CHAPTER 7
SUMMARY

The present study was done in two phases. Nutritional status and exploration of risk factors related to malnutrition in children was done in the first phase. Second phase involved evaluation of effectiveness of Family Based Intervention Programme on nutritional status of children, nutritional knowledge and nutrition related practices of their mothers. It aimed to improve nutritional status of children.

Phase I

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

2. Explore the risk factors of malnutrition in under-five children.

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

Phase II

4. Assess the nutritional knowledge of mothers of under-five children.

5. Assess the nutrition related practices of mothers of under-five children.

6. Develop Family Based Intervention Program (FBIP) to improve the nutritional status of children.

7. Evaluate the effectiveness of FBIP on nutritional status of under-five children.

8. Evaluate the effectiveness of FBIP on nutritional knowledge among mothers of under-five children.

9. Evaluate the effectiveness of FBIP on nutrition related practices among mothers of under-five children.

The conceptual framework for the present study was based on Wiedenbach – Helping art of Clinical Nursing Model.

The hypothesis was tested at 0.05 level of significance.

H_1: The mean pre-test – post-test difference of the scores of nutritional status will be significantly higher in the intervention group than control group.

H_2: The mean pre-test – post-test difference of the scores of nutritional knowledge scores will be significantly higher in the intervention group than control group.

H_3: There will be significant improvement in the means of post-test nutrition related practice scores in intervention group than control group.

Methodology

Methodology has been described phase wise below.

Phase I

The research approach used for this phase was exploratory approach. Cross-sectional survey design was adopted to identify the nutritional status of children and explore the risk factors relating to malnutrition in children. Out of eight blocks, one block was conveniently selected i.e., Halwani block. In Haldwani block there is one community health center in Kaladungi, so it was purposively selected. Under community health center, there are seven primary health care centers covering 21 sub- centers. In order to meet the estimated sample size, the researcher randomly selected sub-centers by lottery method for screening children. The procedure of selecting sub-center continued till estimated sample size was achieved. Thus, four sub centers were selected randomly. Each sub-center was chosen as a cluster for selection of sample. Door to door home visiting was conducted to identify the eligible children.

Mothers and family members were explained about the purpose of data collection followed by which informed consent was obtained from mothers. Screening of the children for malnutrition was done by measuring weight, height and MUAC. Exploration of factors relating to malnutrition was done through semi- structured interview method among the mothers. The total sample size for phase I was 703. Focused group discussions were also conducted to identify mothers' perception of risk factors of malnutrition.

Phase II

The research approach used for this phase was experimental approach. The design selected was cluster randomized control trial. Random allocation of sub-centers as clusters was carried out. Two sub-centers were randomly allocated to control and intervention group. Schematic representation of the research methodology along with randomization procedure was developed according to CONSORT guidelines. The total sample size for phase II was a minimum of 67 samples in each group which was estimated for children identified as malnourished in phase I. Hence, the total sample size for the phase II was 149 (intervention group = 75 and control group = 74). Nutritional knowledge and nutrition related practices of mothers of children identified as malnourished was assessed by structured questionnaire. The mothers and family members of intervention group received intervention (Family Based Intervention Program). Post-test was done for mothers in both intervention and control group at 1st month, and 3rd month and in their children, it was done at 3rd month, 6th month and 9th month respectively.

Descriptive and inferential statistics was used to analyze the data. Descriptive statistics was used to describe the sample characteristics and nutritional status of

children. Odds ratio and logistic regression was used to describe risk factors associated to nutritional status of children. Chi square, t-test and r-Anova was used to determine the effectiveness of intervention on knowledge and nutrition related practices of mothers and weight, height and MUAC of children. The findings of the study were discussed in view of hypotheses.

Results

The results of the study are discussed below.

Nutritional Status of Children

The study found that:

- The overall prevalence of malnutrition identified was 152 (21.6%).

- 76 (11%) children were underweight.74 (10.8%) children in mild to moderate category and 2 (0.2%) in severe category.

- About 39 (5.5) children were found to have wasting, 28 (4%) with mild wasting and 11(1.5%) with moderate wasting.

- Stunting was found in 88 (12.6%) children, 87 (12%) in mild to moderate category and 1 (0.14%) in severe category.

Risk factors of malnutrition

The risk factors related to nutritional status of children was analyzed by logistic regression. The identified significant risk factors for malnutrition in children were: *anemia during pregnancy* [Underweight - 95% CI (0.271, 0.965), $p = 0.039$ and Stunting - 95% CI (2.39,0.765), $p = 0.059$], *birth weight of child below 2.5 kg* [Underweight - 95% CI (1.106, 3.817), $p = 0.023$], *non-initiation of breast feeding within one hour of birth* [Underweight - 95% CI (0.979, 3.344), $p = 0.045$; Wasting -

95% CI (0.989, 4.711), *p* = 0.048 and Stunting 95% CI (1.090, 3.440*), p* = 0.022], *weaning before six months* [Underweight - 95% CI (1.162, 4.026), *p* = 0.013], *Bottle feeding* [Underweight - 95% CI (0.359,0.995), *p* = 0.046]; [Wasting - 95% CI (0.183,0.837), *p* = 0.013 and Stunting - 95% CI (0.372,0.966), *p* = 0.034], *recurrent illness during childhood* 103 (17.3%) [Underweight - 95% CI (1.466,4.361), *p* = 0.001] and [Stunting - 95% CI (1.187,3.447), *p* = 0.009], *Skipping of Meals* [Underweight – 95% CI (1.163, 3.447), *p* = 0.011], *not enjoying meals while eating* [Underweight - 95% CI (1.209,3.333), *p* = 0.006 and Stunting - 95% CI (1.495, 3.837), *p* = 0.001], *open drainage* [Underweight - 95% CI (1.301,6.346), *p* = 0.007] *not having pucca house* [Stunting - 95% CI (0.339,0.887), *p* = 0.014], *not having toilet* [Stunting - 95% CI (1.054,6.269), *p* = 0.038] and not sowing own vegetables [Underweight - 95% CI (1.839-5.312), *p* = 0.000; Wasting -95% CI (1.451-5.883), *p* = 0.002 and Stunting - 95% CI (1.369,3.885), *p* = 0.002].

Relationship between the nutritional status and selected variables

Relationship between nutritional status of children and selected socio demographic variables were computed. It was found that gender (χ^2 = 3.027, *p* = .053*)* and mother's educational status (χ^2 = 6.685, *p* = .009*)* was found to be significantly associated with nutritional status (underweight) of the children.

Nutritional knowledge of mothers of under five children

The knowledge of mothers was assessed through structured knowledge questionnaire on nutrition of children. The data showed that majority 129 (88.3%) mothers had average knowledge, 6 (4%) had good knowledge and 11 (7.5 %) had poor knowledge regarding nutrition of children.

Domain wise knowledge level of mothers regarding nutrition showed that mean knowledge score was 13.80 ± 2.92. The mothers had less than 50% knowledge in weaning and feeding, food sources and health services.

Nutrition related practices of mothers of under five children

About 71 (48.6%) mothers had moderately adequate practices, 71 (48.6%), 24 (16.4%) mothers had adequate practices and 51 (35%) had inadequate practices regarding nutrition for children. Domain wise pretest nutrition related practices of mothers shows that mean practice was 78.33 ± 16.47. The mothers had less than 55% knowledge in feeding and eating.

Effectiveness of FBIP on nutritional status of under five children

Significant difference in mean of weights between intervention group and control group at 6th month (10.79 ± 0.8, 10.32 ± 1.0, t = 3.08, $p < 0.05$) and 9th month (11.32 ± 1.5, 10.68 ± 2.2, t = 2.0, $p < 0.05$) was observed. r-Anova also showed a significant pre-test–post-test difference between mean weights of intervention and control group (F = 48.3, $p < 0.05$).

There was difference in mean of heights between intervention group and control group at 6th month (82.26 ± 5.1, 81.57 ± 5.3) and 9th month (83.81 ± 5.24, 82.73 ± 5.30) but was not significant. r-Anova showed a significant pre-test–post-test difference between mean heights of children in intervention and control group (F = 29.8, $p < 0.05$).

There was difference in means of MUAC of children 9th month (13.2 ± 1.2) in intervention group than control group (13.0 ± 1.2) at 9th month but was not significant. r-Anova shows significant pre-test–post-test difference between mean MUAC of children in intervention and control group (F = 10.3, $p < 0.05$).

Effectiveness of FBIP on nutritional knowledge among mothers

Comparison of nutritional knowledge of mothers between groups showed significant enhancement in mean scores of nutritional knowledge of mothers in post-test of intervention group than control group at 1st month (17.36 ± 3.21, 14.0 ± 3.31, t = 3.06, $p < 0.05$) and at 3rd month (17.36 ± 4.22, 14.10 ± 3.52, t = 3.26, $p < 0.05$). r-Anova was calculated in order to estimate increase in nutritional knowledge of mothers which showed significant difference within group (F = 53.3, $p < 0.05$).

Effectiveness of FBIP on nutrition related practices among mothers

Comparison of nutrition related practices of mothers between groups between groups showed significant enhancement in post-test practices of mothers in intervention group than control group at 1st month (89.55 ± 16.03, 82.19 ± 17.60, $p < 0.05$) and at 3rd month (93.45 ± 20.07, 81.63 ± 19.86, $p < 0.05$). r-Anova was calculated in order to estimate increase in nutrition related practices of mothers which showed significant difference within group (F = 47.74, $p < 0.05$).