceptibility to infection[1]. This affects the child at the most crucial period of time of development which can lead to permanent impairment in later life. According to WHO, globally 162 million under-fives were stunted among them 56% lived in Asia and 36% in Africa, 99 million under-fives were underweight among them 67% lived in Asia and 29% in Africa[2]. 50 million under five children were wasted and 17 million were severely wasted. Approximately 71% of them lived in Asia and 28% in Africa, with similar figures for wasted children 69% and 28% respectively. Children who suffer from wasting face a markedly increased chance of death[3]. According to United Nations International children's Emergency Funds (UNICEF), 13% of children under five years old in the developing world were wasted and 5% were extremely wasted. UNICEF estimates that in developing world 129 million under five children were underweight, nearly one in four and ten percent of them being severely underweight[4]. The prevalence of underweight is higher in Asia than in Africa, with rates of 27 and 21 % respectively[5]. **Methods:** The quantitative research approach was used for the study. The present study adopted mixed research design in two stages, first stage uses Cross Sectional Descriptive Survey for the identification of pre-school children suffering with protein energy malnutrition and second stage Randomized Pretest Posttest Control Group Design for evaluating the Impact of instructional program on knowledge regarding protein energy malnutrition among the mothers of preschool children from selected rural areas of Karnataka was adopted. Nola Penders Model was used as a conceptual framework for the study. Cross sectional survey was conducted in the selected rural areas of Dharwad to screen the preschool children to find the prevalence of protein energy malnutrition in them. A total of 50 (10% of total population of main study) mothers of preschool children were selected as per sampling criteria. 25 each mothers were distributed in experimental and control groups. Structured knowledge questionnaires were used to collect the data from study participants. The results were described by using descriptive and inferential statistics. **Results:** In the experimental group, Pretest knowledge score mean was 14.16, median was 15, mode was 15, standard deviation 3.27 and score ranged between 8-19. Where as in Posttest, mean was 26.20, median was 27, mode was 15, standard deviation was 2.70 and score ranged between 17-29. Among the participants of control group, Pretest knowledge score mean was 13.84, median was 14, mode was 14, standard deviation 3.03 and score ranged between 7-18. Where as in Posttest, mean was 14.44, median was 15, mode was 15, standard deviation was 2.48 and score ranged between 10-18. In the experimental group, during Pretest,

3(12%) respondents had poor Knowledge and 22 (88%) of respondents exhibited an average understanding regarding protein energy malnutrition. In Posttest 1(4%) of respondents expressed an average understanding and 24 (96%) of respondents showed good understanding regarding protein energy malnutrition. Whereas in the control group, during Pretest, 2(8%) of respondents has insufficient comprehension and 23(92%) of respondents had an average knowledge regarding protein energy malnutrition. In the Posttest 5 (20%) of respondents had poor understanding and 20 (80%) of respondents showed an average understanding regarding protein energy malnutrition. In the respondents of experimental group, the findings reveal that the post-test mean knowledge scores was found higher [mean=26.20, SD of 2.70] when compared with mean pretest knowledge score value which was 14.16 with SD of 3.27. Among the respondents of control group, the findings reveal that the post-test mean knowledge scores was found higher [mean=14.44, SD of 2.48] when compared with pre-test mean knowledge score value which was 13.84 with SD of 3.03. Statistical contrast in level of knowledge among research and non-research batches participants during Posttest the 't'$_{(48)}$ values was 15.18.and is reported noteworthy at extent of 0.05, further the respondents of experimental group had higher mean of 26.20 during Posttest when compared to controlled group participant's mean knowledge score of 14.44. This implies the instructional module was efficient in enhancing the level of understanding of participants regarding protein calorie malnutrition. Computed values of Chi square test for association between level of knowledge of respondents regarding protein energy malnutrition and their selected demographic variables is enumerated to be noteworthy at the extent of 0.05, for age group, religion and occupational status of respondents and not found statistically significant for other selected socio demographic variables. **Interpretation and Conclusion:** The overall findings of the pilot study revealed that the Majority of preschool children mothers' knowledge regarding protein energy malnutrition was poor.
Keywords: Impact, Prevalence, instructional program, knowledge, Prevention, protein energy malnutrition.

Introduction

The most dispersed health and under nutrition problem in developing countries including India, is malnutrition of nutrition of calorie and growth retardation. United Nations International Children's Emergency Funds (UNICEF) document "The Progress for Children" identifies that in the growing world 146 million children underneath 5 years are below weight, predisposing them to serious problems from common childhood ailments[6].

Malnutrition often results from not consuming enough standardized food being available to eat. The main cause of not having high quality food is because of high cost of food or due to poverty. Other cause includes lack barest feeding, gastroenteritis, pneumonia, malaria, and other systematic diseases[7]. There are mainly two categories of under nutrition; first one is protein energy malnutrition (PEM) and dietary deficiency. PEM has two severe categories which includes Marasmus is resulting from lack of protein and calories and other one is kwashiorkor is resulting from due to lack of protein only[8].

Pilot study is primer research strategy or preliminary run, done in course of action of a crucial research process. Feasible path are not only an assessments by taking humble number of individuals and these are not brief test primers such examinations as may be coordinated among unobtrusive number of masses.

- ✓ Pilot contemplates serve various huge significance as seeks after
- ✓ It finds plenty fullness of study approach and strategies.
- ✓ Helps to find likelihood of accomplishment of an enlistment arrangement of study individuals.
- ✓ Quality and fittingness of data examine instruments.
- ✓ Shows nature of associations between critical variables with the objective that what number of tests are required for the examination can be assessed.
- ✓ To find cluttering factors that ought to be controlled.

✓ To find legitimacy and adequacy of getting ready materials for inquire about staffs and people.
✓ To find potential issues, for instance, loss of individuals over the range of the examination.

Mother's education can generate different types of intra household effects and thereby reducing the risk of nutritional deficiency like protein energy malnutrition. The effects which bring through mothers education are:
✓ Improved health and nutrition knowledge.
✓ Psychological changes and improved nutritional behaviour.
✓ Shift of power relations within the household in favour of better nutrition which includes breast feeding, weaning practices and child feeding and pregnancy diets may lead to more effective dietary behaviour on the part of mothers who manage food resources within the household.

Statement of the Problem
"A study to evaluate the Impact of instructional programme on knowledge regarding protein energy malnutrition among the mothers of preschool children from selected rural areas of Karnataka: A Pilot Study"

Objectives of the study
✓ To assess the prevalence of protein calorie malnutrition in preschool children.
✓ To assess the pre interventional, existing level of understanding of mothers of preschool children about malnutrition of protein and calorie.
✓ To find the efficiency of instructional module on protein energy malnutrition for mothers of preschool children.
✓ To compare the efficiency of instructional programme on protein energy malnutrition between the experimental and controlled batch.
✓ To evaluate the relationship between the knowledge of preschool children mothers on calorie protein malnutrition with their undertaken socio demographic variables.

Hypotheses
The hypotheses were formulated for the study is as follows-
H$_1$: There will be remarkable disparity in the mean knowledge score among participants of experimental and non-experimental batch regarding malnutrition of protein calorie during pretest at the significance level of 0.05.
H$_2$: Marked contrast will be calculated between mean knowledge score of participants who have not attended the instructional module during pretest and posttest at the significance level of 0.05.
H$_3$: There will be noteworthy difference between the mean knowledge scores of participants who attended the instructional module during pretest and posttest at the significance level of 0.05.
H$_4$: There will be remarkable disparity in the mean knowledge score among participants of experimental and non-experimental batch regarding malnutrition of protein calorie during posttest at the significance level of 0.05.
H$_5$: There will be significant interrelation between levels of knowledge of participants of experimental group regarding protein energy malnutrition during pretest and their selected personal variables.
H$_6$: There will be significant consortium between levels of knowledge of participants of control group regarding protein energy malnutrition during pretest with their undertaken personal variables.

Delimitation
This study is delimited to mothers of preschool children of selected rural areas of Dharwad district and having at least one child suffering with PEM.

Methodology
Research Approach: Quantitative Research Approach
Research Design: Randomized Pretest Post Test Control Group Design.

Sample: Mothers of preschool children from selected rural areas of Karnataka.

Sampling Technique: Simple Random Sampling Technique.

Sample Size: 50 mothers of preschool children residing at selected rural areas of Dharwad.

Tools: A structured knowledge questionnaire with 30 items regarding Protein Energy Malnutrition.

Plan for Data Analysis: Descriptive statistics (frequency, percentage, mean, median and standard deviation) and inferential statistics (T-test) were used for analysis and interpretation of data.

Setting of the Study: Selected Rural Areas of Karnataka.

Sampling Criteria

Present study samples were selected by keeping in view of the following criteria.

Inclusion criteria: Mothers of the preschool children-
✓ Whose children are aged between 1-6 years
✓ Who can speak and read Kannada
✓ Who are willing to participate in the study

Exclusion criteria
✓ Preschool Children's mothers who are not available during the period of study.
✓ Mothers of preschool children who are having some personal or medical problems at the time of the study.

Variables

Study Variables: Effectiveness of instructional programme on knowledge regarding Protein Energy Malnutrition.

Content validity

The structured questionnaire on comprehension of mothers of preschool children regarding protein-calorie malnutrition was content validated by giving to seven experts from nursing field and general medical practitioner. There was 100% agreement by all experts on all the items. However there were few suggestions to modify some of the items and those were incorporated in final tool.

Reliability of the tool

The accuracy of an instrument was entrenched through pilot study. The reliability of knowledge was tested by Karl Pearson's Co-efficient of Correlation, the score was(r=0.81. Item analysis was done to test internal consistency. This is done by critically evaluating questions based on difficult index and Discriminative index. This indicates that tool were reliable.

Data Collection Instrument
The structured tools of data collection is divided in to three parts as following

Part I-Nutritional grading: Protein energy malnutrition will be graded by using Indian Academy of Pediatrics (IAP) classification.

Part II-Demographic profile: It consists of 11 items related to demographic data which includes an age, religion, educational status, an occupation, family income per month, type of family, parity of children, duration of breast feeding, type of diet and source of information regarding protein energy malnutrition.

Part III-Standardized structured knowledge questionnaire on protein energy malnutrition: This section consists of 30 structured items in 4 sections. Section-A consists of 6 multiple choice items related to introduction and definition, section-B consist of 6 items related to Prevalence, Risk factors, Causes and Clinical manifestation, section-C consists of 13 items related to prevention,

section-D consist of 5 items related management and complication.

Results

The pilot study was conducted at selected semi-urban areas of Dharwad from 01.01.2019 to 15.01.2019 to rollout the expediency of an instrument. Required permission from authorities was taken before study. A total of 50 (10% of total population of main study) mothers of preschool children were selected as per sampling criteria. 25 each mothers were distributed in experimental and control groups. Written consent was taken from the samples then structured tools were administered on 1st to 4th day for experimental group and are withheld from control group. Structured instructional programme was administered to all 50 samples on day 5 by gathering all the mothers in the Anganwadi's of that area. Employing the same tool the posttest was completed on day 12 to 15. By conducting pilot study conclusion made were tools and research frame for under taken investigation was found expedience.

Important findings of the pilot study
A. Frequency and Percentage of Socio demographic variables

Table 1. Participant's frequency and percentage dispersion according to their socio demographic variables (N: 25+25)

S.No	Demographic variables	Experimental group		Control group	
		Frequency	Percentage (%)	Frequency	Percentage (%)
1	**Age groups**				
	a) Less than 21yrs	12	52	14	56
	b) 21-25 yrs	08	32	04	16
	c) 26-30 yrs	04	16	06	24
	d) More than 30 yrs	00	00	01	04
2	**Religion**				
	a) Hindu	06	24	07	28
	b) Muslim	06	24	05	20
	c) Christian	12	48	11	44
	4) Other	01	04	02	08
3	**Educational status**				
	a) Primary school	11	44	11	44
	b) High school	00	00	04	16
	c) PUC	09	36	08	32
	d) Graduation	05	20	02	08
	e) PG and above	00	00	00	00
4	**Occupation**				
	a) House wife	08	32	07	28
	b) Daily wages	10	40	12	48
	c) Govt. employee	04	16	03	12
	d) Private employee	03	12	03	12
5	**Family Income (Rs/Month)**				
	a) Up to 2000	11	44	10	40
	b) 2001–4000	07	28	07	28
	c) 4,001–6,000	07	28	08	32
	d) More than 6,000	00	00	00	00
6	**Type of family**				
	a) Nuclear	18	72	14	56
	b) Joint	01	04	02	08

		c) Extended	06	24	09	36
7		**Number of children**				
		a) One	09	36	11	44
		b) Two	06	24	03	12
		c) Three	04	16	08	32
		d) Four and above	06	24	03	12
8		**Duration of breast feeding**				
		a) Less than 6 months	10	40	10	40
		b) 6-12 months	04	16	06	24
		c) More than 1 year	11	44	09	36
9		**Type of diet**				
		a) Vegetarian	14	56	12	48
		b) Non vegetarian	04	16	05	20
		c) Mixed	07	28	08	32
10		**Source of information**				
		a) Mass media	13	52	13	52
		b) Relative	04	16	04	16
		c) Health personnel	07	28	07	28
		d) Anganawadi worker	01	04	01	04
		e) No source	00	00	00	00

The particulars displayed in table 1 elucidated,

Age: In experimental group, majority 12 (52%) respondents were belonged to less than 21 years age group, 8(32%) of respondents were belonged to age group of 21-25 years and remaining 4(16%) were belonged to 26-30 years of age group.

Among the respondents of control group 14(56%) of respondents were belonged to age group of less than 21 years, 6(24%) of respondents were belonged to age groups of 26-30 years, 4(16%) of respondents were belonged to 21-25 years age group and remaining 1(4%) was belonged to more than 30 years of age.

Religion: among the respondents of experimental group 6(24%) each of respondents were belonged to Hindu religion and Muslim religion, 12(48%) of respondents were belonged to Christian religion and remaining 1(4%) of respondent belonged to other religion.

Among the respondents of control group 11(44%) each of respondents were belonged to Christian religion, 07(28%) of respondents were belonged to Hindu religion, 5(20%) of respondents were belonged to Muslim religion and remaining 2(8%) of respondent belonged to other religion.

Educational status: Among the respondents of experimental group, 11(44%) of respondents were had primary school education, 9(36%) of respondents were had PUC education and remaining 5(20%) of respondents were had graduation education.

Among the respondents of control group, 11(44%) of respondents were had primary school education, 8(32%) of respondents were had PUC education, 4(16%) of respondents were had high school education and remaining 2(8%) of respondents were had graduation education.

Occupation: In the respondents of experimental group, 10(40%) of respondents were doing daily wages, 8(32%) of respondents were House wife's, 4(16%) of respondents were doing government services and remaining 3(12%) of respondents were private employees.

Among the respondents of control group, 12(48%) of respondents were doing daily wages, 7(28%) of respondents were House wife's, 3(12%) of respondents were doing government services and remaining 3(12%) of respondents were private employees.

Family income: Among the respondents of experimental group, 11(44%) of respondents family income was up to 2000 and 7(28%) each respondents were had family income of 2001 –4000 and 4001–6000 respectively.

In the control group, 10(40%) of respondents were had up to 2000 income per month, 8(32%) of respondents were had 4001-6000 income per month and remaining 7(28%) of respondents were had 2001-4000 income per month.

Type of family: Among the respondents of experimental group, 18(56%) of respondents were belonged to nuclear family, 6(24%) of respondents were belonged to extended family and remaining 1(4%) of respondents were belonged to joint family.

In the control group, 14(28%) of respondents were belonged to nuclear family, 9(36%) were belonged to extended family and remaining 2(8%) of respondents were belonged to joint family.

Number of children: among the respondents of experimental group, 9(36%) of respondents were had one child, 6(24%) each of respondents were had two children and four children and remaining 4(16%) of respondents were had three children.

In the control group, 11(44%) of respondents were had one child, 8(32%) of respondents were had three children, 3(12%) each of respondents were had two and four children.

Duration of lactation: among the respondents of experimental group, 11(44%) of respondents were fed breast milk for more than 1 year, 10(40%) of respondents suckled the bosom milk less than 6months and 4(12%) of respondents fed the breast milk for 6-12months of duration. In the control group, 10(40%) of respondents suckled the bosom milk for less than 6 months, 9(36%) of respondents fed the breast milk for more than one year and 6(24%) of respondents were fed breast milk for 6-12 months of duration.

Type of diet: among the respondents of experimental group, 14(56%) of respondents were vegetarians, 7(28%) of respondents were having mixed diet and 4(16%) of respondents were non vegetarians. In the control group, 12(48%) of respondents were vegetarians, 8(32%) of respondents were having mixed diet and remaining 5(20%) of respondents were non vegetarians.

Source of information: Among the respondent of experimental as well as control group, 13(52%) of respondents source of information was mass media, 7(28%) of respondents source of information was health personnel, 4(16%) of respondents source of information was relatives and remaining 1(4%) respondents source of information was Anganawadi workers.

Knowledge score distribution of participants regarding protein energy malnutrition

Table 2. Distribution of pretest and posttest knowledge scores regarding protein energy malnutrition among participants of experimental group (N= 25+25)

Group	Aspects	Mean	Median	Mode	SD	Range
Experimental Group	Pre test	14.16	15	15	3.27	8-19
	Post test	26.20	27	27	2.70	17-29
Control Group	Pre test	13.84	14	14	3.03	7-18
	Post test	14.44	15	15	2.48	10-18

Table 2 depicts pretest and posttest scores of level of comprehension of participants of research and non-research batch regarding protein energy malnutrition-

✓ In the experimental group, pretest knowledge score mean was 14.16, median was 15, mode was 15, standard deviation 3.27 and score ranged between 8-19. Where as in posttest, mean was 26.20, median was 27, mode was 15, standard deviation was 2.70 and score ranged between 17-29.
✓ Among the participants of control group, pretest knowledge score mean was 13.84, median was 14, mode was 14, standard deviation 3.03 and score ranged between 7-18. Where as in posttest, mean was 14.44, median was 15, mode was 15, standard deviation was 2.48 and score ranged between 10-18.

Comparison knowledge values between experimental and control batches during pretest

Table 3. Independent t test to compare level knowledge values between experimental and control group during pretest (N=25+25)

Knowledge score	Mean$_D$	SD$_D$	SEMD	Independent 't' test	Significance
Experimental group	14.16	0.79	0.82	0.34	NS
Control group	13.84				

Table 3 depicts the mean disparity of understanding values between research and non-research batch during Pre Test and the 't' (48) = 0.34 is found not significant at extent of 0.05. Hence, it is inferred that mean dissimilarity of knowledge score among respondents of experimental and non-experimental batches is not statistically significant. This indicated that there is no difference between the mean pre-test knowledge scores among Experimental group and Control group and these two groups started from an equivalent baseline.

Comparison between pre-test and post-test knowledge scores.

I) Level of knowledge during pretest and posttest among both groups

Table 4. Participant's abundance and Percentage distribution according to their extent of comprehension regarding protein energy malnutrition (N=25+25)

Groups	Level of knowledge (Pretest and Posttest)					
	Pretest scores			Posttest scores		
	Poor	Average	Good	Poor	Average	Good
	f (%)	f(%)	f(%)	f(%)	f(%)	f(%)
Experimental group	3(12)	22 (88)	--	--	1(4%)	24 (96%)
Control group	2(8%)	23(92%)	--	5(20%)	20(80%)	---

The information presented in the Table 4 describes among the experimental group, during pre-test, 3(12%) respondents had poor command and 22(88%) of respondents exhibited an average understanding regarding protein energy malnutrition. In posttest 1(4%) of respondents expressed an average understanding and 24(96%) of respondents showed good understanding regarding protein energy malnutrition.

Whereas among the control group, during pre-test, 2(8%) of respondents has insufficient comprehension and 23(92%) of respondents had an average knowledge regarding protein energy malnutrition. In posttest 5(20%) of respondents had poor understanding and 20(80%) of respondents showed an average understanding regarding protein energy malnutrition.

II) Comparison of mean knowledge score of participants of both batches regarding protein calorie malnutrition during Pretest and Posttest

Paired 't' value was enumerated to rollout the significance of enhancement of mean knowledge scores of respondents of both groups during pre-test and posttest. The data are presented in Table 5.

Table 5. Comparison of average comprehension values of both experimental and non-experimental batches during pretest and posttest (N=25+25)

Groups	Aspects	Max. score	Range score	Comprehension values		Paired 't' Test
				Mean	**SD**	
Experimental group	Pretest	30	11	14.16	3.27	13.20*
	Post-test	30	12	26.20	2.70	
Control group	Pretest	30	11	13.84	3.03	0.96
	Post-test	30	8	14.44	2.48	
* Significant at 5 % level						

The information presented in Table 5 describes the overall mean knowledge values and enhancement in level understanding of respondents regarding protein calorie malnutrition during pre-test, post-test.

Among the respondents of experimental group, the findings reveal that the post-test mean knowledge scores was found higher [mean=26.20, SD of 2.70] when compared with mean pretest knowledge score value which was 14.16 with SD of 3.27. Among the respondents of control group, the findings reveal that the post-test mean knowledge scores was found higher [mean=14.44, SD of 2.48] when compared with pre-test mean knowledge score value which was 13.84 with SD of 3.03.

The statistical Paired 't' implies that, there is remarkable disparity among experimental group participants during pretest and posttest, it reported to be statistically not worthy with paired 'T' values of 13.20 at the extent of 0.05.demostrated statistical noteworthy in enhancement in extent of understanding values that implies the efficiency of the instructional module.

The statistical paired 't' implies that, there no statistical disparity level of understanding among the respondents of the controlled batch during pre-test and posttest. They are found statistically not noteworthy with Paired 'T' value 0.96 at the level of 0.05. Statistically demonstrated there is no marked disparity among the comprehension score among controlled group. This reveals the there is no change in knowledge scores of respondents of control groups who have not exposed to any instructional module.

Comparison of knowledge scores between research and non-research batches groups during posttest

Table 6. Independent 't' test to compare the knowledge scores between experimental and controlled group during posttest (N = 25+25)

Knowledge score	Mean$_D$	SD$_D$	SEM$_D$	Independent 't' test	Significance
Experimental group	26.20	0.33	0.81	15.18	Significant
Control group	14.44				

Table 6 depicts that, there marked statistical contrast in level of knowledge among research and non-research batches participants during posttest the 't'$_{(48)}$ values was 15.18.and is reported noteworthy at extent of 0.05, further the respondents of experimental group had higher mean of 26.20 during

posttest when compared to controlled group participant's mean knowledge score of 14.44. This implies the instructional module was efficient in enhancing the level of understanding of participants regarding protein calorie malnutrition.

Findings context to Association between level of understanding and socio demographic variables during pre-test
Computed values of Chi square test for association between level of knowledge of respondents regarding protein energy malnutrition and their selected demographic variables is enumerated to be noteworthy at the extent of 0.05, for age group, religion and occupational status of respondents and not found statistically significant for other selected socio demographic variables.

Conclusion
The conclusion drawn from the results of the pilot study are as follows
- ✓ Researcher got extraordinary joint effort from study individuals and all of the individuals showed eagerness for the examination and given their genuine response.
- ✓ It was found that data collection for every model took extra time than anticipated so it was picked to enrol four research aides for the social event of data for standard investigation.
- ✓ Some phrasings used in data assortment instruments were not grasped by the examination members so it was adjusted depend upon the impression of primer examination.
- ✓ Overall revelations of the pilot study exhibited gadgets and study design were viewed as reachable.

Conflict of Interest
There is no conflict of interest stated.

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