A Study to Assess the Effectiveness of Hydrabadi Mix Ball on Nutritional Status among Malnourished under Five Year Children at Selected Anganwadi in Barabanki, Uttar Pradesh

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ABSTRACT

A study to assess the effectiveness of hydrabadi mix ball on nutritional status among malnourished under five year children at selected anganwadi in barabanki, Uttar Pradesh.

Introduction: Malnutrition is a major public health problem worldwide today, particularly in children under five years of age. Protein energy malnutrition is the most widely prevalent form of malnutrition in developing and underdeveloped nations. The nutritional status of children is an indication of the nutritional profile of the entire community. Preschool is a vulnerable period for the child, especially from the growth and development stand point. Aim: Assess the effectiveness of hydrabadi mix ball among malnourished under five year children. **objectives:** 1.To Assess the nutritional status among under five years children before giving hydrabadi mix ball in experimental and control group.2.To assess the nutritional status among malnourished under five years children after giving hydrabadi mix ball in experimental group and without giving hydrabadi mix ball in control group.3.To assess the effectiveness of hydrabadi mix ball on nutritional status among malnourished under five years children in experimental and control group.4.To determine the association between the pre-test level of hydrabadi mix ball on nutritional status among malnourished under five years children with selected demographic variables in experimental and control group. **Methodology:** A quasi-experimental approach and non-randomized control group design was adopted. Convenient sampling technique was used to select under-five children i.e. 30 in each experimental and control group. The investigator gave hydrabadi mix ball until 3 weeks in experiment group and control group were not received any hydrabadi mix ball. The progress of the children was plotted on the WHO growth charts to note the changes in the anthropometry. The collected data were analyzed by calculating frequency, percentage, mean, standard deviation, chi-square, and 't' test. **Result:** In the present study the pre-test mean score of nutritional status in experiment group and control group (-1.22, -1.68) were not statistically significant whereas in posttest nutritional status mean score of experiment and control group (0.95, -1.88).The calculated t value were statistically significant at $p<0.01$ level. **Conclusion:** This study concluded that there is a significant difference in nutritional status before and after giving hydrabadi mixture ball among malnourished under five years children. This study proved that hydrabadi mix was effective to improve the nutritional status of under-five children.

KEYWORDS: malnourished under five years children, hydrabadi mixture ball, nutritional status

INTRODUCTION:

Malnutrition is a major public health problem worldwide today, particularly in children under five years of age. Protein Energy Malnutrition (PEM) is the most widely prevalent form of malnutrition in developing and underdeveloped nations. The nutritional status of children is an indication of the nutritional profile of the entire community. Preschool is a vulnerable period for the child, a especially from the growth and development standpoint.[1] Since 1990, the percentage of undernourished children worldwide has almost halved. But we still have a lot of work to do. Today about 200 million children's lives are at

risk because they are malnourished, almost twice as many suffer from deficiencies in vitamins and other essential micronutrients.[3] Around 25% of the pediatric beds are occupied by patients whose major problem is malnutrition. Domiciliary treatment brings most of the times gratifying results and it also reduces unnecessary hospitalization and in addition enlightens family members regarding nutritional importance.[4] The death rate attributable to malnutrition in children under five years of age in India has dropped by two-third from 1990 to 2017. However, malnutrition still accounts for 68% of deaths of children of this age group. Low birth weight is the biggest contributor. Highest recorded in Uttar Pradesh at 24%. [5] Cheap and easily available dietary supplements like Hyderabad mix which enhance immune recovery are designed in the process of nutritional rehabilitation by WHO as well.[7]

Problem statement
"A study to assess the effectiveness of hydrabadi mix ball on nutritional status among malnourished under five years children at selected Anganwadi in Barabanki, Uttar Pradesh."

Objectives:
1. To Assess the nutritional status among under five years children before giving hydrabadi mix ball in experimental and control group.
2. To assess the nutritional status among malnourished under five years children after giving hydrabadi mix ball in experimental group and without giving hydrabadi mix ball in control group.
3. To assess the effectiveness of hydrabadi mix ball on nutritional status among malnourished under five years children in experimental and control group.
4. To determine the association between the pre-test level of hydrabadi mix ball on nutritional status among malnourished under five years children with selected demographic variables in experimental and control group.

OPERATIONAL DEFINITIONS:
Assess: It refers to monitor the weight every week, height and mid upper arm circumference of the children after 3 weeks

Effectiveness: It refers to the positive outcome of nutritional status on malnourished under five children after the administration of hydrabadi mixture ball.

Hydrabadi mix: It refers to a Supplementry feed made of mixture of roasted soya bean powder (10gms) roasted Bengal grams powder (10gms),

roasted Ragi powder (10gms), roasted groundnut (10gms) and jaggery Syrup (20gms) a ball of hydrabadi mix weighing 60gms.

Nutritional Status: It refers to the status of change on child height, weight and mid upper arm circumference.

Malnourished Under five years children: It refers to any child who age between 2.5 years to 5 years and falling the WHO classification of malnutrition.

HYPOTHESIS:
H_1: There is a significant difference in nutritional status before and after giving hydrabadi mixture ball among malnourished under five years children.

H_2: There is a significant association between the pre-test level of hydrabadi mix ball on nutritional status among malnourished under five years children with selected demographic variables in experimental and control group.

RESEARCHAPPROACH: quantitative-evaluative approach

RESEARCHDESIGN: Quasi experimental, non-randomized control group design

VARIABLES:
Dependent variable: Nutritional Status
Independent Variable: Hydrabadi mixture ball.

Demographic variables: Age in months, gender, order of birth, gestation age, type of diet, type of family, religion, father occupation mother occupation, father education mother education, income, duration of breast feeding, initiation of complimentary feeding, frequency of sickness.

SETTING OF THE STUDY:
The study conducted at ward no 07,08,10,12 Uttar Tola Banki, Barabanki.

POPULATION:
The population of the study are malnourished under five-year children at selected Anganwadi of Barabanki"

SAMPLE
The study samples are malnourished under five-year children who fulfilled the inclusion criteria

SAMPLESIZE
The sample consist of 60 under five children (30 control group and 30 experimental group).

SAMPLIING TECHNIQUE
In this study non probability convenience sampling technique was used to select subjects according to the sample selection criteria.

CRITERIA FOR SAMPLE SELECTION:
Inclusion criteria for sampling
➢ Children of both sex of age between 2.5 years to 5 years

➢ Children of who parent willing to allow their children participating in the study

➢ Children who were malnourished according to WHO criteria

➢ Children who were present regularly at time of data collection

Exclusion criteria for sampling
➢ Children who are suffering from any chronic illness

➢ Children who are suffering from chronic diarrhoea

➢ Children who have develop any acute illness during study period.

The study tool consists of three sections
Section1: Demographic variables:
Section2: WHO growth chart

INTERPRETATION OF THE TOOL
Section-1: Demographic variables
Age in months, gender, order of birth, gestation age at birth, type of diet, type of family, religion, father occupation mother occupation, father education, mother education, monthly income, duration of breast feeding, initiation of complimentary feeding, birth weight, frequency of sickness in a year.

SECTION-2: WHO GROWTH CHART (MODIFIED)
Anthropometric measurement method used to assess the nutritional status of under- five child.

The data was interpreted by WHO growth chart by following way.

	<-1to>-2	Mild Malnutrition
Z-score	<-2to>-3	Moderate Malnutrition
	<-3	Severe Malnutrition

ETHICAL CONSIDERATION & TOOL VALIDATION:
Before commencing the task of data collection, permission was sought from institutional Research & Ethical Committee of Hind institute of medical sciences and letter seeking permission to conduct study was obtained from Principal of Hind institute of medical sciences. I had consulted with the seven experts from pediatric Nursing and Research fields. They all given their valuable suggestion related to my tool and I adopted the necessary corrections in my tool.

PILOT STUDY:
Through pilot study the validity and reliability of tool was developed.

The reliability of the tool was assessed by using inter rater method and its correlation coefficient r value is 0.87

PLAN OF DATA ANALYSIS AND INTERPRETATION:
Analysis and interpretation of data was done according to the objectives laid down for the study

Both descriptive and inferential statistics were used. The data has been analyzed by using descriptive and inferential statistics. Results of the study were shown in the form of tables and graphs. The data analysis was done by calculating the frequency, percentage, mean, standard deviation, chisquare, and 't' test.

PRESENTATIONOFDATA
The data are organized and presented in four sections.
Section I: Frequency and Percentage Distribution of Samples in experimental and control group according to demographic characteristics.

Section II: Frequency and Percentage Distribution of Samples in experimental and control group according to level of malnutrition among under five years children.

Section III: Frequency and Percentage Distribution of Samples in experimental and control group

According to post-test level of malnutrition.

Section IV: Comparison of overall Mean Pre-test and Post-test nutritional status score among under five years children in experimental and control group to find out the effectiveness of hydrabadi mix ball.

Section V: Pre-test level on nutritional status among malnourished under five years children with selected demographic variables in experiment and control group

TABLE: 1

Section I: Frequency and Percentage Distribution of Samples in experimental and control group according to demographic characteristics.

N=60

Demographic Characteristics	Experimental Group(n=30)		Control Group (n=30)	
	f	*(%)*	*f*	*(%)*
1.Age in months				
(a) 30 – 40	5	16.66	7	23.33
(b) 41 – 50	10	33.33	15	50
(c) 51 - 60	15	50	8	26.66
2. Sex				
(a) Male	16	53.33	18	60
(b) Female	14	46.66	12	40
3. Education of Father				
(a) No formal education	9	30	6	20
(b) Upper primary School	8	26.66	12	40
(c) High and higher secondary school	10	33.33	10	33.33
(d) Graduate and above	3	10	2	6.66
4. Education of Mother				
(a) No formal education	7	23.33	5	16.66
(b) Upper Primary School	11	36.66	13	43.33
(c) High and higher secondary school	7	23.33	10	33.33
(d) Graduate and above	5	16.66	2	6.66
5. Occupation of Father				
(a) Un employed	3	10.00	4	13.33
(b) Service	1	3.33	2	6.67
(c) Farmers	22	73.33	18	60.00
(d) Business	4	13.33	6	20.00
6. Occupation of Mother				
(a) Un employed	12	40.00	14	46.67
(b) Service	2	6.67	1	3.33
(c) Farmers	10	33.33	13	43.33
(d) Business	1	3.33	2	6.67
7.Religion				
(a) Hindu	16	53.33	18	60.00
(b) Christian	4	13.33	2	6.67
(c) Muslim	7	23.33	8	26.67
(d) Others	3	10.00	2	6.67
8.Type of family:				
(a)Joint family	12	40.00	8	26.67
(b)Nuclear family	10	33.33	12	40.00
(c)Extended family	8	26.67	9	30.00
(d) Broken family	0	0.00	1	3.33
9. Monthly income in rupees				
(a) < 5000	9	30.00	12	40.00
(b) 5001-10,000	14	46.67	13	43.33
(c) 10,001-15,000	5	16.67	3	10.00
(d) Above 15,001	2	6.67	2	6.67
10. Order of Birth				
(a) 1	7	23.33	8	26.67
(b) 2	10	33.33	12	40.00
(c) 3	5	16.67	7	23.33
(d) 4	8	26.67	3	10.00

11. Gestational age at birth				
(a) 37 – 41 weeks	22	73.33	23	76.67
(b) ≥42 weeks	1	3.33	1	3.33
(c) Below 37 weeks	7	23.33	6	20.00
12. Birth weight				
(a) Above 3.5 kg	2	6.67	3	10.00
(b) 2.6 kg - 3.5 kg	12	40.00	14	46.67
(c) 1.6 kg - 2.5 kg	10	33.33	10	33.33
(d) Below ≤ 1.5 kg	6	20.00	3	10.00
13. Duration of Breast feeding				
(a) No Breast feeding	2	6.67	1	3.33
(b) Birth – 6 months	12	40.00	15	50.00
(c) Until 12 months	8	26.67	11	36.67
(d) Until 2 years	8	26.67	3	10.00
14. Initiation of complementary feeding				
(a) At 5- 6 months	2	6.67	4	13.33
(b) 7 months -12 months	16	53.33	15	50.00
(c) 13 months -18 months	10	33.33	8	26.67
(d) 19 months - 24 months	2	6.67	3	10.00
15. Type of food				
(a) Vegetarian	11	36.67	15	50.00
(b) Non vegetarian	19	63.33	15	50.00
16. Frequency of sickness in a year				
(a)1	2	6.67	3	10.00
(b)2	3	10.00	2	6.67
(c) 3	6	20.00	10	33.33
(d) 4 and above	19	63.33	15	50.00

Table 1 depicts the frequency and percentage distribution of under -five children as per their socio-demographic characteristics. There were total 60 under -five children, 30 in each experimental and control group.

According to age of under -5 children in experimental group, maximum i.e. 50.0% were in age group of 51-60months, followed by 33.33 % were in age group of 41-50 months,16.6 % were in the age group of 26-30 years and only 16.66 % were in age group of 30-40 months. But in control group, half of under -5 children i.e 50.0% were in age group of 41-50 months, followed by 26.66 % were in age group of % 51-60 months, 23.33 % were in age group of 26-30 years and only 6.7% were in age group of 30-40 months.

According to sex, in control group maximum under -five children i.e 60.00% were male, followed by 40.00% were female. But in experimental group, majority of the under- five children that is 53.33% were male, followed by 46.66 % were female children.

According to level of education of Under -5 Children's father, in Experimental group maximum i.e33.33 % were studied up to High and higher secondary school, followed by 30.0% were not studied any formal education. 26.66% were studied up to upper primary school and only 10.00% were studied graduation and above. But in control group, majority Under -5 Children's father i.e 40.0 % were studied up to up to upper primary school, followed by 33.33% were studied up to High and higher secondary school, 20.00% were not studied any formal education and only 06.66 % were studied graduation and above.

According to level of education of Under -5 Children's mother, in Experimental group maximum i.e36.66 % were studied up toupper primary school, followed by 23.33 % equally were not studied any formal education and studied up to high and higher secondary school and only16.66% were studied up to graduation and above. But in control group, majority Under -5 Children's mother i.e 43.33 % were studied up to up to upper primary school, followed by 33.33% were studied up to High and higher secondary school, 16.66% were not studied any formal education and only 06.66 % were studied graduation and above.

According to occupation of Under -5 Children's father, in experimental group maximum i.e73.33 %were belong to farmers and least i.e. 03.33% were doing service whereas in control group maximum i.e.60.00 % were belong to farmers and least i.e. 06.67% were doing service.

According to occupation of Under -5 Children's mother, in experimental group maximum i.e 40.00 %were unemployed,33.33 % were doing farming and least i.e. 03.33% were doing small scale business, whereas in control group maximum i.e.46.67 % were unemployed 43.33 % were doing farming and least i.e. 03.33% were doing service.

According to religion, in experimental group maximum under five children family i.e53.33 were belong to Hindu religion, followed by 26.67% belong to muslim,13.33 % belong to Christian and only 10.0 % were belong to other religion. But control group, majority of under five children family that is 60.00% were belong to Hindu, followed by 26.67 % were Muslim and 6.7% were belong to Christian and other religion.

According to type of family, in experimental group under five children family i.e 40.00% were belong to joint family, followed by 33.33% belong to nuclear family, 26.67 % were belong to extended family and no onei.e0 % belong to broken family. But in control group, majority of the under five children family that is 40.00 % were belong to nuclear family, followed by 30.0 % were belong to extended family,26.67 % were belong to joint family, and 3.33 % were belong to broken family.

According to monthly family income of under five children family, in experimental group maximum i.e 46.67 % were earning Rs 5001 – 10,000 followed by 30.00% were earning <500016.67 % were earning10,001 – 15,000 and only 6.67wereearning> Rs 15,000.But in control group, maximum i.e 43.33 % were earning Rs 5001 – 10,000 followed by 40.00% were earning <500010.00 % were earning10,001 – 15,000 and only 6.67 %were earning> Rs 15,000.

In respect to order of birth of the under five children in experimental group 33.33% were born 2^{nd}order, followed by 26.67% were born in 4th order,23.33% were born in 1st order and 16.67 % were born 3rd order. In control group 40.00 % were born 2^{nd}order, followed by 26.67% were born in 1st order, 23.33% were born in 3rd order and 10.00 % were born 4th order.

In respect to gestational age of the under five children in experimental group 73.33% were born 37 – 41 weeks, followed by 23.33% were born in below 37 weeks,03.33% were born in $\geq$ 42 weeks. In control group 76.67 % were born 37 – 41 weeks, followed by 20.00% were born in below 37 weeks,03.33% were born in $\geq$ 42 weeks.

In respect to birth weight of the under five children in experimental group 40.00 % were born with 2.6 kg - 3.5 kg, followed by 33.33% were born with 1.6 kg - 2.5 kg, 20.00 % were born with below $\leq$ 1.5 kg and only 6.67 % were born with above 3.5 kg. In control group 46.67 % were born with 2.6 kg - 3.5 kg, followed by 33.33% were born with 1.6 kg - 2.5 kg, 10.00 % equally were born with below $\leq$ 1.5 kg and above 3.5 kg.

In respect to duration of breast feeding of the under five children in experimental group 40.00 % were fed with breast feeding birth – 6 months, followed by 26.67 % were equally fed with breast feeding until 12 months and until 2 years,06.67 % were not fed with breast feeding. In control group 50.00 % were fed with breast feeding birth – 6 months, followed by 36.67 % were fed with breast feeding until 12 months, 10.00 % were fed with breast feeding until 2 years, 03.33 % were not fed with breast feeding.

In respect to initiation of complementary feeding of the under five children in experimental group 53.33 % were initiated complementary feeding between 7 months -12 months, followed by 33.33 % were initiated complementary feeding.13 months -18 months, 06.67 % were initiated complementary feeding equally in at 5- 6 months and 19 months - 24 months. In control group 50.00 % were initiated complementary feeding between 7 months -12 months, followed by 26.67 % were initiated complementary feeding13 months -18 months, 13.33 % were initiated complementary feeding in at 5- 6 months and only 10.00 % were initiated complementary feeding 19 months - 24 months.

In respect to type of food of the under five children in experimental group 63.33 % were eating Non vegetarian, followed by 36.67 % were eating vegetarian. In control group, 50.00 % were equally eating non vegetarian and vegetarian food.

In respect to frequency of sickness in a year of the under five children in experimental group 63.33 % were got sickness above 4 times, followed by 20.00 % were got sickness 3 times,10.00 % were got sickness 2 times and 6.67 % were got one time sickness in last year. In control group, 50.00 % were got sickness above 4 times, followed by 33.33 % were got sickness 3 times,10.00 % were got sickness 1 time and 6.67 % were got two time sickness in last year.

The chi-square value was calculated to compare the characteristics of low risk parturient mother's in control and experimental group and difference has been found to be statistically non-significant at p <0.01 level in all variables. Thus it was concluded that control group and experimental group were homogeneous in all aspects.

Objective-1: To Assess the nutritional status among under five years children before giving hydrabadi mix ball in experimental and control group.

Table: 2 Frequency and Percentage Distribution of Samples in experimental and control group according to Pre-test level of malnutrition among under five years children.

N=60

Level of Malnutrition	Experimental Group(n=30)		Control Group (n=30)	
	f	%	f	%
Normal Z-score>0 to 3	09	30.00	11	36.67
Mild Malnutrition Z-score<-1to>-2	15	50.00	13	43.33
Moderate Malnutrition Z-score<-2to>-3	05	16.67	04	13.33
Severe Malnutrition Z-score<-3	01	3.33	02	6.67
Total	30	100%	30	100%

Table 2: Among the experiment group, in the pretest,50.0 % of the under-five children having mild malnutrition,16.67% of them were having moderate malnutrition and 03.33% of them are having severe malnutrition.30.00 % were having normal growth and development.

In the control group, in the pretest, 43.33% of the under-five children were having mild malnutrition, 13.33% of them were having moderate malnutrition and 06.67% of them are having severe malnutrition.36.67 % were having normal growth and development

Section-III
Objective-2: To find out the nutritional status among malnourished under five years children after giving hydrabadi mix ball in experimental group and without giving hydrabadi mix ball in control group.

Table: 3 Frequency and Percentage Distribution of Samples in experimental and control group according to post-test level of malnutrition.

N=60

Level of Malnutrition	Experimental Group (n=30)		Control Group (n=30)	
	f	%	f	%
Normal Z-score>0 to 3	23	76.67	08	26.67
Mild Malnutrition Z-score<-1to>-2	05	16.67	16	53.33
Moderate Malnutrition Z-score<-2to>-3	01	3.33	04	13.33
Severe Malnutrition Z-score<-3	01	3.33	02	6.67
Total	30	100%	30	100%

Table 3: In experiment group, in the pretest,16.67 % of the under-five children having mild malnutrition,3.33%of them were having moderate malnutrition and severe malnutrition.76.67 % were having normal growth and development.

Where as in the control group, in the post-test, 53.33% of the under-five children were having mild malnutrition,13.33% of them were having moderate malnutrition and 06.67% of them are having severe malnutrition. Only 26.67% were having normal growth and development.

Section-IV
Objective-3: To assess the effectiveness of hydrabadi mix ball on nutritional status among malnourished under five years children in experimental and control group.

TABLE 4 Comparison of overall Mean Pre-test and Post-test nutritional status score among under five years children in experimental and control group to find out the effectiveness of hydrabadi mix ball

N=60

Test	No of Under five children	Experimental Group Mean ± SD	Control Group Mean ± SD	Mean difference	independent t-test
Pretest	30	-1.22±0.23	-1.68±0.3	0.46	t=1.06 P=0.15 Not significant
Posttest	30	0.95±0.1	-1.88±0.13	0.93	t=2.893 P=0.01** Significant

Table 4 reveals that the pretest mean score of nutritional status in experiment group and control group(-1.22,-1.68) were not statistically significant whereas in post-test nutritional status mean score of experiment and control group (0.95,-1.88) were statistically significant at p<0.01level

Hence research hypothesis (H1) is accepted. So it can be concluded that is a significant difference in nutritional status before and after giving hydrabadi mixture ball among malnourished under five years children
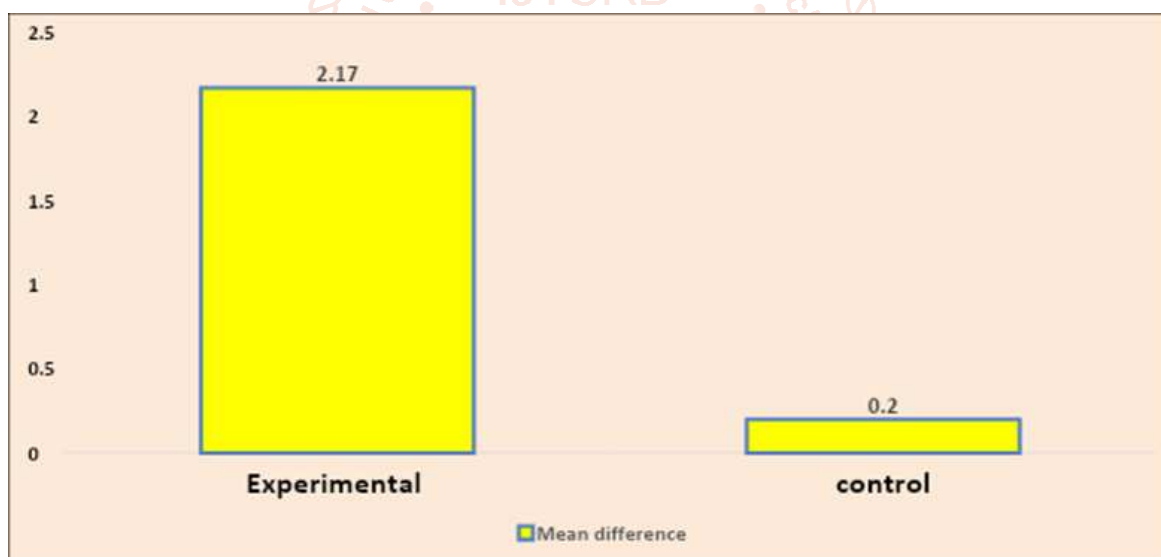
TABLE: 5 Comparison of overall Mean Pre-test and Post-test nutritional status score among under five years children in between experimental and control group to find out the effectiveness of hydrabadi mix ball.

N=60

Group	No. of mothers	Pretest Mean ± SD	Posttest Mean ± SD	Mean difference	Student's paired t-test
Experimental Group	30	-1.22±0.23	0.95±0.1	2.17	t=3.673 P=0.001*** significant
Control Group	30	-1.68±0.3	-1.88±0.13	0.20	t=1.025 P=0.30 Not significant

Table 5 reveals that in control group the overall mean pretest nutritional status score was -1.68±0.33and post-test mean score was -1.88±0.13. This difference between pretest and posttest mean score (0.20) was statistically non-significant.

In experimental group, the pretest mean nutritional status score was -1.22±0.23and posttest mean score was 0.95±0.1. This difference between Pre-test and post-test mean score (2.17)was found statistically significant at p<0.001 level. Differences between Pre-test and post-test score was analyzed using paired t-test.

Fig.20-ComparisonofoverallMeandifference score of nutritional status in control and experimental group to find out the effectiveness of hydrabadi mix ball.

Section-IV
Objective-4: To determine the association between the pre-test level on nutritional status among malnourished under five years children with selected demographic variables in experimental and control group.

Table: 6 Association between Pre-test level on nutritional status among malnourished under five years children with selected demographic variables in experiment group

Demographic Characteristics	Experimental Group(n=30)				
	Normal	mild	moderate	severe	Chi square
1.Age in months					
(a) 30 – 40	2	4	1	0	χ^2 02.16 df:6
(b) 41 – 50	2	5	2	1	
(c) 51 - 60	5	6	2	0	

2. Sex					
(a) Male	6	5	2	1	$\chi^2$04.77 df:3
(b) Female	1	10	3	0	
3. Education of Father					
(a) No formal education	3	4	1	1	$\chi^2$06.88 df:9
(b) Upper primary School	2	4	2	0	
(c) High and higher secondary school	4	5	1	0	
(d) Graduate and above	1	1	1	0	
4. Education of Mother					
(a) No formal education	1	3	2	0	$\chi^2$7.23 df:9
(b) Upper Primary School	4	4	2	1	
(c) High and higher secondary school	3	3	1	0	
(d) Graduate and above	2	2	1	0	
5. Occupation of Father					
(a) Un employed	0	1	2	1	$\chi^2$1.25 df:9
(b) Service	1	0	0	0	
(c) Farmers	8	7	7	0	
(d) Business	1	2	1	0	
6. Occupation of Mother					
(a) Un employed	2	6	3	1	$\chi^2$2,00 df:9
(b) Service	1	0	1	0	
(c) Farmers	3	5	2	0	
(d) Business	1	0	0	0	
7.Religion					
(a) Hindu	6	5	4	1	$\chi^2$3.45 df:9
(b) Christian	2	1	1	0	
(c) Muslim	4	3	1	0	
(d) Others	1	2	0	0	
8.Type of family:					
(a)Jointfamily	3	3	1	0	$\chi^2$5.55 df:9
(b)Nuclearfamily	1	1	2	0	
(c)Extendedfamily	1	1	0	1	
(d) Brokenfamily	0	0	0	0	
9. Monthly income in rupees					
(a) < 5000	2	4	2	1	$\chi^2$1.43 df:9
(b) 5001-10,000	4	8	2	0	
(c) 10,001-15,000	1	3	1	0	
(d) Above 15,001	2	0	0	0	
10. Order of Birth					
(a) 1	2	3	2	0	$\chi^2$6.00 df:9
(b) 2	3	5	2	0	
(c) 3	1	3	1	0	
(c) 4	3	4	1	1	
11. Gestational age at birth					
(a) 37 – 41 weeks	10	10	2	0	$\chi^2$1.42 df:6
(b) $\geq$42 weeks	1	0	1	0	
(c) Below 37 weeks	2	3	1	1	
12. Birth weight					
(a) Above 3.5 kg	0	1	1	0	$\chi^2$2.11 df:9
(b) 2.6 kg - 3.5 kg	4	6	2	0	
(c) 1.6 kg - 2.5 kg	4	4	2	0	
(d) Below $\leq$ 1.5 kg	2	3	1	1	

13. Duration of Breast feeding					
(a) No Breast feeding	1	1	0	0	χ^2 17.16** df:9
(b) Birth – 6 months	5	5	2	0	
(c) Until 12 months	4	3	1	0	
(d) Until 2 years	3	5	0	1	
14. Initiation of complementary feeding					
(a) At 5- 6 months	1	1	0	0	$\chi^2$16.10** df:9
(b) 7 months -12 months	6	8	2	0	
(c) 13 months -18 months	2	5	3	0	
(d) 19 months - 24 months	1	1	0	1	
15. Type of food					
(a) Vegetarian	3	6	2	1	$\chi^2$4.95 df:3
(b) Non vegetarian	9	5	5	0	
16. Frequency of sickness in a year					
1	1	1	0	0	$\chi^2$18.55** df:9
2	1	2	0	0	
3	2	3	1	0	
4 and above	5	10	4	1	

**Significant at p<0.05level

Table6 depicts that association between Pre-test level on nutritional status among malnourished under five years children with selected demographic variables in experiment group. In this there was significant association between the selected demographic variables such as duration of breast feeding, initiation of complimentary feeding, frequency of sickness and there χ^2 value were 17.16, 16.10 and 18.55 respectively significant at p<0.05 level. Hence research hypothesis H_{02} was accepted.

Variable such as Age in months, gender, order of birth, birth weight, gestation age, type of diet, type of family, religion, father occupation mother occupation, father education, mother education, income χ^2 value were not significant at p<0.05 level. Hence research hypothesis H_{02} was rejected.

Table: 7 pre-test level on nutritional status among malnourished under five years children with selected demographic variables in control group

Demographic Characteristics	Control Group(n=30)				
	Normal	mild	moderate	severe	Chi square
1.Age in months					
(a) 30 – 40	7	3	2	1	$\chi^2$1.22 df:6
(b) 41 – 50	15	5	1	1	
(c) 51 – 60	8	6	1	0	
2. Sex					
(a) Male	18	9	2	0	$\chi^2$3.56 df:3
(b) Female	12	4	2	2	
3. Education of Father					
(a) No formal education	6	3	2	0	$\chi^2$2.45 df:9
(b) Upper primary School	12	8	1	1	
(c) High and higher secondary school	10	5	1	0	
(d) Graduate and above	2	1	0	0	
4. Education of Mother					
(a) No formal education	5	2	1	1	$\chi^2$4.65 df:9
(b) Upper Primary School	13	5	2	1	
(c) High and higher secondary school	10	5	1	0	
(d) Graduate and above	2	1	0	0	
5. Occupation of Father					
(a) Un employed	4	2	3	1	$\chi^2$1.27 df:9
(b) Service	2	1	0	0	
(c) Farmers	6	10	1	1	
(d) Business	2	3	1	0	

6. Occupation of Mother					
(a) Un employed	2	8	2	2	$\chi^2$19.50 df:9
(b) Service	1	1	0	0	
(c) Farmers	4	5	4	0	
(d) Business	2	1	0	0	
7.Religion					
(a) Hindu	18	12	2	1	$\chi^2$1.20 df:9
(b) Christian	1	1	0	0	
(c) Muslim	2	4	2	0	
(d) Others	0	1	1	1	
8.Type of family:					
(a)Joint family	2	3	1	2	$\chi^2$2.45 df:9
(b)Nuclear family	5	4	3	0	
(c)Extended family	1	6	2	0	
(d) Broken family	1	0	0	0	
9. Monthly income in rupees					
(a) < 5000	2	6	2	2	$\chi^2$3.53 df:9
(b) 5001-10,000	7	4	2	0	
(c) 10,001-15,000	1	2	0	0	
(d) Above 15,001	1	1	0	0	
10. Order of Birth					
(a) 1	2	4	2	0	$\chi^2$18.5** df:9
(b) 2	4	6	2	0	
(c) 3	2	3	2	0	
(c) 4	0	0	1	2	
11. Gestational age at birth					
(a) 37 – 41 weeks	10	12	0	0	$\chi^2$4.96 df:6
(b) ≥42 weeks	1	0	1	0	
(c) Below 37 weeks	0	1	3	2	
12. Birth weight					
(a) Above 3.5 kg	1	1	0	0	$\chi^2$17.45** df:9
(b) 2.6 kg - 3.5 kg	7	7	1	0	
(c) 1.6 kg - 2.5 kg	3	5	2	0	
(d) Below ≤ 1.5 kg	0	0	1	2	
13. Duration of Breast feeding					
(a) No Breast feeding	1	0	1	2	$\chi^2$5.95 df:9
(b) Birth – 6 months	5	5	3	0	
(c) Until 12 months	3	6	2	0	
(d) Until 2 years	1	2	0	0	
14. Initiation of complementary feeding					
(a) At 5- 6 months	2	1	1	0	$\chi^2$8.35 df:9
(b) 7 months -12 months	8	7	0	0	
(c) 13 months -18 months	3	1	2	2	
(d) 19 months - 24 months	1	0	2	0	
15. Type of food					
(a) Vegetarian	7	5	2	1	$\chi^2$2.35 df:3
(b) Non vegetarian	5	8	2	0	
16. Frequency of sickness in a year					
1	2	1	0	0	$\chi^2$16.93** df:9
2	1	1	0	0	
3	5	2	3	0	
4 and above	7	4	1	2	

***Significant at P<0.05 level

Table7 depicts that association between Pre-test level on nutritional status among malnourished under five years children with selected demographic variables in control group. In this there was significant association between the selected demographic variables such as order of birth, birth weight and frequency of sickness and their χ^2 value were 18.05, 17.45 and 16.89 respectively significant at p<0.05 level. Hence research hypothesis H_{02} was accepted.

Variable such as Age in months, gender, gestation age, type of diet, type of family, religion, father occupation, mother occupation, father education, mother education, monthly income, duration of breast feeding, initiation of complimentary feeding χ^2 value were not significant at p<0.05 level. Hence research hypotheses is H_{02} was rejected.

DISCUSSION

This chapter deals with the discussion of the data analyzed based on the hypotheses of the study. The purpose of the study is to assess the efficacy of hydrabadi mix ball on nutritional status among malnourished under five years childre. The findings of the study are discussed with reference to the objective, hypothesis and with the findings of the study.

Many studies have also shown that the formula advised by the National Institute of Nutrition, Hyderabad specially prepared protein mixtures provide an increase of weight after 22 days to 3 weeks or little later

Objective-1: To assess the nutritional status among under five years children before giving hydrabadi mix ball in experimental and control group.

In present study among the experiment group, in the Pre-test, 50.0 % of the under-five children having mild malnutrition,16.67% of them were having moderate malnutrition and 03.33%of them are having severe malnutrition. 30.00 % were having normal growth and development.

In the control group, in the pretest, 43.33% of the under-five children were having mild malnutrition, 13.33% of them were having moderate malnutrition and06.67%of them are having severe malnutrition. 36.67 % were having normal growth and development.

Both above findings are consistent with a total of 6531 Punjabi children in the age group 1–5 years were measured in a cross-sectional study for assessing malnutrition. The percentage of children who were underweight, stunted, wasted and having low MUAC for age was 15.04%, 11.42%, 10.76% and 38.52% respectively. [57]

A study carried out in three backward states, two blocks were selected in each state on the basis of the maximum concentration of the backward community. a total of 80 samples were selected from the 18 blocks making a sum of 1440 samples. 66.2% of all children of 0–5 years of age were under-weight of which 23.1% were under grade III and IV, showing the severe extent of malnutrition. The highest number of children in Grades III and IV were from Uttar Pradesh 27.1% followed by Orissa 22% and Rajasthan 21.1%. The study also revealed the children were short for age or stunted 32.9% in the age group below three years. George KA, Kumar SN, Lal JJ, et al,(2014). [58]

Objective-2:To assess the nutritional status among malnourished under five years children after giving hydrabadi mix ball in experimental group and without giving hyrabadi mix ball in control group.

In experiment group, in the pretest, 16.67 % of the under-five children having mild malnutrition, 3.33% of them were having moderate malnutrition and severe malnutrition. 76.67 % were having normal growth and development.

Where as in the control group, in the post-test, 53.33% of the under-five children were having mild malnutrition, 13.33% of them were having moderate malnutrition and 06.67%of them are having severe malnutrition. Only 26.67% were having normal growth and development.

Uppal M, Kumari K. & Sidhu, (2015)A study on the effects of curd (dahi) and leaf protein concentrate in children with protein-energy malnutrition. The study was conducted in a tertiary hospital at New Delhi, in which 80 moderately and severely malnourished children of age 1–5 years were given either the curd or LPC in addition to the WHO recommended two-step diet for 15 days. The results revealed a change in weight, haemoglobin level and CD4: CD8 and T-cell subpopulation was significant in both the groups after supplementation. The study concluded that curd and LPC, when added to the diet of malnourished children, would accelerate the immune recovery and improve the nutritional status of the affected children. Our study was also based on maximum utilisation of locally available products making it extremely cost effective. [59]

Objective-3: To assess the effectiveness of hydrabadi mix ball on nutritional status among malnourished under five years children in experimental and control group.

In the present study the pretest mean score of nutritional status in experiment group and control group (-1.22, -1.68) were not statistically significant whereas in posttest nutritional status mean score of experiment and control group (0.95, -1.88) were statistically significant at p<0.01 level.

Hence research hypothesis (H1) is accepted. So, it can be concluded that is a significant difference in nutritional status before and after giving hydrabadi mixture ball among malnourished under five years children.

In the present study result supported by a study to estimated that hydrabadi mixture laddus have significantly increased the Nutritional Status of Anganwadi children in the study subjects as compared to the control group. In their study observed that Supplementation of fortified beverage for 6 months has significantly improved the hematologic and anthropometric measurements and significantly lowers the prevalence of anemia deficiency among the children. Nazni, Pradheepa S, and Hasan A, (2017).[60]

Objective-4: To determine the association between the pre-test level of hydrabadi mix ball on nutritional status among malnourished under five years children with selected demographic variables in experimental and control group.

In this present study the association between Pre-test level on nutritional status among malnourished under five years children with selected demographic variables in experiment group. In this there was significant association between the selected demographic variables such as duration of breast feeding, initiation of complimentary feeding, frequency of sickness and there χ^2 value were 17.16, 16.10 and 18.55 respectively significant at p<0.05 level. Hence research hypothesis H_{02} was accepted.

In regard to Association between Pre-test level on nutritional status among malnourished under five years children with selected demographic variables in control group. In this there was significant association between the selected demographic variables such as order of birth, birth weight and frequency of sickness and their χ^2 value were 18.05, 17.45 and 16.89 respectively significant at p<0.05 level. Hence research hypothesis H_{02} was accepted.

SUMMARY: The main aim of the study was to assess the efficacy of hydrabadi mix ball on nutritional status among malnourished under five years children. To accomplish the objectives and determine methodology for the study, a thorough review of literature was done. The Quantitative approach and quasi-experimental Nonrandomized control group research design was adopted for the study.

CONCLUSION:
Majority of the children are having malnutrition. This study suggested that Hydrabadi mix ball is effective and cost effective in improving the nutrition status and can be implemented in daily living to have a healthy life of the under five year children.

IMPLICATION
The findings of the study have the following implication in nursing.

Nursing Practice
➢ Distributing Hyderabad mix at the Anganwadi Centre, will be helpful among children who are living in a society with malnutrition.
➢ This can be implemented in pediatric nursing practice in the ward of the children who is diagnosed as malnourished.
➢ Nurses has major role in the preventive aspects. To prevent the child from malnutrition and to keep the every child healthy should advice to their parents about hydrabadi mix ball for their children.

Nursing Education:
➢ The institutes of nursing education should play an active role in educating the students regarding Hyderabad mix.
➢ The students should be prepared for imparting health education, nutrition education to the community
➢ The school /college curriculum should be designed in such a way to motivate the students to take nutritious food.

Nursing Administration:
➢ The findings of the study will help the nurse administrator to organize awareness programmes in schools and health education programme for nurses and parents.

Nursing Research:
➢ Apply this research findings while taking care of the children who is diagnosed as malnutrition.
➢ Hyderabad mix is very efficient in improving the weight among malnourished children. This mix should be incorporated in a day to day pediatric nursing practice

RECOMMENDATIONS:
On the basic of findings of the study it is recommended that
➢ A longitudinal study can be done to assess the morbidity status of malnourished children.
➢ A descriptive study can be done to assess the prevalence of malnutrition among under five children.

➢ A correlation study can be done between the gestational age of the child and malnutrition status.

➢ A comparative study on prevalence of malnutrition in urban and rural area can done among under five children.

➢ There is great need to conduct more research to become community people familiar with this recipe.

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