CHAPTER III

METHODS AND MATERIALS

The present study "**Improving Nutrition in Vulnerable Population**" was undertaken with the subsequent objectives:

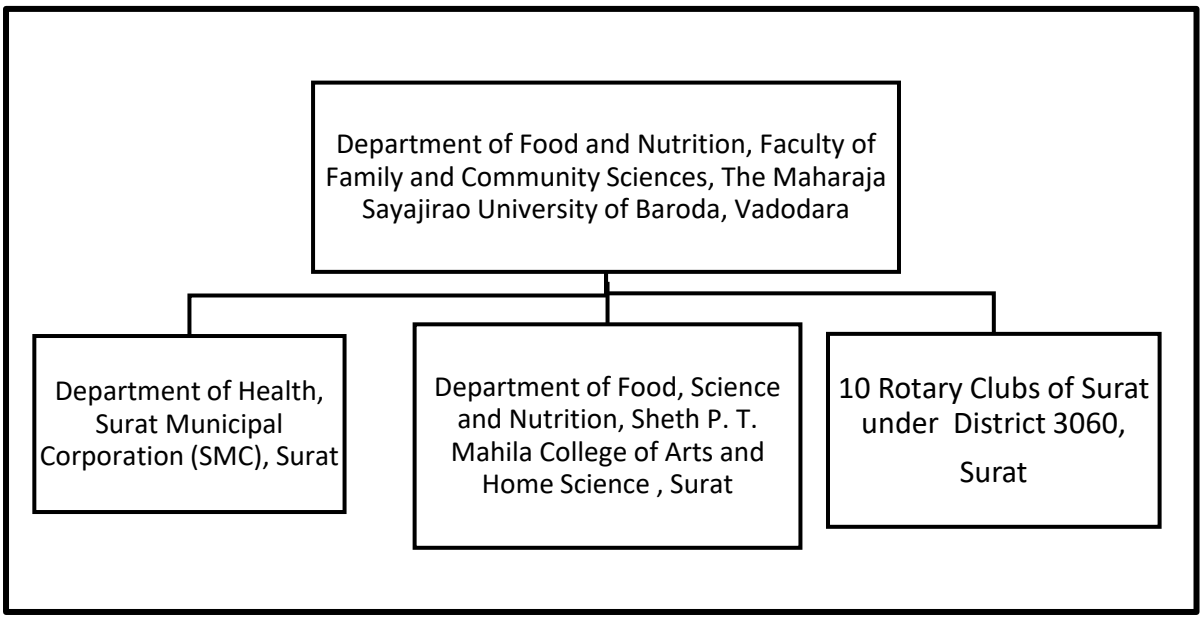
BROAD OBJECTIVE:

To improve the nutritional status of the children under 5 years of age enrolled in the ICDS (Surat city) through Public Private Partnerships

SPECIFIC OBJECTIVES:

1. To understand the situational analysis of anganwadi functionaries and anganwadi centers of ICDS in Surat city
2. To map the prevalence of undernutrition among children under 5 years enrolled in ICDS in Surat city.
3. To strengthen the functioning and infrastructure of ICDS through public-private partnerships (PPP) and assess its impact on the nutritional status of children under 5y enrolled in ICDS in Surat city.

Figure 3.1: Stakeholders Involved in the Study



PERMISSIONS AND CONSENT OBTAINED:

Permissions were obtained from the Chief Medical Officer, Department of Health, Surat Municipal Corporation (SMC) to carry out the work in the ICDS, Surat city.

Informed Consent: For every phase of the study and for every beneficiary group, informed consent was taken before initiating data collection.

ETHICAL APPROVAL:

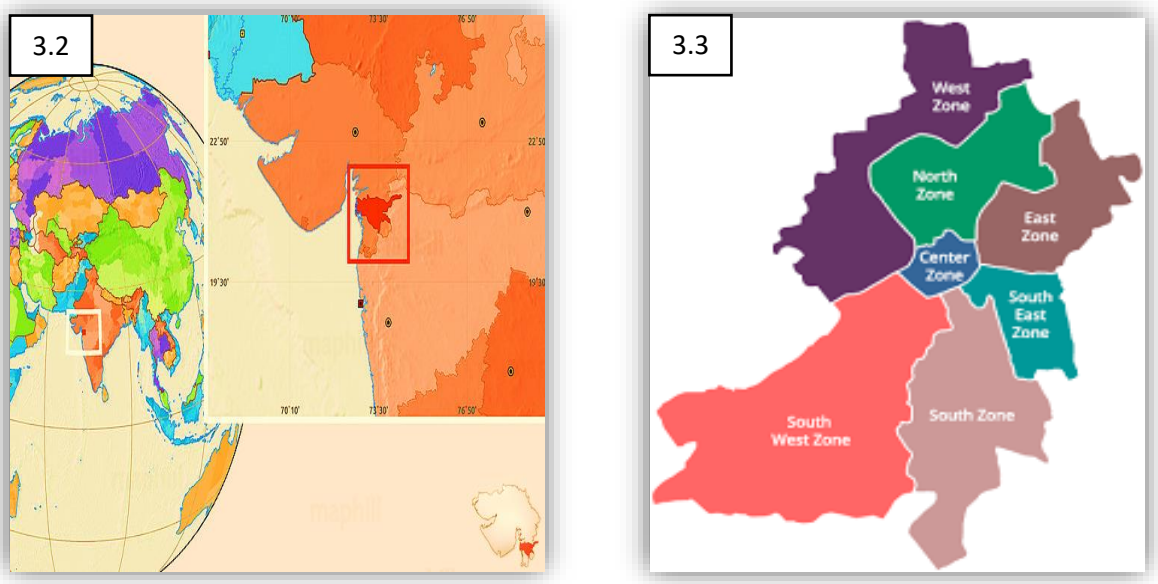
Ethical approval was granted by the ethical committee of The Department of Foods and Nutrition, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat

STUDY AREA:

Surat city which is the second largest city in the state of Gujarat, western India. Urban Surat is home to 4,462,002 million people (Census, 2011) was the area under the study.

Surat city ICDS is divided into 7 zones across 5 Ghataks and it serves through 1004 Anganwadi Centers (AWCs) (SMC records, 2014).

Figure 3.2 – 3.3: Location of Gujarat and Surat City



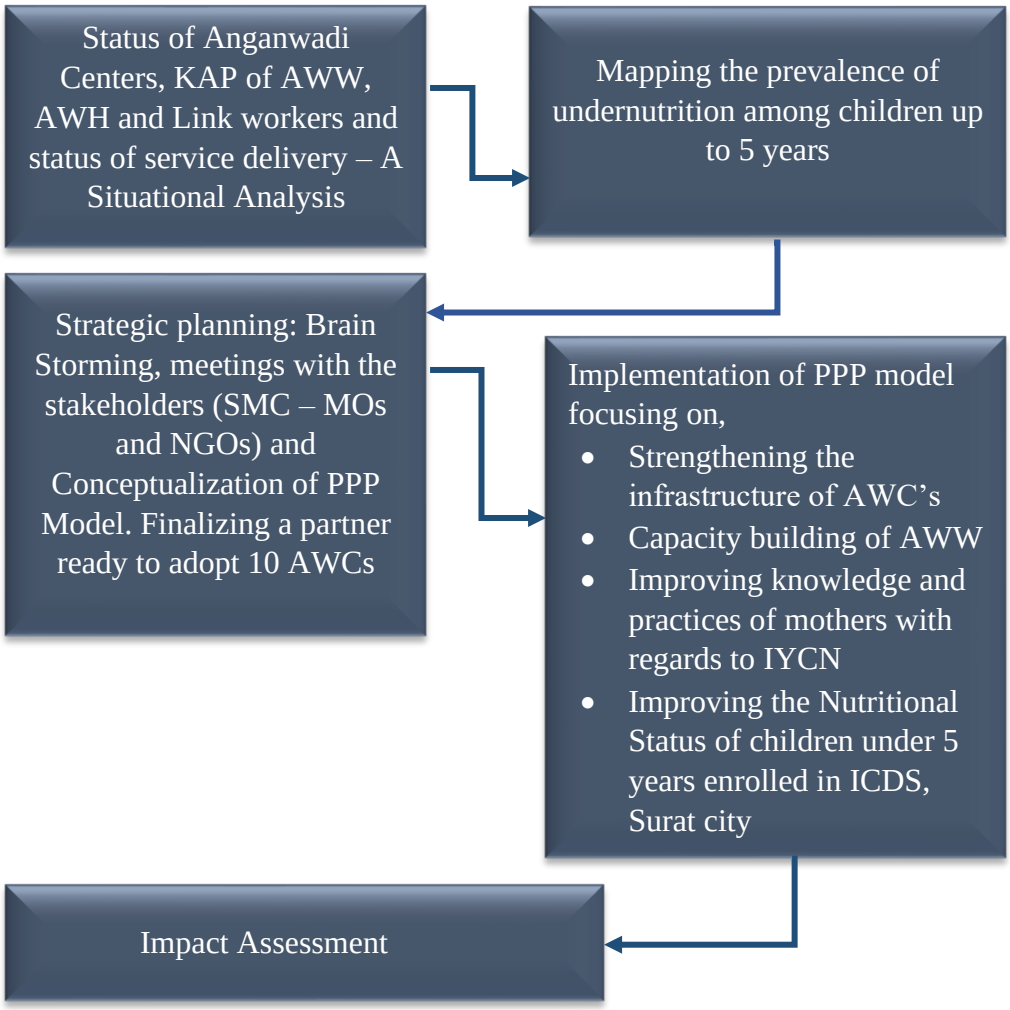
Based on the objectives of the study, the present study was divided into three phases under which the methodology has been discussed,

Phase I: Situational analysis of anganwadi functionaries and anganwadi centers of ICDS in Surat city

Phase II: Mapping the prevalence of undernutrition among children under 5years of age enrolled in ICDS in Surat city

Phase III: Strengthening the functioning and infrastructure of ICDS through public-private partnerships (PPP) and assess its impact on the nutritional status of children under 5years of age enrolled in ICDS in Surat city

Figure 3.4: An Overview of the Study



PHASE I: SITUATIONAL ANALYSIS OF ANGANWADI FUNCTIONARIES AND ANGANWADI CENTERS OF ICDS IN SURAT CITY

Study Design: Phase I was a cross sectional study

Study Population: In the present study, the KAP of Anganwadi functionaries involving, Anganwadi Workers (AWWs), Anganwadi Helpers (AWHs) and Link/ASHA workers was assessed.

Sampling: Urban Surat is divided into 7 zones having 1004 Anganwadi Centers (AWCs) (SMC Data, 2014). All the AWCs were selected as the study area and a blanket coverage was done. Phase I sample constituted of 931 AWWs, 662 AWHs and 145 Link/ASHA workers.

Table 3.1 Indicators and Tools for data collection for Phase I

Indicator	Sample	Methods and Tools
Profile of AWWs, AWHs and Link/ASHA workers	AWW, AWH and Link workers = 1738	Semi structured questionnaire
Knowledge related to Objectives and services of ICDS	AWW, AWH and Link workers = 1738	Semi structured questionnaire
Knowledge related to IYCN practices	AWW, AWH and Link workers = 1738	Semi structured questionnaire
Knowledge related to Growth Monitoring	AWW, AWH and Link workers = 1738	Semi structured questionnaire
Delivery of NHE	AWW, AWH and Link workers = 1738	Semi structured questionnaire
Quality of implementation of ICDS services like Supplementary Nutrition (Balbhog), ECE, Referrals and Health Check ups	AWW, AWH and Link workers = 1738	Focused Group Discussions

Qualitative indicators

The qualitative methods used in the research include Semi-structured interviews and Focused Group Discussions.

1. **Semi-structured Interview**

Method: In-depth interviews were conducted using semi-structured, open-ended guidelines with adequate and relevant dynamic probes to understand the individual and systemic barriers, facilitators, challenges, mitigation plan and way forward strategies related to service delivery with the following service providers

- Anganwadi Workers
- Anganwadi Helpers
- Lady Supervisors

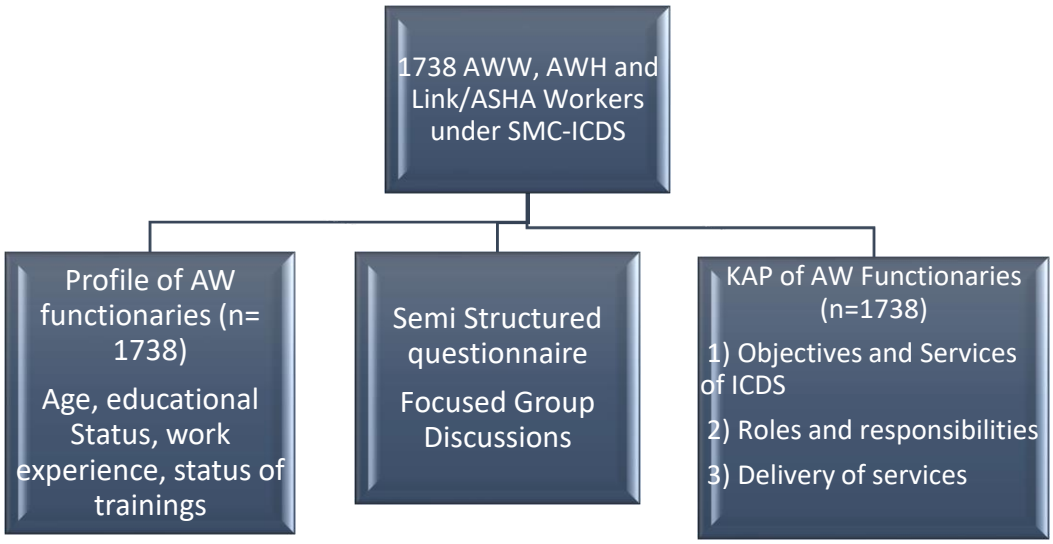
The interview schedule for the functionaries (Annexure 5) included questions on,

1. Trainings received
2. Objectives of the ICDS
3. Beneficiaries of ICDS
4. Role and responsibilities of the functionaries
5. Selected services of ICDS and its delivery
6. Problems faced by Anganwadi functionaries to deliver these services

2. Focused Group Discussions

Method: The anganwadi workers, anganwadi helpers and supervisors were divided in small groups of 8-10 participants and discussion on service delivery and difficulties encountered in implementing these services was carried out.

Figure 3.5: Experimental Design of Phase I



Study Outcomes:

1. Understanding the knowledge, attitude and perceptions of anganwadi functionaries associated with ICDS objectives and delivery of services
2. Understanding the operational challenges and problems faced by anganwadi functionaries with regards to infrastructure and service delivery
3. Understanding the status of anganwadi center (AWC)

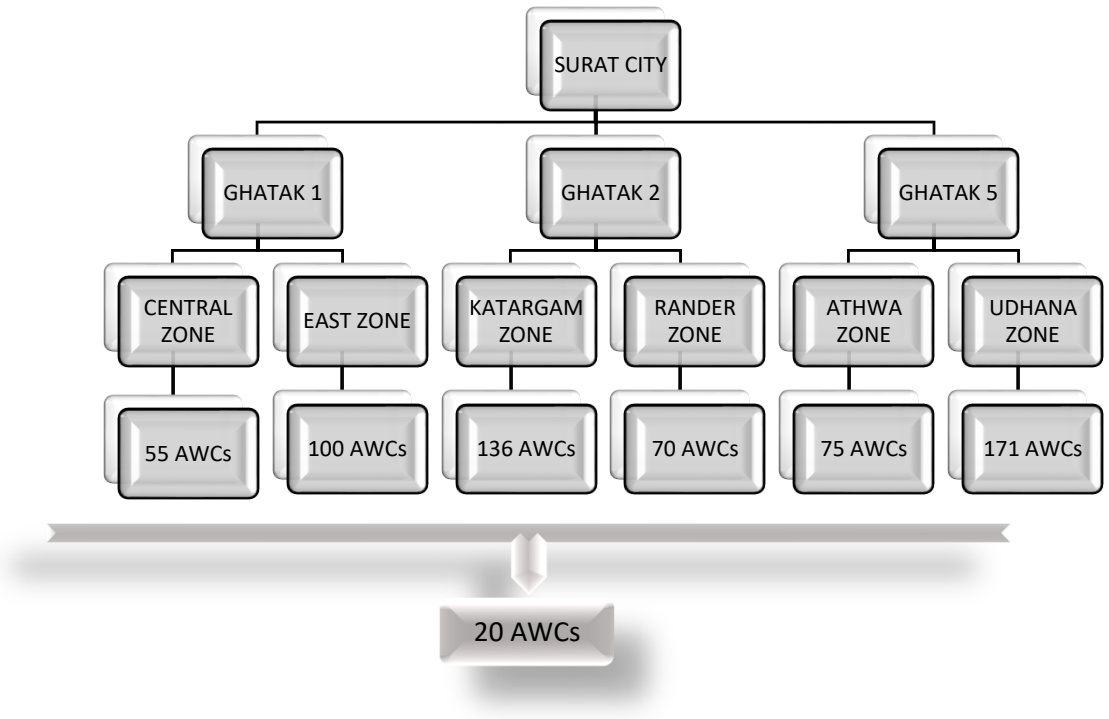
PHASE II MAPPING THE PREVALENCE OF UNDERNUTRITION AMONG CHILDREN UNDER 5 YEARS ENROLLED IN ICDS IN SURAT CITY

Study Design: Phase II was a cross sectional study

Study Population: Within the present study, the nutritional status of children under 5 years of age was assessed

Sampling: Urban Surat caters to 77,626 children from 6 months to 6 years (SMC Data) (as in 2014-15). Considering an average of 30 children per AWC in the age group of 6 months to 5 years, a total of 20 AWCs (4 AWCs from three Ghatak) were purposively selected. The mothers who consented to participate in the present study after obtaining written consent were enrolled, total 968 mother child pair were selected.

Figure 3.6: Sample Selection – Process Flow



Inclusion and Exclusion Criteria

Inclusion Criteria

- Children under 5 years of age of consenting mothers
- Registered at the selected AWC

Exclusion Criteria

- Children of non-consenting mothers

Table 3.2 Indicators and Tools for data collection for Phase II

Indicator	Sample	Method and Tool
Anthropometry: Nutritional status – Stunting, Wasting and Undernutrition (Children up to 5 years of age)	Children (U – 5 years) N = 968	Weight for age, Height for age and weight for height – Z scores, MUAC Z scores Standard methods, WHO growth charts

Quantitative Methods used for data collection in Phase II

As given in table 3.2, the quantitative methods used in the study included anthropometric measurements of height, weight, MUAC and calculation of BMI.

1. **Anthropometric Measurements**

Anthropometry is the study of the measurement of the human body in terms of the dimensions of bone, muscle, and adipose (fat) tissue. The word "anthropometry" is derived from the Greek word "anthropo" meaning "human" and the Greek word "metron" meaning "measure" (Ulajaszek, 1994).

For assessment of nutritional status of children under 5 years of age, weight, height and MUAC measurements were used, BMI was calculated and compared with the WHO standards.

1.1 Weight

Methods: The children (more than one year who could stand straight on their own) were weighed barefoot with minimal clothing on a standardized portable bathroom scale.

The subjects were asked to stand straight without any support with head straight. The scale was calibrated to zero and the weight was recorded to the nearest 0.1 kg.

Children below one year were weighed in salter scale using a trouser suspended from the scale with minimal clothing and the reading was taken to nearest 100 gm. Care was taken to adjust the scale to zero before weighing each child.

1.2 Height

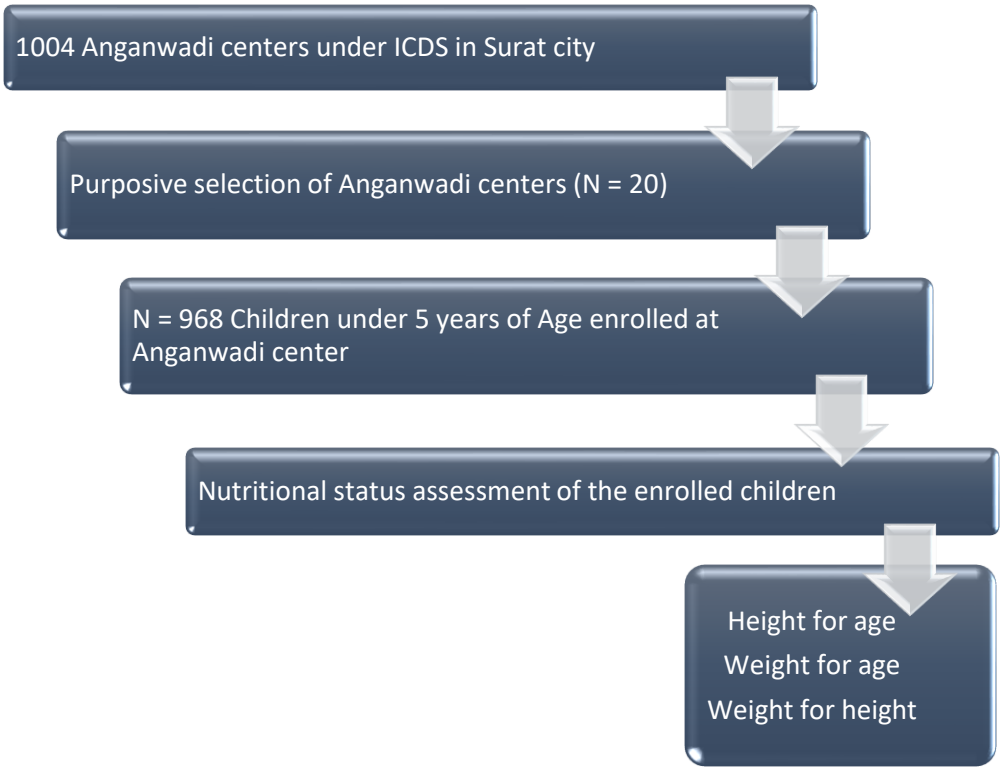
Method: A fiberglass tape was used for measuring the height of the children. The subject was made to stand on a smooth surfaced floor, with the back against the wall, feet parallel and together, with the heels, buttocks, shoulders and the back of the head touching the wall. The subject was asked to look straight ahead with the head held comfortably erect and arms hanging loosely by the side. A thin scale was kept on the head, perpendicular to the wall, so as to lightly press the hair. The height was marked on the wall with the help of a pencil and the reading was taken with the help of the measuring tape. The height was measured to the nearest 0.1 cm.

For the subjects who were unable to stand without support, were laid straight on an infantometer, slightly pressing their knees and their supine/recumbent length was measured to the nearest 0.1 cm.

1.3 Mid Upper Arm Circumference (MUAC)

Method: UNICEF Arm Circumference Insertion tape, Color coded in Red/Yellow/Green, a non-tear and a non-stretch plasticized paper tape was used. The mid-point of the child's left arm was marked from the tip of the shoulder after bending the elbow. The child's arm was straightened and the tape was wrapped around the marked mid-point making sure that the tension on the tape was correct. The measurement was taken to the nearest 0.1 cm.

Figure 3.7: Experimental Design of Phase II



Primary Outcome:

Nutritional status of children under 5 years enrolled in anganwadi center of age

PHASE III: STRENGTHENING THE FUNCTIONING AND INFRASTRUCTURE OF ICDS THROUGH PUBLIC-PRIVATE PARTNERSHIP (PPP) AND ASSESS ITS IMPACT ON NUTRITIONAL STATUS OF CHILDREN UNDER 5 YEARS ENROLLED IN THE ICDS IN SURAT CITY

Section A: Strengthening ICDS Delivery and Outcome through Behavior Change Communication (BCC) among Medical Officers and CDPOs

Rationale:

In lines with the goals set by SMC, Phase 3 A was conducted followed by completion of phase I and Phase II. Based on the gaps identified in phase I and the nutritional status assessment performed in phase II; the 3rd Phase of the study was planned and conducted to improve service delivery and outcome at the anganwadi centers through Behavior Change Communication (BCC).

Behavior Change Communication works as a sustainable strategy to alter long time acquired practices and behaviors. This strategy proves effective at all working ranks. Therefore, the ICDS in-charge, Medical Officers and CDPO's were called for BCC session and it was conducted at two levels:

1) MICRO LEVEL: Orientation of the findings of study phase I and II
2) MESO LEVEL: Assessing the Knowledge, Attitude and Practice of the officials, Brain storming session and Participatory discussion about sustainable strategies
3) EXO LEVEL: Meeting with the commissioner in charge of Surat

Meso Level: The invited ICDS in-charge, MO's and CDPO's were given list of questions regarding their knowledge on current ICDS services, attitude towards the issues of the programme and the actions taken to solve them. The group was asked to write down their experience on a sheet of paper. Their responses were analyzed qualitatively.

Outcome:

1. Understanding the KAP of MO's and CDPO's
2. Understanding the views of ICDS officials
3. Deciding the possible sustainable strategy to improve the current scenario in ICDS, Surat

Section B: Conceptualization, Planning and Development and implementation of a Public Private Partnership (PPP) Model and its Impact Assessment

Public-private partnerships for sustainable development have been in operation for several decades from the local to the international level. With the adoption of the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs) public-private partnerships have become even more prominent (Marks, 2019). Thus, to address the issue of malnutrition and in order to strengthen the ICDS, we based our strategies on the evidence generated by our Phase I and Phase II studies by connecting and mobilizing the common cause interest of Public and Private sectors for improving public health nutrition in vulnerable population.

Study Design: The present phase was a community intervention study

Study Population: The mother-child pair enrolled in Phase II from 20 purposively selected AWCs formed our study population for the intervention in the present phase.

Broad Objective:

- Strengthening the functioning and infrastructure of ICDS through public-private partnership (PPP) and assess its impact on nutritional status of children under 5 years of age enrolled in the ICDS in Surat city

Specific Objectives:

Assess the impact of PPP on;

1. KAP of AWWs and AWC infrastructure
2. KAP of mothers related to IYCN
3. Nutritional status of children under 5 years enrolled in ICDS

Development of a Public-Private Partnership Model

The competitive PPP model is designed based on UNICEF Conceptual Framework of Malnutrition. The competent PPP model calls for greater emphasis on implementation and accountability using evidence-based Nutrition Action recommended by WHO. It was developed with the following objectives;

Availability: To promote additional supply of various services that were incompetent and with additional supplementation increase Food and Nutrition Security.

Accessibility: To Strengthen the AWC infrastructure and provision of various resources to encourage increased participation among children under 5 years.

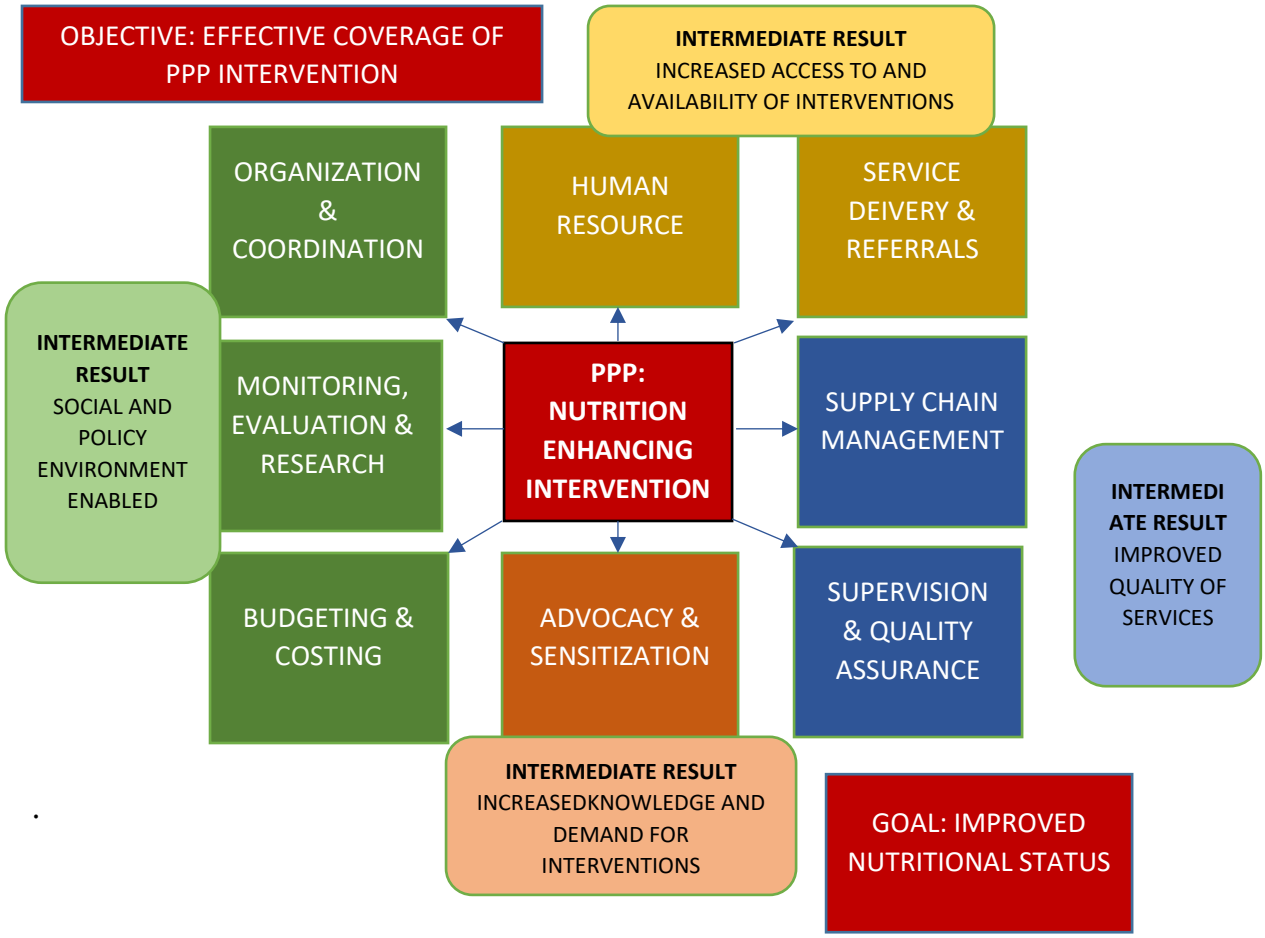
Affordability: Private partners adopting the models were bearing a minimal cost. Thus, the model was affordable

Utilization: To fill the gaps identified in provision of ICDS services and increase service utilization

Sustainability: A well sustainable model to sustain and expand the enabling social and policy environment to increase Social Safety Net.

Figure 3.8 shows the organization flow of the Public-Private Partnership model based on the above principles.

Figure 3.8: Organization for the Public-Private Partnership Model



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Several meetings were organized with various private NGOs like Lion's Club, Surat Round Table and Rotary Clubs who were called for collaboration (Figure 3.8). The implementation of developed Public Private Partnership (PPP) Model was proposed. The mission of Rotary Foundation of Rotary International is to enable Rotarians to advance world understanding, goodwill, and peace through the improvement of health, the support of education, and the alleviation of poverty. The present study's objective being one of their missions, the proposal was enthusiastically accepted by 10 Rotary clubs of Surat city under District 3060. The clubs collaborating with the SMC to sign the MOU were; Rotary Club of Udhna, Rotary Club of Surat, Surat Diamond City, Surat East, Surat Riverside, Surat Round Town, Surat Sea Face, Surat West, Surat Katargam and Surat Hazira Bay.

Figure 3.9: Process Flow for Implementation of Public-Private Partnership

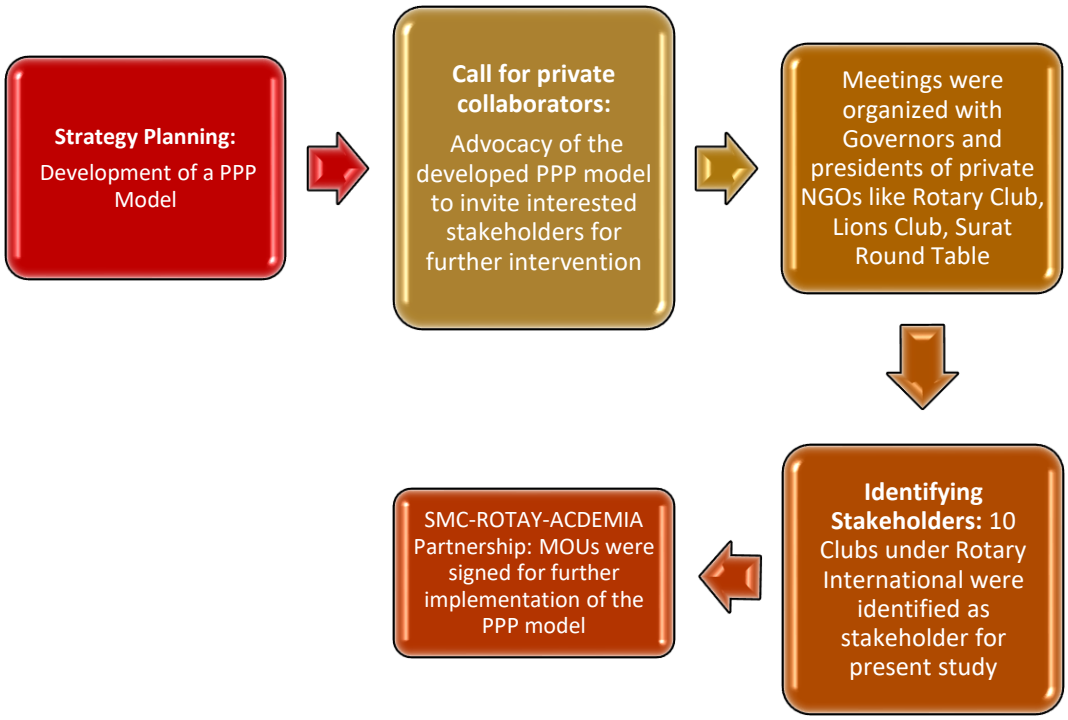

Table 3.3 presents the interventional activities proposed under PPP that were accepted by the presidents of all the Rotary Clubs while signing the MOU with SMC. The MOU was signed for a period of one year.

Table 3.3: Details of the intervention Activities proposed under PPP

Interventional activities	**Stakeholders/ Institution** **Roles & responsibilities**
ICDS **Proposed filling up the posts Improvement in the quality and quantity of food**	**SMC** Service Delivery
Strengthening the infrastructure Painting the AWC, RO water supply, Electricity, Tube lights and fans, Induction stoves and vessels	**Rotary Club** I/C presidents: Need based provision of resources. Painting all the AWCs with child friendly paintings and ECE materials
Nutrition Experts (Trainers)	**Academia** Researcher, Sheth P.T. Mahila College, Surat
Training the AWWs and AWHs	
Pediatricians	**Rotary Club** Rotary Volunteers
Milk supplementation (3 days/week) - existing	**SMC** Service Delivery
Additional supply of milk (3 days/week)	**Rotary Club**

Additional supply of ORS sachet, IFA supplements – need based **Hand washes, Stationary, Toys and ECE material** **Additional fruits and snacks distribution**	Funding provided to AMUL for delivery of the same milk sachets as supplied by SMC using the same logistics as used by SMC by Rotary Club Provision of soaps, utensils, stationary, toys and ECE material – one time distribution of year-round stock Once weekly as per member's convenience
Strengthening the referral system and medical care **Management of SAM and MAM children** **Non-Formal Pre School Education**	**SMC** **Rotary Club** Pediatrician: Visit of Rotarian member pediatrician once a months and free treatments and medicines for children referred **Rotary Club** Member Volunteers to provide ECE to children once a week at all adopted AWCs
Increase accountability	**Rotary Club** **Academia** Frequent meetings to assure qualitative implementation
NHE material Printing and distribution	**Funding: Rotary Club** **Content Contribution: Academia** Film Production on Breast Feeding awareness using electronic media NHE Booklet printing – Print media
Community Mobilization **Nutrition Health Education for improved IYCN** **Sensitization and benefits of BALBHOG** **Community promotion of sanitation**	**Academia – NHE sessions using Electronic and print media; Film, PPTs and Booklet** Counseling and support Training and counseling the enrolled beneficiary Training the member volunteers to disseminate the correct practices
Community Mobilization **Sensitization and benefits of BALBHOG** **Nutrition Health Education for improved IYCN** **Community promotion of sanitation**	**Rotary Club** Member volunteers: Celebration of birthdays, festivals and MAMTA DIWAS Counseling and support, organizing competitions Organizing demonstrations
	Academia

Intervention Description Under PPP Model Using TIDier Checklist: Explanation and Elaboration

1a. Fill the vacant positions

1b. Strengthening the infrastructure

1c. Nutrition and Health Education

1d. Health check-ups and referrals

1e. Supplementary nutrition

1f. Ensuring adequate supplies at the AWC

2a. Guiding rationale for filling up the vacant positions of FLWs is ensuring better service delivery and improved supervision under ICDS

2b. Dynamic infrastructure with availability of all the basic facilities would motivate and increase the participation of beneficiaries ensuring improved utilization of services provided by ICDS

2c. Improvement in Infant and young Child Nutrition (IYCN) along with hygiene and sanitation practices ensures improved nutritional status. Thus, NHE sessions were conducted in order to improve the knowledge of FLWs and caregivers to improve these practices

2d. Regular health check-ups are essential for early diagnosis and treatment of malnutrition and various medical conditions affecting nutritional status along with periodic monitoring

2e. Supplementary nutrition provided at the AWC not only increases the participation but also ensures food and nutrition security of one meal among resource devoid populations

2f. Adequate supplies of ORS and IFA are important in addressing dehydration in diarrhea and anemia among adolescents, pregnant and lactating mothers. Also, adequate supplies of handwash creates enabling environment for hand hygiene practices. Strengthening these positively impacts the nutritional status among the vulnerable groups

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3/4a. A meeting with the SMC Commissioner was organized to discuss the lack of staff and to expedite the ongoing process of filling up of vacant positions of AWWs and Lady supervisors

3/4b. Painting of the AWCs, restoring water and power supply, installation of electrical fitting like tube lights and fans in AWCs which lacked these, distribution of induction vessels, stationery, books, toys, etc.in the AWCs under the intervention group

3/4c. NHE material like posters, booklet, PPTs, films and recipe demonstration in the intervention group

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3/4d. Monthly pediatrician's visits to ensure regular monitoring and timely referral

3/4e. A meeting was scheduled with assistant commissioner to discuss the grievances related to the meal served and to ensure improvement in the quality. Responsibility of additional supply of milk was taken up by private partners

3/4f. Lack of IFA and ORS supplies at particular intervention group centers were brought to SMC's CMO notice. Need based additional supplies were provided by the private partners

5a. The process of filling up the vacant positions was taken up and well executed by SMC

5b. Private partners facilitated the strengthening of infrastructure

5c. Academic partners (SPTMC and MSU) facilitated the capacity building sessions for FLWs and development of NHE material. Film making and booklet printing was done by the private partners

5d. Honorary service was provided by the pediatricians on monthly basis who were the members of Rotary Club (Private partners) at the AWCs under the intervention group

5e. Academic partners

5f. Private partners

6a. Few AWWs posts were vacant and >50 AWCs were under one lady supervisor. This led to compromised service delivery. The requirement of 1 lady supervisor for 20 AWCs was raised and as the process was already ongoing, many of these vacant positions were filled.

6b. Instead of funds, services or facilities which were required at each AWC under intervention group was communicated to the Rotary president and they filled all the identified gaps along with painting of each AWC under intervention group

6c. The gaps were identified in phase 1 and 2 and based on the gaps identified with respect to IYCN and hygiene and sanitation practices; the content and awareness dissemination strategies were decided and developed for the intervention group. One day session was organized for each AWW – one on one and a refresher on correct growth monitoring, importance of first 1000 days, optimal IYCN practices and essential components to be covered during counselling for undernourished children were covered. A total of 10 sessions were organized for AWWs. Beneficiary (mother/caregiver of U-5 children) group sessions were organized and educated through PPTs, Films, demonstration on hand washing and recipe preparation from balbhog and using posters. Three sessions per AWC and a total of 30 sessions were organized for the beneficiaries. During Nutrition week celebration, complementary feeding was exclusively covered and reinforced again with

respect to frequency, quantity and composition across all AWC under intervention group. As a part of breast-feeding week celebration, a film on awareness regarding breast feeding was rolled out and showcased in groups at all AWC under intervention group. Mamta Diwas and Mangal Diwas were facilitated and supervised by the volunteers of rotary club who in turn were trained on guidelines for CBE celebrations.

6d. Monthly visits of pediatricians were scheduled at each AWC for health check-ups and for tracking the growth of children registered under the study. SAM children requiring further attention were referred to NRC.

6e. SMC provides 100 ml of sanjeevni flavored milk to MAM and SAM children 3 days a week, under PPP model additional milk was provided on other 3 days which were not covered by SMC. Thus, in all 10 AWC, MAM and SAM children got 100 ml milk/day for all 6 days in a week.

6f. IFA, ORS, handwash, and other supplies which AWC fell short of were provided by private partners.

7 All the above interventions were provided at the AWC. The training and capacity building of the team delivering capacity building session was done at Sheth P. T. Mahila College, Surat.

8a. All the AWC under the intervention group had AWW and AWH. Also, Lady supervisors were assigned no more than 25 AWC per head which was earlier – before intervention >50 AWC per head.

8c. Sessions for FLWs-AWWs: 1 capacity building session/AWC thus, total of 10 sessions
Beneficiaries – Mother/caregiver of children U-5 Y of age: 3 sessions/AWC, Total of 30 sessions
Nutrition Week: 1 session/AWC, Total 10 sessions
Breastfeeding awareness week: 1 session/AWC, Total 10 sessions
Mamta Diwas and Mangal Diwas: AWW assisted by volunteers throughout the year

8d. Health check-ups: 10 visits/AWC, total 100 visits

8e. Supplementary Nutrition: 300 ml*30 children*10 AWC = 90 Lts of milk per day (Additional 3 days a week)

8f. IFA, ORS, handwash, and other supplies which AWC fell short of were provided by private partners.

9/10. The PPP model was personalized based on the findings of the situational analysis done. No modifications in any intervention during the course of the study was considered

11/12. The filling of posts and infrastructure strengthening was a one-time intervention in the entire course of study. Intervention adherence as far as NHE dissemination and pediatricians visit was concerned, regular attendance per session were taken and kept a note of by the volunteers. Capacity building team which was constituted of PG Nutrition student volunteers who were trained on the content and delivery method by the researcher, a 0 session in classroom and a mock on field was done before rolling out the actual sessions thus, assuring the quality.

Table 3.4: Tools and Techniques used in the planned intervention activities

Activities	Type of Session	No. of Session	Target Group	Tools and Techniques
Initiative to improve quality and quantity of lunch served	-	-	SMC	Meeting
Improvement in drinking water access	-	-	Rotary	Instalation of water filters
Proposed filling up the posts	-	-	SMC	Meeting
Health Check Ups	Individual	10/AWC	Children	Health Check up
Additional supply of milk (3 days/week)	Individual	3 days/ week	Children	Milk Distribution
Empowerment of ICDS workers to improve IYCN practices among mothers	Individual	1/AWC (10)	AWWs	PPT
Infrastructure development of ICDS centers to improve accessibility and availability of ICDS services	-	-	AWC	Rotary: Painting and infrastructure provision
Empowerment of the beneficiaries (Mothers of U-5 y children enrolled in the study) regarding IYCN practices and utilization of the ICDS services	Group	3/AWC (30) 1/AWC (10)	Mothers	NHE using Booklet, PPT and Film on breast feeding Demonstration of Balbhog recipes

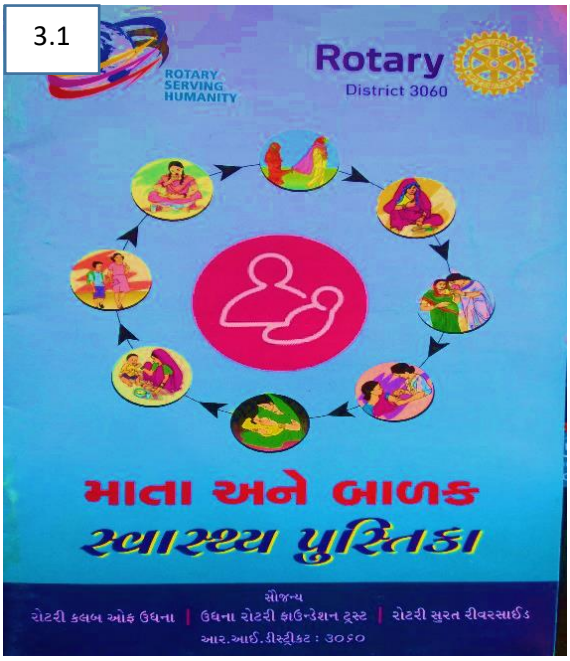
Distribution of Bags, books, clothes, snacks and fruits, hand washes, toys and ECE material through ICDS centers	-	-	children	-
Initiative to improve quality and quantity of lunch served	-	-	SMC	Meeting
Improvement in drinking water access	-	-	Rotary	Instalation of water filters

Nutrition Health Education (NHE)

In the present study, the nutrition and health education materials like Film, PPTs and Booklet were developed with the funding received from our private stakeholders and imparted through innovative communication strategies using various forms of media such as electronic and print supported by hand-on learning activities with the help of Rotarian volunteers to improve IYCN practices among mothers.

Image 3.1-3.2: Glimpse of NHE Booklet prepared under PPP

3.1



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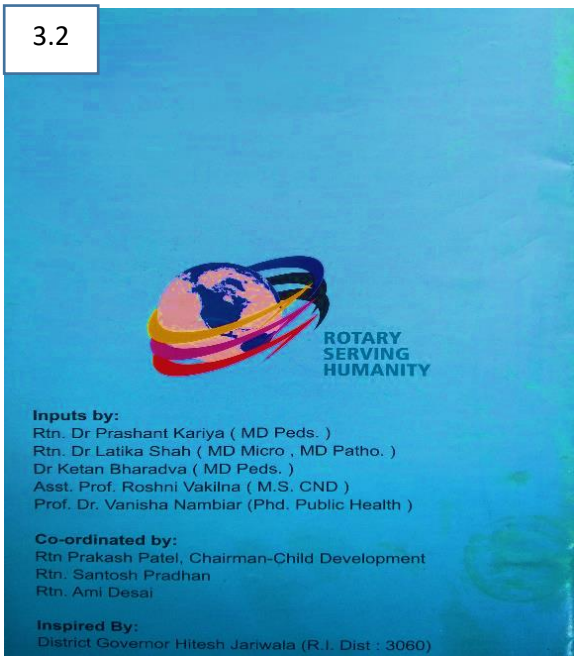

Electronic media

Audio-visual content showcased using electronic media and power-point presentations coupled with various behavior change interventions are proven to improve the behaviors and practices concerned with health and thus are very useful sources to improve the health in populations. Power point presentation was developed as electronic media for imparting information and knowledge to mothers. Nutrition and health education was imparted using various innovative

strategies like booklet, posters and films on various subjects related to infant and young child nutrition.

Print media

In order to reach a wider target audience, print media is considered user friendly and handy (Child Refuge Report, 2007).

The Booklet (Image 3.3-3.4) which was developed with the funding received from our private stakeholders were prepared, printed and rolled out to all the experimental group AWCs. The main topics covered were; Malnutrition (Reasons, Consequences, prevention) Balanced Diet, Importance of Growth Monitoring, Importance of Breast Feeding, Anemia, Immunization, Different Vaccines and its Importance, Recipes Multi Nutrient Fortified Premix (Balbhog) and Various Government Policies and Programs available for the Beneficiaries.

Hand-on learning activities

Demonstrations of various recipes made out of Balbhog and Competitions based on various learnings were conducted.

ICDS workers were empowered and trained and Infrastructure of ICDS was improved. Beneficiaries were counseled regarding utilization of ICDS services.

Table 3.5: Indicators and Tools for Impact Analysis Phase III

Indicator	Sample	Methods and Tools
Status of the AWC	AWC = 20	Structured Accreditation tool Observation Check list
Service delivery by AWW	AWW	Observation Check list
KAP of AWW related to IYCN practices	AWW = 20	Semi structured questionnaire
KAP of mothers related to IYCN enrolled in the study	Mother = 675 EG: 366 CG: 309	Pre-Post intervention Interview Schedule: Semi structured questionnaire
Anthropometry: Nutritional status – Stunting, Wasting and Undernutrition (Children 6 months to 5 years of age)	Children (U – 5 years) N = 676	Weight for age, Height for age and weight for height – Z scores, MUAC Z scores Standard methods, WHO growth charts

Study Outcomes:

1. Post intervention Improvement in AWC infrastructure
2. Increased availability, accessibility and utilization of ICDS services
3. Improved KAP of AWWs
4. Improved KAP of mothers related to IYCN
5. Improved Nutritional status of children under 5 years of age, ICDS, Surat city

Impact Assessment:

Impact was assessed on both Experimental and Control groups across 19 clusters to assess the post intervention changes. Personal interview using Semi-structured questionnaire, direct observation and anthropometric assessment were carried out for impact assessment.

Data Analysis and Assessment:

Collected Data was coded and entered in Microsoft Excel Version 7. Frequency distribution using mean and standard deviation were used. Correlation tests, chi square and Odds Ratio were used to test the significance and efficacy. Analysis related to frequency distribution was carried out using MS Excel and IBM SPSS Statistics 20. Statistical tests used to find correlation were carried out using IBM SPSS Statistics 20 Package. Anthropometric assessment was carried out using WHO Anthro Software.

Figure 3.10: Experimental Design of Phase III