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A Study To Assess The Effectiveness Of Knowledge Regarding Protein Energy Malnutrition Among Rural Mothers Of Under Five-Year Children In Farrukhabad.

MR. SUNIL CHETIWAL

DESIGNATION :ASSISTANT PROFESSOR [CHILD HEALTH NURSING]

MR.MANISH KUMAR SHARMA

DESIGNATION :ASSOCIATE PROFESSOR [MEDICAL SURGICAL NURSING]

MIS. NEHA SINGH ,MS. SHIVA BHADAURIYA

DESIGNATION :ASSISTANT PROFESSOR [OBG]

Abstract

Background:
Protein Energy Malnutrition (PEM) remains a major public health issue in developing countries, particularly affecting children under five years of age. Rural areas, such as Farrukhabad, often face challenges related to inadequate maternal knowledge, limited access to healthcare, and poor nutritional practices. Enhancing mothers' awareness is crucial to prevent and manage PEM effectively.

Objectives:
The study aimed to assess the existing knowledge of rural mothers regarding Protein Energy Malnutrition (PEM) and to evaluate the effectiveness of an educational intervention in improving their understanding.

Methods:
A quasi-experimental research design with pre-test and post-test was adopted. The study was conducted among 60 rural mothers of under-five children in selected villages of Farrukhabad using purposive sampling. A structured questionnaire was used to assess the knowledge before and after a structured teaching program on PEM. Data were analyzed using descriptive and inferential statistics.

Results:
The pre-test findings revealed that a majority of mothers had inadequate knowledge about the causes, signs, prevention, and management of PEM. After the educational intervention, there was a statistically significant improvement in the post-test knowledge scores ($p < 0.05$). The mean post-test score was notably higher than the mean pre-test score, indicating the effectiveness of the teaching program.

Conclusion:
The study concluded that structured health education significantly improves the knowledge of rural mothers regarding Protein Energy Malnutrition. Continuous community-based nutritional education programs are recommended to empower mothers and reduce the incidence of PEM among under-five children.

Keywords: Protein Energy Malnutrition, Rural Mothers, Under-Five Children, Nutritional Knowledge, Health Education, Farrukhabad .

INTRODUCTION

"If we can conquer space, we can conquer childhood hunger"

--Buzz Aldrin

The term "protein" originates from the Greek word proteios, meaning "primary" or "of the first rank". The term was coined in 1838 by the Swedish scientist Jons Berzelius to emphasize the importance of this class of molecules. Indeed, protein play crucial, life sustaining biological roles, both as constituent molecules and as triggers of physiological processes for all living things. For example, proteins provide the architectural support in muscle tissues, ligaments, tendons, bones, skin, hair, organs and glands. Their environmental-tailored structures make possible the coordinated function (motion, regulation, etc.) in some of these assemblies.[1]

The building blocks of proteins are amino acids. There are twenty naturally occurring amino acids from which all natural proteins are constructed. All twenty are based on the common structure and differ in the chemical properties of their so-called side chains. Some (e.g. tryptophan and phenylalanine) are strongly hydrophobic, while others (e.g. lysine and aspartic acid) carry an ionic charge at physiological pH, making them hydrophilic. Amoni acids are linked together by peptide bonds to form protein chains. The sequence of amino acids in a protein and the way the protein chain is folded determine its properties.[2]

"Nutrition is defined as combination of dynamic process by which the consumed food is utilized for nourishment, structural and functional efficiency of every cell of the body. Under five children require balanced nutrition to become healthy for national growth and economic development from dynamics.[3]

The health of a nation's populace is intricately linked to the well-being of its individuals, with good nutrition standing as a cornerstone of optimal health. Child malnutrition, a pervasive public health issue with far-reaching global implications, underscores the critical need for prioritizing quality nutrition to safeguard the welfare of the youngest members of society. Malnutrition often steals dreams from their young lives and hangs their future in the balance. It remains a major public health concern for children under the age of 5 years in many low- and middle-income countries because it is still the leading underlying cause of child mortality in the countries.[4] Additionally, the immunological implications of severe protein-energy malnutrition in children, highlighting the nexus between malnutrition and susceptibility to infectious diseases. Global data on child malnutrition reveal alarming statistics, with millions of children worldwide experiencing stunting, wasting, and underweight conditions, contributing significantly to under-5 mortality rates[5,6]. The paper concludes with a call to action for concerted efforts at the global, national, and Child levels to address the root causes of child malnutrition and implement evidence-based interventions to ensure the well-being of future generations.

In 2019, the global prevalence of protein- energy malnutrition increased to 14,767,275 cases. The age-standardized prevalence rate (ASPR) showed an increasing trend between 1990 and 2019, while the age-standardized deaths rate (ASDR) and age-standardized DALYs rate presented a significantly decreasing trend in the same period. Meanwhile, there was a clearly ASPR, ASDR, and age-standardized DALYs rate downtrend of the prediction curve when the SDI went up. PEM still has a relatively serious disease burden in the world, especially in children and the elderly. At the same time, this phenomenon will be more obvious due

to the aging of the world's population. Effective prevention measures should be strengthened to continuously improve public health conditions.[7]

As per the Global Hunger Index 2022 report, prevalence of undernourished in the population stands at 16.3%, child stunting is at 35.5%, child wasting is at 19.3% and child mortality rate is 3.3%. The value of 'prevalence of undernourished in the population' is flawed as it is based on opinion poll conducted on a very small sample size and does not take into account the series of measures taken by Government of India to ensure food security in the country.

Data on nutritional indicators in the country are captured periodically under the National Family Health Survey (NFHS) conducted by the Ministry of Health and Family Welfare. As per the recent NFHS-5 (2019-21) report, the nutrition indicators for children under 5 years have improved as compared with NFHS-4 (2015-16). Stunting has reduced from 38.4% to 35.5%, Wasting has reduced from 21.0% to 19.3% and Underweight prevalence has reduced from 35.8% to 32.1%.

Government has accorded high priority to the issue of malnutrition and is making serious efforts to address this issue. The efforts under the Supplementary Programme under Nutrition Anganwadi Services and POSHAN Abhiyaan have been rejuvenated and converged as 'Saksham Anganwadi and POSHAN 2.0' (Mission Poshan 2.0).[8]

STATEMENT OF THE PROBLEM

A STUDY TO ASSESS THE EFFECTIVENESS OF KNOWLEDGE REGARDING PROTEIN ENERGY MALNUTRITION AMONG RURAL MOTHERS OF UNDER FIVE-YEAR CHILDREN IN FARRUKHABAD.

OBJECTIVES OF THE STUDY

- ✓ To assess the knowledge regarding protein energy malnutrition among rural mothers of under five year children.
- ✓ To provide information booklet to improve the knowledge among rural mothers under five-year children.
- ✓ To associate the knowledge regarding protein energy malnutrition among rural mothers of under five-year children with their selected demographic variables

OPERATIONAL DEFINITION

In this study, the following term refers to

- ✓ **Assess:** The process used to identify the level of knowledge of rural mother of under five-year children regarding protein energy malnutrition
- ✓ **Knowledge:** The information regarding protein energy malnutrition elicited through structured knowledge questionnaire
- ✓ **Rural:** It refers to the village Community
- ✓ **Protein energy malnutrition:** A range of pathological conditions arising from coincident lack of varying proportions of protein and calories, occurring most frequently in infants and young children and often associated with infection. The clinical form of protein energy malnutrition is kwashiorkor and Marasmus.

- ✓ **Effectiveness:** It refers to the outcome of the knowledge intervention Programme through structured questionnaire by providing information booklet under-five children.
- ✓ **Under-five children:** Children who belong to the age group of 1-5 years who are residing in the selected village of Farrukhabad.

ASSUMPTION AND HYPOTHESIS OF THE STUDY

- **Assumptions**

1. Rural mothers may have inadequate knowledge regarding protein energy malnutrition.

2. Rural mothers may have interest to gain information regarding protein energy malnutrition.

3. Some rural mothers may have adequate knowledge regarding protein energy malnutrition.

- **Hypothesis**

$H0_1$: There will be no significant association of pre test knowledge regarding protein energy malnutrition among rural mothers of under five year children with their selected demographic variables.

$H0_2$: There will be no significant association of post test knowledge regarding protein energy malnutrition among rural mothers of under five year children with their selected demographic variables.

$H1_1$: There will be significant association of pre test knowledge regarding protein energy malnutrition among rural mothers of under five year children with their selected demographic variables.

$H1_2$: There will be significant association of post test knowledge regarding protein energy malnutrition among rural mothers of under five year children with their selected demographic variables.

SETTING OF THE STUDY

According to Pilot and Beck, "Setting are more specific place where the data collection occur."

The current study will be conducted at Farrukhabad (UP).

POPULATION UNDER STUDY

According to Pilot and Hungler, "Sample is a subset of population selected to participate in a research study.

The assessable population for study will be "Rural mother of under five year children".

SAMPLE SIZE

In this study 70 mothers of under five year children are selected.

SAMPLING TECHNIQUE

It is the process of selecting a representative part of the population.

In this study purposive (non-probability) convenient sampling technique is used.

SAMPLING CRITERIA

Inclusion criteria:-

- Mothers of under five year children.
- Mothers of under five year children who are available at the time of data collection.
- Mothers of under five year children who are able to read and write the Hindi language.
- Mothers who are willing to participate.

Exclusion criteria:-

- Mothers who are not having under five year children
- Mothers of under five children who are not available at the time of data collection.
- Mothers of under five year children who are not able to read and write the Hindi language.
- Mothers who are not willing to participate in the study.

DEVELOPMENT OF TOOL

- Self-Administered structured questionnaires schedule was prepared by researcher to assess the knowledge regarding protein energy malnutrition among mothers of under five year children in selected rural area at Farrukhabad (U.P).

- **Population of knowledge questionnaire of:**
- Knowledge questionnaire consists with two following sections-
- **SECTION 1:** Comprised of socio - demographical variables (Age, qualification, religion, family income, family type, number of children in the family)
- **SECTION 2:** Self-administered structured questionnaire regarding knowledge of protein energy malnutrition.
- It comprised 30 multiple choice questions.
- **Section - 2 is divided into four sections as following:**
- Section A: structured knowledge questionnaire regarding protein energy malnutrition.
- Section B: Question related to knowledge regarding causes of protein energy malnutrition.
- Section C: Question related to sign and symptoms of protein energy malnutrition.
- Section D: Question related to the management and prevention of protein energy malnutrition.
- The level of knowledge was categorized as follows:

S. NO.	SCORE	LEVEL OF KNOWLEDGE
1	0-6	Poor
2	7-12	Fair
3	13-18	Good
4	19-24	Very good
5	25-30	Excellent

- Maximum score: 30
- Minimum score: 0

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of data collected from 70 rural mothers of under five year children to assess the knowledge regarding protein energy malnutrition. Analysis and interpretation of data are based on the data obtained through a structured knowledge questionnaire.

Analysis and interpretation of data are based on the objectives of the study and hypothesis to be tested. The findings were organized, tabulated, interpreted by using descriptive and inferential statistics.

ORGANIZATION AND PRESENTATION OF DATA

Section I: Description of baseline characteristics of rural mothers of under five year children regarding protein energy malnutrition.

Section II: Pre test association of knowledge among rural mothers of under five year children regarding protein energy malnutrition.

Section III: pre test association of knowledge regarding protein energy malnutrition among rural mothers of under five year children with their selected demographic variables.

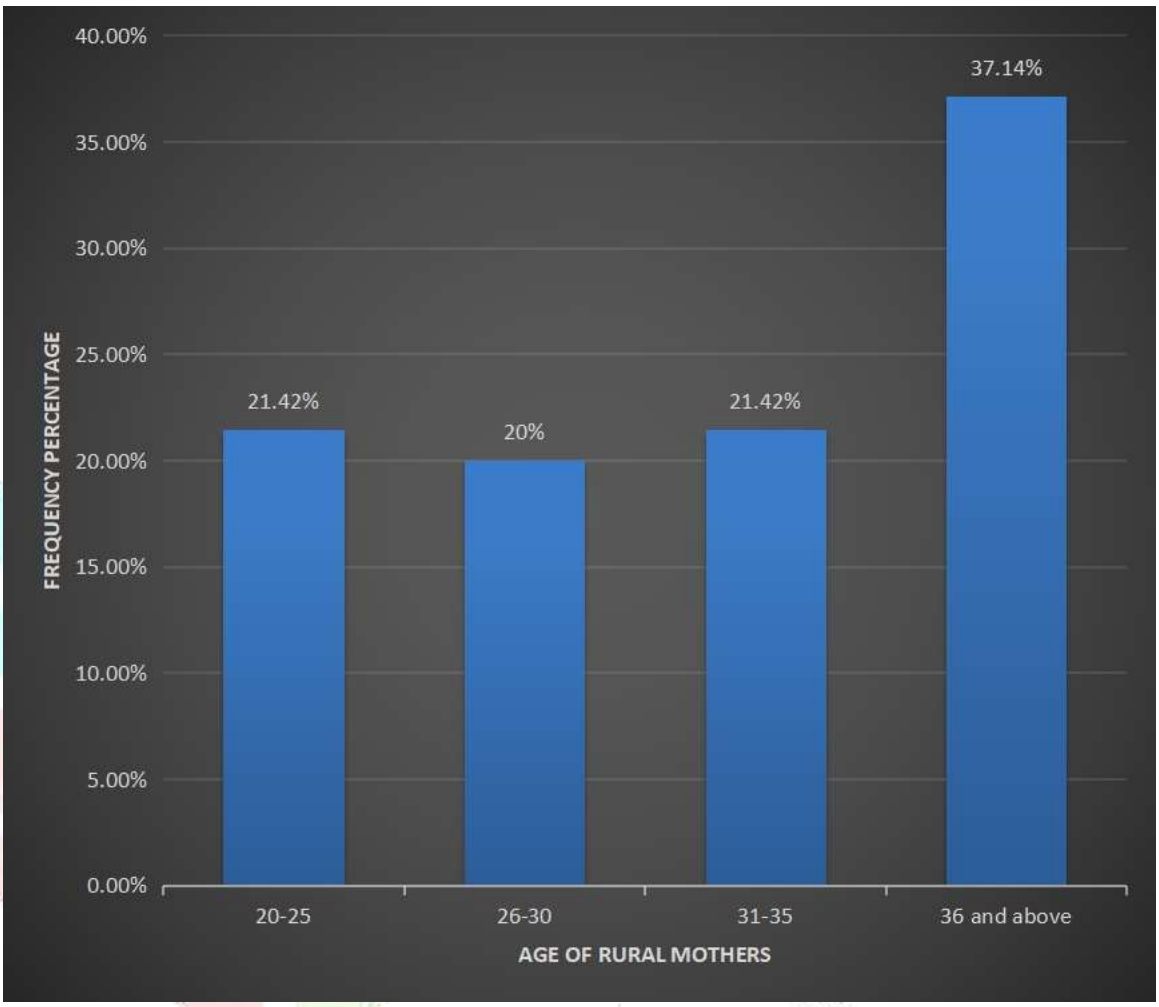
Section IV: post test association of knowledge among rural mothers of under five year children regarding protein energy malnutrition.

Section V: post test Association of knowledge regarding protein energy malnutrition among rural mothers of under five year children with their selected demographic variables.

SECTION - I

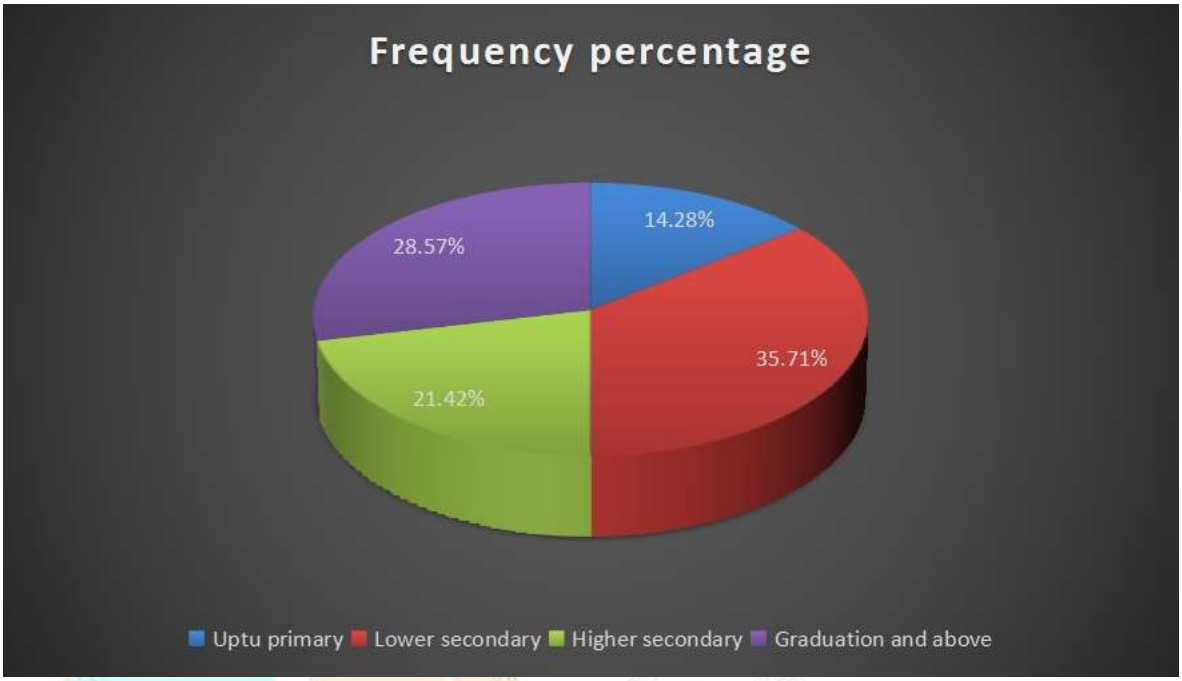
Description of baseline characteristics of rural mothers of under five year children regarding protein energy malnutrition.

Figure 1: Bar diagram shows percentage distribution of rural mothers according to age.



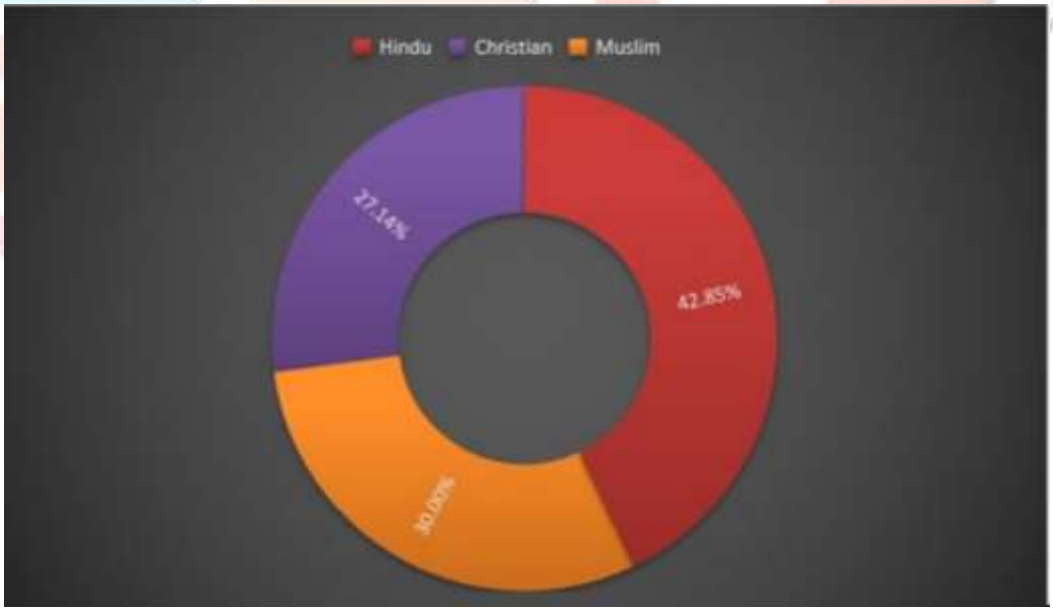
It is evident that from figure 1 that majority (37.14%) of rural mothers were in the age roup of 36-above years, while (21.42%) were in the age group of 20-25 and 31-35 years while (20%) were in the age group of 26-30 years.

Figure 2: Pie diagram shows Percentage distribution of rural mothers according to qualification.



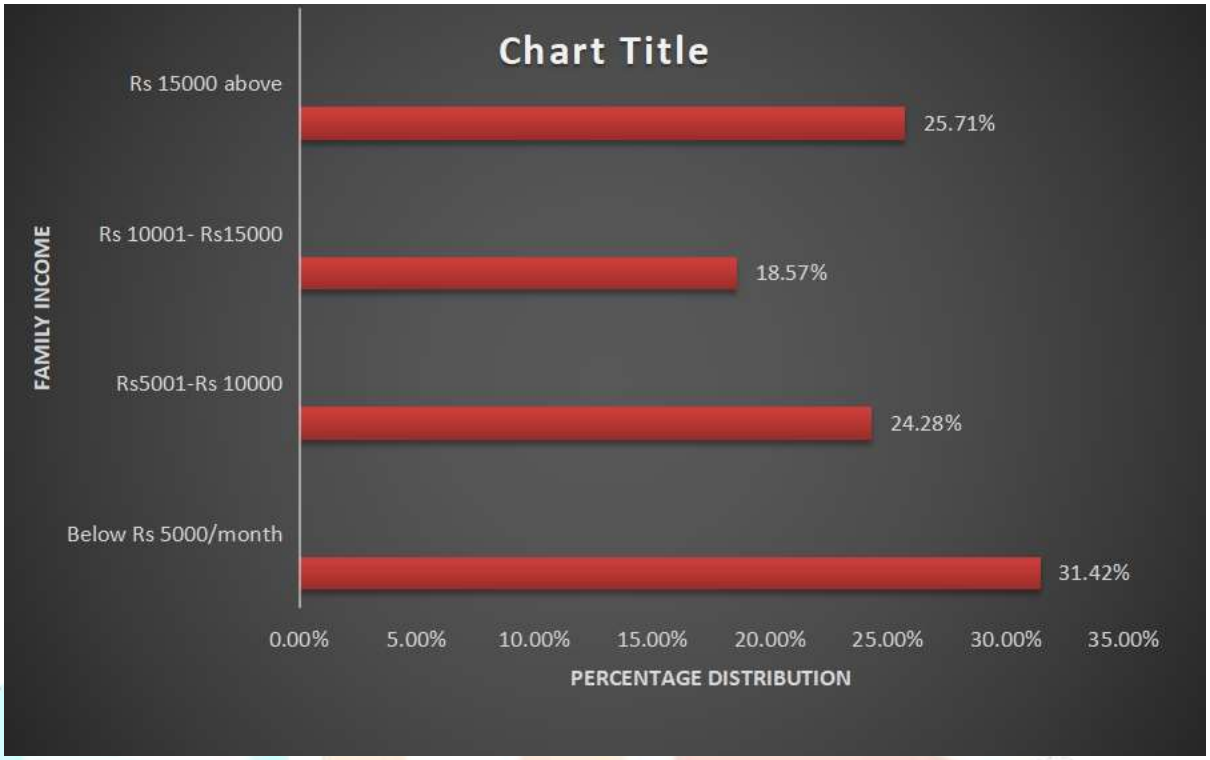
It is evident that from figure 2 that majority (35.71%) of rural mothers had their lower secondary education, 14.28% rural mothers had their up to primary education, 21.42% mothers had their higher secondary education and 28.57% of rural mothers completed their graduation.

Figure 3: Sun burst chart shows percentage distribution of rural mothers according to religion.



It is evident from figure 3 that majority (42.85%) of the rural mothers were Hindu, 30% were Muslim and 27.14% were Christians

Figure 4: Clustered bar diagram shows percentage distribution of rural mothers according to family income.

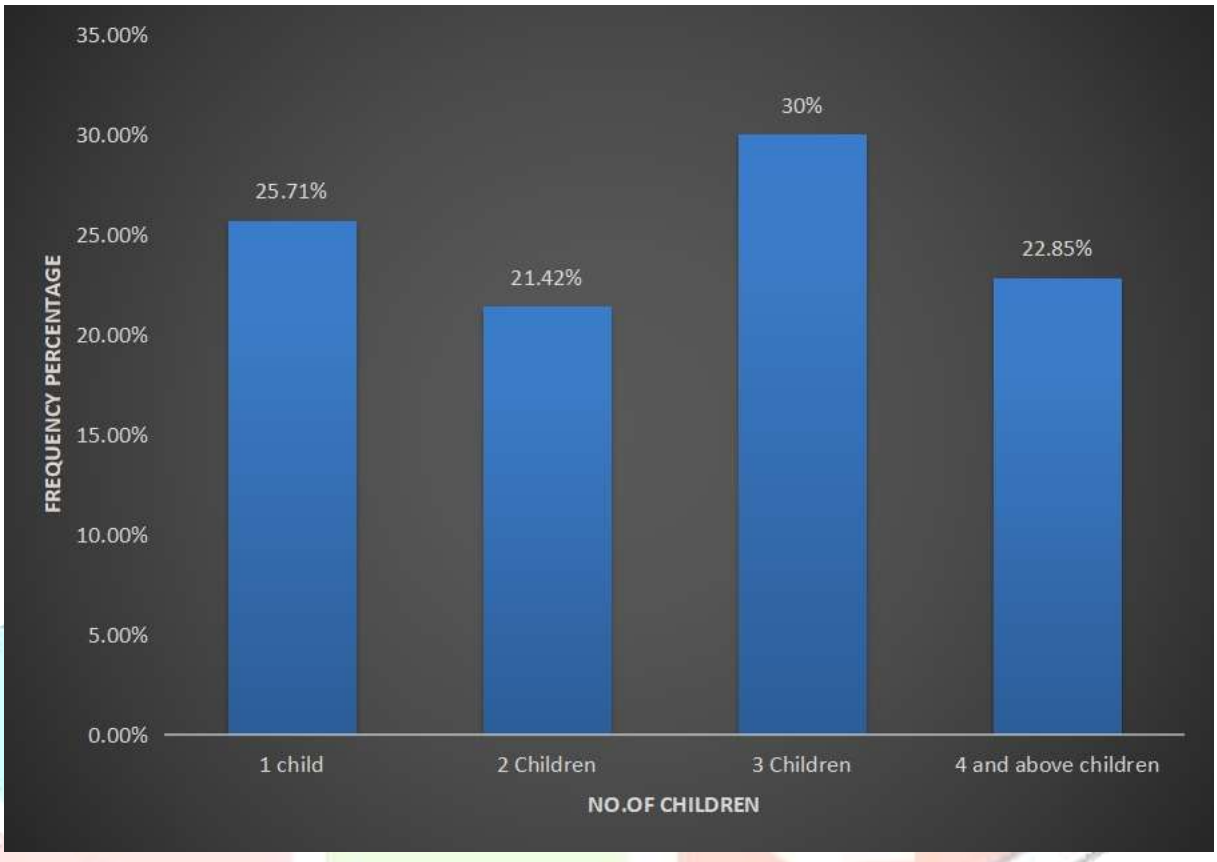


It is evident from figure 4 that majority (31.42%) of the rural mothers having family income of below Rs.5000/month, 24.28% having Rs.5001-Rs.10000/ month, 18.57% having family income of Rs.10001-Rs.15000/month and 25.71% having the family income of Rs 15000-above/month

Figure 5: Funnel diagram shows percentage distribution of rural mothers according to family type.

It is evident from figure 5 that majority (42.85%) of the rural mothers belonged from joint family, 30% belonged to nuclear family and the remaining (27.14%) were from extended family.

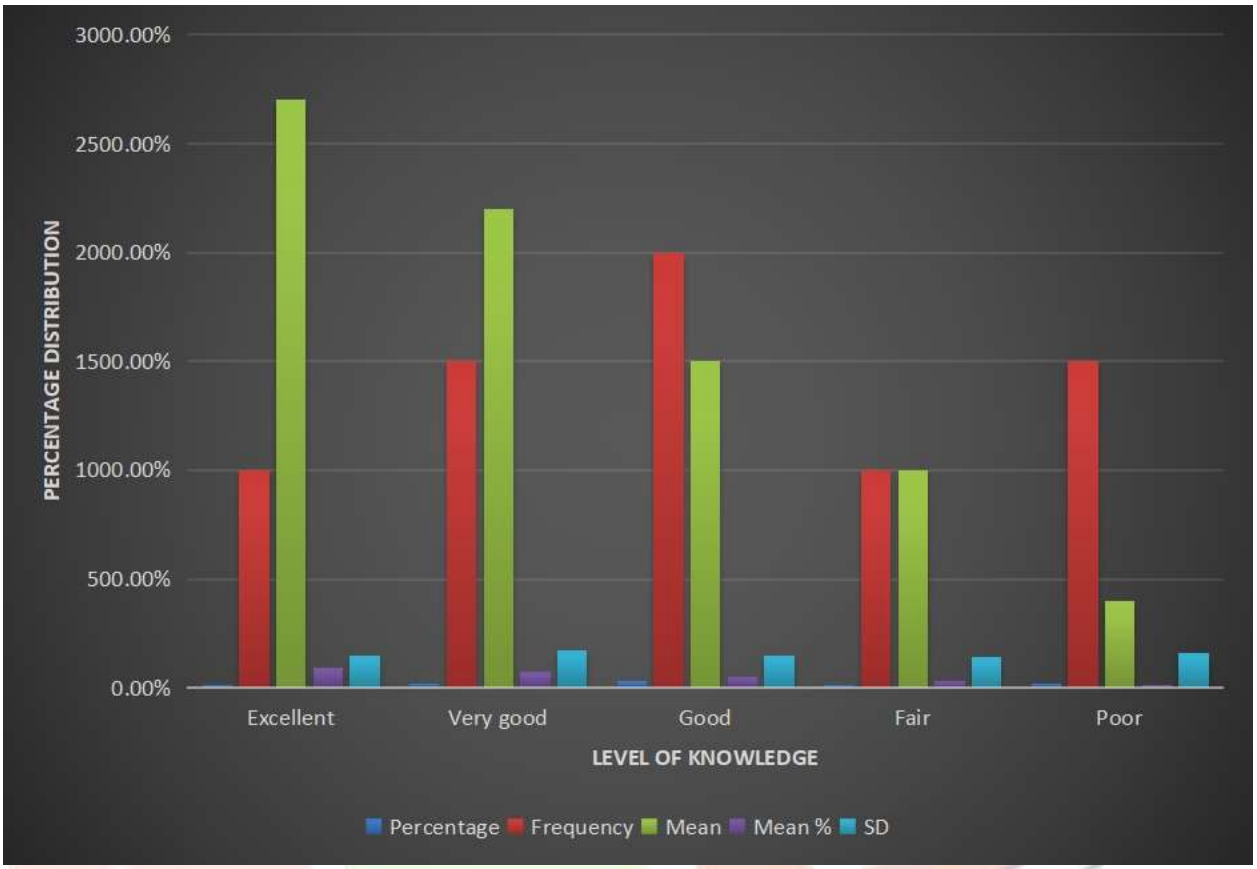
Figure 6: Bar diagram shows percentage distribution of rural mothers according to number of children.



It is evident from figure 6 that majority (30%) of the rural mothers having 3 children's, 25.71% mothers have 1 child, 21.42% mothers have 2 children and 22.85% mothers have 4 and above children.

SECTION – II

Figure 7: Clustered bar diagram shows pre test percentage distribution of knowledge among rural mothers of under five year children regarding protein energy malnutrition.



Above Figure 7 shows the frequency and percentage distribution of rural mothers. 14.28% of rural mothers obtained Excellent score (25-30), 21.42% of rural mothers obtained Very good score (19-24), 28.57% of rural mothers obtained good score (13-18), 14.28% of rural mothers obtained fair score (7-12) and 21.42% of rural mothers obtained poor score (below 6).

PRE TEST ASSOCIATION OF KNOWLEDGE AMONG RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN REGARDING PROTEIN ENERGY MALNUTRITION

Table 1: Pre test frequency and percentage distribution of knowledge among rural mothers of under five year children regarding protein energy malnutrition.

S.no	Level of knowledge	Frequency	Frequency %	Mean	Mean %	SD
1	Excellent 80%-100% (25-30)	10	14.28	27	90%	1.49
2	Very good 60%-79% (19-24)	15	21.42	22	73.33%	1.73
3	Good 40%-59% (13-18)	20	28.57	15	50%	1.486
4	Fair 20%-39% (7-12)	10	14.28	10	33.33%	1.414
5	Poor 0%-19% (0-6)	15	21.42	4	13.33%	1.603

Maximum score: 30

Minimum score: 0

SECTION III

PRE TEST ASSOCIATION OF THE KNOWLEDGE OF RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN WITH THEIR SELECTED DEMOGRAPHIC VARIABLES.

Table -2 (a): Mean knowledge score of rural mothers regarding protein energy malnutrition according to age.

S.no.	Age	Frequency	Frequency %	Mean	Mean%
1	20-25	15	21.42%	14.4	48%
2	26-30	14	20%	15.42	51.4%
3	31-35	15	21.42%	16.26	54.2%
4	36 and above	26	37.14%	14.57	48.58%

Table -2 (b): Chi square and degree of freedom of rural mothers regarding protein energy malnutrition according to age.

S.no.	Age	Excellent	Very good	Good	Fair	Poor	Total	Chi square	Df
1	20-25	1	4	5	2	3	15		
2	26-30	3	2	3	4	2	14		
3	31-35	2	4	5	1	3	15	5.91	12
4	36 - above	4	5	7	3	7	26		
	Total	10	15	20	10	15	70		

Table 2(a) and (b) shows that maximum mean knowledge score (16.26) and percentage (54.2%) was found in the age group of 31-35 year, 14.4 (48%) was found in the age group of 20-25, 15.42 (51.4%) was found in the age group of 26 -30 year and 14.57 (48.58%) was found in the age group of 36-above. The difference in the mean knowledge score of rural mothers according to age was tested and found statistically not significant at 0.05 significance level.

Table -3 (a): Mean knowledge score of rural mothers regarding protein energy malnutrition according to qualification.

S.no.	Qualification	Frequency	Frequency %	Mean	Mean%
1	Up to primary	10	14.28%	10.1	33.66%
2	Lower Secondary	25	35.71%	15.64	52.13%
3	Higher secondary	15	21.42%	17.26	57.53%
4	Graduation and above	20	28.57%	17.85	59.5%

Table -3 (b): Chi square and degree of freedom of rural mothers regarding protein energy malnutrition according to qualification.

S.no.	Qualification	Excellent	Very good	Good	Fair	Poor	Total	Chi square	Df
1	Up to primary	0	2	1	2	5	10	12.322	12
2	Lower Secondary	2	5	10	3	5	25		
3	Higher secondary	3	3	5	1	3	15		
4	Graduation and above	5	5	4	4	2	20		
	Total	10	15	20	10	15	70		

Table 3(a) and (b) shows that maximum mean knowledge score (17.85) and percentage (59.5%) was among rural mothers of education level up to graduation,10.1 (33.66%) in mothers who had upto primary education, 15.64 (52.13%) in mothers who had lower secondary education and 17.26 (57.53%) in mothers who had completed their Higher secondary education. The difference in the mean knowledge score of rural mothers according to qualification was tested and found statistically not significant at 0.05 value of significance level

Table -4 (a): Mean knowledge score of rural mothers regarding protein energy malnutrition according to religion.

S.no.	Religion	Frequency	Frequency %	Mean	Mean %
1	Hindu	30	42.85%	15.06	50.2%
2	Christian	19	27.14%	17.94	59.82%
3	Muslim	21	30	12.47	41.58%

Table -4 (b): Chi square and degree of freedom of rural mothers regarding protein energy malnutrition according to religion.

S.no.	Religion	Excellent	Very good	Good	Fair	Poor	Total	Chi square	Df
1	Hindu	3	7	10	5	5	30	8.567	8
2	Christian	5	3	6	3	2	19		
3	Muslim	2	5	4	2	3	21		
	Total	10	15	20	10	15	70		

Table 4 (a) and (b): Shows that maximum mean knowledge score (17.94) and percentage (59.82%) was found in Christians, 15.06(50.2%) was found in Hindus and 12.47(41.58%) was found in Muslims. The difference in the mean knowledge score of rural mothers according to religion was tested and found statistically not significant at 0.05 value of significance level.

Table -5 (a): Mean knowledge score of rural mothers regarding protein energy malnutrition according to family income.

S.no.	Family income	Frequency	Frequency %	Mean	Mean%
1	Below Rs.5000/month	22	31.42%	12.77	42.57%
2	Rs.5001-Rs.10000/month	17	24.28%	14.23	47.45%
3	Rs.10001-Rs.15000/month	13	18.57%	17.30	57.69%
4	Rs.15000-above	18	25.71%	15.72	52.40%

Table -5 (b): Chi square and degree of freedom of rural mothers regarding protein energy malnutrition according to family income.

S.no.	Family income	Excellent	Very good	Good	Fair	Poor	Total	Chi square	Df
1	Below Rs.5000/month	3	3	6	3	7	22	9.581	12
2	Rs.5001-Rs.10000/month	1	5	4	4	3	17		
3	Rs.10001-Rs.15000/month	2	5	3	1	2	13		
4	Rs.15000-Above	4	2	7	2	3	18		
	Total	10	15	20	10	15	70		

Table 5 (a) and (b): Shows that maximum mean knowledge score 17.30 and percentage 57.69% was found among rural mothers who is having family income below Rs.10001-Rs.15000/ month. 12.77 (42.57%) was found among rural mothers who is having family income below Rs.5000/ month, 14.23 (47.45%) was found among rural mothers who is having Rs.5001-10000 family income and 15.72 (52.40%) was found among rural mothers who is having Rs.15000- above family income. The difference in the mean knowledge score of rural mothers according to family income was tested and found statistically not significant at 0.05 value of significance level.

Table -6 (a): Mean knowledge score of rural mothers regarding protein energy malnutrition according to family type.

S.no.	Family type	Frequency	Frequency %	Mean	Mean%
1	Nuclear	21	30%	12.60	42.22%
2	Joint	30	42.85%	14.50	48.33%
3	Extended	19	27.14%	16.94	56.49%

Table -6 (b): Chi square, degree of freedom and P-value of rural mothers regarding protein energy malnutrition according to family type.

S.no.	Family type	Excellent	Very good	Good	Fair	Poor	Total	Chi square	Df
1	Nuclear	2	3	7	4	5	21	18.947	8
2	Joint	3	7	10	4	6	30		
3	Extended	5	5	3	2	4	19		
	Total	10	15	20	10	15	70		

Table 6 (a) and (b): Shows that maximum mean knowledge score 16.94 and percentage 56.49% was found among mothers who had extended family, 12.60 (42.22) was found among mothers who had nuclear family, 14.50 (48.33%) was found among mothers who had joint family. The difference in the mean knowledge score of rural mothers according to family type was tested and found statistically not significant at 0.05 value of significance level.

Table -7 (a): Mean knowledge score of rural mothers regarding protein energy malnutrition according to no. of children.

S.no.	No. Of children	Frequency	Frequency %	Mean	Mean%
1	1 child	18	25.71%	12.50	41.66%
2	2 children	15	21.42%	14.06	46.88%
3	3 children	21	30%	16.61	55.39%
4	4 and more children	16	22.85%	15	50%

Table -7 (b): Chi square, degree of freedom and P-value of rural mothers regarding protein energy malnutrition according to no. of children.

S.no.	No. Of children	Excellent	Very good	Good	Fair	Poor	Total	Chi square	Df
1	1 child	2	3	4	3	6	18		
2	2 children	1	3	6	1	4	15		
3	3 children	4	5	6	4	2	21		
4	4 and above children	3	4	4	2	3	16	6.521	12
	Total	10	15	20	10	15	70		

Table 7 (a) and (b): Shows that maximum mean knowledge score 16.61 & percentage 55.39% was more found among mothers who having 3 children, 12.5 (41.66%) was found among mothers who having 1 child, 14.06 (46.88%) was found among mother who having 2 children and 15 (50%) was found among mothers who having 4 and more children. The difference in the mean knowledge score of rural mothers according to number of children was tested and found statistically not significant at 0.05 value of significance level.

SECTION IV

POST TEST ASSOCIATION OF KNOWLEDGE REGARDING PROTEIN ENERGY MALNUTRITION AMONG RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

Table 8(a): Post test frequency and percentage distribution of knowledge among rural mothers of under five year children regarding protein energy malnutrition.

S.no	Level of knowledge	Frequency	Frequency %	Mean	Mean %	SD
1	Excellent 80%-100% (25-30)	25	35.71	27.16	90.5%	1.77
2	Very good 60%-79% (19-24)	20	28.57	22.05	73.5%	1.72
3	Good 40%-59% (13-18)	15	21.42	15.5	51.6%	1.72
4	Fair 20%-39% (7-12)	10	14.28	10.6	35.3%	1.35
5	Poor 0%-19% (0-6)	0	0	0	0%	0

Table - 8(b): Post test Association of the knowledge of rural mothers of under five year children with their selected demographic variables.

Demographic variables		Excellent	Very good	Good	Fair	Poor	Total	f %	Chi Square	Chi square tabulated	Df
Age of mothers	20-25	5	5	5	0	0	15	21.42 %	14.108	21.026	12
	26-30	5	5	2	2	0	14	20.00 %			
	31-35	5	5	5	0	0	15	21.42 %			
	36-above	10	5	3	8	0	26	37.14 %			
	Total	25	20	15	10	0	70				
Qualification	Upto primary	5	0	5	0	0	10	14.28 %	29.08	21.026	12
	Lower secondary	5	5	10	5	0	25	35.71 %			
	Upper secondary	5	5	0	5	0	15	21.42 %			
	Graduation and above	10	10	0	0	0	20	28.57 %			
	Total	25	20	15	10	0	70				
Religion	Hindu	15	10	0	5	0	30	42.85 %	36.93	15.507	8
	Christian	5	10	2	2	0	19	27.14 %			
	Muslim	5	0	13	3	0	21	30.00 %			

	Total	**25**	**20**	**15**	**10**	**0**	**70**				
Family income	**<Rs.5000/ month**	**5**	**5**	**7**	**5**	**0**	**22**	**31.42 %**	**14.139**	**21.026**	**12**
	Rs 5001-Rs.10000/ month	**5**	**5**	**2**	**5**	**0**	**17**	**24.28 %**			
	Rs.10001-Rs. 15000	**5**	**5**	**3**	**0**	**0**	**13**	**18.57 %**			
	Rs.15000-above/month	**10**	**5**	**3**	**0**	**0**	**18**	**25.71 %**			
	Total	**25**	**20**	**15**	**10**	**0**	**70**				
Family type	**Nuclear**	**5**	**11**	**5**	**0**	**0**	**21**	**30.00 %**	**20.034**	**15.507**	**8**
	Joint	**10**	**5**	**10**	**5**	**0**	**30**	**42.85 %**			
	Extended	**10**	**4**	**0**	**5**	**0**	**19**	**27.14 %**			
	Total	**25**	**20**	**15**	**10**	**0**	**70**				
No. Of children	**1 child**	**5**	**4**	**5**	**4**	**0**	**18**	**25.71 %**	**17.39**	**21.026**	**12**
	2 children	**4**	**6**	**5**	**0**	**0**	**15**	**21.42 %**			
	3 children	**10**	**5**	**0**	**6**	**0**	**21**	**30.00 %**			
	4 children and above	**6**	**5**	**5**	**0**	**0**	**16**	**22.85 %**			
	Total	**25**	**20**	**15**	**10**	**0**	**70**				

PERCENTAGE DISTRIBUTION OF POST TEST KNOWLEDGE SCORES

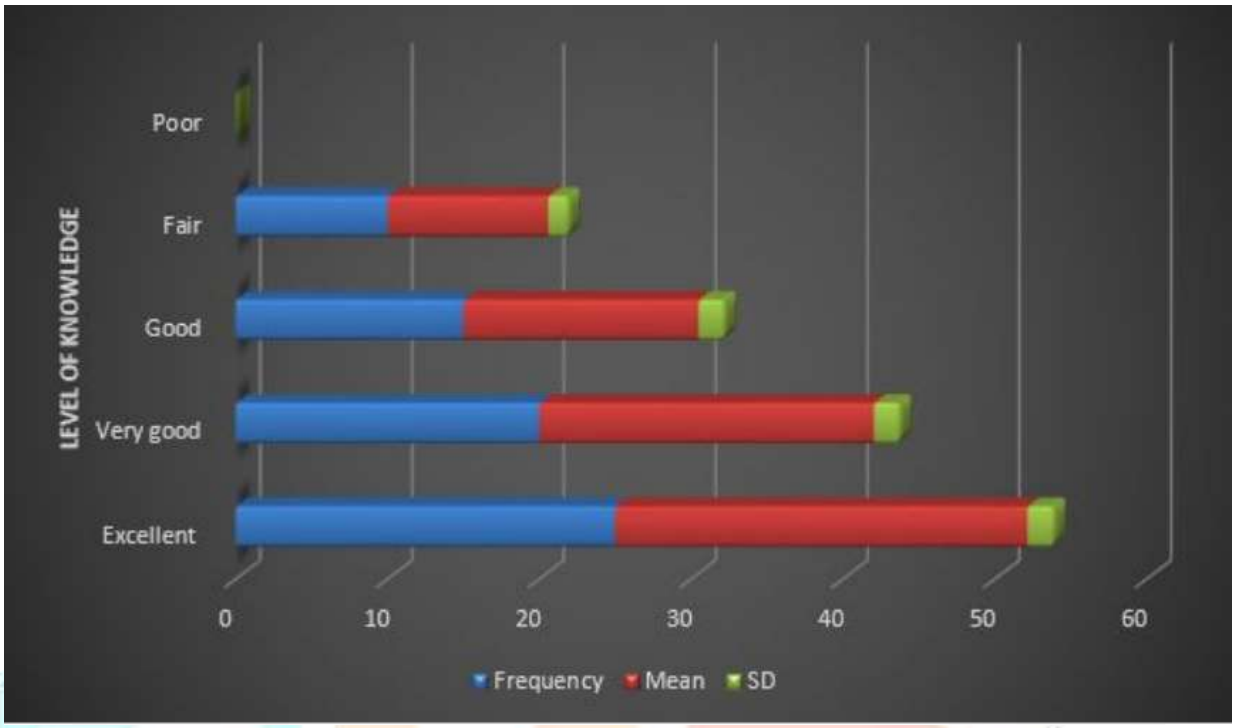


Fig 8(a): Stacked bar diagram showing percentage distribution of post test knowledge scores

COMPARISON OF KNOWLEDGE SCORES

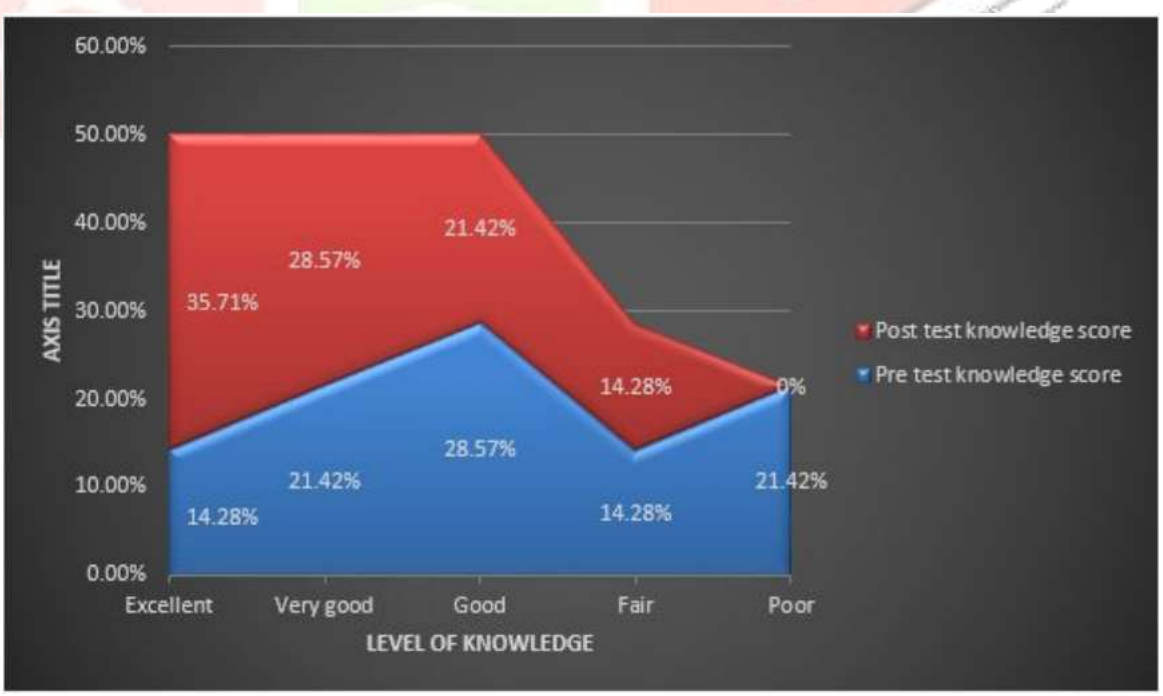


Fig 8(b): Stacked area diagram indicating effectiveness of test as per the reviewing of knowledge scores

Section V

EFFECTIVENESS OF INFORMATION BOOKLET IN TERMS OF GAIN IN KNOWLEDGE SCORE

This section manages the investigation and understanding of the information got to **assess the effectiveness of Information Booklet regarding protein energy malnutrition among rural mothers under five year children at kamalganj** in terms of gain in knowledge scores. Data regarding the pre-test and post-fest knowledge scores are analyzed in terms of frequency percentage and presented in tables and figures.

Table 9(a): Frequency and percentage distribution of pre test and post test knowledge scores

Knowledge scores	Pre test		Post test	
	Frequency	%	Frequency	%
25-30	10	14.28	25	35.71
19-24	15	21.42	20	28.57
13-18	20	28.57	15	21.42
7-12	10	14.28	10	14.28
1-6	15	21.42	0	00
Total	70	100.0	70	100.0

Maximum score: 30

Data in Table 9(a) shows that majority of the respondents (64.27%) had scores 18 and below and only 21.42% had scores between 19-24 and only 14.28% had scores above 24 in pre test. In the post-test, none of them had scores below 6. On comparing the pre test scores with the post test scores it was found that all the mothers scored higher in post test than the pro test. This indicates that Information booklet was effective in increasing the knowledge scores among Rural mother under five year children at kamalganj regarding protein energy malnutrition.

Table 9(b): Mean, mean %, standard deviation and mean % actual gain of pre test and post test knowledge scores

Knowledge scores	Pre test	Post test	Mean % actual gain
Mean	15.07	20.6	18.43
Mean%	50.23	68.6	
Standard deviation	16.32	6.40	

Data in Table 9(b) and fig 9 shows that the mean % knowledge score was higher in post test (68.60%) than mean % knowledge score of pre test (50.23%). The standard deviation of pre test (16.32) is more dispersed than their post test standard deviation (6.40). The mean % actual gain from pre test to post test after providing information booklet is 18.43%.

Fig 9: Cone diagram of mean % knowledge score of pre test and post test regarding protein energy malnutrition.

DISCUSSION

This chapter discusses the main findings of the research study and reviews that in relation to the findings from the result of the present study For this study the data was obtained regarding the protein energy malnutrition among the rural mothers of under five year children in kamalganj, District- Farrukhabad.

In order to achieve the objectives of the study, Pre Experimental Research Design (one group pre test and post test design), a quantitative experimental research approach and purposive convenient sampling technique was used to select the sample. The data was collected form the 70 participants by using self-administered structured questionnaire schedule. The finding of the study had been discussed with reference to the objective and hypothesis.

PRE TEST ASSESSMENT OF THE LEVEL OF KNOWLEDGE REGARDING PROTEIN ENERGY MALNUTRITION AMONG THE RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN

Figure 7: Table 1: shows the frequency and percentage distribution of rural mothers. 14.28% of rural mothers obtained Excellent score (80%-100%), 21.42% of rural mothers obtained Very good score (60%-79%), 28.57% of rural mothers obtained good score (40%-59%), 14.28% of rural mothers obtained fair score (20-39%) and 21.42% of mothers obtained poor score (below 6).

Also shows the maximum standard deviation (1.73) was found in the very good level of knowledge, 1.49 was found in excellent, 1.486 was found in good, 1.414 was found in fair and 1.603 was found in poor level of knowledge.

PRE TEST ASSOCIATION OF THE KNOWLEDGE REGARDING PROTEIN ENERGY MALNUTRITION AMONG RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

Figure1: Table 2(a) and (b) shows that maximum mean knowledge score (16.26) and percentage (54.2%) was found in the age group of 31-35 year, 14.4 (48%) was found in the age group of 20-25, 15.42 (51.4%) was found in the age group of 26 -30 year and 14.57 (48.58%) was found in the age group of 36-above. The difference in the mean knowledge score of rural mothers according to age was tested and found statistically not significant at 0.05 significance level.

Figure 2: Table 3(a) and (b) shows that maximum mean knowledge score (17.85) and percentage (59.5%) was among rural mothers of education level upto graduation,10.1 (33.66%) in mothers who had upto primary education, 15.64 (52.13%) in mothers who had lower secondary education and 17.26 (57.53%) in mothers who had completed their higher secondary education. The difference in the mean knowledge score of rural mothers according to qualification was tested and found statistically not significant at 0.05 value of significance level.

Figure 3: Table 4 (a) and (b): Shows that maximum mean knowledge score (17.94) and percentage (59.82%) was found in Christians, 15.06(50.2%) was found in Hindus and 12.47(41.58%) was found in Muslims. The difference in the mean knowledge score of rural mothers according to religion was tested and found statistically not significant at 0.05 value of significance level.

Figure 4: Table 5 (a) and (b): Shows that maximum mean knowledge score 17.30 and percentage 57.69% was found among rural mothers who is having family income below Rs.10001-Rs.15000/ month. 12.77 (42.57%) was found among rural mothers who is having family income below Rs.5000/ month, 14.23 (47.45%) was found among rural mothers who is having Rs.5001-10000 family income and 15.72 (52.40%) was found among rural mothers who is having Rs.15000- above family income. The difference in the mean knowledge score of rural mothers according to family income was tested and found statistically not significant at 0.05 value of significance level.

Figure 5: Table 6 (a) and (b): Shows that maximum mean knowledge score 16.94 and percentage 56.49% was found among mothers who had extended family, 12.60 (42.22) was found among mothers who had nuclear family, 14.50 (48.33%) was found among mothers who had joint family. The difference in the mean knowledge score of rural mothers according to family type was tested and found statistically not significant at 0.05 value of significance level.

Figure 6: Table 7 (a) and (b): Shows that maximum mean knowledge score 16.61 & percentage 55.39% was more found among mothers who having 3 children, 12.5 (41.66%) was found among mothers who having 1 child, 14.06 (46.88%) was found among mother who having 2 children and 15 (50%) was found among mothers who having 4 and more children. The difference in the mean knowledge score of rural mothers according to number of children was tested and found statistically not significant at 0.05 value of significance level.

From table 2, 3, 4, 5, 6 and 7 it is evident that the demographic variables such as Age group, qualification, religion, family income, family type and no. of children; **the calculated chi square value is less than the critical value at p<0.05 level of significance so null hypothesis is accepted and research hypothesis is rejected.**

POST TEST ASSESSMENT OF LEVEL OF KNOWLEDGE REGARDING PROTEIN ENERGY MALNUTRITION AMONG RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN

From table 8(a) shows the frequency and percentage distribution of rural mothers. 35.71% of rural mothers obtained Excellent score (80%-100%), 28.57% of rural mothers obtained Very good score (60%-79%), 21.42% of rural mothers obtained good score (40%-59%), 14.28% of rural mothers obtained fair score (20-39%) and 0% of mothers obtained poor score (below 6).

Also shows the maximum standard deviation (1.77) was found in the excellent level of knowledge, 1.72 was found in very good and good, 1.35 was found in fair and 0 was found in poor level of knowledge.

POST TEST ASSOCIATION OF THE KNOWLEDGE REGARDING PROTEIN ENERGY MALNUTRITION AMONG RURAL MOTHERS OF UNDER FIVE YEAR CHILDREN WITH THEIR SELECTED DEMOGRAPHIC VARIABLES

From table 8(b) it is evident that the demographic variables such as age group, family income and no. of children; the determined chi square value is less than the critical value at $p<0.05$ level of significance so null hypothesis is accepted and the research hypothesis is rejected.

In demographic variables such as qualification, religion and family type; the calculated chi square value is higher than the critical value at $p<0.05$ level of significance. So null hypothesis is rejected and research hypothesis is accepted for these demographic variables.

SUMMARY

The study to assess the effectiveness of knowledge among rural mothers of under five year children in kamalganj, Farrukhabad (U.P).

METHODOLOGY

The research design adopted for the study was Pre Experimental Research Design (one group pre test and post test design) design and research approach adopted for this study was quantitative experimental approach. The sample taken was 70 mothers of under five year children. The mothers were selected in rural areas in Farrukhabad, Uttar Pradesh.

The review of literature is provided in the following sub headings

Section 1: Review related to knowledge about protein energy malnutrition

Section 2: Review of literature related to national mal nutrition Programme.

Section 3: Review related to causes and risk factors about protein energy malnutrition

Section 4: Review related to demographic variables of protein energy malnutrition

Section 5: Review related to prevention of protein energy malnutrition.

MAJOR RESEARCH FINDINGS

SECTION: 1

- The maximum member of mothers 37.14% was in the age group of 36-above year.
- 35.17% of mothers had completed higher secondary education.
- 42.85% of mothers had belong to religion Hindu.
- 31.42% mothers had below Rs.5000/month family income.
- 42.85% mothers belong to joint family type.
- 30% of mothers have maximum number of 3 children.

Pre test assessment of level of knowledge of mothers regarding protein energy malnutrition among rural mothers under five year children showed that majority 28.57% had good knowledge , minority 14.28% had excellent and fair knowledge each and remaining 21.42% of mothers had very good and poor knowledge each.

SECTION: 2

EFFECTIVENESS OF INFORMATION BOOKLET IN BOOKLET IN TERM TERMS OF GAIN IN KNOWLEDGE SCORES.

1. Majority of the respondents (28.57%) had scores 13-18, 14.28% had scores each between 25-30 and 7-12 and 21 42% had scores between 19-24 and 0-6.
2. In the post-test, none of them had scores below 6.
3. On comparing the pre-test scores with the post-test scores it was found that all the rural mothers scored higher in post-test than the pre-test.
4. This indicates that Information booklet was effective in increasing the knowledge scores among rural mother under five year children regarding protein energy malnutrition.
5. The stacked area diagram showing that the post-test knowledge scores were reliably higher than the pre-test knowledge scores. All the rural mothers under five year children regarding protein energy malnutrition achieved higher scores in the post-test.
6. Majority of subjects (35.71%) had scores ranging between (25-30) in post-test whereas in the pre-test 14.28% had scored above 25.
7. The information in table 9(b) likewise portray that the mean post-test data scores (20.6)) was higher than their mean pre-test data scores (15.07).
8. The SD of pre-test (SD-16.32) is more dispersed than their post-test SD (SD-6.40).
9. Mean % knowledge scores in post test is maximum () than the mean % knowledge score in pre test.

SECTION:3

ASSOSCIATION BETWEEN THE PRE TEST AND POST TEST KNOWLEDGE SCORE WITH THEIR SELECTED DEMOGRAPHIC VARIABLE

The Chi-square test computed between knowledge and selected variables revealed that there was a significant association between the knowledge and selected Socio-demographic.

In pre test. It is evident that the demographic variables such as age group, family income, qualification, religion, family type and no. of children; the determined chi square value is less than the critical value at $p<0.05$ level of significance so null hypothesis is accepted and the research hypothesis is rejected.

In post test. It is evident that the demographic variables such as age group, family income and no. of children; the determined chi square value is less than the critical value at $p<0.05$ level of significance so null hypothesis is accepted and the research hypothesis is rejected.

In demographic variables such as qualification, religion and family type, the calculated chi square value is higher than the critical value at $p<0.05$ level of significance. So null hypothesis is rejected and research hypothesis is accepted for these demographic variables

CONCLUSION

The study was conducted to A study to assess the effectiveness of knowledge regarding protein energy malnutrition among rural mothers under five year children. On the basis of the findings and results, a conclusion was drawn.

NURSING IMPLICATION

The findings of the study have implications in the field of nursing education, nursing practice, nursing research and nursing administration. Preventive measures can be adopted by large number of rural mothers under five year children based on demographic variables and they need education and training on protein energy malnutrition thereby reducing risk factors associated with protein energy malnutrition.

NURSING EDUCATION

- The present study emphasizes on the enhancements in the knowledge regarding Protein Energy Malnutrition.
- The nurse must have the adequate knowledge regarding all the facts of Protein Energy Malnutrition while providing education
- The mothers should take active participation in education programme.
- They should be given proper education during the programme Therefore, the study emphasizes the need for enhance the knowledge regarding Protein Energy Malnutrition.

NURSING PRACTICE

- The nurses working in health services should be equipped with the knowledge regarding protein energy malnutrition.
- Health teaching programme on protein energy malnutrition need to be scheduled.
- Nurse can be perspective and sensitive in the process of identifying and validating any immediate and long term problem and respond to these by appropriate interventions.

NURSING ADMINISTRATION

Nursing administrators should take interest in motivating other nursing personnel to improve their educational status by updating their knowledge by conducting in service and mothers development programmes to improve their knowledge regarding Protein energy Malnutrition. The nursing and Health administrators should take interest in updating the knowledge regarding Protein energy Malnutrition.

NURSING RESEARCH

There is always a scope for the existing research to be reviewed so as to keep it updated. There is a need to conduct further studies in this area to prevent Protein Energy Malnutrition.

Promote more research in that area.. Nursing researcher can conduct interactive sessions for increasing the knowledge of mothers regarding Protein Energy Malnutrition and the protocol may also be developed as a guideline for further research in different setting.

RECOMMENDATIONS

On the basis of the study, it is recommended that:

- A similar study can be undertaken with large number of sample.
- The present study can be replicated in similar and different setting.
- LVarious other interventional modalities, which vary in content and method, can be used to increase the knowledge of early adults regarding protein energy malnutrition.

REFERENCES

1.protein structure introduction – NYU Scholars
2. https://www.qiagen.com
3. Park K. Text book of preventive and social medicine 200. 18th edition.
Banarasidas Bhanot publishers. P 432, 435, 654.
4. Govender I, Kaswa R, Rangiah S, Nzaumvila D. Malnutrition in children under the age of 5 years in a primary health care setting. South African family practice. 2021;63(1).
5. Ashok Kumar Koshariya. Climate-Resilient Crops: Breeding Strategies for Extreme Weather Conditions. Plant Science Archives. 2022-01-03.
6. Bharathiraja and Lalit Upadhyay. An overview of mycorrhiza in pines: research, species and applications. Plant science archives. 2022.7.4.
7. Global, regional and national burden pf protein energy malnutrition: a systematic analysis for the global burden of disease study. Xu Zhang et al. nutrients. 2022.
8.Pressrelease:Pressinformationbureauhttps://www.pib.gov.in/PressReleasePage.aspx?PRID=1907187.
9. Onis M de, Monteiro C, Clugston G. The worldwide magnitude of protein-energy malnutrition: an overview from the WHO Global Database on Child Growth. Bulletin of the World Health Organization. 1993. 71(6)
10. Di Giovanni V, Bourdon C, Wang DX, et al. Metabolomic changes in serum of children with different clinical diagnoses of malnutrition. J Nutr. 2016 Dec. 146 (12):2436-44. [QXMD MEDLINE Link].
11. Levels and trends in child malnutrition: UNICEF - WHO - World Bank Group joint child malnutrition estimates. Key findings of the 2016 edition. Available at https://www.who.int/nutgrowthdb/jme_brocua=1. 2016; Accessed: August 27, 2018.
12. Bergen DC. Effects of poverty on cognitive function: a hidden neurologic epidemic. Neurology. 2008. 71:447-451. [QXMD MEDLINE Link].
13. Horta BL, Victora CG, de Mola CL, et al. Associations of linear growth and relative weight gain in early life with human capital at 30 years of age. J Pediatr. 2017 Mar. 182:85-91. e3. [QXMD MEDLINE Link].
https://emedicine.medscape.com/article/1104623-overview?form=fpf
14. Press release: Press information bureau https://www.pib.gov.in and. Digital Sansad: - https://sansad.in
15. The Hindu https://www.thehindu.com
16. Feeding Indiahttps://www.feedingindia.org
17. Wikipedia/*- https://en.wikipedia.org
18.https://testbook.com
19. Rachna MN, Ningaraj Belagalla, Jagadeesh MS, Shilpa Huchchannanavar, Shrinatha, T.N, Somashekar KS, Aparna Shrivastava, Manish Kapoor and Sanjay Hazarika. 2024. “prevalence and factors associated with protein energy malnutrition among pre school children in rural areas”. European journal of nutrition and food safety 16 (8):142
20. Karnataka's health Action 2001 Aug: 36-39.
21. Metabolic health digest.
https://metabolichealthdigest.com/nutrient-requirements-for-indians-icmr-nin-2020/
22. Nigatu G. Assefa S. Akalu TY. Prevalence and associated factors of underweight Among children 6-59 months of age in Takusa district, Northwest Ethiopia, International Journal for Equity in Health, 2018.17:1-8.
23. Study on Prevalence of Protein Energy Malnutrition among Children of 3-6 Years of Age in the Study DistrictMalay Savalia, Sumit Unadkat (2019), Healthline journal volume 10 lssue.

24. A study to asses knowledge, attitude and practices of mothers of under five children regarding prevention of Protein Energy Malnutrition
Dr. Harish Kumar Sharma, Mr. Gagan Deep, 2022.
25. Impact of Instructional Programme on Knowledge Regarding Protein Energy Malnutrition among the mothers of Preschool Children from Selected Rural Areas of Karnataka: Pretest Rangappa S. Ashi, Sanjay M Peerapur, 2020.
26. A Descriptive Study to Assess the Knowledge of Protein Energy Malnutrition among the Under-five Parents in Alandur Community, Chennai AR. Bharathi, J Res Med Dent Sci, 2021, 9(11): 1-5
27. A Comparative Study to assess the Knowledge regarding Protein Energy Malnutrition among the mothers of Under-Five Children in the selected rural and urban area of Kanpur
Jasmi Johnson, Alan V. Joseph, Akurathi Mary Madhuri, Adarsh Kumar, Moni Sachan, 2022

28. The effect of nutrition-specific and nutrition- 30 sensitive interventions on the double burden of malnutrition in low-income and middle-income countries: a systematic review.
Escher NA, et al. Lancet Glob Health. 2024.
29. Diagnosis, Treatment and Prevention of Nutritional Anemia in Children: Recommendations of the Joint Committee of Pediatric Hematology-Oncology Chapter and Pediatric and Adolescent Nutrition Society of the Indian Academy of Pediatrics.
Chandra J, et al. Indian Pediatr. 2022.
30. Risk factors for under-nutrition among children aged one to five years in Udupi taluk of Karnataka, India: A case control study. A Basit, Suma Nair, KB Chakraborty, BB Darshan, Asha Kamath The Australasian medical journal 5 (3), 163, 2012.
31. Risk factors for malnutrition among preschool children in rural Karnataka: a case-control study. Ansuya, Baby S Nayak, B Unnikrishnan, Anice George, Shashidhara YN, Suneel C Mundkur. BMC Public Health 18, 1-8, 2018
32. Assessment of Serum Vitamin D Status and Its Associated Health Problem Among Children with Protein Energy Malnutrition: A Cross- Sectional Research Study in Central
Rural India. Pallavi Dhulse et al. Cureus. 2023.
33. Aynal Hoque et al. Assessment of the prevalence of malnutrition in under 5 aged children of slums in Dhaka city, Bangladesh Sch J App Med Sci, 2021 Feb 9(2): 267-270.
34. Tiwari, S. R., Bandi, J. R., Awasthi, S. R., & Sharma, A. K. (2017). Assessment of prevalence of protein energy malnutrition in under 5-year children in an urban slum of Mumbai, India and to study associated factors. International Journal of Community Medicine and Public Health, 3(5), 1129-1134. https://doi.org/10.18203/2394- 6040.ijcmph20161371
35.. Sethy G. Jena D, Jena P. Pradhan S. Biswas T. Prevalence of malnutrition among under five children of urban slums of Berhampur, Odisha, India: a Community based cross-sectional study, International Journal of Contemporary Pediatrics, 2017. 4:2180-2186.
36. Jena P. Rath S, Nayak MK, Satapathy D. Study of social and demographic determinants Of severe acute malnutrition in children aged 6-59 months in a tertiary care center of Odisha, International Journal of Contemporary Pediatrics, 2019.6 (1).
37. Ntenda PM. Association of low birth weight with under nutrition in preschool-aged Children in Malawi, Nutrition Journal,2019. 18:1-15.