CHAPTER V

SUMMARY AND CONCLUSION

The latest available global data estimates indicate that 150.8 million children (22.2%) under five years of age are stunted, 50.5 million children under five are wastedand 20 million newborn babies are estimated to be of low birth weight (Global Nutrition Report, 2018). Estimates for 2014–16 suggest that about 281 million people are undernourished in the Asia region, marking only a slight reduction from the number in 1990-92 (FAO, 2015). India is facing a major malnutrition crisis as it holds almost a third of world's burden for stunting with the highest prevalence, is a home to 38.7 % of stunted children (RSOC, 2014). Adopted in 2015 the SDGs call for major transformations in agriculture and food systems in order to end hunger, achieve food security and improve nutrition by 2030.

Although, four decades have passed since the launch of ICDS program in India, till today, the rates of malnourishment among children under five remains alarmingly high (Sahoo et al., 2016). Beyond doubt, ICDS has not delivered the desired results. The underlying issues could be related to infrastructural problems, lack of utilization due to poor awareness about the program, faulty supervision and monitoring mechanisms and corruption in food supplies (PEO, 2011; Paul et al., 2017).

Thus, there is need for using integrated packages which is nutrition sensitive in nature to improve food and nutrition security which can lead to improved nutritional outcomes for childrenin the urban slums. Innovative approaches are needed to strengthen existing systems which is affordable and sustainable and can increase the availability, accessibility and utilization. In an effort to attain these, it is almost certain that it will be necessary to innovate and consider out-of-the-box policy options .Developing multi-stakeholder partnerships especially public-private partnerships (PPPs) sharing knowledge, expertise, technology and financial support are critical for overall success of the SDGs (UNDP, 2018). Therefore, multisectoral planning was introduced including behaviour change communication and public-private partnership to tackle malnutrition and make sustainable change in urban slums of Surat.

The **broad objective** of the present study was to improve the nutritional status of the children enrolled in the ICDS (Surat city) through Public Private Partnerships.

The **specific objectives** were; 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 5years enrolled in ICDS in Surat city.

Based on the objectives, the study was conducted in three phases across 7 zones and 5 ghataks selected purposively in Surat city after necessary ethical clearance (IECHR/2015/17) with Department of Foods and Nutrition, The Maharaja Sayajirao University of Baroda, Gujarat. Phase I*:* In this cross-sectional study, blanket coverage of all anganwadi workers under ICDS, was done. Situational analysis of the KAP of anganwadi functionaries related to ICDS objectives and service delivery, the operational challenges and problems faced by them with regards to infrastructure and service delivery and anganwadi center was carried out. Qualitative and quantitative tools such as semi-structured questionnaires and focused group discussions were used for data collection. Descriptive statistics with frequency distribution was used in analysis. Phase II: In this cross-sectional study, nutritional status of children under 5 years enrolled at AWC under ICDS in Surat city was assessed. The sample (n = 968) comprised of children from purposively selected 20 AWCs across three Ghataks. All data collected was entered in MS Excel and statistically analyzed using WHO Anthro software. Phase III: In this community intervention trial to improve nutritional status of vulnerable population using PPP model based on the situational analysis results of the previous phases. The 20 AWCs selected in Phase II comprising of EG (n = 486) and CG (n = 482) children under 5 years enrolled in ICDS wherein 10 AWCs formed a part of EG and 10 were in CG. PPP model was implemented, Capacity building of AWWs and mothers of enrolled children was carried out with regards to IYCN practices and service delivery and utilization respectively. Infrastructure was strengthened by the private partners with respect to basic amenities and need based requirements per AWC under EG. Impact was assessed in terms of KAP of AWWs and AWC infrastructure, KAP of mothers related to IYCN and Nutritional status of children under 5 years enrolled in ICDS. All data collected before and after intervention were entered in MS Excel and statistically analyzed using WHO Anthro and IBM SPSS version 20 package.

The results of **Phase I** indicated that out of total 1738 anganwadi functionaries covered, were 931 AWWs, 662 AWHs and 145 Link workers. Well covered topics under NHE were Timely initiation of breast feeding' and 'Importance of colostrum feeding which was > 89%. Poorly (< 10%) covered topics were vaccination and referrals. Only 39.8% AWWs practiced timely growth monitoring.Poor acceptability of BALBHOG was reported by 54.6% AWWs. Regular monthly health check-ups were reported by 92.2% and 90.6% AWWs provided referrals. Regular home visits for SAM children were conducted by 90.2% AWWs but only 33% AWWs visited them daily and 30% visited them thrice a week. Others (40%) conducted home visits for SAM children less than thrice a week. Overall, 20% AWCs lacked toilet facility, 22% AWCs faced power supply problems, Stove facility lacked in 22% AWCs thus they could not prepare RAAB at their centers and 8% AWCs lacked supply of safe drinking water and NHE could not be delivered due to lack of time by 39.6% AWWs. More than one fourth (27.5%) workers complained of community support and coverage could not be achieved optimally by 34.5% AWWs and 16.1% raised concerns regarding sound vaccination practices. Lack of proper infrastructure was reported by 18.3% AWWs. Many (26.9%) AWWs failed in delivering non-formal education to children.

Phase II results revealed that, the mean age of mother's was 28.9 years whereas that of fathers' was 41.7%. Among the study sample, 20.4% mothers were illiterate whereas only 1.3% fathers were found illiterate. Majority (82.1%) households used common toilets, 16.1 % has a toilet in their houses whereas 1.8% reported resorting to open defecation. Per capita income/ month for 78.7% households was >1000 INR but according to the definition of BPL, all household's earnings were < $3.20 classifying them as BPL. The sample constituted of 498 boys and 476 girls, the age range of sample was 6.05 months to 60 months, with mean age of 30.54 months. Mean stunting, wasting and underweight was -1.61, 1.05 and -1.63 respectively. Stunting, wasting and underweight prevalence in the study sample was 38.9%, 21.2% and 39.1% respectively.

Phase III results indicated that PPP had a positive impact. There was a significant impact seen among EG workers with regards to early BF practices ($p < 0.05$), GM practices of EG AWWs significantly ($p<0.05$) in terms of scale attachment and plotting the growth chart whereas improved ($p<0.001$) in terms of scale placement at eye level, calibration and using GM chart information to sensitize mothers. Acceptance of BALBHOG improved by 30% in EG ($p< 0.05$), attendance during spot feeding and using standardized cups increased by 80% and 100% respectively ($p < 0.001$). Correct record maintenance of home visits showed an improvement

by 20% ($p < 0.05$) among EG. Post intervention, the mean shift in accreditation score for AWCs among EG was 5.5 whereas that in CG was 0.44. Attendance at AWC of children beneficiaries enrolled in the study increased by 11.7% in EG and by 7.4% in CG. Initiating BF with 1 hour: 17.5% V/S 11.3%, Decrease in prelacteal feeding: 9.1 % V/S 1.9%, Colostrum feeding: 7.9% V/S 4.9%, continuation of BF above two years: 30.6% V/S 3% and Water feeding after 6th month: 12.1% V/S 9% was observed among EG V/S CG. Service utilization by beneficiaries of EG increased ranging from 7.1% for vaccination to 25.9% for health check-up. All the services showed a mean rise of 16.9%. Attitude towards initiating complementary feeding after 6th month improved among EG mothers by 53.6% V/S 25.2% among CG mothers. Awareness regarding harmful effects of not initiating CF timely increased 15 to 40% respectively with respect to 'child falling ill' and 'child becoming malnourished'. Hand washing practices improved among EG mothers by 27.3% as compared to 16.8% CG mothers. Moderate Underweight (UW) decreased by 8.2% and severe UW decreased by 7.6% among EG compared to increase of 3.6% moderate UW and decrease of 0.9% severe UW among CG. Decrease in sample mean of Z scores for UW among EG was 0.4 SD whereas it increased among CG by 0.12 SD. Moderate stunting decreased by 7.1% and severe stunting by 4.9% among EG participants whereas in CG, there was no change observed in moderate stunting while there was an increase observed in severe stunting by 0.3%. Z score sample mean for stunting decreased from -1.75 to – 1.5 SD. Reduction in moderate wasting was 7.7% and severe wasting was by 1.9% in EG whereas there was an increase of 1.3% and 2.3% respectively seen among CG. Z score sample mean for wasting among EG shifted from -1.25 SD to 0.75 SD. There was an increase in complete immunization seen among both the groups due to ongoing INDRADHANUSH phase 3 campaign. Intervention group showed greater increase (by 30%) as compared to CG (7.8%). Morbidity among EG children reduced by 24.1% and that among CG showed reduction by 13.6%. Practice towards procuring medical treatment from a doctor increased among EG by 66%.

Conclusions: ***Adopt an anganwadi*** scheme by the local Rotary clubs brought in an increase in the nutritional status of the children attending the ICDS and this study can be treated as a pilot study to improve the infrastructure as well nutritional status of the vulnerable children attending the ICDS centers across the country. Such efforts of community participation and PPP engagements need to be promoted and extended as a part of corporate social responsibility.

PUBLIC-PRIVATE PARTNERSHIP MODEL

Diagnosis

Delivery of ICDS services	Utilization of services	Prevalence of Malnutrition
Strengthening in terms of counseling, NHE and growth monitoring	Increase attendance, community participation and awareness	38.9% Stunting 21.2% Wasting 45.9 % Underweight

PROCESS

Planning, Co-designing, and Co-development of the strategy to improve ICDS service delivery and service utilization with involvement of Public, Private and Academic Stakeholders: Conceptualization of Public Private Partnership (PPP)

System Strengthening

- Painting the AWC, RO water supply, Electricity, Tube lights and fans, Induction stoves and vessels
- Filling up of vacant posts, improvement in quality and quantity of food fed at the AWC
- Increase accountability – frequent meetings to assure quality of implementation

- Capacity Building of the AWWs with respect to NHE, Content of counselling and growth monitoring
- Strengthening the supervision for home visits

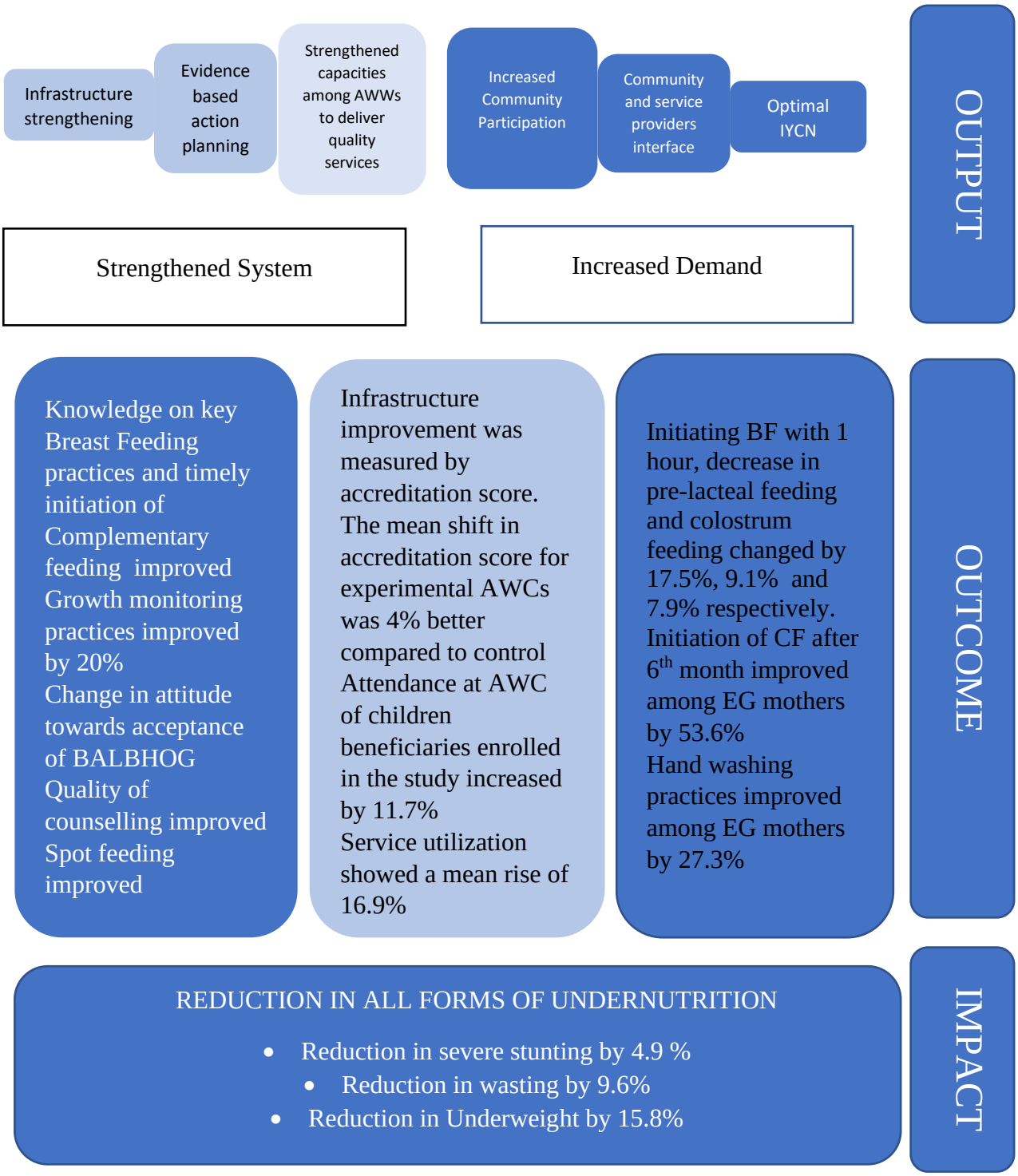
- Strengthening the referral system and medical care
- Management of SAM and MAM children

Demand Generation & Increased Utilization

- Community Mobilization to increase participation
- Nutrition Health Education for improved IYCN and Hygiene & Sanitation using BCC
- Sensitization and benefits of BALBHOG
- Community promotion of sanitation

INPUT

- Additional supply of milk (3 days/week)
- Additional supply of ORS sachet, IFA supplements – need based
- Hand washes, Stationary, Toys and ECE material
- Additional fruits and snacks distribution


Infrastructure strengthening
Evidence based action planning
Strengthened capacities among AWWs to deliver quality services
Increased Community Participation
Community and service providers interface
Optimal IYCN
OUTPUT
Strengthened System
Increased Demand
Knowledge on key Breast Feeding practices and timely initiation of Complementary feeding improved
Growth monitoring practices improved by 20%
Change in attitude towards acceptance of BALBHOG
Quality of counselling improved
Spot feeding improved
Infrastructure improvement was measured by accreditation score.
The mean shift in accreditation score for experimental AWCs was 4% better compared to control
Attendance at AWC of children beneficiaries enrolled in the study increased by 11.7%
Service utilization showed a mean rise of 16.9%
Initiating BF with 1 hour, decrease in pre-lacteal feeding and colostrum feeding changed by 17.5%, 9.1% and 7.9% respectively.
Initiation of CF after 6th month improved among EG mothers by 53.6%
Hand washing practices improved among EG mothers by 27.3%
OUTCOME
REDUCTION IN ALL FORMS OF UNDERNUTRITION
Reduction in severe stunting by 4.9 %
Reduction in wasting by 9.6%
Reduction in Underweight by 15.8%
IMPACT