“A Study On Risk Factors Of Malnutrition And Effectiveness Of Family Based Intervention Program (Fbip) On Nutritional Status Of Children And Knowledge And Practices Of Mothers In Selected Villages Of Nainital District, Uttarakhand.”

SYNOPSIS SUBMITTED

By

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DECLARATION

I hereby declare that the synopsis entitled **"A Study on Risk Factors of Malnutrition and Effectiveness of Family Based Intervention Program (FBIP) on Nutritional Status of Children and Knowledge and Practices of Mothers in Selected Villages of Nainital District, Uttarakhand"** is my own original work and it has not formed the basis for the award of any degree, diploma, associateship or fellowship of similar other titles.

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Background of the Study

A healthy individual makes a healthy country and today's children are tomorrow's leaders. In children under the age of five years nutrition is very essential, since it directly has an impact on their growth and development throughout their childhood period[1]. Indian population is experiencing changes in the demographic, epidemiological and nutrition. To maintain the nutritional status in the children and women, efforts have been initiated. Inspite of all the efforts for reducing the prevalence of underweight among children in under five ages from over 67.3% in 1974–1975 to 41% in 1996–1997, the percentage of underweight children rose to 44.4% in 1998–1999, and was still unchanged at 43.5% in 2005–2006 [2].

Malnutrition and in relation to it growth retardation is common in India. Malnutrition is defined as "a state wherein adequate nutrients are not delivered to the cells to provide the substrate for optimal functioning." Protein energy malnutrition is one of the forms of malnutrition. Therefore, the problem of malnutrition is of serious concern [3].

In many parts of the world malnutrition is identified as one of the major health issues. About 45% of the children under the age of three years are reported to die due to malnutrition [4]. Malnutrition is said to be one of the most serious problems in the world as it is found to be disease at third rank causative 3.5 million deaths per year among the under five children [5].

In the year 2014, according to WHO worldwide statistics the prevalence of wasting, stunting and underweight was found to be 7.8%, 24.7% and 15.1% among under five children [6-7]. About 80% of the undernourished children are living in 20 countries in the world and India is has nearly 60 million underweight children [8].

Presently, about 48% of under five children are malnourished and 43% are found under weight (NFHS -3) in India. Malnutrition accounts for 54% (more than half) deaths in children below five years of age in India. Due to high incidence of malnutrition in India, about 43% of children die due to mild to moderate malnutrition and 11% deaths are caused due to severe malnutrition [9].

Insufficient nutritional intake during the early childhood can directly affect the growth and development and sexual maturation during the adolescent thereby placing them at risk of opportunistic infectious diseases, also in association to improper lifestyle practices.[10] Malnutrition not only effects growth and development of child but also directly has impact on survival rate of under five children which indirectly affects economic status of individuals and society as a whole [11]. As it hampers economic development and causes poverty due to diminished physical health leading to decreased working capacity and low intellectual capacity thus learning deficiency, thereby imposing more expenses on health[6].

Inspite of economic growth and development in our country since two to three decades, under five children are still affected due to malnutrition leading to poor life span in both urban and rural which is also related to increase in our population, lack of educational status, poor access to health facilities and inequality related to socio economic status in our country India are all related causes of malnutrition.

Even thou there has been tremendous growth in production of food in our country and increased consumption of high calorie food items, still no change has been identified in the nutritional status, as still malnutrition prevails in our country for 20 years. In India, about 43% of under five children are malnourished, it is thus highly prevalent in our country[12].

Thus, it becomes very important to assess the nutritional status in under five children and to identify the causative factors relating to nutrition and under nutrition which will provide us with proper direction to plan programs and progressive strategies for children and their mothers thereby improving the nutritional status of our country.

Need for the Study

It is estimated that more than half of the deaths occurs due malnutrition and other causes in association to it includes Malaria (57%), diarrhea (61%), pneumonia (52%) and measles (45%) [13].

About 10 million children all over the world and even more die from the diseases which can be prevented and treated at earlier stage. Among this malnutrition is accountable for half of these deaths. Developmental delay, impaired cognitive, motor and physical development, and poor cognitive performance, low IQ, poor social skills, vulnerability to diseases and more behavioral problems in children are consequences of long-term malnutrition in children. Globally malnutrition is admissibly very high and the step to reduce it is very slow [14].

Even after rigorous efforts being made by Government of our country (India) during the previous years to sort the problem of malnutrition among children, it still prevails and is one of the most serious problems of our country. The 2016 Global Hunger Index Report ranked India 97th among 118 countries [15].

The most common factors of malnutrition include inadequate intake of food, severe and repeated infections or combination of both. Socio demographic factors like occupational and educational status of parents, marital status, income of family, knowledge of primary care giver, residential area, sanitation and source of water supply are all indirectly associated to malnutrition[16].

Malnutrition also gets aggravated due to inadequate access and distribution of resources among the family members, improper environmental conditions, infectious diseases, inadequate diet, and poverty which affects nutritional status more than genetic predisposition in childhood [17].

In a state like Uttarakhand, environment plays a very vital role to affect child's nutritional status. The unstable living situation in Uttarakhand, owing to it being a new state has a direct impact on physical and psychological health of people. A study conducted by Vyas S et al. (2016) in Uttarakhand indicated that majority of children (87.40%) belonging to lower socio-economic status which were found to be undernourished (61.78%). It was also found that majority of under nutrition i.e., 88.44% was present in children living in poor environment[18].

To solve this problem of malnutrition which is present since independence era and other problems relating to nutrition like overweight, effects on health and its risk factors, a thorough planning is required at ground level to identify the root cause of this problem instead of solving it superficially. Most of the times, faulty food habits, religious vibes, poor knowledge and any others are responsible for these nutritional problems in children. These all can be rectified to most of the extent through awareness programs or education regarding diet in under five children.

There is extreme shortage of health care providers in developing countries.[19] Thus, health care services at primary level are usually not given much importance. Due to less number of health care centers in nearby locality most of the people neglect health and access the hospital only when health status becomes serious or disease aggravates. Thus, health care workers give more importance to serious cases and thereby preventive aspect e.g., health education of health care often gets neglected[20].

Hence, to overcome this problem it is necessary to have an intervention which can is not only effective but also it is reachable, feasible, culturally acceptable and can also be combined with local health services. Such intervention can also be done by training the community health representatives or even some members who can provide appropriate nutrition related education to primary care givers and family members to prevent malnutrition and improve nutrition status of children [(21-22)].

Inspite of government-initiated programs to solve the problem of malnutrition its prevalence rate is still very high in the state of Uttarakhand as identified in a study conducted by was 61.78% [22]. Therefore, it directly points to the need for exploration of the factors which are responsible for malnutrition.

Exploration of the factors will further provide a platform to develop a need-based intervention program for mothers of the under five children. Nutritional status is also associated directly with mothers' knowledge and rearing abilities of their child. Thus, an intervention which focuses on improving mothers' knowledge and related practices towards maintaining optimum

level of nutrition in children will be helpful which will thereby reduce the rate of malnutrition in the children below five years of age. The need for an intervention is supported by a study conducted by Vyas et.al (2016).

Thus, this study will explore the risk factors of malnutrition and develop a need-based intervention program for the mothers of under five children with a goal to improve the nutritional status in the under five children.

Review of Literature

Review has been taken from various sources like journals, internet sources, electronic databases like Science Direct, Google Scholar, PubMed, etc. The literature review has been organized under the following headings:

1. Nutritional status and risk factors related to nutrition in under five children
2. Studies related to intervention programs on nutritional status

Nutritional status and factors related to nutrition in under five children:

A study was conducted by (B. Aurangzeb, 2012) among 157 hospitalized children and adolescents admitted in Sydney Children hospital. The objective of the study was to identify the prevalence of malnutrition and nutrition risk in children and factors associated in hospitalized children. It was found that (52.6%) of the children below 2 years were malnourished. According to nutrition risk assessment score, 47.8% children were at high risk and only 28.7% children had no nutrition risk. Children identified with high nutrition risk had low weight for age, low BMI (p ¼ 0.001) and longer hospitalization (p¼ 0.001). It was concluded that the nutrition risk screening at admission will aid to identify high nutrition risk children at early stage, thereby aiding timely intervention[23].

A study was conducted by (Bantamen G, 2014) to identify factors associated to malnutrition among under five children in Ethiopia. Out of 321 (107 cases and 214 control) children it was found that 63.20% of cases and 24.40% controls had uneducated fathers. About 38.23% of cases and 21.89% of controls had history of diarrheal episode. Children in the families

having drinking water from unprotected source, had three times risk of malnutrition as compared to children consuming water from protected source [AOR=3.04, 95%CI (1.01, 9.17)]. It was concluded, inadequate child rearing and feeding practices are directly leads to malnutrition in under five children. Therefore, it is important to administer a nutrition related intervention activity in the community area[24].

A study conducted by (Vyas S, 2016) to determine the prevalence of under nutrition among toddlers and to identify whether family variables are risk factors for under nutrition in young children (0 - 36) months residing in rural area, Dehradun. It was found that out of 500 children majority of the children (87.40%) belonging to lower socio-economic status which were found to be undernourished (61.78%), majority of under nutrition i.e., 88.44% was found in children living in Poor environment, majority (75.50%) of undernourished children had illiterate fathers, maximum under nutrition (88.46%) was found in children whose mothers were unskilled labourers by occupation. The study concluded that literate mothers can easily introduce new feeding practices, which helps to improve the nutritional status of their children[22].

Intervention programs on nutritional status:

A community-based intervention study was conducted by (Banerjee B, 2005) to study the magnitude of the problem and impact of nutrition advices given to mothers of 300 infant suffering with severe degree of malnutrition in West Bengal. It was found that the prevalence of malnutrition was 50.67% among the infants. Further there was gain in body weight found following nutritional advices given to mothers. A no significant relationship found between nutritional advices and increase in infant's weight ($t12 = 1.16$, $p > 0.05$). The average increase in weight found was 80.77 grams. It was concluded that nutrition education on mothers of infants has a favourable effect on children's' nutritional status[25].

(Gupta & Kumar, 2013) conducted a longitudinal intervention study among mothers of 206 under five children of village Domana Jammu, India. The objective of the study was to evaluate the effect of nutrition related information given to mothers. It was found that the

prevalence of malnutrition was 20.87%. About 14.56% children were falling in grade I category of malnutrition and 5.83% in grade II malnutrition. Nutritional education was given to mothers of malnourished children in group of (8 - 10) each consequently for four weeks, once in week. Nutrition education intervention was found to be effective as it resulted in re - gaining normal weight for age in 30.23% of children during the study. The study concluded, that efforts should be undertaken to solve the problem related to malnutrition through multicomponent approach[26].

Review of literature has been organized into two sections: Nutritional status and factors related to nutrition in under five children and intervention programs on nutritional status. The review has helped to identify the prevalence of malnutrition and the need to address the factors associated to it at the earliest. It also emphasizes the importance to develop need-based intervention for mothers of under five children based on various aspects of nutrition which will be explored and will also help in countering the bane of malnutrition.

Research Statement

A study on risk factors of malnutrition and effectiveness of family-based intervention program (FBIP) on nutritional status of children and knowledge and practices of mothers in selected villages of Nainital district, Uttarakhand.

Purposes

The purpose is to identify nutritional status, explore the risk factors related to malnutrition and to develop need-based family-based intervention program (FBIP) to improve the nutritional status of under five children. It also aims to identify its effectiveness on nutritional status in under five children, knowledge and related practices of their mothers.

Objectives of the Study

The objectives of the study are to:

Primary Objectives:

1. Assess the nutritional status of under five children in selected villages of Nainital district, Uttarakhand.

2. Explore the risk factors related to malnutrition in under five children using a mixed method approach.
3. Assess the nutritional knowledge and related practices among mothers of under-five children.
4. Develop Family based intervention program (FBIP) to improve the nutritional status of under five children.
5. Determine the effectiveness of FBIP on nutritional status of under five children.
6. Determine the effectiveness of FBIP on nutritional knowledge among mothers of under-five children.
7. Determine the effectiveness of FBIP on nutrition status related practices among mothers of under-five children.

Secondary Objective:

8. Find the relationship between the nutritional status of under five children and selected variables.

Hypotheses

The hypotheses will be tested at 0.05 level of significance:

H_1: There will be significant improvement in malnutrition grade of under five children in the intervention group after the administration of FBIP.

H_2: There will be significant increase in the nutritional knowledge score among mothers of under five children in intervention group after the administration of FBIP.

H_3: There will be significant increase in the nutrition related practice score among mothers of under-five children in intervention group after the administration of FBIP.

H_4: There will be significant relationship between nutritional status and selected variables.

Assumptions:

The study assumes that:

1. One of the most common health problems in under five children is malnutrition.
2. Sample size is true representation of the population
3. Mothers' knowledge on nutrition may influence the nutritional status of children.
4. Low socio-economic status families are at higher risk for malnutrition.
5. Poor child rearing practices can affect child nutritional status.
6. Selected demographic variables have influence on mothers' knowledge and practice regarding prevention and management of malnutrition.
7. Mothers' responses to the semi – structured scheduled items will reflect their actual knowledge about management of nutrition in their under five children.
8. Mothers' play a significant role in maintaining nutritional status of their children.
9. Meeting age-appropriate nutritional requirements of under five children is challenging for mothers.

Research Variables

- ***Independent variable:*** Family based intervention program (FBIP)
- ***Dependent Variable:***
  1. *Nutritional status of under five children: weight for age, weight for height and height for age.*
  2. *Nutritional knowledge among mothers of under-five children.*
  3. *Nutrition related practices among mothers of under-five children.*
- ***Socio demographic variables:***
  1. *Age in years,*
  2. *Gender*
  3. *Religion,*
  4. *Type of family,*
  5. *Number of siblings,*
  6. *Place of stay*
  7. *Socio-economic status,*
  8. *Education and Occupation of the parents*
  9. *Birth order,*
  10. *Type of diet and*
  11. *ANC services*

Operational Definitions

Nutritional Status: In this study nutritional status refers to level of nourishment of the under five children which will be measured by weight, height, MUAC followed by clinical assessment scale. It will be interpreted according to WHO criteria for underweight, stunting and wasting (weight for age, low height for age and low weight for height).

Risk factors related to malnutrition: In this study it refers to the factors contributing to or associated with malnutrition measured in terms of knowledge, child care practices and risk factors of malnutrition as measured by semi structured questionnaire among mothers on under five children and perception of malnutrition assessed by focused group discussions (FGD) among mothers of under five children and community health workers.

Nutritional Knowledge: In this study it refers to awareness of mothers regarding nutrition of under five children as measured by structured knowledge questionnaire (SKQ) in following domains: Concept of nutrition (functions and nutritional need of child), balanced diet, common deficiency diseases, Feeding and importance, Complications related to nutrition deficiencies, Prevention and management of nutrition deficiencies and Utilization of health services.

Nutrition related Practices: In the present study, it refers to nutrition, child care practices and utilization of health services followed by mothers of under five children to maintain nutritional status as measured by structured questionnaire.

Under five children: In this study, under five children refers to children in the age group of one to five years and residing in selected villages of Nainital district, Uttarakhand.

Mothers: In this study it refers to mothers of under five children in selected villages of Nainital district, Uttarakhand.

Effectiveness: In this study effectiveness refers to the ability of FBIP in improving nutritional status of children as measured by difference in pretest and post test scores of knowledge and practice of mothers and nutritional status of children.

FBIP: Family based *intervention program (FBIP):* In this study, it refers to a multi- component

training program which will be conducted for mothers of malnourished children in a group of (8 – 10). It aims to improve nutritional status of the under - five children, knowledge and practices among mothers in regard to nutrition. It consists of four sessions. Each session will last for 60 minutes and will delivered once a week for four weeks. The components covered will be: Concept of Nutrition (functions and nutritional need of child), balanced diet, common deficiency diseases, Feeding and importance, Complications related to nutrition deficiencies, Prevention and management of nutrition deficiencies and Utilization of health services. Various educational strategies will be adopted.

Methodology

Research approach: Mixed approach

Research design: Phase I: Exploratory design to explore the nutritional status and factors

Phase II: Randomized controlled study

Population: Children below five years of age and their mothers

Sample: Children (1-3) years of age and their mothers.

Sample Size:

Phase I: 1000

$n = z^2pq/d^2$ [z = 1.96, q = 1-p, d = 3% (absolute precision)]

p = 61.78 (Ref: 25)

n = 3.814*.3822*.6178/.0009 = 1007

n = 1007 + 10% for non-response rate = 1017

Also, will be again estimated later after pilot study..

Phase II: Identified malnourished children will be allotted into control and experimental group through cluster random allocation of the villages.

Research setting*:* Selected Block of Nainital District.

Sampling technique**:** Multi staged cluster random sampling technique will be adopted for the study. From Nainital district, block will be selected by simple random sampling, from the selected

block further two villages will be selected by simple random sampling. A house-to-house survey will be conducted and under five children will be assessed for malnutrition via anthropometric measurements and clinical assessment followed by which factors relating to it will also be explored. The identified children will be further allotted into control and intervention group through random allocation. The intervention and control group will be then followed up at one month, third month, six month and nine months respectively (Refer Fig. 1).

Inclusion criteria

Phase I & II

1. Children belonging to the age group of one to three years and having mild to moderate malnutrition.
2. Availability of the children at the time of data collection
3. Mothers who are willing to participate in the study.
4. Mothers who will be able to understand Hindi language.

Exclusion Criteria

Phase II:

1. Mothers who are mentally challenged.
2. Children having congenital deformities like mal absorption syndrome, celiac diseases and lactose intolerance, down syndrome and pierre robin syndrome, cleft lip and cleft palate, tracheo esophageal fistula, congenital dysplasia of hip and cerebral palasy.
3. Children with severe malnutrition or undergoing any kind of treatment for malnutrition.
4. Children who are not staying with biological mother.

Delimitations

The study is delimited to:

1. Children belonging to the age group of one to three years in selected areas of Nainital district
2. Evaluation of effectiveness of FBIP is delimited to children with mild and moderate malnourished identified children

Schematic Presentation of Research Methodology:

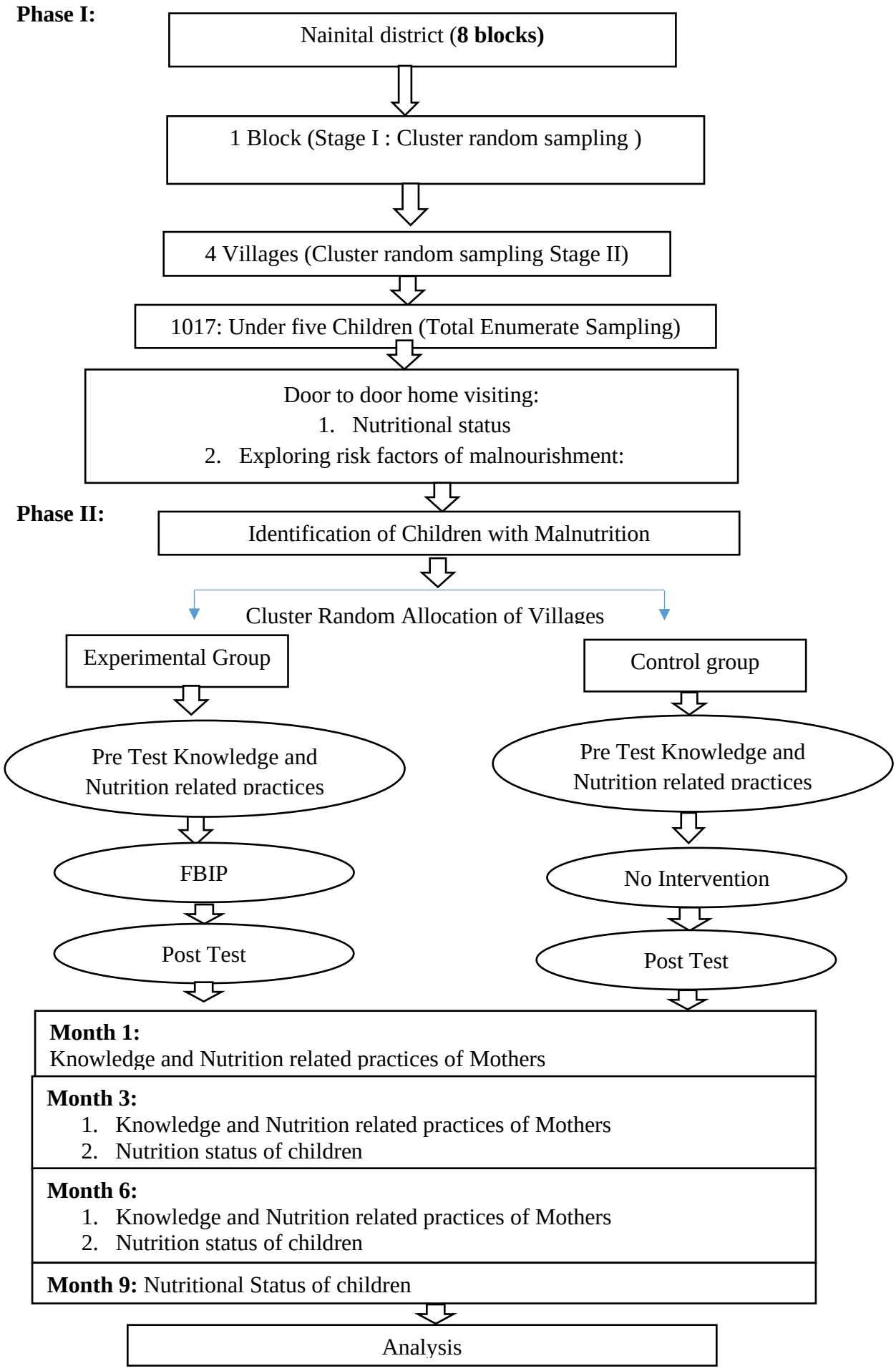

Fig. 1. Schematic representation of the research methodology

Description of tool:

Tool 1: Socio demographic Proforma

Tool 2: Tools for Assessment of Nutritional Status

2A: Weighing Machine

2B: Tape measure

2C: Clinical assessment Proforma

2D: Flow sheet to document Anthropometric measurements

Tool 3: Semi Structured questionnaire to assess risk Factors related to malnutrition in under five children

Tool 4: Structured Knowledge questionnaire on Nutrition of under five children

Tool 5: Structured Checklist on nutrition practices adopted by mothers

Tool 1: Socio demographic Proforma:

The Tool will be developed by the researcher to collect background information from the mothers' selected for the study. It consists of: Gender, Age in years, Gender, Religion, Type of family, Number of siblings, Place of stay, Socio-economic status, Education and Occupation of the parents, Birth order, Type of diet and ANC services. The items will not have any scoring as the proforma will be intended to collect only the factual information.

Tool 2: Anthropometric Proforma:

It consists of two sections which will be developed by the researcher and consists of:

1. Section I: assessment of weight, height and mid upper arm circumference measured by weighing scale and inch tape. It will further be interpreted according to WHO Anthro software version 3.1.0 which will be used to classify the nutritional status: underweight, stunting and wasting.
2. Section II: clinical assessment: hair, face, eyes, lips, tongue, teeth, gums, glands, skin, nails, muscular and skeletal.

Tool 3: Factors related to malnutrition in under five children:

This tool will be developed by the researcher to explore various factors contributing to or associated with malnutrition and will be measured in terms of knowledge, child care practices and risk factors of malnutrition as measured by semi structured questionnaire among mothers on under five children and perception of malnutrition assessed by focused group discussions (FGD) among mothers of under five children and community health workers. The items will not have any scoring as the proforma will be intended to collect only the factual information.

Tool 4: Structured Knowledge questionnaire on Nutrition of under five children:

This tool will also be developed by the researcher to assess the knowledge of the mothers regarding nutrition of under five children. They will be assessed from the following domains: Malnutrition, Minor deficiency diseases and nutrient rich diet, Feeding and importance, Complementary feeds, Management, Prevention &Complications and Utilization of services. The knowledge level will further be categorized into Good, Average and Poor.

Tool 5: Structured Checklist on nutrition related practices used by mothers:

This tool will be developed by the researcher to identify the related practices of the mothers relating to maintenance of nutritional status of under five children. This area will be assessed by structured checklist which will be self-reported by the mothers. It will be categorized into good practice and poor practice.

Validity

- The tool will be submitted to experts from different fields of community medicine, community health nursing, pediatric medicine, child health nursing, department of nutrition and obstetrics and maternity nursing.
- The language validity will be determined by translating the tool to Hindi and then retranslating to English.

Pretesting & Reliability

Pretesting of the tool will be done by administering the tool to 05 samples and 20 samples for reliability

Pilot Study

It will be conducted on 100 samples. (10% of sample size)

Ethical Considerations

1. Permission will be taken from the: Dean, Himalayan College of Nursing, SRHU, Jolly Grant, Dehradun, Institutional Ethical Clearance committee of SRHU, Jolly Grant, Dehradun and Block Officer (DHO) of Haldwani, Distrait Nainital.
2. Consent will be obtained from the participants after explanation of the study purpose.

Plan for Data Collection

After taking administrative permission from the community developmental officer, list of blocks and villages will be collected. The study will be conducted in two phases:

Phase I: In this phase from eight blocks one block will be selected by cluster random sampling. Four villages will be selected by cluster random sampling from selected block. A house-to-house survey will be conducted in the villages to identify nutritional status of under five children and to explore the risk factors of malnutrition till the desired sample of 1017 is achieved. Informed consent will be taken and mothers will be informed regarding the purpose of the data collection. To gather the data, background information will be collected by structured demographic tool and to explore the factors relating to malnutrition a semi- structured interview method will be conducted among the mothers. To assess the nutritional status anthropometric measurements and clinical assessment will be done among the children.

Phase II: The identified children in the phase I will be allotted into control and experimental group through cluster random allocation of the villages. Pretest will be conducted in the mothers of under five children identified as malnourished (both experimental and control group) regarding

nutrition related knowledge and practices. A need-based intervention program will be designed. The experimental group will receive need-based intervention (FBIP). Posttest will be conducted for both intervention and control group mothers at 1st month and 3rd month and in their children, it will be conducted at 3rd month 6th month and 9th month respectively.

Data Analysis

Descriptive and Inferential Statistics

Descriptive statistics: frequency and percentage

Inferential Statistics: Chi – square, independent t test, Odds ratio

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