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A quasi experimental study to assess the effectiveness of nurse-led intervention on knowledge regarding malnutrition of under five year children among anganwadi workers in selected urban ICDS centers, Agra, Uttar Pradesh

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Abstract
Aim: The objectives of the study were.
1. To assess and compare the pre interventional knowledge on malnutrition among experimental and comparison group AWW.
2. To assess and compare the post interventional knowledge of malnutrition between experimental and comparison group of AWW.
3. To associate the pre interventional level of knowledge on malnutrition with selected demographic variable.

Method: 130 AWWs from urban ICDS center of Agra were included as samples by purposive sampling. Data to assess the knowledge was collected by close-ended questionnaire with 50 items with maximum score of 50. The felt learning needs were assessed by open-ended questionnaire. Reliability of the questionnaire was tested by test retest method and the tool was found to be reliable (r = 0.83). Validity was tested by consultation with guides and experts from related field.

Results: Analysis showed that AWWs had total mean percentage of 53.2%. Area wise mean percentage was highest (68.0%) in the area 'assessment of malnutrition', it was higher (57.0%) in the area prevention of malnutrition, 41.0 in the area 'management of malnutrition' and 40.0 for the area 'factors related to malnutrition'. Further, most of the AWWs expressed felt learning needs in all areas of malnutrition.

Power point presentation (PPT) was prepared focusing on areas and subareas where mean knowledge score was average or below average and also based on felt learning needs expressed by AWWs in the open-ended questionnaire. PPT was validated by consulting guides and experts from related field. Effectiveness of the module was evaluated by a post-test.

Interpretation and conclusion: Total mean percentage of knowledge scores of AWWs improved from 53.2% to 97.6%. Further, area wise knowledge mean percentage improved from 40.0% in pre-test to 94.0% in post-test in the area ' factors related to malnutrition'. The same increased from 57.0% to 97.3% for the area prevention of malnutrition. The mean percentage for the area 'management of malnutrition' was 41.0% in pre-test which increased to 99.0% in post-test and mean percentage of the area 'assessment of malnutrition' was 68.0% in pre-test whereas it was 100.0% in post-test.

Paired't' test indicated very highly significant (P> 0.001) difference between the pretest and post-test knowledge scores of AWWs regarding malnutrition.

Further chi-square test indicated no association (*P*< 0.05) between the post-test knowledge scores and demographic variables of AWWs such as age, education, refresher course attended on malnutrition among children below Five years of age and number of years back refresher course attended. There was significant association (P > 0.05) between the years of experience as Anganwadi worker and post-test knowledge scores of AWWs.

Keywords: Nurse led Intervention, malnutrition, Agra Uttar Pradesh

Introduction
Children's are the first call on programme of human resource development not only because the children's are very susceptible, because the foundation for lifelong learning and human development is laid in these crucial early years. It is now all over acknowledged that investment in human resources development is a mandatory for economic development of any nation.

An estimated in 2017, 15 year under age of children of 6.3 million died. Within the 1st month of life million children died. According to this 15000 death of under-five per day [1].

Need for the study
In early childhood success, emotional stability, and wellbeing have their roots. The ministry of child and women development implemented different schemes of child and mother. ICDS was one of them [26]. Today; this scheme includes world's big and unique program for children's development [27]. In India, ICDS is recently significant programme of government which reduces child and maternal malnutrition. ICDS is most important interventions, and many studies indicate its positive role in tackling India's health and nutrition problems.

The studies indicate its positive role in tackling India's health and nutrition problems. Studies indicate its positive role in tackling India's health and nutrition problems. The available data indicates that maternal and child interventions have played an integrated role substantially lowering under five, infant mortality rates and the levels of both severely and moderately malnourished children have declined due to ICDS.

Statement of problem
A Quasi experimental study to assess the effectiveness of Nurse-Led Intervention on knowledge regarding malnutrition of under five Year children among Anganwadi workers in selected urban ICDS centers, Agra, Uttar Pradesh

Objectives of study
1. To assess and compare the pre interventional knowledge on malnutrition among experimental and comparison group AWW.
2. To assess and compare the post interventional knowledge of malnutrition between experimental and comparison group of AWW.
3. To associate the pre interventional level of knowledge on malnutrition with selected demographic variable

Hypothesis
HO1: There will be no significant difference between pre and post interventional knowledge score between malnutrition among experimental group.

H02: There will be no significant difference on post intervention knowledge on malnutrition between experimental and comparison group of anganwadi workers.

H03: There will be no significant association of pre intervention level of knowledge score on malnutrition among experimental and comparison group with their selected demographic variables

Delimitations
The study is limited to Anganwadi workers:
- Working at ICDS centers of urban Agra.
- Willing to participate in the study.
- Available during data collection.

2. Methodology
Research approach
Research approach is a methodical, unbiased method of finding with empirical suggestion and demanding control. It is the basic stratagems that the researcher implements to develop evidence that is correct and not in prediction.
The control is achieved by holding the conditions constant and varying with the phenomenon under study.

The choice of research approach constitutes one of the major decisions, which must be made in conducting a research title as the approach chosen on a research project can greatly affect its outcome.
In order to achieve the desired objectives of this study, quantitative research approach is adopted to achieve desired objectives.
In the present study, the of Nurse- Led Intervention (PPT) on knowledge regarding malnutrition of under 5 yr.

Children are measured in numerical form and these data are analyzed by using statistical method.

Research design
The research design supports in the selection of samples for observation, and determines the type of analysis interpret the data. The selection of the research design depends upon aim of the study and the conditions under which the study is conducted. The design adopted for this study is quasi experimental one group pre-test Post-test research design. The results.
It examines and assess the effectiveness Nurse-Led Intervention (PPT) on knowledge regarding malnutrition of under 5 yr children in AWWs in selected urban ICDS centers, Agra, Uttar Pradesh.

Setting of the study
Setting refers to the area where the study is conducted. Qualitative researchers strive to study their phenomenon in a variety of context. This study was proposed to be conducted among AWWs in selected urban ICDS centers, Agra, Uttar Pradesh" The study carried out urban ICDS, Fatehpur sikri, Agra.

Sample and sampling method
Sample is the subset of the units that comprise the population. Small amount to subject is used in study when it is not practicable to research the whole population from which it is drawn. This sampling process make it possible to gain a generalization to the intended population depend on careful observation of variables, within a relatively small proportion of population.

Sample
The sample composed of 130 Anganwadi workers who are working at the ICDS centers, which are fulfilling inclusion and exclusion criteria and participating in study.

Sampling technique
In the present study, the samples selected for data collection were from Anganwadi ICDS centers of Davanagere, Agra, Uttar Pradesh, who are fulfilling exclusion criteria and inclusion criteria. Participating in study Non probability Purposive Sampling method.

Development of tool
a) Construction of tool to identify the learning needs of Anganwadi workers: A questionnaire was based on the review literature and in consultation with the research experts. The questionnaire had three parts.

Part A-Demographic variables: It includes age, education, year of experience, whether attended any refresher course in malnutrition of under 5 yr children, and if so when was the last refresher course on malnutrition attended.

Part B-Assessment of the knowledge of the AWWS regarding malnutrition.
It construct of close ended question to assess the knowledge of the AWWs regarding malnutrition. It has four sections.
Section I had five items regarding factors related to malnutrition.

Section II had 30 items regarding prevention of malnutrition.

Section III had five items regarding assessment of malnutrition and

Section IV had ten items management of malnutrition.

Each item has one, maximum score for correct response. Thus, there were 50 items with 50 maximum scores.

Part C-Identification of felt learning needs related to malnutrition

It consists of open ended questionnaire to identify felt learning needs related to malnutrition, which were not included in Part B. The AWWs were instructed to write their felt learning needs under the following areas such as factors related to malnutrition, prevention of malnutrition, assessment of malnutrition and management of malnutrition. Interpretation of the tool was done by only percentage of responses were considered to identify the felt learning needs of Anganwadi workers related to the above mentioned areas.

Reliability

It has to do with the value of measurement. In its ordinary wisdom, reliability is the "consistency" or "repeatability" of measures. Reliability is the consistency of a set of measurements or measuring tool.

Test-retest and internal consistency reliability methods used and Reliability was found $r = >0.83$.

The questionnaire was administered to 14 Anganwadi workers of Agra rural, ICDS centers. The gap between the Ist and IInd test was ten days. r value showing that tool is reliable for assessment of the knowledge of malnutrition.

b) Development of nurse led intervention

A Nurse-led Intervention (power point presentation) was based on the assessed learning needs.

The steps followed in construction of the nurse led intervention were:
1. Referred related literature regarding malnutrition.
2. 2 Prepared the contents of nurse led intervention.
3. Established nurse led intervention.
4. Preparation of final draft of the nurse led intervention and Editing and translation of the PPT.

1. Referred of related literature

The literatures referred to prepare the content of the nurse led intervention are presented in the Annexure.

2. Organization of the content of the nurse led intervention

Contents of nurse led intervention were organized under five lessons such as:
a) Nutrition
b) Diet for a child from 0-5 years of age
c) Malnutrition
d) Prevention of malnutrition
e) Management of undernourished children
f) Answer key

3. Content validity of the nurse led intervention

Content validation was established by consulting experts in related filed (Annexure). Suggestions and recommendations of the experts which were considered to modify the contents

of the module are presented in table.

4. Preparation of the Nurse-Led Intervention (final draft of the NLI) Process of development Power point presentation (PPT)

A Nurse-Led Intervention was developed to teach the AWWs related malnourished child care. The Nurse-Led Intervention was of 30 min duration that covered the following areas;

The process of development of the nurse-led intervention involved the;
a) Development of criteria checklist.
b) Preparation of the first draft of nurse-led intervention programme.
c) Preparation of the Slides.
d) Content validation of nurse-led intervention.
e) Preparation of the final draft of nurse-led intervention programme.

Development of the criteria checklist

Criteria checklist was prepared against which the content of the Nurse-Led Intervention was to be evaluated.

Preparation of the first draft of nurse-led intervention (PPT)

The Nurse-Led Intervention comprised the following headings:

Lesson 1-Nutrition

Lesson 2-Diet for a child from 0-5 years of age

Lesson 3-Malnutrition

Lesson 4-Prevention of malnutrition

Lesson 5-Mgt of undernourished child

The first draft of nurse-led intervention programme was developed after reviewing the available literature and consulting the experts. The factors such as time and independent learning, the level of understanding and needs that affects the AWWs learning were considered while preparing nurse-led intervention programme.

Preparation of the nurse-led intervention
Power point presentation.

The PPT was prepared care of malnourished children's.

Content validation of Nurse-led intervention

The Nurse-Led Intervention was given to 4 experts for validation against the criteria checklist.

5. Preparation of the final draft of nurse-led intervention

The final draft was prepared after modification suggested by the experts. The Nurse-led Intervention was based on general and specific objectives. The Nurse-Led Intervention covered the following content areas:

Data collection procedure

Researcher obtained ethical approval from appropriate review panels to conduct the study. Prior permission was obtained from the Assistant Director of Child and women Welfare Department Agra (Annexure). The researcher communicated the supervisors of Anganwadi worker to extend co-operation. Data was collected during the monthly meeting of Anganwadi workers.

There are 89 Anganwadi centers in the urban ICDS project of Agra District. For smooth functioning the 89 Anganwadi centers they are classified into 4 circles. Each circle constitutes 44 Anganwadi centers. Every month meetings are conducted at two AWCs. At each center meeting is conducted for two days for AWWs of two different circles. Thus, for four circles meetings are conducted in two days.

Data collection done by each circle separately during meeting of respective circle. Thus each day data was collected from two circles and it took two days to complete the data collection procedure. Researcher dully explains the aim of the study. Only the samples who had signed the consent form are included in the study. Data confidentiality was maintained.

Further, Nurse-led intervention technique was followed for distribution of the Nurse-Led Intervention and also collection of data for post-test.

Data for pre-test was collected from 01/12/2016 to 28/04/2017, further; data for post-test was collected from 3/02/2018 to 31/12/2018. The researcher approaches the study subjects, explained to them the aim of study and obtained the consent after assuring the subjects about the confidentiality of Data collection done in the information from the students. Over-all of 130 AWWs were selected for the study who encounter inclusion criteria of samples.

Data analysis

Data analyzed by using both inferential and descriptive statistics. SD and mean percentage was used to describe the learning needs of Anganwadi workers. Further, one group pre-test (x) and post-test (y) designed was used.\in the study. (y-x) of the Power point presentation. Formula used to evaluate effectiveness of the PPT is Treatment pre-test (x)? Post-test (y) = effectiveness (y-x). Statistical significance of effectiveness of the module was analyzed by the paired t' test and association was tested through chi-square test

Results

It is observed that the AWWs had mean knowledge score of 19.71 ± 3.90 (39.41%) out of the maximum score of 50. Further knowledge level indicates that only 9% of total scores were in good knowledge level and also AWWs had expressed felt learning needs regarding malnutrition in all areas of malnutrition. Hence it was felt that a module is to be prepared to improve the AWWs knowledge level inform them the facts regarding the self-expressed learning needs.

A nurse-led intervention (PPT) was prepared on malnutrition. The steps followed of the module are explained in Chapter III. Effectiveness of the nurse-led intervention was evaluated by post-test for the same group with same tool to assess the knowledge. The statistical formula used to evaluate effectiveness of the module is described in Chapter III.

Hypotheses were tested using paired't 'test and X^2 test. Paired't' was calculated to analyses the differences in knowledge of AWWs in the pre and post-test. Further X^2 test was calculated to analyse the associated between demographic variables and posttest knowledge scores of AWWs.

Ho1

There is no significant difference between the pre-test and post-test knowledge scores of AWWs regarding malnutrition among children below 5 years of age.

Paired't' test was calculated to analyse the difference in knowledge of AWWs in pre-test and post-test on various areas of malnutrition.

Table 1: Comparison of area wise and over all mean scores

Area	Test	Mean	SD	t'	p'
Factors related to malnutrition	Pre	2.03	1.15	13.4	<0.001*
	Post	3.8	1		
Primary prevention of malnutrition	Pre	13.4	3.19	19.85	<0.001*
	Post	21.55	3.49		
Assessment of malnutrition	Pre	1.33	0.98	15.12	<0.001*
	Post	1.55	1.25		
Management of malnutrition	Pre	2.94	1.38	18.4	<0.001*
	Post	7.36	2.13		
Overall	Pre	19.7	3.9	29.08	<0.001*
	Post	36.24	4.73		

Ho2

There is not significant association between the demographic variables of AWWs and their knowledge scores in pre-test.

Chi-square was calculated to analyses the association of demographic variables with the post-test scores of knowledge is AWWs regarding malnutrition to find effectiveness of the module with regard to demographic variables of the sample.

Table 2: Association between demographic variables and pre-test knowledge of AWWs regarding malnutrition

Demographic variables	DF	X^2	Table Value	Significance
Age	6	8.26	12.59	>0.05
Education	6	3.55	12.59	>0.05
Experience	6	6.86	12.59	>0.05
Attended refresher course	2	0.10	5.99	>0.05
Year of last refresher course attended	6	10.39	12.59	>0.05

4. Discussion

Worldwide the major issue of malnutrition is noted in school going Childers. It is commonly noted that malnutrition in children pervades all aspects of their health, growth, cognitive and social development and can lead to irreversible and lifelong effects. Especially in India, one of the greatest problems for undernutrition among children. Till date, even after a technical developmental phase of the country the country is still struggling with this problem. This is the only malnutrition, the condition resulting from faulty nutrition, weakens the immune system and causes significant growth and cognitive delay. The present study focuses on the development of a Nurse led intervention based on the learning needs of the Anganwadi workers regarding malnutrition among the children below Five years of age, in urban ICDS centers Agra (Uttar Pradesh).

An iterative design used to develop a nurse led intervention for knowledge regarding malnutrition under 5 yr. children among AWWs based on their learning needs. Data collected from 130 Anganwadi workers selected by purposive sampling from urban selected ICDS centers, Agra. Quality of nurse led intervention (PPT) was assessed by quasi experimental method.

The study is concerned with effectiveness of nurses led intervention (PPT) on knowledge regarding factors, prevention, management and assessment of Malnutrition among AWW's. The results shows have been discussed with reference to objectives stated in chapter I along with findings of other studies.

Findings of the study are summarized as follows:

- Over All knowledge level of the Anganwadi workers regarding malnutrition revealed that Majority 90.77% of responses were in the poor knowledge level, 6.92% of responses were in the good knowledge level whereas only 2.31% of the responses were in the very poor knowledge level whereas excellent category scored 0%.
- The effectiveness of module was high in overall scores on malnutrition scores revealed that out of 50 maximum scores, knowledge score in the pre-test was $19.71 + 3.90$ (39.41%) whereas post-test knowledge score was $36.25+4.72$ (72.49%). Thus there was an increase of around 33.08% in the mean knowledge scores of AWWs.
- Good improvement was seen in the in the area 'factors related to malnutrition' revealed that pre-test mean knowledge score was $2.03 + 1.2$ which is 40.60% of the maximum obtainable score, whereas the mean score was $3.81 + 1.0$ (76.15%) in the post-test, indicating 35.55.0% of increase the knowledge mean score of AWWs which shows that the correct response is increased by 76.15%.
- In the area 'prevention of malnutrition' the pre-test knowledge mean score was 13.40 ± 3.18(44.67%) whereas the post-test mean score was 21.55 ± 3.49 (71.84%) shows an increase of 27.17% knowledge mean score of AWWs.
- In the area 'assessment of malnutrition' pre-test mean knowledge score was 1.336 ± 1.0 (26.62%) whereas, the post-test mean knowledge score was 3.52 ± 1.2 (70.46%) shows 43.84% increase in the mean score. However, this might be associated with high knowledge mean score of the AWWs.
- In the area 'management of malnutrition' pre-test knowledge mean score was 2.95 ± 1.4 (29.46%) whereas the post-test mean knowledge score was 7.36 ± 2.12 (73.62%) shows an increase of 44.16.0% in the knowledge mean score of AWWs.
- Effectiveness of the nurse led intervention with regard factors related to malnutrition revealed good improvement in the scores, (51.54%) of effectiveness was observed for the item ' worm infestation is a factor related to malnutrition, 43.08% effectiveness was noticed in dietary deficiency as an important factor' 35.38% in item 'Continuous deficient consumption of body building foods is a factor of stunted growth. Further, 33.08% improvement was seen in area of 'deficient consumption of energy yielding foods is a factor of marasmus'
- However, the effectiveness was low (26.15%) for the item 'Continuous deficient consumption of body building foods is a factor of stunted growth'. Knowledge of Anganwadi worker It might be associated with the percentage during Pretest
- Regarding" Initiating breast feeding immediately after child birth" 98% AWWs responded correctly where as

47% AWWs responding correctly on "a child can be given solid foods at the age of 8-9 months" and 34% of AWWs responded correctly on the item "Starting weaning 3-4 months". It reveals that most of AWWs had knowledge on breast feeding but knowledge is lacking on weaning 52% of anganwadi workers responded correctly for the item "Egg is essential to maintain growth of the body".

- ss51% of AWWs at responded correctly for the item "Fruits are essential to protect the body from diseases". 50% AWWs has responded correctly for the item "Cereals yield energy for body activities". 49% of AWWs at responded correctly for the item "Pulses help to maintain growth of the body" and 41% of AWWs at responded correctly for the item "Vegetables are required to protect body from diseases". 40% of AWWs at responded correctly for the item "Milk helps in bone development of the child".

Conclusion

From the result of the study investigator concluded that around 53% of AWWs were aged between 36-45 years, 76% of them were educated up to higher secondary course, 50% of AWWs had above 11-15 years of service experience, 99% of the anganwadi worker has attended refresher course related malnutrition in children under 5yr.children.

Further, anganwadi worker has not good knowledge in most of the areas of malnutrition, but the knowledge was excellent in some cases (16%) in factors related to malnutrition. A nurse led intervention (PPT) was prepared and effectiveness was evaluated by posttest. Mean knowledge score improved from 19.7 ± 3.9 to 36.24 ± 4.73 after implementation of the nurse led intervention. Highly significant difference was found between pre and post-test knowledge scores of AWWs in all areas of malnutrition and module seems to be effective to all groups AWWs except with regard to years of experience.

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