TATA TRUSTS

PALGHAR

PROJECT SPOTLIGHT

AN ICDS SYSTEM STRENGTHENING INITIATIVE

END OF PROJECT EVALUATION

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THE INDIA NUTRITION INITIATIVE
AN INITIATIVE OF TATA TRUSTS

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PALGHAR

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END OF PROJECT EVALUATION

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EXECUTIVE SUMMARY

ICDS – AN UMBRELLA SCHEME FOR CHILD DEVELOPMENT

Launched on October 2, 1975, the Integrated Child Development Services (ICDS) Scheme of India – also referred to as the Anganwadi Services Scheme – is one of the world's largest programmes for early childhood care and development. The scheme is designed as a response to the fundamental challenges of child development in terms of a) cognitive development through pre-school non-formal education and b) physical growth by liberating childhood from the vicious cycle of malnutrition, morbidity, reduced cognitive capacity and mortality. The ICDS has the broad objective of strengthening the foundation for psychological, physical and social development of children through nutrition support, counselling and cognitive development services. The scheme is particularly designed to deliver six important services to children (0-6 years) as well as pregnant and lactating mothers as follows: a) supplementary nutrition, b) non-formal pre-school education (PSE), c) nutrition and health education, d) immunization, e) health check-ups and, f) referral services. ICDS design is universal with huge potential to serve the most vulnerable populations. Its strategies are well conceptualized to address the proximate and distal determinants of malnutrition, the intergenerational cycle of malnutrition and provide effective coverage of services during the 'first thousand days' window.

PROJECT SPOTLIGHT

Health and nutrition are shared responsibility of individuals, households, community, developmental partners and the government. In India there are huge expectations from the government to scale up the programmatic support such as ICDS for health and nutritional improvements of the population. Despite wide ranging efforts, such initiatives warrant active community support and collaborations for addressing the challenges in a mission mode. Implementation of such massive programme in a socioeconomically and geographically diverse country cannot be devoid of challenges and constraints. Much of these constraints can be addressed with localized inputs with extensive micro-level engagement with the key stakeholders. **Project Spotlight** is a spirited attempt in this direction to contribute toward the fight against malnutrition in selected geographies of Andhra Pradesh, Rajasthan (as Making it Happen) and Maharashtra.

In Maharashtra, project activities included refurbishing AWCs, capacity building of frontline workers by helping them converge with other stakeholders, improving infant and young child feeding practices, and working with communities and Panchayati Raj Institutions to generate awareness on the causes and consequences. Aligning with the vision of the ICDS program, Project Spotlight strives to strengthen the existing delivery system and mobilize the community with an array of carefully planned activities in the three districts of Maharashtra viz. Chandrapur, Gadchiroli and Palghar.

APPROACH FOR ENDLINE ASSESSMENT

The endline survey was carried out by IQVIA Consulting and Information and Services Private Limited across 197 Anganwadi Centers (AWC) across 8 blocks of Palghar district of Maharashtra. The sample of 197 consists of 84 AWCs which were selected for full refurbishment and 113 AWCs proportionate sample selected for partial refurbishment. Further, a total 200 women each were interviewed in 40 randomly selected AWCs (fully or partially refurbished) in 8 blocks to understand the services they received during their antenatal and postnatal period. A total of 120 mothers each for the child age group 6 to 36 months and 3 to 6 years were interviewed for ICDS services received by their children. A comprehensive set of structured interview schedules were prepared for conducting the survey targeting beneficiary groups experience during pregnancy and lactation period as well as the utilization of services among children 6-36 months as well as 3-6 years. In view of Covid-19 pandemic, the endline survey was done telephonically with ethical protocols approved by Sigma Institutional Review Board.

KEY FINDINGS

Fully Refurbished AWCs

- The need for major or minor repairs in fully refurbished AWCs reduced considerably. Post-refurbishment the condition of the roof, exterior walls, kitchen area and outdoor area for activities improved for most of the AWCs. However, space of storage, availability of boxes and jars, condition of floor, and LPG for cooking are some of the important areas that needs further attention for refurbishments and provisions. The toilets were available in 90.5% of AWCs which was 71.9% at baseline. However, out of these 65.8% AWCs toilet were functional and reported water availability.
- Small mats and durries were available in 97.6% of AWCs which was 65.2% at baseline. Pre-school education (PSE) kit was available in 69% of AWC, an increase of 30.8% from baseline. Adult weighing machine was available in almost all AWCs; weighing scale for infants was available in 89.3% AWCs; and Salter weighing scale for children was available in 84.5%.
- AWCs were more likely to have first aid box, ORS sachets and IFA tablets, however, there is still need to ensure 100% availability. Availability of MCP cards and growth charts has also increased when compared with baseline. In endline, MCP cards were available in 68 (81%) out of 84 fully refurbished AWCs whereas, in baseline only 11 (12.3%) out of 89 fully refurbished AWCs had MCP cards available. Growth charts were available in 85.7% of AWCs.

Partially Refurbished AWCs

- Availability of MCP cards, growth charts and PSE kits has increased when compared with baseline. MCP cards were available in 91 (80.5%) partially refurbished AWCs which was just 11 AWCs (9.9%) at baseline. Growth charts were available in 85.8% of AWCs. Pre-school education (PSE) kit was available in 60.1% of AWCs which was 40.5% at baseline. IFA tablets were available in 8.8%. ORS sachets were available in 39.8% whereas in baseline, it was available in only 11.7% of AWCs. Presence of compound wall in AWCs, painted exterior walls and availability of demarcated area for outdoor play or kitchen has also increased. Storage of food items has also improved but storage of food items with proper labelling and demarcated boxes and jars still needs to be improved.
- Among other amenities, small mats and durries were available in 98.2% of AWCs but only in 76.6% they were in usable condition. Adult weighing machine was available in 95.6%; weighing scale for infants was

available in 86.7%; Salter weighing scale was available in 81.4% AWCs; height measuring tape was available in 93% of AWCs. First aid box was available in 35.4% whereas, medicine kit only in 31.9%.

- The toilets were available in 81.4% of AWCs. However, not all the toilets are functional mainly because of lack of water facility. Notwithstanding partial refurbishments, ventilation, lighting and running water supply of these AWCs is an area for further improvement. This requirement is critical in view of the fact that some of these AWCs have to accommodate over 40 children for the pre-school component. While the condition of the roof has improved in most AWCs when compared with baseline but 50% of these AWCs still have requirements of major and minor repairs.

ICDS Services Utilization during Antenatal Period

- Registration of pregnant women in the first trimester of pregnancy has increased from baseline. 84.1% of mothers had registered themselves in the first trimester of pregnancy which was 58.5% at baseline. Utilization of supplementary nutrition services increased from 91.5% to 97.9% during the project period. Supplementary nutrition in form of take-home ration has increased from baseline whereas percentage of beneficiaries receiving supplementary nutrition in form hot cooked food has decreased from baseline.
- 77.5% mothers informed that they were counselled on importance of ANC checkup during pregnancy which was 65% at baseline. Overall, antenatal checkups done for four or more times has increased from 65.5% to 70.0 % in endline.
- Advantage of taking IFA tablets increased when compared to baseline. 77% of mothers were aware about benefits of IFA as it helps in development of brain of baby which was 62.5% at baseline and 68.5% trusts that it reduces the risk of development of iron deficiency anemia. 95.5% of mothers informed that they consumed complete course of IFA whereas, in baseline 76.5% completed course of IFA. 84% received counselling for exclusive breastfeeding. 79% of mother were aware that exclusive breastfeeding strengthens the immunity of the baby which was almost similar to that in baseline. However, counselling services on TT immunization needs improvement.

ICDS Services Utilization during Postnatal Period

- Supplementary nutrition services were received by 98.5% of mothers which was 97% at baseline assessment. 45.2% received both type of supplementary nutrition at endline whereas 77.8% received both type of nutrition at baseline. 52.8% only THR and 2% hot cooked food which was 10.3% and 11.9% at baseline respectively.
- Percentage of home visits by AWW/ANM/ASHA after delivery has increased from 82% at baseline to 98.5% at endline. The services received were perceived as satisfactory by majority of the women (65% satisfactory services and 32.5% highly satisfactory). In baseline, 38.5% perceived as satisfactory services and 21% as highly satisfactory. 86.5% completed the course of IFA which was 52.5% in baseline assessment. But mostly women had not received the tablets who could not complete the course. Counseling about consuming calcium tablets after delivery has increased from 65.5% to 96.5% when compared to baseline assessment.
- Counselling about initiation of breast-feeding within 1 hour of birth has increased from 84.5% at baseline to 97.5% at endline. 94% of mothers were counselled about

exclusive breast feeding up to 6 months, a 13% increase from baseline assessment. Counselling on consumption of IFA tablets for six months post-delivery increased from 58.5% at baseline to 94% in the endline survey. Counselling on initiating complementary food needs improvement. 63.5% of the lactating women received counselling on initiation of complementary food to the baby whereas, in baseline 96% of the lactating women received counselling.

ICDS Services Utilization by Children 6-36 months

- Almost all services which children were availing from AWC has increased from baseline to endline. 97.5% of mothers informed they their children received only take-home ration. In baseline, 78.3% of mothers informed they their children received both (THR and HCF) nutrition.
- There is an increase in the percentage of mother breastfeeding their child within one hour of birth from 73.3% to 92.5% at endline. The percentage of women who breastfed the baby exclusively for 6 months has also increased from 80% in baseline survey to 96.7% in endline survey. 64.2% of mothers initiated complimentary feeding at 6 months of age whereas in baseline, 48.3% of mothers initiated complimentary feeding at 6 months of age.
- 84.2% of mothers had received counselling on importance of growth monitoring which was 77.5% at baseline. 76.7% of mothers informed that their child received biannual Vitamin A supplementation which was 83.3% at baseline.

ICDS Services Utilization by Children 3-6 years

- Percentage of children availing services from AWC has been increased from 97.5% to 100%. Percentage of children getting supplementary nutrition form AWC has increased from 95.8% to 100%. All Children received some form of Supplementary nutrition, 52.5% received both (THR & HCF), 17.5% received only hot cooked food and 30% received only take-home ration. In baseline, 62.9% received both (THR & HCF) and 37% received only HCF. 86% mothers were satisfied with the quality and quantity of the supplementary nutrition received.
- Growth monitoring services increased from 69.2% to 79.7% except Pre-School Education services which has decreased slightly from 72.5% to 64.4% Percentage of mothers aware of PSE activities being performed in AWC has increased from 76.7% to 90.0%. 90% of mothers were satisfied with PSE services at AWC.
- 87.5% of mothers informed that they received counselling on importance of growth monitoring which was 65% at baseline. 95% of mother informed that Health checkup services are available in AWC which was 85.8% at baseline. 54.4% of children were receiving health checkup on a monthly basis which has decreased from baseline where 66% of children were receiving monthly health checkup.

Dietary Diversity Among Lactating Mothers

- About half of the lactating mothers did not have a minimum diversified diet and were confined to selected food groups in all the meals of a day. Econometric estimates suggest that increasing the intake of dairy or non-veg items such as (meat, poultry and fish) can increase the proportion consuming a diversified diet to 72 percent from 54 percent
- About 95 percent and 85 percent of lactating mothers (with 0-6 months child) did not have any fruits in the morning and

evening breakfast meal, respectively. More than two-third of lactating mothers (with 0-6 months child) did not have any dark green leafy vegetables or Vitamin-A rich fruits during the day.

- Food groups such as fruits, meat, poultry, fish, nuts and seeds are among the most difficult components to be attained and therefore attention on these items is necessary at the policy front. A significant association between health, nutrition and education counselling and consumption of a diversified diet is observed.

Dietary Diversity Among Children

- Daily diet of most of the children in both the age groups in Palghar contains a substantially higher component (frequency) of grains, white roots, tubers, and pulses and much lower frequency of dairy, eggs, and non-vegetarian food. The daily intake of dairy and eggs is lower among children 36 months and above. More than 90 per cent children did not have nuts and seed in even a single meal of the day which are a rich source of protein.
- 50 per cent of children in both age group did not have a minimum diversified diet and were confined to selected food groups in all the meals of a day. Econometric analysis suggests that if all children belonging to age group 6-36 months are provided with dairy products then the dietary diversity of the group will increase from 49% to 68%. Similarly, addition of eggs or non-vegetarian food for all children aged 3-6 years can provide highest increase in the dietary diversity score from 51% to 74%.
- Food groups such as meat, poultry and fish, other fruits, other eggs and Vitamin-A rich; and nuts and seeds are among the most difficult components to be attained and therefore substantial interventions are required in this regard at policy front.

MAIN RECOMMENDATIONS

- The assessment shows that the AWC assets and amenities has improved during the project period but this activity of infrastructure upgradation should be treated as a continuous process. Provisioning of such items requires greater coordination within the government departments as well as across stakeholders (including the community and various development partners).
- ICDS can expand the monitoring framework to include various AWC assets and items for a comprehensive assessment of status and progress in AWC infrastructure. This can allow stakeholders to compete in service strengthening and upgradation and motivate them to improve the AWC infrastructure.
- Project Spotlight has implemented its activities in full spirit and principle of convergence action across stakeholders. Further convergence support from Health Department, Panchayats, Electricity Department etc. is necessary for providing electricity connection, building repairs and refurbishments, toilet facility, drinking water facility, compound wall and outdoor play area as well as minor items such as first aid kits, medicine kits, IFA tablets, ORS sachets etc.
- Continued engagement with beneficiaries as well as improving the capacity and communication strategies of the AWWs is necessary to improve knowledge and awareness on exclusive breastfeeding for first 6 months, danger signs during and in post-natal period of pregnancy, and bi-annual Vitamin A supplementation.
- Provision of dairy products or eggs or fruits etc for all ICDS beneficiaries can enhance dietary diversity by 25% points. Efforts for provision of these food items emerges as an important area for policy considerations.


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01.
PROJECT SPOTLIGHT: BACKGROUND AND CONTEXT

Malnutrition remains a leading healthcare challenge across the globe. Malnutrition under its definition encompasses both over-nutrition and undernutrition, which also includes micronutrient malnutrition. Multiple indicators to measure and describe malnutrition and food insecurity exists, however nutritional failures are usually understood with the severity of anthropometric failures such as stunting, wasting and underweight.

Nutrition practices including exclusive breastfeeding, introduction of complimentary foods, iron-folate supplementation in pregnant and lactating women, and behaviour change communication to educate mothers and families on appropriate nutrition practices are critical foundations, yet despite these initiatives, across India less than 10% children have diets with adequate nutrition and nearly 60% of children and 50% of pregnant women are anaemic (IIPS, 2016).

Biased focus on anthropometric failure indicators as the outcome improvement indicators largely misses out on process indicators of the program. Failure of any of the combinations above can have detrimental effects in the growth of children and can keep them in the vicious cycle of malnutrition.

Malnutrition has both human and economic consequences, which include poor health outcomes, reduced economic productivity and lower educational attainment, which have been increasingly recognized by policy makers (ID, 2017).

Our goal is aligned towards the UN Sustainable Development Goal 2 of ending hunger, helping the country achieve food security and improved nutrition, and promoting sustainable agriculture.

The Tata Trusts' strategy for combating malnutrition is an integrated approach that focuses on three foundational pillars; **product, platform** and **policy**.

Products: development and use of innovative products to mitigate health risks related to undernutrition among population. Some of these products include, salt, rice, milk, wheat and oil, pulse based snacks fortified with iron, folate, vitamin B12, A and D as well as android based applications, m-Khushalli.

Platforms: the gateway of program delivery at scale. Strengthening existing social safety net programs and schemes through appropriate modifications and support occupy central position. These include Integrated Child Development Services (ICDS) scheme, National Rural Health Mission (NRHM), Public Distribution System (PDS) amongst others.

Policy: evidence based advocacy with policy makers and various stake-holders for scaling up of products through various platforms. Providing data analytics support to help understand and tackle challenges in meeting nutrition goals of the country.

1.1. ICDS SERVICES

Integrated Child Development Services (ICDS) is India's response to malnutrition amongst children. Started in 1975, it expanded post 2005 and today is the largest community nutrition programs in the world. It is well designed to address the proximate and distal determinants of malnutrition, the intergenerational cycle of malnutrition and well covers the 'one thousand days' window. ICDS coverage has an unmatched reach of 8.7 crore children, pregnant women and lactating mothers. ICDS design is universal with huge potential to serve the most vulnerable populations.

6 Key Services Under Integrated Child Development Services (ICDS)

Supplementary nutrition for children from 6 months to 6 years

Immunization for women and children

Pre-school education for children from 3–6 years

Health check-ups for women and children

Nutrition and health education for mothers and adolescent girls

Referral services for women and children

1.2. PROJECT SPOTLIGHT

1.2.1. Rationale

Health and nutrition are shared responsibility of individuals, households, community, developmental partners and the government. In India there are huge expectations from the government to scale up the programmatic support such as ICDS for health and nutritional improvements of the population. Despite wide ranging efforts, such initiatives warrant active community support and collaborations for addressing the challenges in a mission mode.

The ICDS scheme is designed as a response to the fundamental challenges of child development in terms of a) cognitive development through pre-school non-formal education and b) physical growth by liberating childhood from the vicious cycle of malnutrition, morbidity, reduced cognitive capacity and mortality. The ICDS has the broad objective of strengthening the foundation for psychological, physical and social development of children through nutrition support, counselling and cognitive development services (MWCD 2019).

The scheme is particularly designed to deliver six important services to children (0-6 years) as well as pregnant and lactating mothers as follows: a) supplementary nutrition, b) non-formal pre-school education (PSE), c) nutrition and health education, d) immunization, e) health check-ups and, f) referral services.

Implementation of such massive programme in a socioeconomically and geographically diverse country cannot be devoid of challenges and constraints. Notwithstanding the overarching programmatic framework, the ICDS is affected by variabilities in delivery of services, trainings of frontline workers, community outreach and garnering basic support from stakeholders for strengthening of service delivery infrastructure. Much of these constraints can be addressed with localized inputs with extensive micro-level engagement with the key stakeholders.

The Project Spotlight is a spirited attempt in this direction to contribute toward the fight against malnutrition in selected geographies of Andhra Pradesh, Rajasthan (as Making it Happen) and Maharashtra.

1.2.2. Project Spotlight in Maharashtra

Project activities primarily include refurbishing Anganwadi Centres, building capacities of frontline workers by helping them converge with other delivery stakeholders, improving infant and young child feeding practices, and working with communities and Panchayati Raj Institutions to generate awareness on the causes and consequences. Aligning with the vision of the ICDS program, Project Spotlight strives to strengthen the existing delivery system and mobilize the community with an array of carefully planned activities in the three districts of Maharashtra viz. Chandrapur, Gadchiroli and Palghar.

Goal

Women of reproductive age and children achieve sustainable improvement in their nutrition and health status. With a special focus on most vulnerable populations and families, reduction in stunting and anaemia will be the key impact indicators of improved nutritional status of the population.

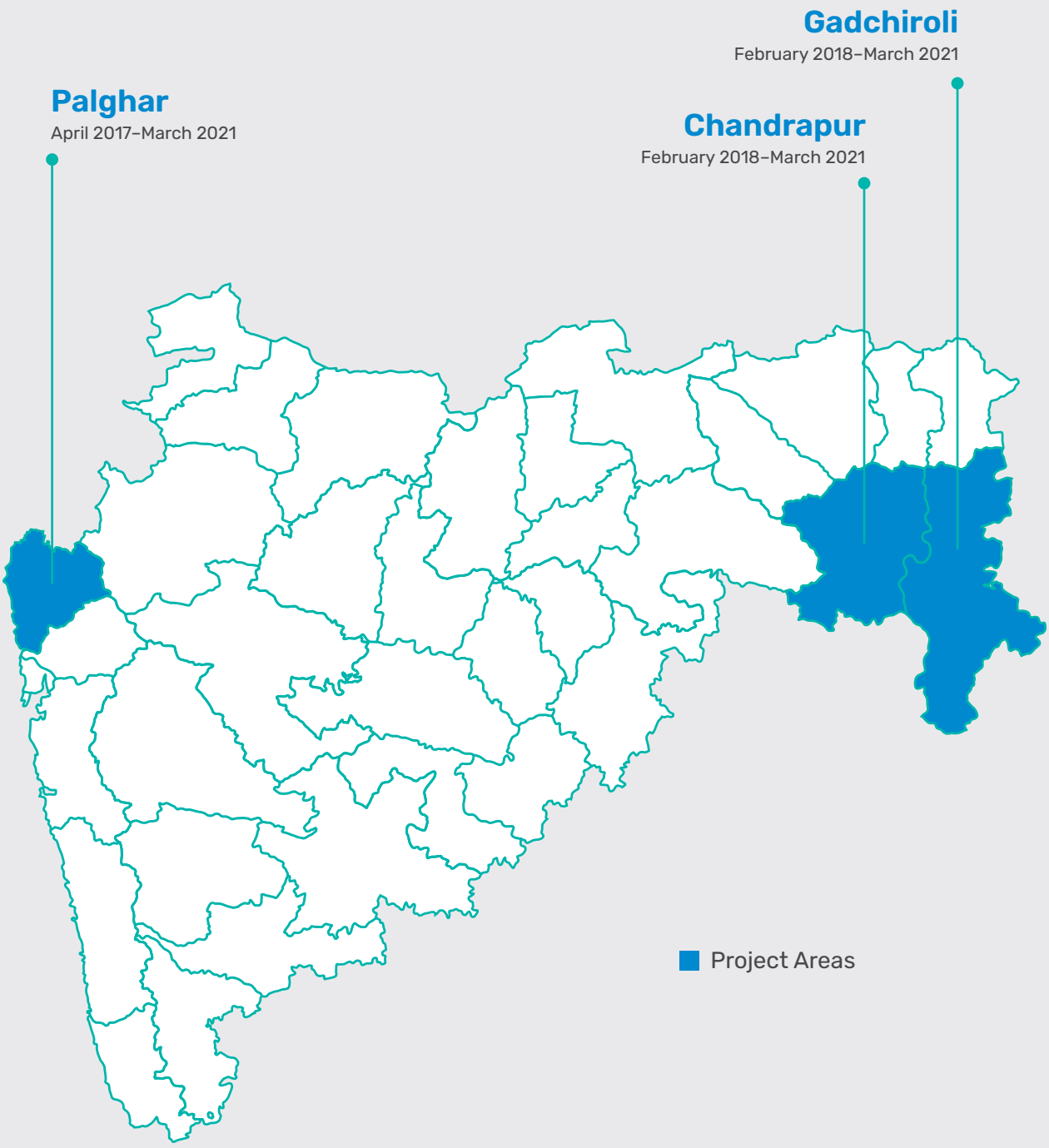
Objectives

To improve the quality and coverage of services in the ICDS and NHM by focusing on trainings, demand generation, monitoring and a management information system that helps in managing the process.

To improve nutritional practices and seeking behaviour of the communities at individual, family and community level for improved nutritional status of population.

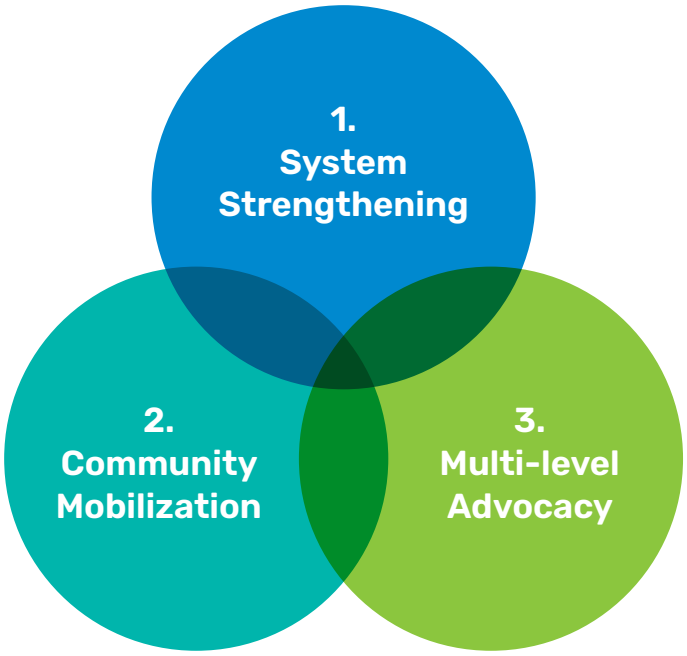
Maharashtra (3 Districts)

4114 anganwadi



Source: NFHS-5, 2019-20

1.3. A THREE-PRONGED IMPLEMENTATION APPROACH



1.3.1. System Strengthening

Understanding that a mammoth of framework to address malnutrition in India such as ICDS implemented country wide, already exists, it was only imperative to focus on a series of initiatives to strengthen this scheme. ICDS scheme offers a package of six services at the last mile, which has in-built convergence with National Rural Health Mission (NRHM) and Panchayati Raj schemes. These six services implemented at Anganwadi Centres (AWC) through Anganwadi workers (AWW), include; Supplementary nutrition; for children below 6 years, pregnant and lactating mothers; Immunization; for children below 6 years; pregnant and lactating women; Health Check-up; children below 6 years; Referral Services; Pre-school education and Nutrition and Health Education.

Identifying Anganwadis as the focal point for service delivery as well as convergence, a string of initiatives to strengthen the system were designed and implemented.

These initiatives are listed as below;

- **Civil upgradations of Anganwadi Centres**
- **Upgrading Anganwadi Centres with need based equipment**
- **Building capacities of ICDS and NHM staff and particularly, AWW (AAA), ASHA and ANM on convergence matrix**
- **Capacity building of Panchayati Raj Institution's representatives on their roles and responsibilities by converging with Anganwadis**
- **Building capacities of Anganwadi workers on Mother, Infant and Young Child Nutrition (MIYCN)**
- **Building capacities of Anganwadi workers on conducting community based events and Jan Andolan initiatives**

1.3.2. Community Mobilization

Behaviour, a complex phenomenon, is influenced by factors within the individual and beyond. Social and Behaviour Change Communication (SBCC) has been used for decades to promote changes in knowledge, attitudes, norms, beliefs and behaviours. Grounded in theory and backed by evidence, SBCC encompasses coordination of messages and activities across a variety of channels to reach multiple levels of society, including the individual, the community, services and policy. In India, polio eradication is an exemplar success of a strategy wherein SBCC was a part of core strategy.

Understanding the importance of mobilizing communities to avail services offered at Anganwadis, a number of thoughtful initiatives were implemented to further complement the efforts taken to strengthen the system.

These included:

- **Conducting Community Based Events to support and scale up POSHAN Abhiyaan**
- **Periodic conduct of mass communication events (or commonly known as Jan Andolan events) on a variety of topics. Dietary diversity amongst children and women, different types of breastfeeding positions for young mothers, early child education and play, ANC services, prenatal services, were some areas covered through these mass mobilization events**
- **Conducting community MIYCN trainings with an attempt to make mothers, mother-in laws and community influencers Master Trainers themselves on young child nutrition practises**
- **Facilitating joint household visits of frontline workers to pregnant and lactating mothers**
- **Organized multiple felicitation events to recognize efforts of frontline workers towards their fight against malnutrition**

1.3.3. Multi-level Advocacy

Advocacy is a combination of individual and social actions designed to gain political commitment, policy support, social acceptance, and systems for a particular health goal or program. It is an action directed at changing the policies, positions or programmes of any type of institution. It puts problem on the agenda, provides a solution to that problem and builds support for acting both on the problem and solution. However, advocacy has to operate in a world of multi-level governance. Programs are executed in a government system with transfer of power of decision making with other actors involved in implementation from State to District, Block until the last unit of administration at Village level.

Known as Multi-Level Advocacy, wherein programme advocacy principles engage with all stakeholders with same rigour and message. Although, not very well explored and executed by program implementers, it holds the key to successful uptake of program objectives. It is enabled by focusing way and beyond Secretariats; on Government system as a whole, and by communicating same programme messages at multiple levels.

To achieve this, some of the initiatives taken up were as below:

- **State level advocacy to scale up convergence matrix and smart anganwadis with Principal Secretary and ICDS Comissioner, DWCD, Govt. of Maharashtra on a six monthly basis**
- **District level advocacy jointly with DM, CEO Zilla Parishad, DPO, DHO, PRI members to discuss progress and seek joint monitoring support on a quarterly basis**

- **Block level advocacy jointly with BDO, CDPO, MO and PRI members to discuss progress and seek joint monitoring support with a monthly frequency**
- **Village level advocacy jointly with Lady Supervisor, LHV, AWW, ASHA, ANM and PRI members to seek programmatic support on a monthly frequency''**

1.4. MAJOR ACCOMPLISHMENTS

1.4.1. System Strengthening

Civil Upgradation of Anganwadi Centres

- Upgradation of dilapidated Anganwadis by way of infrastructure repairs and fixes which included; repair of roof, walls, address uneven flooring, kitchen upgradation, pivoting for safe and secured entrance. Toilet facilities were constructed or upgradation, water proof painting of walls with specially designed Information, Education and Communication messages.
- **100** dilapidated Anganwadi Centres in Palghar and **5** in Gadchirolli were refurbished and transformed to develop model Anganwadi Centres
- Technical support to Chandrapur District Administration for refurbishing 49 Anganwadi Centres
- Through systematic and convergent approach to refurbishing Anganwadis (for details please refer to SOP on Refurbishment of Anganwadi Centres), all 105 transformed AWCs received support from respective Gram Panchayat. This included, provision of tables, chairs, fans, tube lights, school uniforms etc. depending on the requirements. Moreover, 39 such AWCs also got electrified with the support of Gram Panchayat.
- Refurbished and Transformed Anganwadis handed over to District Administration in Palghar by former Hon'ble Chief Minister of Maharashtra Shri Devendra Fadnavis

Need Based Upgradation of Anganwadis

- Ensuring seamless delivery of core components of ICDS services, district wide survey to assess the status of availability of various equipments within AWC were conducted in Chandrapur, Palghar and Gadchirolli, Maharashtra.
- After careful consideration from the findings of survey, **3183** Anganwadis across Palghar district were upgraded with need based equipment. They were provided with the following items:
  - **1 Stadiometer**
  - **1 Infantometer**
  - **1 Weighing Machine**
  - **1 Water Purifier**
  - **4 Plastic Mats**
  - **12 Posters on Nutrition and Early Child Education**
  - **13 Educative play material**
  - **20 Nutrition Booklets on Mother Infant and Young Child Feeding**

Building capacities on Mother Infant and Young Child Feeding Nutrition (MIYCN)

- Equal importance was laid on disseminating in-depth subject matter knowledge on nutrition and health through practical sessions. Special focus was on training one and all with same rigor instead of cascading approach.
- Under POSHAN Abhiyaan, AWWs have been trained in a cascade fashion, on a number of topics to improve quality of service

delivery. To supplement the extensive exercise of Goverment of India, we built capacities of frontline workers on practical insights of MIYCN practices.

- Through a 3-day residential training program, the curriculum was delivered through video presentations and hand-held lessons on 49 positions of successful breastfeeding, essential nutrients and its low cost food sources, initiation of complementary feeding of a 6 months old young child, along with cooking demonstrations to prepare low cost nutritious recipes for 'young children'.
- **3100** frontline workers trained on MIYCN across Chandrapur, Gadchirolli and Palghar districts

Capacity Building of Frontline Workers and Panchayati Raj Institution members on Convergence Matrix

- The underlying focus of 'econometrics of convergence' was measuring convergence. Simply put, for convergence to count, we must count convergence! Building on this, through extensive trial and errors, tools to measure convergence were developed and successfully implemented across three districts. These tools were namely, 'AAA (AWW-ASHA-ANM) Report Card' for ICDS and NHM convergence and 'Village Health Report Card' (VHRC) for ICDS and PRI convergence.
- Frontline workers were trained on working in convergence through the mandatorily use of tools approved by all three District Authorities.
- Convergence of services offered by Anganwadi- ASHA- ANM (AAA): With the objective to enable convergence of services under ICDS and NHM, a joint Government Resolution (GR) was released jointly from DWCD and Department of Public Health, Maharashtra. This GR offered detailed guidelines on through five-point implementation process of convergence of services provided by ICDS and NHM.
- **7,000** workers were trained through **640+** trainings in Chandrapur, Gadchirolli and Palghar districts
- Capacity building activities like convergence of services offered by ICDS-PRI members, identifying high risk beneficiaries, formation of bridge of information through convergence, training PRI members and officials of ICDS Deptt. on use of Village Health Report Cards (VHRC) were conducted in all three districts.
- **884** AWWs were hand-held to activate the system, periodic efforts were made to ensure Gram Sewaks and Lady Supervisor jointly submit VHRC to Sarpanch, CDPO and Block Extension Officer

Building capacities of Anganwadi Workers on Community Based Events

- Palghar, a newly formed district was identified in Phase II of implementation plan of POSHAN Abhiyaan scheme. Recognizing the importance of CBE initiative in spreading awareness systematically, it was considered imperative to bring up-to speed, one of the infamous district with soaring child malnutrition indicators. Thereby AWWs were hand held to implement CBE following the guidelines mentioned under the scheme before its official roll out. First step of which, was to train AWWs and LS on understanding CBE process under the scheme and its guidelines along with handholding support in conducting the same.
- **1,486** Anganwadi workers trained on ways of conducting Community Based Events

1.4.2. Community Mobilization

Celebrating Community Based Events

- **20,000** Community Based Events conducted directly before POSHAN: PM's Overarching Scheme for Holistic Nutrition Abhiyaan subsumed in Palghar district in a span of six months
- **9,000** Community Based Events supported in Chandrapur and Gadchirolli

Periodic Conduct of Mass Communication Events (popularly known as Jan Andolan events)

- Jan Andolan events in project spotlight aspire to motivate multiple sectors and communities on malnutrition, its various forms and need for consumption nutritious food by tapping into people's inherent goals.
- An attempt therefore was made of bringing periodicity to mass behaviour change initiatives under this project. Moreover, various aspects of addressing child nutrition failure were taken up in multiple separate sessions. Some of the areas addressed included; household dietary diversity, low cost nutritious food sources, types of breastfeeding positions, early child education and play through inter-anganwadi sports competitions, ante-natal services, pre-natal services.
- **1284** Jan Andolan events conducted across Chandrapur, Gadchirolli and Palghar districts, well-distributed throughout project period

Community Trainings on Infant and Young Child Feeding practices

- Underscoring the importance of quality of knowledge dissemination at village level, we trained communities on addressing malnutrition through nutrition. Hence, a thoughtful inclusion of capacity building activity under SBCC initiative of this project.
- Participants of these training sessions included pregnant and lactating mothers, husbands, mother-in laws, women of the village, young girls and village influencers. Curriculum of these training sessions included role of nutrients in our body, local low cost food sources of essential nutrients, dietary diversity, effective breastfeeding positions through role play and video sessions, initiation of complementary feeding, cooking demonstration for young child feeding and role of hygiene and sanitation. Since such elaborate sessions, require time of approximately 3-4 hours, participants were offered nutritious lunch which also seemingly improved attendance.
- **400** individual Community Trainings on IYCF conducted in Chandrapur and Gadchirolli districts

Joint Household Visits by Frontline Workers

- Under Project Spotlight, since AAA's worked in tandem together, we further underscored their convergence by focusing on 'Joint Household Visits' of all three frontline workers. Like any other initiative, AAA's were hand held initially from coordinating calendars to visiting beneficiaries' house together. Soon with the accolades and commendation received from household members, village panchayat members as well as the positive change in mother's behaviour motivated frontline workers to scale up the initiative.
- **25,000** household visits enforced of frontline workers across three districts has been our best foot forward in sensitizing both communities as well as system. Thereby enabling and bringing alive successful initiative of SBCC of this project.

Felicitating Efforts of Frontline Workers

- Funds are expended on training frontline workers. The biggest barrier in behaviour change is not the lack of skill and expertise of frontline workers, unfortunately it is the lack of trust on frontline workers; both of organizations and communities.
- Under Project Spotlight, we made a deliberate attempt to recognize the hard work of AAA's at various levels. Various events on Poshan theme were organized at Sector, Block and District level.

1.4.3. Multi-Level Advocacy

- Technical Support Unit (TSU) established at State, District, Blocks and Village were key to facilitate objectives set out under this initiative.
- At State, focus of TSU was to set up review meetings with Principal Secretary and ICDS Commissioner. At District, District Magistrate, CEO-Zilla Parishad, Deputy CEO, ICDS, District Health Officer were the most instrumental officials to allow implementation in respective districts.
- At Block, Block Development Officer, CDPO, Taluka Health Officer, Extension Officer were the facilitators of project implementation and focus of TSU. At village, Sarpanch, Gram Sevak and AAA were the real foot soldiers to bring out the project alive.
- All TSUs throughout were in sync to push, support and scale up ideas timely and effectively. Documenting minutes of advocacy meetings and prompt release of official communications enabled through TSUs played the most instrumental role in efficient program delivery.
- **9241** such advocacy meetings were held under project spotlight across all TSU

1.5. ABOUT PALGHAR MALNUTRITION PROGRAM

To address the malnutrition challenges in Palghar district, Tata Trust embarked joint initiative with the Department of Women and Child Development, Government of Maharashtra and other implementation partners has launched a program on Integrated Child Development Services (ICDS) System Strengthening and Digitization in Palghar, Maharashtra. The Tata Trust followed a multi-pronged approach to strengthen the overall system. Under this project, IQVIA worked on multiple areas like capacity building of frontline workers, linking health and nutrition departments through a AAA program, behaviour change communication strategies to create awareness among the beneficiaries, refurbishment of Anganwadi Centre's (AWCs) and providing need-based equipment for all AWCs in Palghar.

The overarching goal of the project is to strengthen the implementation of Poshan Abhiyan, the Government of India's flagship initiative to address malnutrition, in the tribal and rural areas of Palghar district, Maharashtra. Tata trust strengthened the function of the ICDS in using a combination of interventions to improve the programme's service delivery, modify supplementary food rations and improve awareness amongst young mothers. It includes refurbishing anganwadis, building the capacities of frontline workers, working with communities and panchayati raj institutions to generate awareness, improving the quality of supplementary nutrition, and influencing policy through data-based research.

1.6. BASELINE ASSESSMENT SUMMARY

The aim of the program is to ensure a positive situation in tribal and rural communities of Palghar district, where nutrition related awareness, linkage of communities with health and nutrition services based on participation and accountability processes, and household nutrition practices are optimally developed, to improve ICDS and child nutrition. As a part of TATA Trust's Palghar Malnutrition Program, IQVIA had conducted Baseline Assessment of AWC and ICDS Beneficiaries to assess coverage of services and understand status of AWC through Infrastructure. The baseline assessment was conducted during the month of May and June 2018. The Baseline assessment report had identified the following gaps in existing ICDS program of Palghar districts:

- Inadequate infrastructure facility like safe drinking water, electricity and Toilets provide safe and strong structure
- Lack of Child friendly sanitation facilities in the anganwadi centre,
- Lack of awareness about hand hygiene practices due to unavailability of soaps and water facility in anganwadi centre,
- Inadequate Food Storage Facilities at AWC
- Lack of awareness among the beneficiaries about the key component under the ICDS program that further implies low coverage outcome of the program
- Unavailability of Growth Monitoring Equipment, Take Home Ration and Hot Cooked Food
- Need to provide refresher training to AWW on nutrition education for improving the quality of nutrition counselling session

1.7. INTERVENTION DESIGN AND IMPLEMENTATION TIMELINE

Based on the baseline findings, an intervention was designed for Strengthening and Digitizing the existing anganwadi centres in rural and tribal blocks of Palghar district. Wherein, the program included improvement in infrastructure of anganwadi centre for improving the coverage of ICDS program, capacity building of anganwadi facilitator and ensuring availability of preschool educational and nutritional components in the anganwadi centres. The program further emphasised on community outreach activities for ensuring community sensitization about integrated services provided through ICDS program. Keeping in line, a robust monitoring and evaluation framework was formulated for determining the progress of the initiative and to address challenges that obstruct the implementation of the program. Benchmarks were set for measuring the appropriateness, effectiveness, efficiency, impact and sustainability of the program. According to the monitoring and evaluation plan, three monitoring visits were proposed to be conducted by IQVIA for assessing the progress of the project indicators over one-year period.

1.7.1. Monitoring and Evaluation Timeline

According to the monitoring and evaluation plan, first two monitoring visits were conducted during December 2018 and March 2019. The third proposed visit was not conducted due to COVID-19 pandemic outbreak. Project services have been severely disrupted since the Covid-19 pandemic began.

First Monitoring Visit

December 2018

Endline Assessment of AWC and ICDS Beneficiaries

June-August 2020

May-July 2018

Baseline Assessment of AWC and ICDS Beneficiaries

March 2019

Second Monitoring Visit

1.8. IMPLEMENTATION OVERVIEW

QVIA conducted **First Monitoring Visit** during the Month of December 2018 to document the progress against set implementation milestones. During the visit, the M&E partner processed documentation of refurbishment of AWCs. Conducted FGD for assessing the knowledge, attitude and practices among beneficiary group. Conducted Key Informant Interviews with Implementation Partners, ASHA, AWW and PRI member for understanding the on ground challenges in implementing the project activities. Moreover, the M&E team collected data on selected performance indicators as per agreed Log frame and prepared a reporting document for measuring the progress of the project. As suggested by TATA Trusts team, three blocks namely Jawahar, Mokhada and Vikramgad were selected for the first monitoring visit. 32 AWWs and 24 ASHA's were selected randomly from fully and partially refurbished AWCs for assessing their experience of undergoing AAA training. Out of 200 AWCs, 31 fully and partially refurbished AWCs across three blocks were selected randomly to gather information on select performance indicators as per agreed log frame. PRI members and Implementation partner were interviewed to understand the process of refurbishment.

1.9. PHASE 1 – MONITORING VISIT FINDING

The Key findings for first monitoring visit after implementing the plan of action were firstly, the AWWs, PRI and community members expressed satisfaction on refurbishment process and experienced improvement in service delivery by AWC post refurbishment. The survey data found that improvement in quality of food has direct impact on ICDS program coverage rate. Moreover, AWWs and ASHAs reported to be satisfied with the trainings that has been conducted for capacity building. Most of the AWWs had started implementing the learnings from trainings on field. However, due to time constrain few the AWW failed to implement the learning on field. Consequently, there is need to conduct a refresher training on the difficult topics for effective field implementation. Secondly, during the monitoring visit the Pregnant and Lactating women were interviewed to assess the awareness about

the program implementation. The women reported that were satisfied with the plan of action of CBE program. It was found that the program has successfully disseminated information on nutrition and IFA supplements to pregnant and lactating women. But then again, majority of them reported that the community health workers did not inform them about their AAA visit. Thirdly, the visit report presented that the project activities like receipt of THR, organization of VHSNDs, session on growth monitoring were help as per plan. Furthermore, it was found that there is a scope of improvement in the project indicators such as pre-school attendance, CBE events or growth monitored sessions and AAA visits.

1.10. PHASE 2 – MONITORING VISIT FINDINGS

The second monitoring visit was conducted during March 2019 to document the progress against set implementation milestones and to validate the findings reported by the Program against set performance indicators agreed upon in Log Framework. The Key findings for first monitoring visit after implementing the plan of action were extensive coverage of topics, effective engagement and two-way communication ensured understanding by the participants. Involvement of practical components of role-plays, mapping and formulation of strategy for further planning and supervision would ensure further compliance for AAA meetings. AWWs and ASHAs were satisfied with the methods and approaches used during training but there is a need to emphasize on refresher trainings for covering new topics. During the visit AWWs revealed that AAA meetings were held for cross verifying surveys, monthly planning of home visits and for record checking. During the visit, it was found that the review and supervision of the meetings were almost negligible. Similarly, no records were maintained for reviewing the convergence meetings held at Block level.

During the VHSND session, it was observed that majority of the work for delivery of services to pregnant women and children is performed by ANM. Further, the role of ASHA and AWW is limited to inviting beneficiaries for VHSND and in planning VHSND sessions. Therefore, due to lack of involvement of ASHA and AWW various components were unserved like counselling of beneficiaries especially lactating women, conducting separate session on growth monitoring, involvement of PRI and supervision. The role of ASHA and AWW is important in successfully conducting VHSND sessions. Moreover, during the visit it was found that receipt of THR, VHSND sessions, growth monitoring sessions were conducted as per planned. However, few performance evaluating indicators like number of community-based events conducted, PSE attendance, presence of supervision in VHSND, number of AAA meetings reduced further during second monitoring visit as compared to first monitoring visit, which reflects the limitation of implementing project activities in the sampled blocks for reducing malnutrition. The visit narrative reported that most of the pregnant and lactating women were aware of the community-based events held but were not aware of the different IYCF messages given during events. Most of them revealed that they were not visited by AWW, ASHA and ANM together.

Post Baseline Assessment and Monitoring Visits, IQVIA conducted 'Endline Assessment' of AWC and ICDS Beneficiaries as a part of TATA Trust's Palghar Malnutrition Program. The Endline Assessment was done to assess the coverage of services and to evaluate the progress on coverage indicators (outcome). Moreover, the endline assessment was conducted to understand the impact of interventions in strengthening and digitalizing the existing ICDS system. Therefore, this report aim to emphasis on the detailed findings of endline assessment in the following sections.

02. EVALUATION APPROACH

2.1. APPROACH OVERVIEW: ENDLINE EVALUATION

IQVIA team conducted the endline assessment for Tata Trust's **Palghar Malnutrition Programme** in two parts:

Assess Coverage of ICDS Services

Conducting structured interviews to understand services provided to

- Pregnant women
- Lactating women
- Children 6 months of 36 months
- Children 3 years to 6 years

Infrastructure Assessment of AWCs

Infrastructure assessment using observation checklist

- For AWCs selected for full refurbishment
- For sample AWCs selected for partial refurbishment

2.2. RESEARCH DESIGN AND SAMPLING

2.2.1. Selection of AWC – Sampled and Additional

This section consist of detailed sampling process for infrastructural assessment of AWCs in the Endline Survey:

Table 2.1: Sample Size Estimation of AWCs for Infrastructure Assessment

Criteria	Block	Sampling Method	Sample Size
# Fully furbished AWCs in 3 blocks in the Palghar district with block-wise breakup:	Jawahar	List from TATA Trust	30
	Mokhada		30
	Vikramgad		29
# Partially furbished AWCs in 8 blocks in the Palghar district with block-wise breakup:	Dahanu	Relative proportion sampling and Selection of each AWC by random number	20
	Jawahar		10
	Mokhada		10
	Palghar1		20
	Talasari		5
	Vada		15
	Vasai		10
	Vikramgad		21
Total			**197**

The endline survey covered all eight blocks, which comes under Palghar district. During the endline survey, out of 3174 AWCs in Palghar district wherein the intervention model was implemented 84 full refurbished AWCs were selected as per the list shared by Tata trusts. Moreover, 113 partially refurbished AWCs were selected using relative proportion sampling from the remaining 3090 AWCs of Palghar district. Therefore, the total sample size estimated for Infrastructural assessment was 197. In addition, the data collection team visited all 197 AWCs.

Table 2.2: Sample size calculation for AWCs for Partial refurbishment

District	P	q	d^2	CI	Sample
Palghar	0.04	0.96	4%	95%	92 = 100 (rounding off)

2.2.2. Sample Size Estimation for Pregnant Women and Lactating Mothers

Sample size was calculated using the formula,

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

where, Z = 1.96

p = Proportion of pregnant women age 15-49 years who are anemic in Maharashtra (.49) (NFHS-4)

q = 1-p

d = margin of error = 5 %

Respondent	P	q	d^2	CI	Sample
Pregnant women / Lactating mothers	.49	0.51	5%	95%	384 (400 by Rounding off)

Selection of the pregnant women and lactating mothers in the AWCs and method of data collection

- A sub sample of 20 AWCs was randomly selected from a list of 89 fully refurbished AWCs and another 20 AWCs were selected from the remaining 111 partially refurbished AWCs.
- In each AWC, five mothers with children in the age group of 0 to 6 months (for pregnancy related services) and five women with children in the age group of 6-12 months (for lactation period related services) were selected for conducting the structured interviews.
- The Structured interviews were conducted at the household of the beneficiary.
- The list of beneficiaries was taken from AWC, where more than the required number of beneficiaries were available the selection of beneficiaries was done randomly and where the required number of beneficiaries were not available the same type of adjacent AWC was visited for covering the sample size.

2.2.3. Sample Size Estimation for Children Availing Preschool Education Related Services (3-6 years)

Sample size was calculated using the formula,

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

where, Z = 1.96

p = Proportion of children under 5 years who are severely wasted in Maharashtra (.094) (NFHS-4)

q = 1-p

d = margin of error = 5 %

Respondent	P	q	d^2	CI	Sample
Mothers of children in 3-6 years of age	0.094	.906	5%	95%	121

Selection of mothers of PSE children and Methodology of data collection

- In each AWC area, 3 mothers were interviewed with children 3 years to 6 years age for preschool education services
- The Structured interview was conducted at the household of the beneficiary.
- The list of beneficiaries was taken from AWC, where more than required number of beneficiaries were available the selection of beneficiaries was done randomly and where the required number of beneficiaries were not available same type of adjacent AWC was visited for covering the sample size.

2.2.4. Sample Size Estimation of Children Age 6–36 months

Sample Size Estimation

Sample size was calculated using the formula,

$$n = \frac{Z^2 \times p \times (1-p)}{d^2}$$

where, Z = 1.96

p = Proportion of breastfeeding children age 6-23 months receiving an adequate diet (.05) (NFHS-4)

q = 1-p

d = margin of error = 5 %

Respondent	P	q	d^2	CI	Sample
Mothers of Children 6-36 months	0.05	0.95	5%	95%	127

- In each AWC area, 3 mothers were interviewed with children 6 months to 36 months age to understand service received during 6-36 months of age. Total 120 mothers of children 6 months to 36 months were interviewed.
- The Structured interview was conducted at the household of the beneficiary.
- The list of beneficiaries was taken from AWC, where more than required number of beneficiaries were available the selection of beneficiaries was done randomly and where the required number of beneficiaries were not available same type of adjacent AWC was visited for covering the sample size.

2.3. STUDY TOOLS

A comprehensive set of tools were prepared for conducting the survey targeting diverse groups. The tools were translated into Marathi language. Five types of tools have been developed to undertake the endline assessment. These tools are explained in the upcoming sections in detail.

2.3.1. Structured Interview Schedule for Pregnant and Lactating Women

The interview schedule compromises of five sessions described below:

- First section - incorporates the socio-demographic profile of the respondents
- Second section - captured the extent of utilization of ICDS services
- Third section - captured knowledge, attitude and practices towards utilizing Supplementary Nutrition Services offered by AWCs
- Fourth section - consist of knowledge, attitude and practices towards health check-ups during and after the pregnancy

- Fifth section - captured knowledge, attitude and practices towards importance, knowledge and utilization of Health and Nutrition education services

2.3.2. Structured Interview Schedule for Pre-School Children (3-6 years) and Children Between Age of 6-36 months

The interview schedule compromises of nine sessions described below:

- First section - incorporated the socio-demographic profile of the respondents
- Second section - captured the information regarding the child in study
- Third section - captured knowledge, attitude and practices towards utilizing Supplementary Nutrition Services offered by AWCs
- Fourth section - captured knowledge, attitude and practices towards importance, knowledge and utilization of Health and Nutrition education services
- Fifth section - captured information regarding the mother's knowledge regarding the importance of Growth Monitoring
- Sixth section - provided information about the awareness and practices towards availing the immunization services for the child
- Seventh section - captured information regarding knowledge about child health check-ups
- Eighth section - captured information regarding the knowledge, attitude and practices towards the management of childhood illnesses
- Ninth section - captures information regarding knowledge of services available through Village Health Sanitation and Nutrition Day

2.3.3. Checklist for Assessment of Fully and Partially Refurbished AWCs

This checklist aims to assess the infrastructure of the refurbished AWCs. It captured information about type of facility, location of the facility, condition of AWC building, indoor and outdoor premises condition of the AWCs, availability of necessary equipment's in the AWCs, Availability of water and sanitation services and processes and storage of the food in AWCs. A section of the checklist also included questions intended for Anganwadi workers.

2.4. PILOT TESTING OF THE TOOLS

To establish the relevance of the study tools, pilot testing was undertaken by IQVIA on 9th and 10th July 2020 for Aganwadi worker (for assessment of Aganwadi Centre), mothers of children aged between 0-6months (for pregnancy related services), mothers of children aged between 6-12months (for lactation related services), mothers of children aged between 6-36 months and mothers of children aged between 3-6 years.

Sample Covered: Pilot study included 13 beneficiaries of randomly selected AWC in Block Mokhada. In the first phase of the study, one Aganwadi worker was interviewed for assessment of the infrastructure of the refurbished AWCs. In the second phase, three mothers with children in the age group of 0 to 6 months were interviewed for assessing pregnancy related services. In the third phase, three mothers with children in the age group of 6-12 months were interviewed for assessing lactation period-related services. Subsequently, three mothers were interviewed with children 3-6 years of age for assessing preschool education services. Lastly, three mothers were interviewed with children 6-36 months' age to understand nutritional service received from Anganwadi Centers.

The study tools were tested on the following aspects:

- **Time:** The pilot study was conducted for capturing the time taken to conduct each interview. The average time taken was 20-25 minutes.
- **Ease of Understanding:** The study helped in assessing the difficulty level in understanding each question translated in Marathi by the community members
- **Ease of Use:** Moreover, it gave a brief illustration about conducting the telephonic interview by the team and to evaluate and incorporate all changes suggested by the team in interview format for capturing better response
- **Sequence of the Questions:** Understanding the sequence in which the questions were asked is important for capturing good quality data. Therefore, to identify the areas that needed modification for better delivery by the team and easy understanding by the participants the pilot testing was conducted

Limitation of the pilot study:

- Call dropped off due to network issues
- In some cases, it was observed that mobile phones were unavailable with the beneficiaries and mobile numbers belonged to their husbands, which also led to delay since their husbands are working and not available at home for a longer period. Therefore, the team had to ask for the suitable time so that they could connect with the beneficiaries.
- Non-response rate increases in telephonic interviews due to call connectivity issues such as numbers were switched-off or unreachable.

Table 2.3: Risks and their mitigation strategies

Possible Risks	Mitigation Strategies
Risk #1: Phone calls that provided no answer or refusal to participate in survey	Our team updated Database Tracker after every phone survey call. The Database Tracker was helpful in keeping trajectory of the non-response rate, while also keeping track of how many phone surveys were completed (For instance, target: 20 beneficiaries). In case of refusal, the database tracker helped in preparing a refusal list
Risk #2: Non-cooperative beneficiaries	With each phone survey on average taking 20-25 minutes, there were few instances where participants requested to leave in the middle of the survey or if they felt uncomfortable to talk for long. In such case, we requested participant to suggest a time as per their comfortability to complete the remaining survey.
Risk #3: Invalid phone numbers of beneficiaries	Confirmed numbers with AWWs
Risk #4: Recall Error	Team validated if participant meets Survey Criteria (For example; Age of child) before start of survey. Process Methodology and techniques provided to data collectors during the training workshop
Risk #5: Delays in coverage as per Detailed Work Plan	In few cases, it was observed that mobile phones were unavailable with the beneficiaries and mobile number belonged to their husband, which led to delay as per the workplan since their husbands were working and not available at home for a longer period of time. The Survey Supervisor also acted as a buffer support system to cover phone surveys where the data collection team was behind schedule due to unforeseen disruptions in the Detailed Work Plan.
Risk #6: Hesitance among women in discussing certain issues	Gender sensitivity, assuring confidentiality, building rapport and probing techniques for appropriately approaching such phone survey discussions were provided during the training workshop.

2.4.1. Risk and Mitigation Strategies

During the pilot study, the data collection team came across some of the following challenges for which their mitigation strategies mentioned below were followed.

2.5. TRAINING OF FIELD INVESTIGATORS TEAM

To ensure the smooth operation of the field plan a two-day virtual training workshop was organized for data collectors and supervisors. The subject experts from IQVIA conducted the training. A substantial part of the training focused on manoeuvring the tablet application for data collection, hands-on training with the tablets that would be used for the data collection. The training was conducted through presentations, and group discussions. After e-training, on day 3, mock exercises were conducted for each data collector and team coordinator to ensure that they understood the questionnaire, its flow, capability to capture data without error in the required time slots etc.

2.5.1. Training on Ethical Aspects of Research

The team was trained about the consent form in detail, about the process of taking consent from each respondent during telephonic survey to ensure ethical aspects of this study.

The team was trained to make proper documentation to carry out the survey, enter data into the tablet application, upload/ sync data to the server, manage data online and possible challenges that can be faced during data collection.

2.6. ETHICAL CONSIDERATIONS

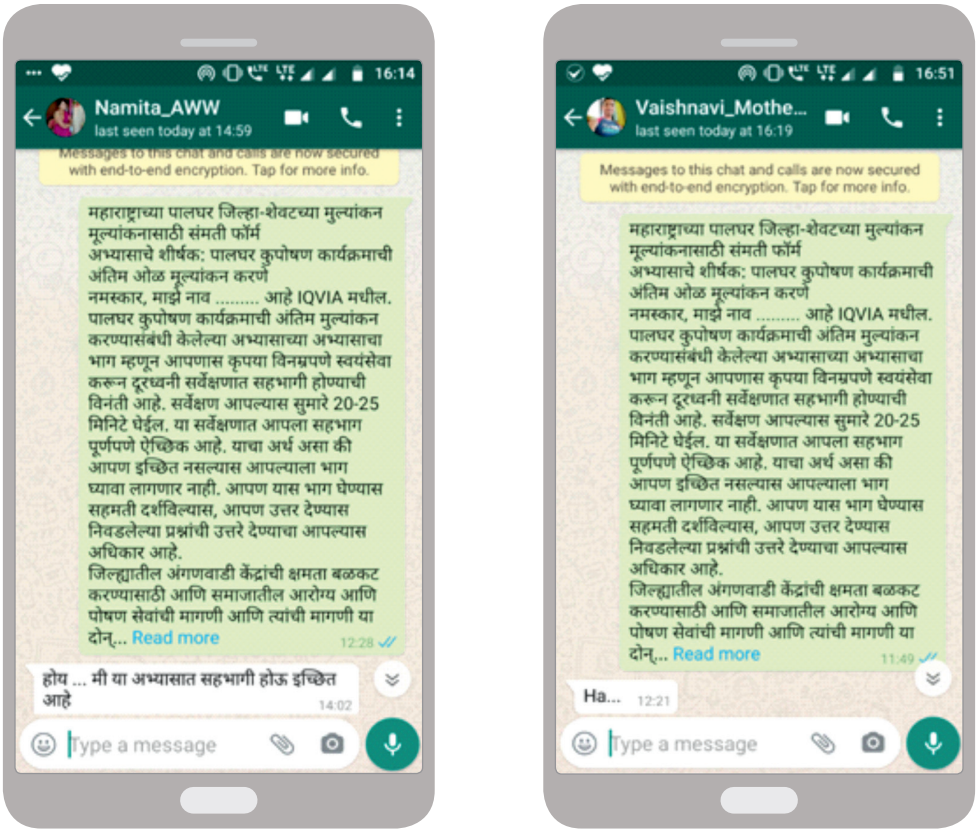
Participant/Respondent informed consent was taken by IQVIA prior to conducting data collection. All the AWWs had given their verbal consent that they can be contacted in case for project related work. Post their interview, the team explained AWWs the requirement of interviewing beneficiaries. The AWW then dropped a message in the WhatsApp group that was created for interacting with beneficiaries in the area. Moreover, calls were made to the beneficiaries who were not active in the WhatsApp group. Later on, the AWW shared the numbers of beneficiaries who gave her a verbal consent for participating in the survey.

Since it was a telephonic survey, the team read out the consent form that consisted of a comprehensive, though succinct, description of the study and included the relevant elements of informed consent - in narrative form. The interviewer directly asked the person if the participant agreed to participate in the survey. Moreover, the consent was shared with the participant through text message/Whatsapp and approval was taken from the participant before conducting the survey.

2.6.1. Maintaining Confidentiality and Privacy of Beneficiaries

IQVIA is CMMi Level 3 certified and have several ISO quality certifications (20000-1:2011, 27001:2013, 9001:2015), which demonstrates the reliability and security of information storage systems and IT practices. IQVIA will employ reasonable and appropriate technical, administrative and physical safeguards designed to protect Personal Information in its possession from loss, misuse and unauthorized access, disclosure, alteration and destruction, taking into account the risks involved in the processing and the nature of the Personal Information IQVIA is processing.

Figure 2.1: Sample screenshots of consent form from the endline study



- Risks to participants - This study was done in such a way that it would not cause any physical and psychological risks as well as moral implications to the study participants.
- Confidentiality was maintained with respect to the respondents and also regarding the information that was collected. No personal information was revealed in any situation.
- Security of the Data - Data collected was stored in a secured manner within locked locations; and/or security codes was assigned to computerized records and was not used for any other purpose other than the research purpose. Data was safeguarded, and access was restricted to only the research team.

The team of data collectors were trained on how they should never store data in paper or share data with anyone outside the project team. During training, data collection team was made aware about IQVIA's strong adherence to maintaining privacy. If there is any deviation to best practices for securing data, it could lead to disciplinary action, leading even to termination of employment.

2.7. DATA COLLECTION

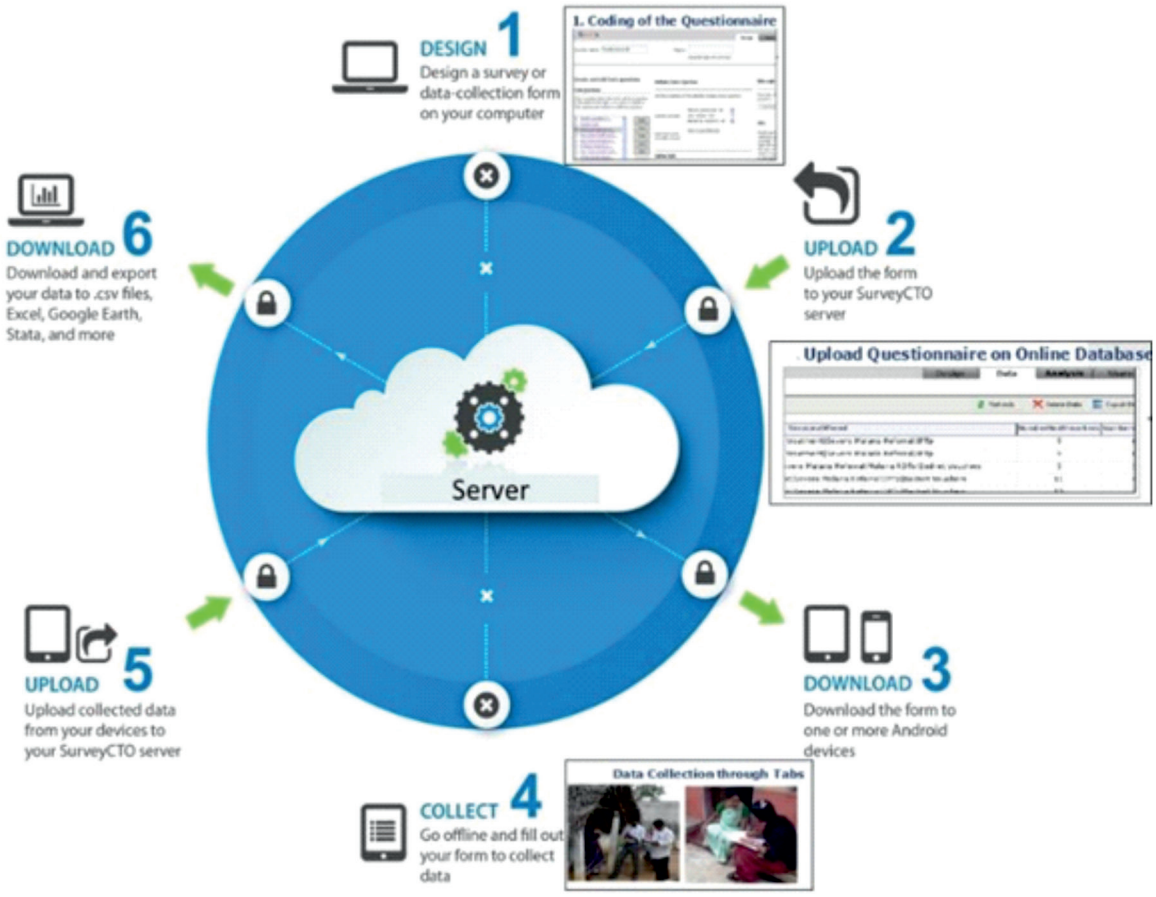
The data was collected in an android tablet-based Computer Assisted Personal Interview (CAPI). The survey questionnaire tools were coded on the mobile application, which were further deployed on tablets. The data collected by the team was possible in offline/ online mode. It was ensured that the data synchronization happens in real-time if the device is online. If the device is in offline mode, the synchronization happens automatically whenever the connectivity is established.

2.8. LIMITATIONS OF THE STUDY

Since this endline study was planned to conduct during the pandemic crisis of COVID-19, this led to some limitations in conducting this program. Due to COVID-19 and as per Government norms to maintain social distancing and travel restriction imposed, the study was conducted through telephonic interviews, which was initially planned through face to face interviews.

Earlier, the study was planned to involve the infrastructural assessment of anganwadi centers (AWC) through observation as it was done during baseline assessment. However, it could not be possible due to COVID-19. Out of 200 anganwadi centers assessed in the baseline study, only 27 AWCs were part of the endline survey. Moreover, questions for assessment of AWC were tweaked in such a manner that they could be asked from anganwadi worker directly to assess the current condition of AWC and identify the gaps.

Figure 2.2: Illustration of mobile data based collection



03.
AWC ASSETS AND AMENITIES

"A key pillar of the POSHAN Abhiyaan is convergence of all Nutrition related Schemes on the target population. These include programmes such as the Anganwadi Services, Pradhan Mantri Matru Vandana Yojana, Scheme for Adolescent Girls of MoWCD; Janani Suraksha Yojana (JSY), National Health Mission (NHM), Anemia Mukt Bharat, Indradhanush of MoHFW; Swachh Bharat Mission of Ministry of Drinking Water & Sanitation (MoDWS); Public Distribution System (PDS) of Ministry of Consumer Affairs, Food & Public Distribution (MoCAFP&D); Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) of Ministry of Rural Development (MoRD); Drinking Water & Toilets with Ministry of Panchayati Raj (MoPR) and Urban Local Bodies through Ministry of Housing & Urban Affairs (MoH&UA)."

- POSHAN Abhiyaan: Operational Guidelines for Convergent Action Plan

AWC assets and amenities play an important role in ICDS coverage and participation. In 2015, the *NITI Aayog* (premier policy think tank of the Government of India) had conducted a rapid assessment of AWCs across 19 States and Union Territories (UTs) and found that 41% AWCs had either shortage of space or were unsuitable whereas 13.7% did not have safe drinking water facilities. Various research studies have also found considerable inter-state and intra-state heterogeneities and gaps in AWC infrastructure including drinking water and toilet facilities (Joe and Subramanyam, 2020). These basic amenities along with essential items such as Information, Education and Communication (IEC) material, growth monitoring equipment, weighing scales, pre-school education (PSE) learning resources are necessary for ensuring quality service delivery. Lack of space within the premises for conducting physical activities such as songs and games also adversely affects the delivery of non-formal PSE. Over the years, such deficiencies in AWC infrastructure have disrupted the delivery of PSE component which is at the core of the ICDS program. Given such high relevance, Project Spotlight has directed its efforts to improve the AWC infrastructure and strengthen PSE services.

This endline evaluation attempts to understand the current situation of Anganwadi Centers following the activities of Project Spotlight. It may noted that under the project 84 AWCs were selected for full refurbishment and rest of the AWCs were selected for partial refurbishment.

Full refurbishment was carried out as per the definition below:

- Minor structural repairs and provision of shed in the absence of it
- Painting and Flooring the center- Only those centers whose wall paint has visibly peeled off or do not have paint altogether or is in inhabitable condition will be painted. Those centers identified with floor repaired.
- Weighing machines, Posters, MCPC, Modules- Only those centers where the equipment's and modules are missing will be procured and provided. The brand, content of modules, posters will be in lines provided by the government.

Partial refurbishment was carried out as per the definition below:

- Providing working tools to the AWWs which are currently missing such as weighing machine
- Information education material

Key aspects of physical infrastructure: The availability and functionality of the basic infrastructure at the AWCs as per the Government of India guidelines was reviewed.

- Civil infrastructure assessment
  - For Fully refurbished AWCs
  - For Partially refurbished AWCs
- Food handling and storage practices
  - For hot cooked food
  - For THR
- Water Sanitation and Hygiene
- Availability and Functionality of required equipment in AWCs
- Availability of IEC Material for Anganwadi Workers

The endline assessment was carried out for 197 Anganwadi centers (AWC) across 8 blocks of Palghar district of Maharashtra. Out of 197 Centers, 190 centers were located in rural and tribal areas and 7 were located in urban and semi-urban area.

To ensure the proper functioning of the AWCs, the availability of Anganwadi workers and helpers within the AWCs play a key role in ensuring quality and efficient service delivery of ICDS services to the beneficiaries. In 91.4% of AWCs both AWWs and Helpers were in place whereas, 8.6% had only AWWs in place.

3.1. STATUS OF AWC INFRASTRUCTURE

3.1.1. Civil Infrastructure assessment for fully refurbished AWCs (n=84)

Ownership and Type of Construction

The building status of AWCs was assessed to understand the ownership of the building, type of construction, and condition of all over infrastructure of the building. The status of AWC building ownership and type of construction is given in the figure 3.1.

It was observed that out of 84 fully refurbished Anganwadi centers across 3 blocks of Palghar district, 82.1% AWC were having government allocated buildings, 7.1% had community given structure and 10.7% had community constructed structure (Figure 3.1).

Overall, out of 84 fully refurbished AWCs, 13.1% of the structures were semi-pucca (roof is not of concrete), 85.7% were pucca and 1.1% were kuccha structures.

Figure 3.1: Distribution of fully refurbished AWCs as per type of Building (n=84)

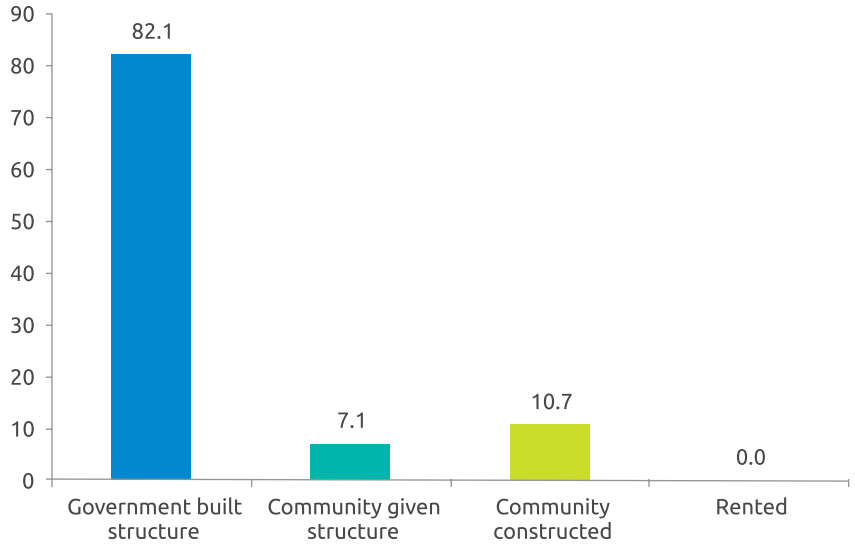
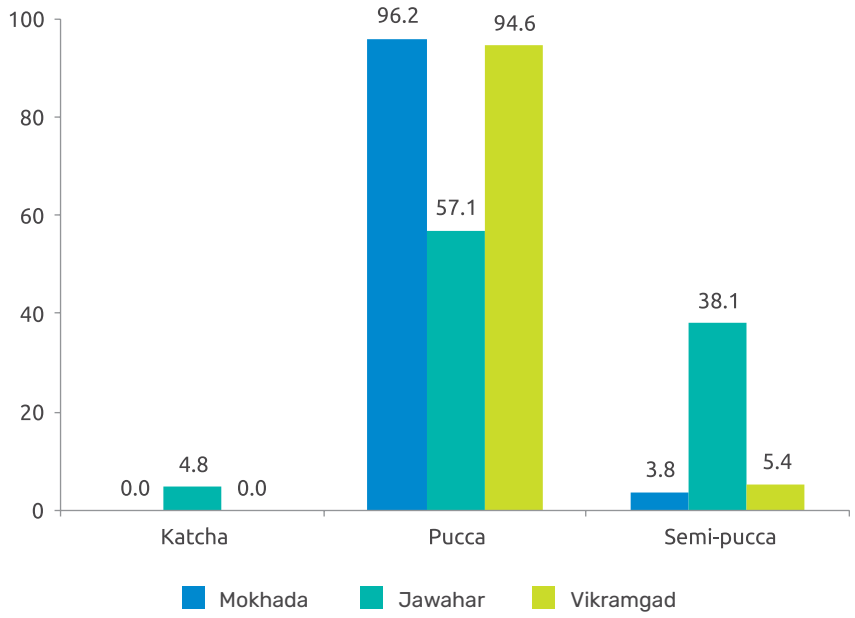


Figure 3.2: Distribution of fully refurbished AWCs as per type of construction (n=84)



Condition of AWC Building

Table 3.1: Percentage Distribution of AWCs as per condition of AWC building (BL: n=89, EL: n=84)

	Needs Major Repair		Needs Minor Repairs		Needs Demolition		New		Others	
	BL	EL	BL	EL	BL	EL	BL	EL	BL	EL
Jawahar (BL=30, EL=21)	3.3	4.8	83.3	90.5	0.0	0.0	6.7	4.8	6.7	0.0
Mokhada (BL=30, EL=26)	3.3	16.0	53.3	56.0	3.3	12.0	30.0	8.0	10.0	4.0
Vikramgad (BL=29, EL=37)	6.9	13.5	82.8	40.5	0.0	2.7	10.3	40.5	0.0	8.1
Total	8.9	22.2	73.0	57.1	1.1	4.8	15.7	21.4	5.6	4.8

Overall 21.4% of AWCs were newly constructed in the endline, whereas, in baseline 15.7% were newly constructed. 57.1% of fully refurbished AWCs needed minor repair whereas in baseline, 73% needed minor repair. However, in endline 22.2% of them needed major repair while in baseline 8.9% needed major repair.

Condition of Roof

Overall, 40.5% of AWCs had roofs in good condition with no seepage which was 37.8% at baseline. The program has provided sheds or repaired the roof of AWCs that has no shed or needed minor repair in the baseline survey. During the endline survey, 46.4% of AWCs reported seepage in roof whereas, in baseline 69.7% AWCs reported seepage. Across the three blocks, AWCs of Vikramgad have undergone maximum repair from baseline to endline survey. During baseline only 10% of AWCs reported good Condition of roof with no seepage whereas in the endline survey it showed an increment of almost 50% in the roof of AWCs.

Table 3.2: Percentage distribution of AWCs as per condition of roof (BL: n=89, EL: n=84)

	Good Condition No Seepage		Needs Another Repair		Seepage		Others	
	BL	EL	BL	EL	BL	EL	BL	EL
Jawahar (BL=30, EL=21)	16.7	33.3	6.7	4.8	76.7	61.9	0.0	0.0
Mokhada (BL=30, EL=26)	30.0	32.0	13.3	24.0	56.7	40.0	0.0	8.0
Vikramgad (BL=29, EL=37)	10.3	51.4	10.3	2.7	75.9	43.2	3.4	2.7
Total	37.8	40.5	10.1	9.5	69.7	46.4	1.1	3.6

Condition of Exterior Wall Painting

Table 3.3: Percentage Distribution of AWCs as per condition exterior wall painting (BL: n=89, EL: n=84)

	Needs Painting		Well Painted	
	BL	EL	BL	EL
Jawahar (BL=30, EL=21)	66.7	52.4	16.7	47.6
Mokhada (BL=30, EL=26)	83.3	60.0	33.3	44.0
Vikramgad (BL=29, EL=37)	96.6	40.5	3.4	59.5
Total	82.0	48.8	18.0	51.2

Attractive exterior walls of the AWC act as stimulation for the Children and motivate family members to send their children to AWCs for availing services.

In 51.2% % of fully refurbished AWCs the exterior walls were well painted which was 18% at baseline. 48.8% of AWCs needed repainting of walls in the endline whereas, 82% needed wall repainting in baseline.

Condition of Indoor Premises

Availability of good ventilation and light are critical for proper functioning of the AWCs. Similarly, bright colorful interior walls of

AWCs act as stimulation for the cognitive development of children and help children in taking interest in the activities that are being performed in AWC. In the endline, 91.7% of AWCs were well ventilated, 65.5% of AWCs were well lit which was 95.5% and 92.15 respectively at baseline. 91.7% had capacity to accommodate 40 children which was 59.6% at baseline. 39.3% needed floor repair. 54.8% needed painting of the walls whereas 84.3% needed painting in baseline. Electric meter was available in 15.5% AWCs whereas in baseline it was available in 7.9% AWCs only.

Condition of Kitchen and Food Storage

One of the critical service delivery functions of AWCs is provision of supplementary nutrition to pregnant women, Lactating mothers and Children in age group 6 months to 6 years. Thus, food handling and storage is of utmost importance in the Anganwadi center. During the assessment it was observed that for provision of hot cooked meals, food is being prepared either in AWC itself or it is supplied through self-help groups. In the endline, the AWW reported that 60 AWCs out of 84 (71.4%) had separate cooking areas where as in baseline, 21 AWCs out of 89 (23.6%) had separate areas for cooking. Moreover, AWW reported that 80.7% AWCs used LPG stove as fuel for cooking whereas in 19.3% Chulha with coal or wood was used as fuel.

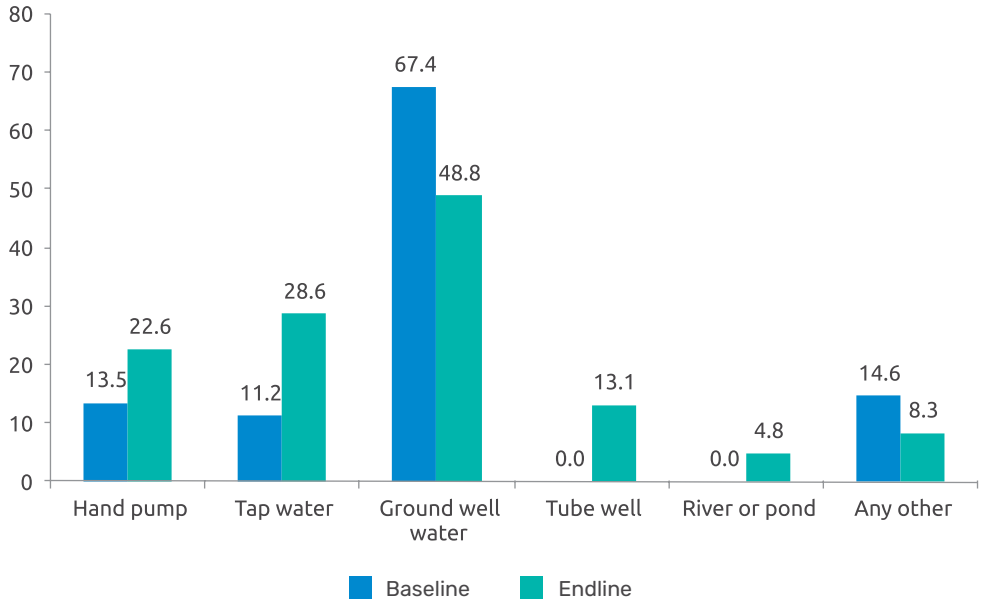
Source of Drinking Water

Main source for drinking water was ground water. Usage of handpump water and tap water has increased over the baseline. 22.62% were using hand pump water (13.4% at baseline), 28.57% tap water whereas 11.2% were using at the time of baseline assessment. 13% were using tube well water. 13% were using water for drinking from multiple sources like river or pond or any other (Figure 3.3).

Sanitary Hygiene Practices in AWCs

Sanitary hygiene practices followed in AWC are critical for the behavioral practices and infection prevention in children. The message given through AWCs to children also helps in building similar practices through families of the children. The section outlines availability of toilets in AWCs, whether they are in working condition, follow hand washing practices etc.

Figure 3.3: Percentage distribution of fully refurbished AWCs as per source of drinking water (BL: n=89, EL: n=84) (%)



Availability of Toilets, Water and Soap for Handwashing After Toilet

The toilets were available in 90.5% of AWCs which was 71.9% at baseline. Out of AWCs with available toilets, 65.8% of AWCs toilets were in working condition whereas it was only 31.5% at baseline. 68.4% had water available in the toilet which was only 23.6% at baseline and 94.7% had soap for handwashing after toilet which was 20.2% during baseline assessment. Demarcated hand washing area was available in 76 (90.5%) of AWCs, an increase of 20% from baseline (Figure 3.4).

Availability of Sitting Arrangement

Small mats and durries were available in 97.6% of AWCs which was 65.2% at baseline. Out of AWCs with available mats/durries, in 84.1% AWCs mats/durries were well maintained, in 9.8% AWCs they were dirty and in 6.1% they were torn. During the endline survey, 78.4% of AWCs had wooden chairs and tables for Anganwadi Worker.

Availability of Growth Monitoring Equipment at the AWCs

Basic function of Anganwadi center is to undertake growth monitoring of children and accordingly provide supplementary nutrition to the Children. In baseline Adult weighing machines were available in 91% out of which 83% were in working condition whereas, in endline, Adult weighing machines were available in almost all AWCs except one (98.8%) out of which 92.8% were in working condition. Weighing scale for infants was available in 89.3% AWCs (53.9% at baseline) however, 90.7% were in working condition. Salter weighing scale for children was available at 84.5% however, 94.4% were in working condition. In 90.5% AWCs height measuring tape was available.

Availability of Pre-school Education Material

One of the important service delivery functions for the children of 3-6 years of age in AWCs is pre-school education.

Figure 3.4: Distribution of fully refurbished AWCs as per availability of toilets, water and soap for hand washing (BL: n=89, EL: n=84) (%)

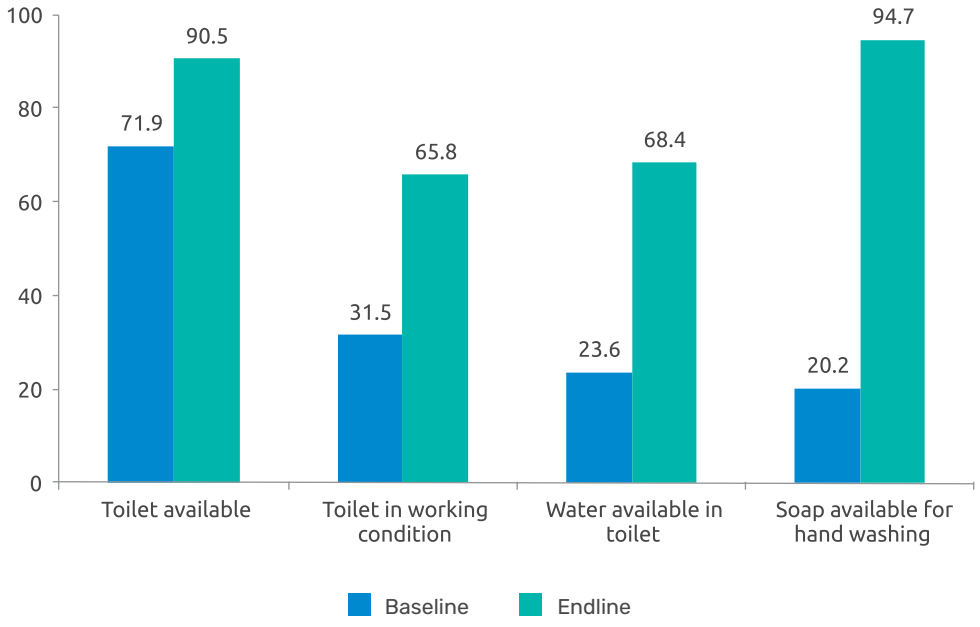
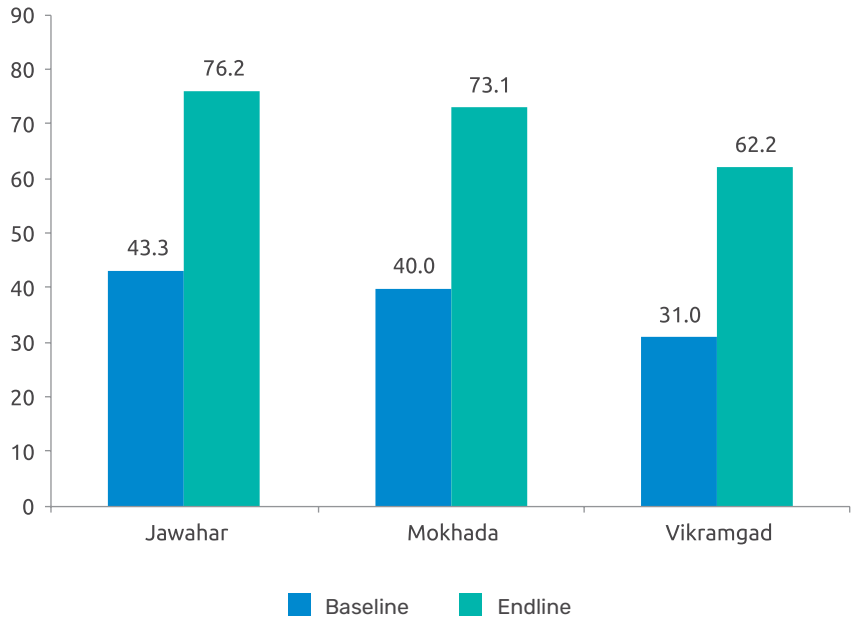


Figure 3.5: Distribution of availability of PSE kit in fully refurbished AWCs (BL=89, EL=84) (%)



Across all AWCs, Pre-school education (PSE) kit was available in 69% of AWCs, an increase of 30.9% from baseline.

Availability of Posters, IEC Material and AWW Modules

Various tools are provided to AWW to undertake counselling sessions.

Table 3.4: Distribution of fully refurbished AWCs as per availability of Posters/IEC material and AWW modules (BL: n=89, EL: n=84)

	Poster		IEC Materials		AWW Modules	
	BL	EL	BL	EL	BL	EL
Jawahar (BL=30, EL=21)	83.3	100.0	66.7	85.7	36.7	95.2
Mokhada (BL=30, EL=26)	66.7	76.9	70.0	88.5	30.0	92.3
Vikramgad (BL=29, EL=37)	72.4	91.9	44.8	89.2	51.7	97.3
Total (BL=89, EL=84)	74.2	89.3	60.7	88.1	39.3	95.2

Posters were available in 89.3% of partially refurbished AWCs whereas it was available in 74.2% of AWCs in baseline. IEC material was available in 88.1% of partially refurbished AWCs which was available in 60.7% of AWCs at baseline. AWW module was available in 95.2%of partially refurbished AWCs which was 39.3% at baseline.

3.1.2. Civil Infrastructure assessment for partially refurbished AWCs (n=113)

Ownership, Condition and Type of Construction

The building status of AWCs was assessed to understand the ownership of the building,

type of construction, and condition of all over infrastructure of the building. The status of AWC building ownership and type of construction is given in the figure 3.6.

The AWW reported that out of 113 partially refurbished Anganwadi centers, 69 AWC were having government allocated buildings, 9 were in rented buildings, 35 were community given structures and many others. The AWW reported 81.4% of the structures were Pucca, 14.2% were Semi-pucca (roof is not of concrete) and 4.4% were Kuccha structures. Out of 113 AWCs, 27.4% of AWW reported that compound wall was available in their AWCs whereas in baseline survey, 13.5% AWCs reported availability of compound wall. 9.7% of the AWCs required painting on exterior walls which was 2.7% at baseline. 64.6% of AWCs had demarcated play area for outdoor activities whereas in baseline, 29.7% had demarcated play area for outdoor activities. During the endline survey, 94.7% of AWCs were well ventilated and 68.1% of AWCs were well lit. 85.8 had capacity to accommodate 40 children which was 57% at baseline. 45.1% needed floor repair. 69.9% needed painting of the walls.

Condition of Kitchen and Food Storage

In baseline, 55% of AWCs cooked food within the premises whereas, in the endline, 96.5% of AWCs cooked food within the premises. From an indoor pollution point of view, it is important to know the type of fuel that is being used for cooking as in most of the AWCs the cooking area is located inside the AWCs. During the endline survey, 95.4% of the AWCs LPG gas stove was being used cooking fuel by AWCs which was 70.5% at baseline. Remaining AWCs used smokeless Chulha or Chulha with coal and wood or any other means for cooking food. The data reveals that 19.3% out of 109 of partially refurbished AWCs were using ground well water for cooking, 0.9% AWCs hand pump water and in 3.7% tap water was being used for cooking. Rest 28.4% of AWC were using either tap or ground well water for cooking based on availability.

Sources of Drinking Water

Main source for drinking water 35.4% out of 113 of partially refurbished AWCs was hand pump water whereas 26.5% and 20.3% were using

Figure 3.6: Distribution of partially refurbished AWCs as per type of building (n=113) (%)

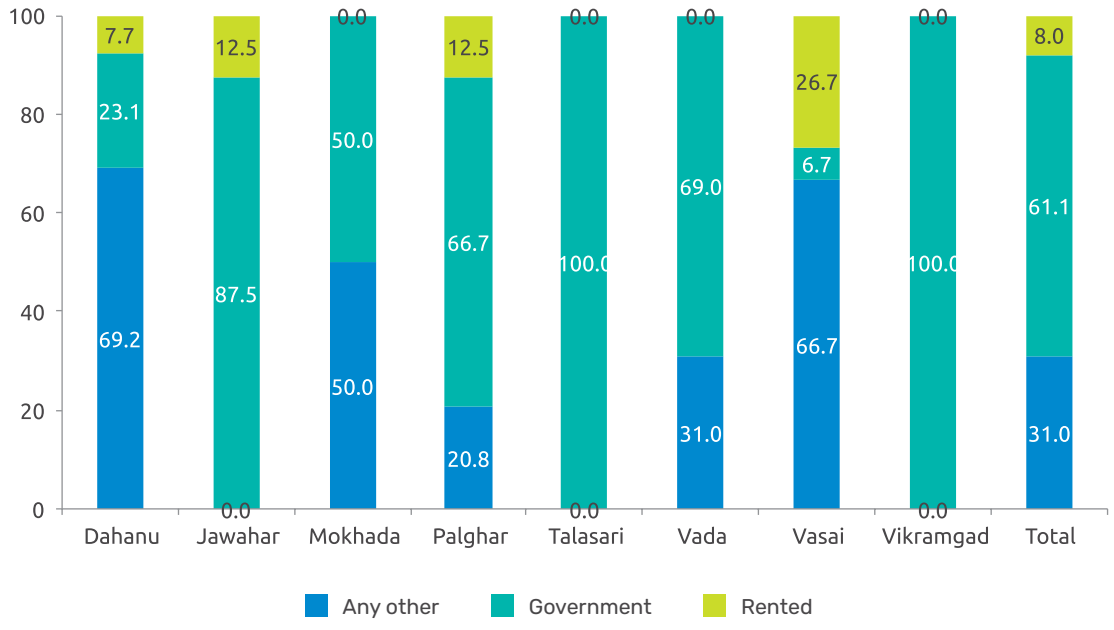


Figure 3.7: Block-wise distribution of partially refurbished AWCs as food cooked within AWCs (BL: n=111, EL: n=113) (%)

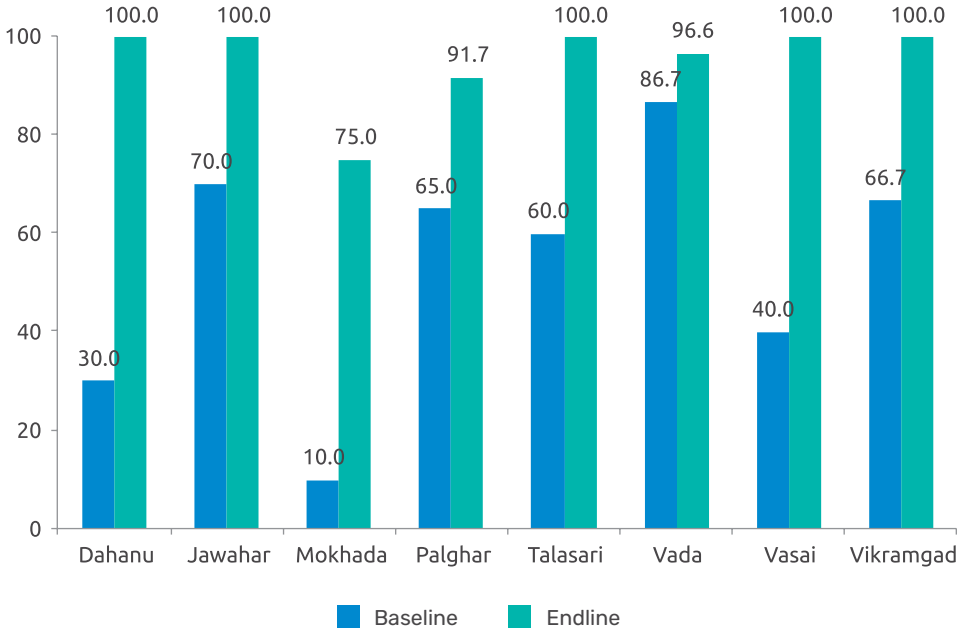
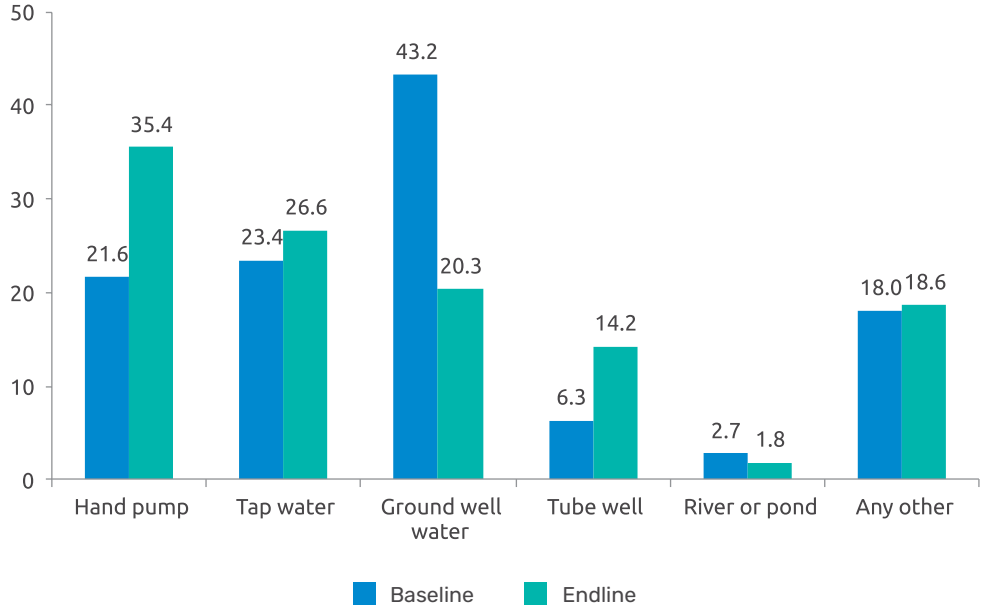


Figure 3.8: Distribution of partially refurbished AWCs as per source of drinking water (BL: n=111, EL: n=113)



tap water and ground well water respectively. 14% used tube well water and 1.7% used river or pond as source for drinking water (Figure 3.8).

Sanitary Hygiene Practices in AWCs

Sanitary hygiene practices followed in AWC for critical behavioral practices and infection prevention in children. The message given through AWCs to children also helps in building similar practices through families of the children. The section outlines availability of toilets in AWCs, whether they are in working condition, hand washing practices etc. in the AWCs. During the endline survey, the AWWs

reported that toilets were available at partially refurbished AWCs which was 64% in baseline. Out of which, 69.6% of the toilets were in working condition and 77.1% had water available in the toilet which was 31.5% at baseline. Moreover, 97.8% had soap available for handwashing which was 25.2% at baseline. Demarcated hand washing area was available in 90 (79.6%) of AWCs whereas, in baseline in 66 (59.5%) of AWCs handwashing areas were available.

Availability of Sitting Arrangement

Small mats and durries were available in 98% of AWCs which was 91% at baseline. Out of AWCs with available mats/durries, in 84.1% AWCs mats/durries were well maintained, in 9.8% AWCs they were dirty and in 6.1% they were torn. Wooden chair and table for AWW was available in 67% of the AWCs.

Availability of Growth Monitoring Equipment

Adult weighing machine was available at 95.6%; however, 88% were in working condition. In baseline, it was available in 87% of AWCs. Weighing scale for infants was available at 86.7% however, 94.9% were in working condition. In baseline, it was available only in 25.2% of AWCs Salter weighing scale for children was available in 81.4% however, 97.8% were in working condition. Height measuring tape was available in 95.6% of AWCs for partia

Availability of Pre-school Education Material

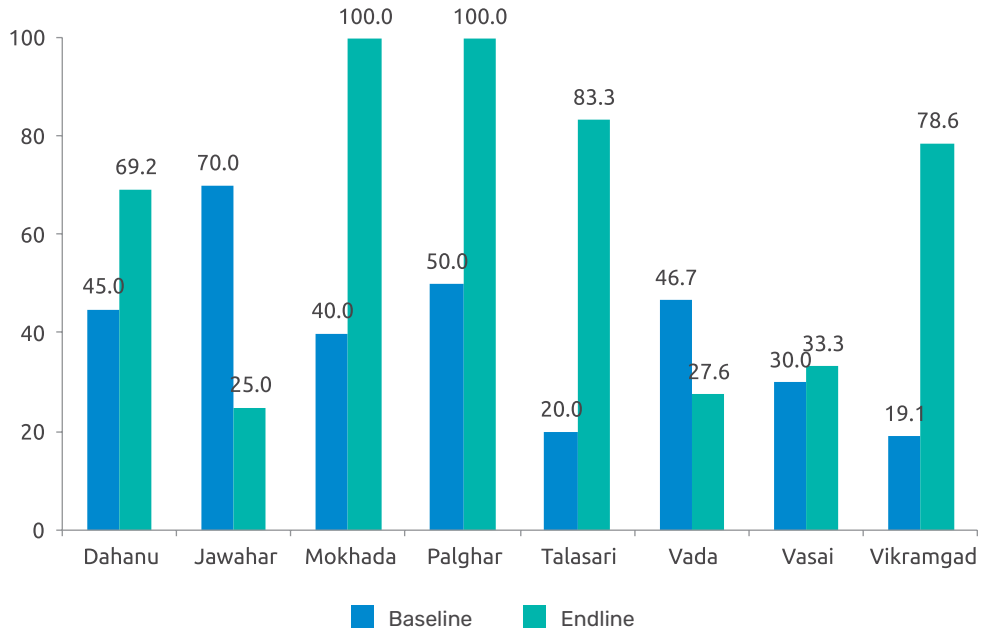
One of the important service delivery function for the children of 3-6 years of age in AWCs is pre-school education.

Around 60.2% of AWCs PSE kit was available which was 20% more than Baseline Survey. Overall availability of PSE kit was better in Mokhada and Palghar block with 100% and whereas it was poor in Jawahar (25%) block as compared to other blocks.

Availability of Posters, IEC Material and AWW Modules

Posters were available in 97.3% of partially refurbished AWCs whereas it was available in

Figure 3.9: Percentage distribution of availability of PSE kit in partially refurbished AWCs (BL: n=111 EL: n=113)



61.3% of AWCs in baseline. IEC material was available in 87.6% of partially refurbished AWCs which was available in 41.4% of AWCs at baseline. AWW module was available in 96.5% of partially refurbished AWCs which was 48.6% at baseline.

3.2. AWC INFRASTRUCTURE IMPROVEMENTS

There has been considerable improvement in the availability of various assets and amenities available with the AWCs in the project area. In particular, availability of materials distributed through the projects such as PSE kits, posters, toys and weighing scale etc has increased from baseline to endline period. A few materials such as availability of MUAC tapes and growth registers is lower in endline period. Storage area and in general availability of outdoor space for activities are areas for further action. This also suggests that full refurbishment of more AWCs should be carried to upgrade their infrastructure.

Assets and Amenities	Baseline (N=200)	Endline (N=197)	Change
Adequate storage space for toys etc.	59.5%	50.8%	-8.7%
AWW Modules	44.5%	95.9%	51.4%
Cemented or tiled floor	79.0%	70.0%	-9.0%
Clean and hygienic surroundings	65.5%	96.4%	30.9%
Compound wall or fencing	14.5%	33.5%	19.0%
Educational material (blocks etc.)	75.0%	95.4%	20.4%
Electric fan	11.0%	23.9%	12.9%
Electricity connection	15.0%	12.2%	-2.8%
Free from dangerous places (ponds, lakes etc.)	78.5%	90.4%	11.9%
Functional toilet	38.0%	57.9%	19.9%
Growth charts / registers	92.5%	85.8%	-6.7%
Low wooden chairs and tables	66.0%	71.1%	5.1%
Mats and small carpets	93.5%	98.0%	4.5%
MUAC tapes	94.0%	76.1%	-17.9%
New building	80.0%	67.0%	-13.0%
Outdoor play material	39.5%	26.9%	-12.6%
Painted exterior wall	20.0%	37.6%	17.6%
Plastered interior wall	90.0%	90.9%	0.9%
Pollution-free vicinity	70.5%	97.5%	27.0%
Posters	67.0%	93.9%	26.9%
PSE kit	39.5%	64.0%	24.5%
Pucca building	26.0%	35.5%	9.5%
Salter weighing scale for infants	38.0%	87.8%	49.8%
Shelves and racks for storage	64.0%	63.5%	-0.5%
Stadiometer	89.0%	91.9%	2.9%
Tap water for drinking	22.0%	27.4%	5.4%
Toys	24.5%	71.6%	47.1%
Weighing machine for adults	89.0%	97.0%	8.0%

3.2.1. AWC Infrastructure Index (AII)

For the development of AWC Infrastructure Index (AII), 28 items related to AWC items and amenities are selected and categorized into five domains viz.: AWC surroundings, AWC building quality, AWC basic amenities, AWC PSE amenities, and growth monitoring equipment. The domain-specific items are listed as follows: A) AWC surroundings: clean and hygienic; ponds, rivers or dangerous places nearby; sources of pollution (air, water, noise, land) nearby. B) AWC building quality: type of building (Pucca building: concrete roof and brick wall); condition of building (new construction); exterior wall colouring; compound wall or fence; outdoor play material; type of flooring (cement or tiles); cemented interior wall. C) Amenities: electricity connection; electric fan; pump or tap water; functional toilet; small mats (carpets); shelfs or racks; low wooden chair and table; growth chart and registers; adequate storage space. D) Pre-school education material: toys; educational material; PSE kit; availability of posters; availability of PSE learning modules. E) Growth monitoring equipment: weighing machine (adults); Salter weighing scale for infants; MUAC tapes; stadio-meter or height measuring tape.

The AII is constructed for AWC assets and amenities using a composite mean-gap normative based asset index defined as follows:

$$\text{Mean Gap Asset Index}_j = \frac{\sum_{i=1}^{n} a_{ij}(1-\mu_i)}{\sum_{i=1}^{n}(1-\mu_i)}$$

Where a_i is the i^{th} asset or amenity feature of the j^{th} AWC. If the j^{th} AWC has the asset or amenity feature then ai assumes a value of 1 (zero otherwise). Here, μ_i is the mean value of the i^{th} asset or amenities in the given sample of AWCs. It may be noted that the asset or amenity feature (a_i) is weighted using ($1 - \mu_i$) based on the population-level unavailability of the particular asset or amenity. In other words, an AWC having an asset or amenity which is owned by fewer AWCs (such as electricity connection) receives greater weights than an asset owned by most (such as weighing instrument for adults).

Domains for AWC Assets and Amenities	Baseline	Endline	Change
Surroundings	70.5%	92.9%	22.4%
Building quality (Physical infrastructure, kitchen, walls, roof, playground, swing)	32.2%	41.3%	9.0%
Amenities (electricity, toilet, water, fan, light, power)	35.7%	38.0%	2.3%
Pre-school amenities	43.3%	72.5%	29.2%
Growth monitoring equipment - Child	54.2%	83.2%	29.0%
Overall	40.1%	47.3%	7.2%

Overall, the AII index value registers a positive change between baseline and endline period. Major gains are noted in AWC infrastructure in terms of availability of pre-school amenities as well as growth monitoring equipment for children. For instance, on an average the pre-school amenities were available and in good status for 43% AWCs during the baseline period. However, following the Project Spotlight intervention the situation has improved and during endline 73% AWCs reported better pre-school amenities. The growth monitoring equipment also improved significantly by 29% i.e. from 54% AWCs having such equipment during baseline to 83% AWCs during endline. Physical infrastructure and building quality have also improved over the period. The AWC surroundings of the endline sample was also much better than the baseline sample.

3.2.2. AII and PSE Attendance

Finally, the status of AWC infrastructure as captured through the AII is associated with the PSE attendance during the months of April, May and June 2018 across AWCs. On a monthly basis, AWCs with better physical location (clean and hygienic surroundings, away from dangerous places (lakes etc.) and pollution-free vicinity) have over 80% attendance for PSE component. Availability of toys and learning material as well as adequate storage space for toys, shelves and racks for storage, low wooden chairs and tables also have higher attendance levels.

The mean PSE attendance across AWCs shares a positive association with AII index based on the Principal Component Analysis of the various AWC assets and amenities. The PSE attendance in AWCs in the lowest AII quintile is about 65% to 67% during April, May and June whereas the same reaches a higher level of 79% to 83% for the AWCs in highest AII quintile. The association is further examined using both ordinary least squares approach as well as multilevel-random effects model to account for inter-block variations in AWCs. The AII index based on the mean-gap asset index score finds a positive and significant association under both the approaches.

A 0.01 unit change in the mean-gap based AII score is associated with a 0.4 percentage point increase in PSE attendance in both the models (Model I and III). The AII index based on the PCA approach also finds significant infrastructure-related gradient in AWC attendance. For instance, compared to AWCs in lowest quintile of the AII, in both the models AWCs in the highest quintile are having 23% higher PSE attendance (Model II and IV). These models are also adjusted for location of the AWCs (rural or tribal) as well as the month of attendance.

The tribal area AWCs have a marginally higher attendance but the significance is inconsistent. Similarly, PSE attendance in June is marginally higher than April and May but the effects are significant only in the random-effects model. Besides, the block-level variance partition coefficients (VPC) of the random-effects model are low (2.6% and 5.2% in Model II and IV, respectively) and suggests that there are no major between-block variations in PSE attendance.

Figure 3.10: Attendance for preschool education services by AWC infrastructure index quintiles, Palghar 2018

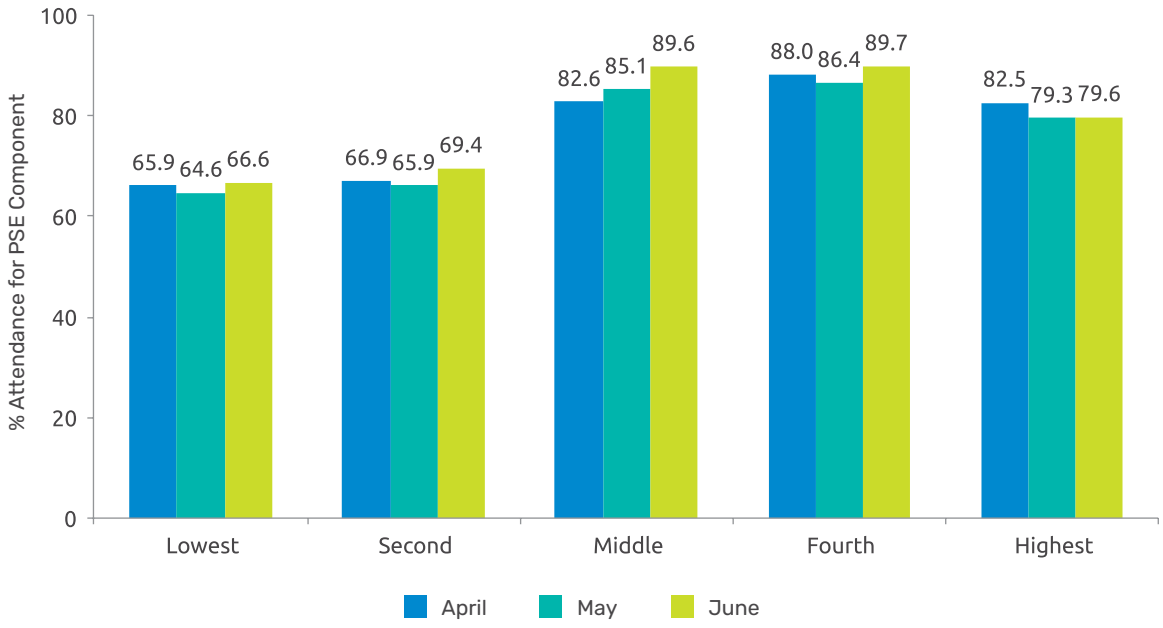


Table 3.5: Mean attendance during April, May and June by AWC assets and amenities availability status of the AWCs, Palghar, 2018

AWC Assets and Amenities	April		May		June	
	Yes	No	Yes	No	Yes	No
Clean and hygienic surroundings	82	69	80	69	83	71
Free from dangerous places (ponds, lakes etc.)	82	60	81	59	83	62
Pollution-free vicinity	80	71	79	70	82	73
Pucca building	80	76	79	75	81	78
New building	78	72	78	68	81	72
Painted exterior wall	81	76	81	75	82	78
Compound wall or fencing	81	76	81	75	85	78
Outdoor play material	78	77	76	76	78	79
Cemented or tiled floor	75	88	73	89	77	89
Plastered interior wall	77	84	76	84	78	85
Electricity connection	81	77	76	76	79	79
Electronic fan	81	77	76	76	79	79
Tap water	79	77	76	76	77	80
Functional toilet	76	78	74	78	77	80
Mats	77	75	77	72	79	80
Shelves and racks for storage	85	63	83	63	85	66
Low wooden chairs and tables	82	67	82	66	85	68
Growth charts / registers	78	66	77	67	80	71
Adequate storage space for toys etc.	84	68	82	68	85	70
Toys	83	75	80	75	82	78
Educational material (blocks etc.)	80	68	79	67	81	72
PSE kit	81	75	80	74	84	76
Posters	81	70	79	71	81	74
AWW Modules	82	73	80	73	83	76
Weighing machine for adults	76	87	76	85	78	88
Salter weighing scale for infants	75	78	75	77	77	80
MUAC tapes	77	86	76	85	79	84
Stadiometer	76	86	75	84	78	86

Table 3.6: Econometric estimates (OLS and Random-effects models) for association of PSE attendance with AWC infrastructure index (both composite score and PCA), Palghar 2018

(Dependent variable: PSE attendance)	Ordinary Least Squares (OLS)		Random effects model (2-level)	
	Model I	Model II	Model III	Model IV
All Score*100 (composite)	0.40***	–	0.41**	–
[95% CI]	[0.27; 0.53]		[0.05; 0.77]	
2nd quintile All (PCA)	–	2.5	–	1.3
		[-3.5; 8.5]		[-9.6; 9.8]
3rd quintile All (PCA)	–	19.7***	–	19.4**
		[13.7; 25.6]		[3.2; 36.3]
4th quintile All (PCA)	–	22.7***	–	22.8***
		[16.8; 28.6]		[7.8; 37.0]
5th quintile All (PCA)	–	14.9***	–	14.3**
		[8.9; 20.9]		[0.0; 27.6]
Rural AWC	-3.84	-5.8*	-4.76	-5.5
	[-10.62; 2.94]	[-12.3; 0.7]	[-13.23; 3.71]	[-13.8; 2.9]
May	-0.86	-0.9	-0.86	-0.9
	[-5.71; 3.99]	[-5.5; 3.8]	[-2.76; 1.04]	[-2.8; 1.0]
June	2.18	2.2	2.18*	2.2*
	[-2.67; 7.03]	[-2.4; 6.8]	[-0.35; 4.71]	[-0.4; 4.7]
Constant	64.8***	70.5***	64.8***	70.2***
	[55.9; 73.6]	[62.8; 78.2]	[49.2; 80.3]	[56.2; 84.3]
R-squared	0.087	0.179	–	–
VPC	–	–	2.6%	5.2%
[95% CI]			[1.0%; 7.0%]	[0.9%; 25.5%]
N	444	444	444	444

****, **, and * denotes significance at 1%, 5% and 10% level.*

"Seven key challenges for addressing undernutrition at national level are … getting nutrition on the list of priorities, and keeping it there; doing the right things; not doing the wrong things; acting at scale; reaching those in need; data-based decision-making; and building strategic and operational capacity. Interventions with proven effectiveness that are selected by countries should be rapidly implemented at scale. The period from pregnancy to 24 months of age is a crucial window of opportunity for reducing undernutrition and its adverse effects. Programme efforts, as well as monitoring and assessment, should focus on this segment of the continuum of care."

- Bryce, J., Coitinho, D., Darnton-Hill, I., Pelletier, D., Pinstrup-Andersen, P., & Maternal and Child Undernutrition Study Group. (2008). Maternal and child undernutrition: effective action at national level. The Lancet, 371(9611), 510-526.

04. ASSESSMENT OF SERVICES PROVIDED THROUGH AWCS DURING PREGNANCY

4.1. SOCIO-DEMOGRAPHIC OVERVIEW

During the endline survey, 200 mothers of 0-6 month children were telephonically interviewed across 8 blocks to understand the services they received during the antenatal period. The survey provided socio-demographic characteristics of the respondent such as age, level of education and occupational types. During the Endline survey, the highest percentage of respondents were of the 21-25 years age group and the lowest percentage of respondents were from the 15-19 years age group. The minimum age of the respondents was 17 years, and the maximum age was 46 years. This reflects that the family planning program has affected significantly in the community level, which has resulted in low early age at conception. The educational status of the respondents illustrated that the highest percentage of the respondents were those of whom attained primary level of education or above (26%) and lowest percentages of respondent has attained more than higher secondary level of education (5%). In the end line survey, the illiterate level decreased from 31.5% in baseline to 11.5% that reflected the development paradigm of the district. The occupational status of the population was largely affected by COVID-19 pandemic. During the endline survey, COVID-19 pandemic was at its peak so the daily wage labour who were working in nearby urban areas were jobless as the factories and industry remained closed to prevent occupational exposure to COVID-19. Therefore, during the endline survey, the percentage of Daily wage labourers decreased from 18.5% in baseline to 5.5%. 75% of the respondents were homemakers and 3.5% of respondents were involved in agriculture related work. Very few respondents reported having government or private jobs.

Percentage of pregnant women who delivered in Institutions increased significantly from 88% to 97% in Endline evaluation. Only 3% had their delivery either at home or transit. There was a significant difference in the place of delivery from baseline assessment. Further, logistic analysis has been done to identify the association between place of delivery and socio-demographic factors. The socio-demographic factors consist of respondent's education which was further divided into three categories for effective analysis, i.e., Illiterate, education up to middle class and more than middle class. There were two more independent variable, i.e., respondent's Occupation that was divided into two categories, i.e., housewife and others and the number of ANC visits.

The analysis shows that in the endline survey the odds ratio of institutional delivery is three times higher in comparison to baseline. Education and occupation of the respondent, however, shows no significant association with the place of delivery.

Table 4.1: Result of logistic regression showing the determinants of place of delivery

Covariates	Odds Ratio	P > z	[95% Conf. Interval]	
Respondent Education				
No Education®	1.00			
Literate with Middle Class Education	0.70	0.444	0.2847	1.7352
More than Middle Class Education	2.35	0.190	0.6551	8.4072
Study Time				
Baseline®	1.00			
Endline	3.95	0.01	1.5071	10.3760
Occupation				
Housewife®	1.00			
Others	0.70	0.394	0.3044	1.5979
ANC Visit				
Three and less than 3 visits®	1.00			
At least 4 visits	1.14	0.749	0.5054	2.5810
Pseudo R2	0.0920			
N	400			

Note: Significance level-†p<0.01, ††p<0.05, €p<0.1; ®Reference category; Model I (Dependent variable: Institutional delivery=1 otherwise=0

4.2. ICDS SERVICE UTILIZATION OVERVIEW

Table 4.2: Coverage and receipt of ICDS services and counselling by pregnant women

Key Indicators of AWC Services and Counselling	Baseline (%)	Endline (%)
Enrolment in AWC	97.5	97.5
Benefits from AWC	94.5	96.5
Supplementary nutrition from AWC	93.0	96.0
Importance of Early registration	55.0	70.0
Counselled about ANC check-up	65.0	77.5
Awareness about IFA	88.5	97.5
Counselled on IFA consumption	77.0	90.5
Informed about danger signs	52.5	66.5
Counselled on diet	81.5	83.5
Counselled on calcium	72.5	86.0
Informed about TT immunization	90.0	75.0
Informed about warning signs	58.5	67.5
Counselled on initiating breastfeeding	84.5	81.5
Counselled on exclusive breastfeeding	81.0	70.0
Counselled on personal hygiene	77.0	97.5

The coverage of ICDS services seemed to improve after the implementation of the 'Palghar Malnutrition Program'. During endline survey, the pregnant women reported that the service utilization of all AWC services has improved significantly except counselling on exclusive breastfeeding and dissemination of information about TT immunization, which has reported a significant drop. The program emphasised on providing Health and Nutrition counselling as the meals served in AWC for fortified nutrition is not sufficient for the whole day. Therefore, to provide the caloric requirements for healthy, normal weight women the women needed to be counselled on balanced equilibrium under the nutritional guidelines, which can be met the energy intakes. Therefore, the data reflected that the program has successfully achieved its one of its important objective. Among the counselling services, counselling on personal hygiene has reported the highest percentage change after the implementation of the program. Some of the least utilized services such as information about warning sign, danger sign, importance of early registration, which was reported below 55% has improved after the implementation of the program.

An increase in the percentage of ICDS services utilization was reported across the blocks. In terms of supplementary nutrition, the percentage in Dahanu, Palghar and Vasai had increased by 23%,7% and 31% respectively. Mokhada, Palghar and Talasari had shown an increase in percentage from 0% to 30%, 48% and 50% respectively in terms of referral services.

The implementation of the program has aided to improve the quality and quantity of six integrated services. The endline survey has captured self-reported service utilization satisfaction rate at an aggregate level among beneficiary group. The above figure showed that after the implementation of the program, almost 100% women were satisfied with the quality and quantity of supplementary nutrition, which were less than 85% during baseline. During baseline, less than 65% beneficiaries were satisfied with ANC quality and AWC services. While after the implementation of the program above 95% beneficiaries has reported that they were satisfied with AWC services and ANC qualities.

4.3. ASSESSMENT OF SUPPLEMENTARY NUTRITION SERVICES UTILIZATION

40.5% of beneficiaries informed that they received both hot cooked food and Take-home ration from AWCs whereas in baseline, 80.5% informed that they received both HCF and THR. 1.5% received only hot cooked food and 54% received only take-home ration which was only 6% at baseline (Figure 4.1).

4.3.1. Hot Cooked Food

Only 1.5% of mothers who received hot cooked food from AWC; 59.5% received it for 4-6 months during pregnancy. In addition, 75% of them had it daily, the percentage dropped by 21% from 96% in endline.

4.3.2. Take Home Ration

54% of pregnant women received THR from AWC out of which 58.7% received it for 4-6 months. Majority of PWs i.e., 79.89% received it monthly during pregnancy. However, it has decreased as compared to baseline. Comparatively the percentage of women who received THR for 1-3 months seems to increase from 5.7% in baseline survey to 32.1% in endline survey.

Figure 4.2 interprets the overall perception of the pregnant women on the quality of supplementary nutrition being provided by

Figure 4.1: Distribution of type of supplementary nutrition received by mothers during antenatal period (EL: n=192) (BL: n=186)

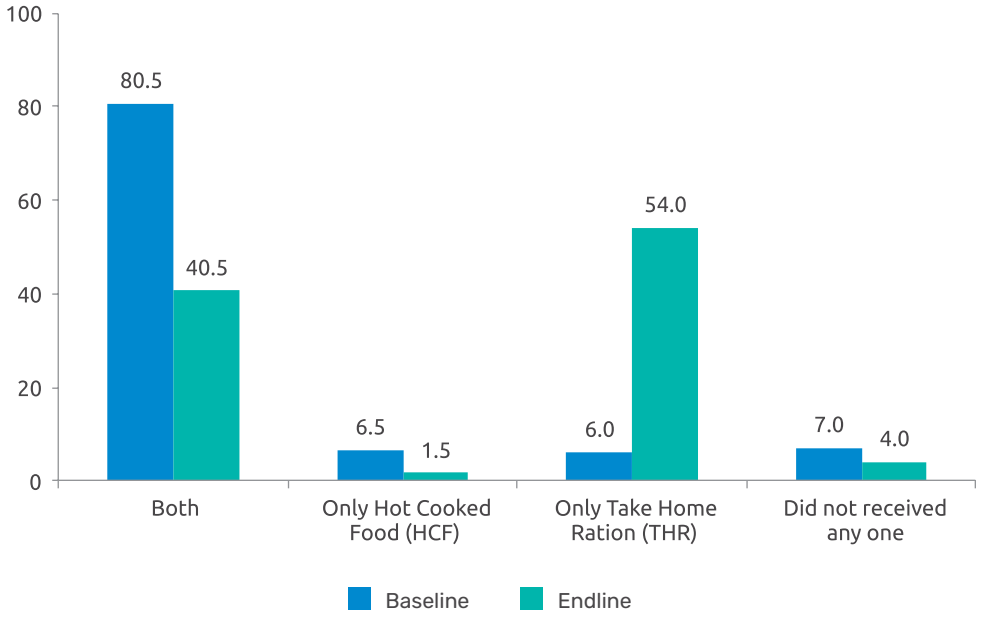
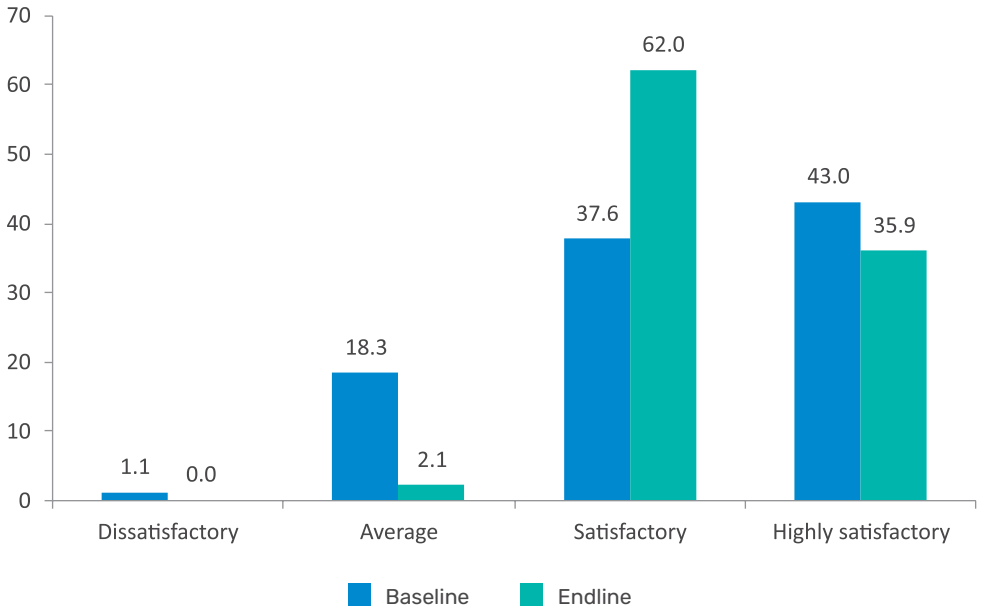


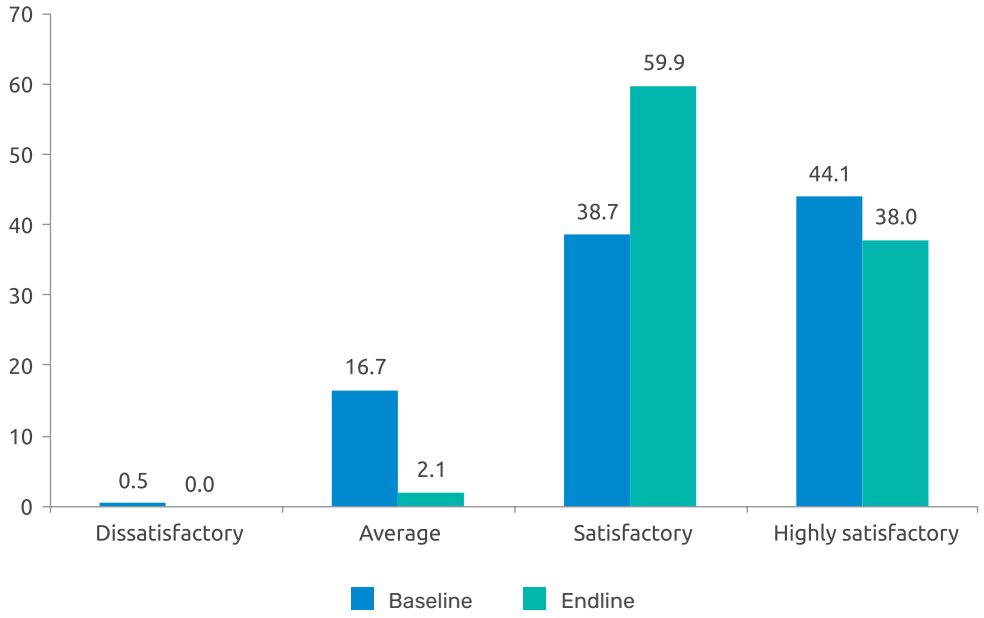
Figure 4.2: Perception of pregnant women on quality of supplementary nutrition services provided by AWC



AWC. The services received were perceived as satisfactory by majority of the pregnant women (61.9%% satisfactory services and 35.9% highly satisfactory) whereas in baseline it was 37.6% satisfactory services and 43% highly satisfactory.

Looking at the overall perception of the pregnant women on the quantity of supplementary nutrition being provided by AWC, the services received were perceived as satisfactory by majority of the women (59.9% satisfactory and 38% highly satisfactory services) (Figure 4.3).

Figure 4.3: Perception of pregnant women on quantity of supplementary nutrition services provided by AWC



4.4. ASSESSMENT OF HEALTH CHECK-UP

4.4.1. Assessment of Antenatal Care Service Utilization

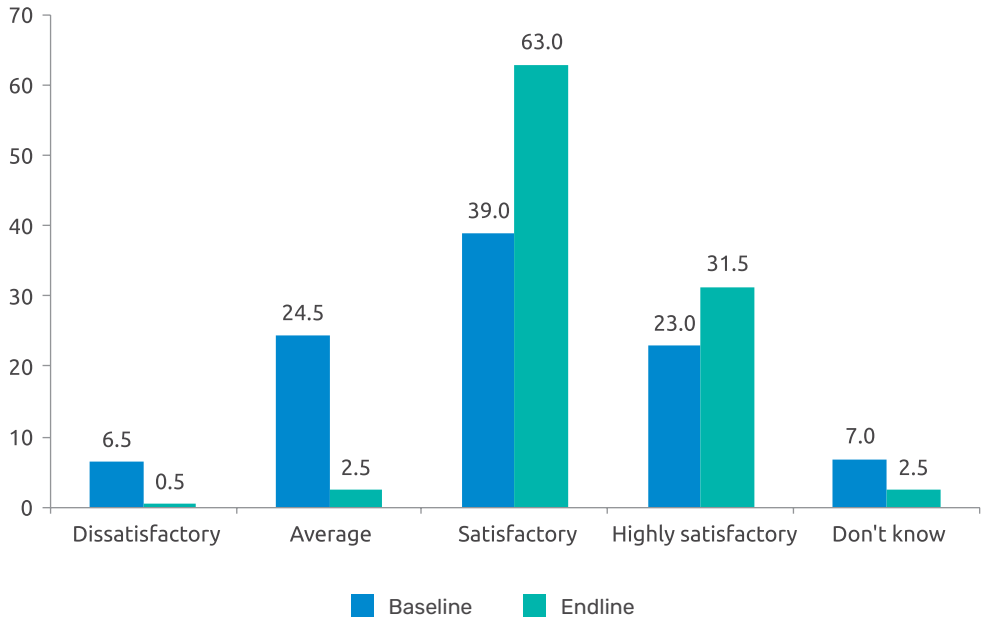
The endline survey depicts that 97.5% of pregnant women were enrolled for availing services in AWC. During the endline survey, 84.1% of respondents were enrolled in AWCs in the first trimester of pregnancy. An increase of 26.5% was reported in the endline survey in comparison to baseline survey. The survey data showed that 11.3% respondents reported re-enrolling themselves in AWCs during the second trimester of pregnancy that was 39% during baseline assessment. In the third trimester, only 1.5 % of respondents re-enrolled themselves in AWCs. Full ANC utilisation in Palghar district was inadequate and inequitable. Less than one fourth of the women receive the minimum number of recommended ANC visits. Therefore, community health workers should provide counselling on Planned Parenthood and family planning to young married couples. Broadcasting important messages related to antenatal care at relevant health and educational institutes and through mass media, may help in increasing awareness at the population level.

Figure 4.4 depicts the overall perception of the pregnant women on the health check-up services being provided by AWC, the services received were perceived as satisfactory by majority of the women (63% satisfactory services and 31.5% highly satisfactory).

4.4.2. Assessment of Health and Nutrition Education Services

One of the main objectives of ICDS is to enhance the capability of the mother to look after the normal health and nutritional needs of the child through proper nutrition and health education. Hence, it is one of the six services covered under the ICDS programme, and has been a primary component of ICDS since its inception. The service provide knowledge on basic health, nutrition, childcare and development through group counselling and one to one counselling.

Figure 4.4: Mother's perception on health check-up services by AWC



4.4.3. Counselling on IFA and Calcium Consumption

The above figures depict the counselling on consumption of IFA tablets and women who consumed complete courses of IFA during pregnancy. Out of 200 respondents, 88.5% were aware of consumption of IFA. In endline assessment, 90.5% received counselling on IFA consumption, which was 77% at baseline assessment. The endline survey shows the increase in percentage of consumption of complete courses of IFA as suggested by AWW. 95.5% completed the course of IFA as suggested by AWW, which was 76.5% in baseline assessment (Figures 4.5 and 4.6).

Figure 4.5: Women who consumed complete course of IFA during pregnancy (n=200) (%)

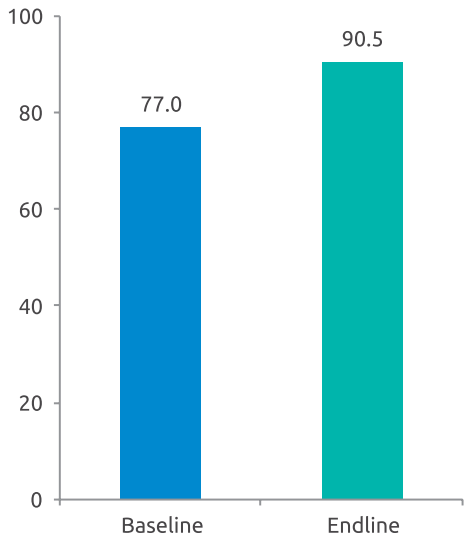
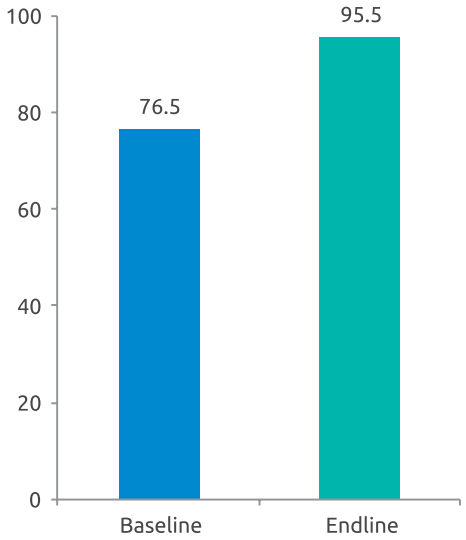


Figure 4.6: Women received counselling on IFA consumption (n=200) (%)



Counselling about consuming calcium tablets after delivery has increased from 72.5% to 86.0% when compared to baseline assessment. The end line survey shows an increase in percentage of consumption of complete courses of calcium as suggested by AWW from 72% to 93.5%.

4.4.4. Assessment of Counselling on Child Feeding Practices (IYCF)

Counselling on importance of initiating breast-feeding within one hour of birth of baby In context of initiation of breastfeeding, 81.5% women received counselling on importance of initiating breastfeeding within one hour of birth of baby whereas, in baseline 84.5% women received counselling. Moreover, the survey illustrated that 84% of the mothers received counselling for exclusively breastfeeding the baby up to 6 months of age, an increase of 3% from baseline. Out of which, 79.0% mother believes that exclusive breastfeeding helps to strengthen the immunity of the baby and 53.0% considers that it helps the baby to grow and develop properly.

Based on overall perception, 40.0% Women were highly satisfied with the health & nutrition education, counselling services being provided by AWC services, an increase of 14% from baseline study. 56.5% perceived to be satisfied with these services.

4.4.5. Assessment of Immunization Services

Immunization of pregnant women and infants protects children from six vaccine preventable diseases-poliomyelitis, diphtheria, pertussis, tetanus, tuberculosis and measles. These are major preventable causes of child mortality, disability, morbidity and related malnutrition. Immunization of pregnant women against tetanus also reduces maternal and neonatal mortality. The survey revealed that there has been an increase in the percentage of availability of MCP cards with PWs from 71% to 96.5%. 95.7% of mothers were registered during the first trimester of pregnancy that was 84.5% in baseline assessment.

Moreover, 75% of women informed that they had received counselling for TT immunization which has declined when compared with baseline (90%) and 23.0% of women were not able to recall whether they have received the counselling or not. Out of 200 respondents, 51.0% were aware about the importance of TT immunization whereas 49% were not able to recall. In addition, 41% were aware that two doses of TT immunization are required to be taken during pregnancy.

4.5. COUNSELLING SERVICES DURING PREGNANCY

One of the key components of the ICDS is to provide nutrition and health counselling to all the pregnant women. The objective of counselling activities is to create awareness and knowledge among women about various aspects of pregnancy through one to one and group counselling. Women who are pregnant are counselled on the importance of early registration of the pregnancy, diet to be consumed during pregnancy, IFA compliance and monitoring of weight gain. Support is also provided about importance of breastfeeding and identification of danger signs among both mother and child through counselling. Systematic reviews on impact of antenatal dietary advice, nutrition education and counselling with or without nutrition supplementation report significant impact on maternal and child health.

'Project Spotlight' specifically aimed at strengthening the ICDS counselling services through an array of carefully planned activities. Project activities primarily included capacity building of frontline workers by helping them

converge with other delivery stakeholders and working with communities and Panchayati Raj Institutions to generate awareness on the causes and consequences of malnutrition in their area. This section assesses the contribution of "Project Spotlight" in improving the ICDS nutrition education and counselling services by anganwadi workers. The analysis is based on data from randomly selected 40 AWCs spread across 8 administrative blocks of Palghar district in Maharashtra. A sample of 200 women each during baseline and endline are interviewed to understand their knowledge and awareness as well as experience of counselling and during their last pregnancy.

The utilization of AWC services has improved over the period as the program has emphasised on the implementation gaps of the ICDS services. As a result, the quality and quantity of the services has improved drastically after the implementation of the program. During baseline, the service utilization of referral services was around 10.5 % that has reported to improve to 49% after the implementation of the program. The data suggested during baseline counselling and health and nutrition education service utilization was 46% among pregnant women. However, after the implementation of the program the utilization of those services improved from 46% to 69% and from 46% to 77% respectively (Table 4.3).

The data shows that components such as awareness on importance of early registration needs further emphasis under the counselling services. Results are also presented regarding counselling on IFA benefit and ANC benefit during pregnancy period for reducing maternal and child mortality. Moreover, in case of counselling received on importance of postnatal checkup, a total 47% mothers received counselling on early detection of complications that was only 30% in baseline. The survey provided insight counselling improve health of mother and birth to healthy baby. Counselling on development of brain of baby as one of the benefit of consumption of IFA tablets increased from 55% at baseline to 77% in the endline survey. While counselling on reducing risk of IDA and baby growth as other two components of IFA consumption benefit also reported to improve from 62% at baseline to 68% during endline and from 43% at baseline to 51% during endline respectively (Table 4.4).

Table 4.3: Status of key ICDS services, Palghar 2018 and 2020

Key Indicators of AWC Services and Counselling	Sub-components	2018		2020	
		N	%	N	%
Services AWC	Supplementary nutrition	183	91.5	189	94.5
	Health check-ups	158	79.0	185	92.5
	Health and nutrition education	92	46.0	154	77.0
	Counselling services	92	46.0	138	69.0
	Immunization	140	70.0	151	75.5
	Referral services	21	10.5	98	49.0
	Personal hygiene	92	46.0	151	75.5
Reason for satisfaction with food quality	Adequate quantity	158	79.0	121	60.5
	Good taste of the food	40	20.0	130	65.0

Table 4.4: Status of key counselling components, Palghar 2018 and 2020

Key Components of Counselling	Sub-components	2018		2020	
		N	%	N	%
Importance of early registration	Recalling of correct date of period/expected delivery	86	43.0	78	39.0
	Early detection of complications	60	30.0	94	47.0
	Use of Safe abortion services	59	29.5	49	24.5
	Prevent neural tube defects	2	1.0	31	15.5
ANC benefits	Improves health of mother	124	62.0	130	65.0
	Birth to healthy baby	117	58.5	95	47.5
IFA benefits	Early detection and treat of complications	20	10.0	70	35.0
	Development of brain of baby	111	55.5	154	77.0
	Reduced risk of IDA	125	62.5	137	68.5
	Fetal growth	86	43.0	103	51.5

Based on the baseline and endline data, the logistic regression based odds of coverage of various ICDS services, including counselling components, during pregnancy is assessed. Compared to baseline, the likelihood of utilization of various counselling services was significantly higher during the endline period. For instance, counselling on importance of early registration (OR: 2.07; 95% CI: 1.23; 3.49), ANC check-up (OR: 2.11; 95% CI: 121; 3.70), IFA awareness (OR: 6.36; 95% CI: 2.01; 20.12), counselling on IFA consumption (OR: 3.56; 95% CI: 1.72; 7.38) and counselling on calcium intake (OR: 2.14; 95% CI: 1.13; 4.05) was significantly higher during the endline period. Nevertheless, no significant change was noted for aspects such as awareness on danger signs and warning signs during pregnancy or in newborn and also diet counselling by pregnant women. The likelihood of utilization of services like information about TT immunization, counselling on initiating and exclusive breastfeeding was significantly low among pregnant women.

Figure 4.7 shows that after the implementation of the program, 98% women were satisfied with the quality and quantity of supplementary nutrition, which were less than 85% during baseline. During baseline, less than 65% beneficiaries were satisfied with ANC quality and AWC services. While after the implementation of the program above 95% beneficiaries has reported that they were satisfied with AWC services and ANC qualities.

Table 4.7 presents the results of ordered logit model. Results indicate that the odds of greater use of services and recalling about counselling are higher for those who have complete more than primary education and have a higher household income. The gradient is not strong when the same model is run for 2020 indicating that dissemination of information is reaching everyone. Also, compared to baseline, most of the beneficiaries have higher chances of recalling the various AWW counselling components.

Table 4.6: Logistic regression based odds ratio of coverage of various services post-intervention, Palghar 2018 and 2020

Key Indicators of AWC Services and Counselling	Odds Ratio (2020 vs 2018)	95% CI	N
Importance of Early registration	2.07**	[1.23,3.49]	400
Counselled about ANC check-up	2.11**	[1.21,3.70]	400
Awareness about IFA	6.36**	[2.01,20.12]	400
Counselled on IFA consumption	3.56***	[1.72,7.38]	377
Informed about danger signs during pregnancy	1.59	[0.95,2.67]	400
Counselled on diet	1.36	[0.70,2.65]	400
Counselled on calcium	2.14*	[1.13,4.05]	400
Informed about TT immunization	0.21***	[0.10,0.44]	400
Informed about warning signs among newborn	1.22	[0.73,2.04]	400
Counselled on initiating breastfeeding	0.36**	[0.18,0.73]	400
Counselled on exclusive breastfeeding	0.46*	[0.26,0.84]	400
Counselled on personal hygiene	14.57***	[5.04,42.10]	377

Note: The Odds Ratio compares the chances of service uptake in 2020 with reference with 2018. The model is adjusted for socioeconomic correlates such as age, education and income.

****, ** and * denotes significance at 1%, 5% and 10% level.*

Figure 4.7: Percentage satisfied with quality of services during pregnancy, Palghar (2018 and 2020)

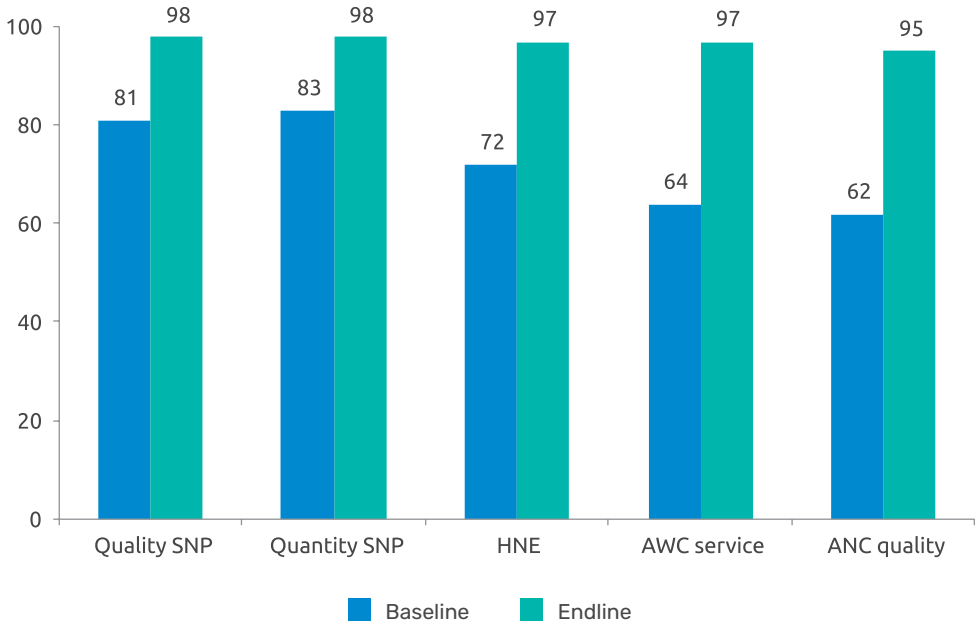


Table 4.7: Ordered logit model based odds ratio for greater use of ICDS services and recalling AWW counselling, Palghar (2018 and 2020) Table 6: Multilevel model random slope, odds ratio dietary diversity, Palghar, 2020

	2018	2020	Pooled
Education level			
Up to Primary	1	1	1
	–	–	–
Above Primary	1.39	1.21	1.3
	[0.66,2.90]	[0.60,2.43]	[0.80,2.12]
Below Poverty Line			
APL	1	1	1
	–	–	–
BPL	0.82	0.44	0.66
	[0.25,2.69]	[0.14,1.33]	[0.30,1.47]
DNK	0.58	0.17*	0.4
	[0.14,2.36]	[0.03,0.87]	[0.14,1.12]
Employed			
Not employed	1	1	1
	–	–	–
Employed	1.66	2.79*	1.84*
	[0.87,3.16]	[1.14,6.83]	[1.10,3.05]
Income categories			
0	1	1	1
	–	–	–
1	1.57	0.65	1.32
	[0.72,3.44]	[0.16,2.67]	[0.68,2.55]
2	1.53	1.2	1.82
	[0.56,4.23]	[0.33,4.41]	[0.90,3.68]
3	3.88*	0.36	2.44
	[1.21,12.44]	[0.04,2.97]	[0.92,6.42]
4	2.24	1.37	2.27*
	[0.86,5.85]	[0.34,5.45]	[1.10,4.68]
Period			
2018			1
2020			4.00***
			[2.27,7.05]
N	200	200	400

****, ** and * denotes significance at 1%, 5% and 10% level.*

“Breastfeeding is one of the foundations of child health, development and survival. It is especially important where diarrhoea, pneumonia and undernutrition are common causes of mortality in children under 5 years of age. Breastfeeding also helps to reduce overweight and obesity and protects maternal health in all parts of the world. For these reasons, the World Health Organization (WHO) recommends that breastfeeding should be initiated within the first hour after birth and that infants should exclusively breastfeed for the first 6 months; complementary foods should then be introduced with continued breastfeeding until 24 months of age or older”

- Bryce, J., Coitinho, D., Darnton-Hill, I., Pelletier, D., Pinstrup-Andersen, P., & Maternal and Child Undernutrition Study Group. (2008). Maternal and child undernutrition: effective action at national level. The Lancet, 371(9611), 510-526.

05. ASSESSMENT OF SERVICES PROVIDED THROUGH AWCS FOR LACTATING MOTHERS

5.1. SOCIO-DEMOGRAPHIC OVERVIEW

During the endline survey, 200 mothers of 6 month children were telephonically interviewed across 8 blocks to understand the services they received during the postnatal period. The survey provided socio-demographic characteristics of the respondent such as age, level of education and occupational types. During the Endline survey, 51% of respondents were of the 20-24 years age group followed by 36% of respondents were from the 25-29 years age group. The educational status of the respondents illustrated that the highest percentage of the respondents were those of whom attained primary level of education or above (25%) and lowest percentages of respondent has attained more than higher secondary level of education (6%). In the end line survey, the illiterate level decreased from 35% in baseline to 10% that reflected the development paradigm of the district. During the endline survey, 82.5% of mothers were home makers whereas in baseline we observed, 43.5% were home makers. With regards to distribution of lactating women based on type of ration card, 72.5% had BPL ration card which was 76.5% at baseline while 12.0% of mothers had no information about the card.

Table 5.1: Coverage and receipt of ICDS services and counselling by lactating mothers

Key Indicators of AWC Services and Counselling	Baseline		Endline	
	N	%	N	%
Enrolment in AWC	197	98.5	197	98.5
Benefits from AWC	195	97.5	197	98.5
Supplementary nutrition from AWC	194	97.0	197	98.5
Importance of PNC	106	53.0	148	74.0
Awareness about IFA	131	65.5	186	93.0
Counselled on IFA consumption	117	58.5	188	94.0
Informed about danger signs	95	47.5	146	73.0
Counselled on diet	142	71.0	169	84.5
Counselled on calcium consumption	131	65.5	193	96.5
Counselled on initiating breastfeeding	169	84.5	195	97.5
Counselled on exclusive breastfeeding	162	81.0	188	94.0

5.2. ICDS SERVICE UTILIZATION OVERVIEW

The coverage of ICDS services seemed to improve after the implementation of the 'Palghar Malnutrition Program'. During endline survey, the lactating women reported that the service utilization of all AWC services has improved significantly. Among the counselling services, counselling on calcium consumption, initiating breastfeeding, excluding breastfeeding and IFA consumption has reported to improve after the implementation of the program. Some of the least utilized services such as information about danger sign, importance of PNC, which was reported below 55% has improved significantly after the implementation of the program.

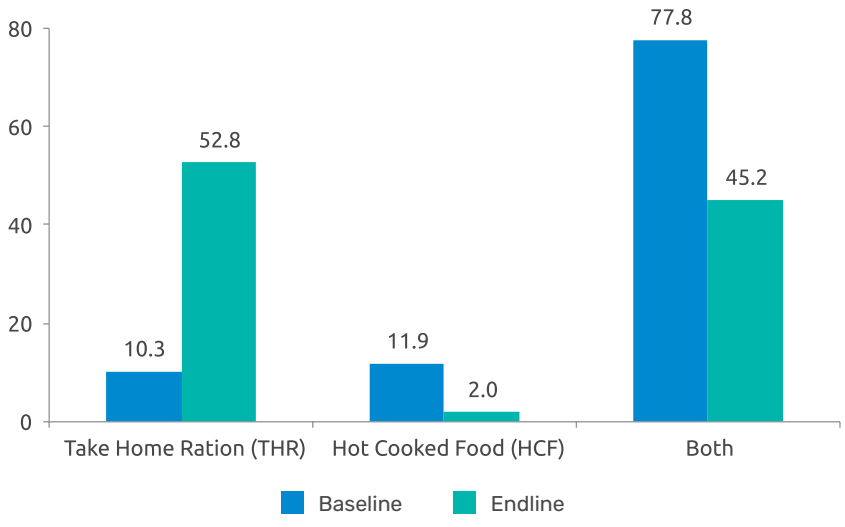
The data presented that supplementary nutrition services were received by 98.5% of mothers whereas 1.5% of mothers did not receive any services. Percentage of the women receiving Health checkups and Health and Nutrition Education services has increased during endline assessment. In the endline survey data revealed that percentage of mother receiving health and nutrition services from AWC has increased from 38% to 78.7% and referral services availed from AWC has increased from 5.6% to 57.9%.

5.3. ASSESSMENT OF SUPPLEMENTARY NUTRITION SERVICES UTILIZATION

The daily diet of a lactating woman should contain an additional 350 calories. Some micronutrients are specially required in extra amounts during these physiological periods. The mother as well as the growing foetus needs iron to meet the high demands of erythropoiesis (RBC formation). Calcium is essential, both during pregnancy and lactation, for proper formation of bones and teeth of the offspring, for secretion of breast-milk rich in calcium and to prevent osteoporosis in the mother.

Similarly, iodine intake ensures proper mental health of the growing foetus and infant. Vitamin A is required during lactation to improve child survival. Besides these, nutrients like vitamins B 12 and C need to be taken by the lactating mother. Comparative study revealed that the percentage of mothers availing Supplementary food services from AWC has increased from 97.5% to 98.5%. There were no significant changes on the benefits received by lactating women. *(p=0.47)*

Figure 5.1: Distribution of type of supplementary nutrition received by lactating women (%) (n=197)



Out of 200 mothers interviewed 197 informed that they received supplementary nutrition services from AWCs. 45.2% received services in both forms whereas in baseline 77.8% received in both forms. 52.8% received only Take-home Ration from AWC which was 10.3% at baseline and 2% received only Hot Cooked food (HCF) (Figure 5.1).

5.3.1. Hot Cooked Food

Out of total women receiving HCF only 32.5% received for 4-6 months however, 53% did not receive the HCF at all. 77.4% out of these women received Hot Cooked Meals on a daily basis whereas in baseline, 91.4% received HCF on a daily basis.

5.3.2. Take Home Ration

Compared to Hot Cooked Meals, 66.5% of the women received Take Home Ration from AWC in 4-6 months whereas in baseline 78% received THR in 4-6 months and around 79.27% of the women received the THR on a monthly basis which has decreased from baseline (96.5%).

Figure 5.2 interprets the overall perception of the lactating women on the quality of supplementary nutrition being provided by AWC. The services received were perceived as satisfactory by the majority of the lactating women (57% satisfactory services and 37.5% highly satisfactory).

Looking at the overall perception of the lactating women on the quantity of supplementary nutrition being provided by AWC, the services received were perceived as satisfactory by majority of the women (57% satisfactory and 36% highly satisfactory services) (Figure 5.3).

It is important to note here that even though the supply of the hot cooked meals and take-home ration was consistent, only 6% of the women perceived it as average. The overall issue with the supplementary nutrition services remains not with the availability of the hot cooked meal or Take-Home Ration but with the quality and quality of the food being supplied by AWC.

5.4. ASSESSMENT OF HEALTH CHECK-UP SERVICE UTILIZATION

During the endline survey 98% of women in Palghar District reported that ANM/ ASHA/

Figure 5.2: Lactating women's perception on quality of food (n=197)

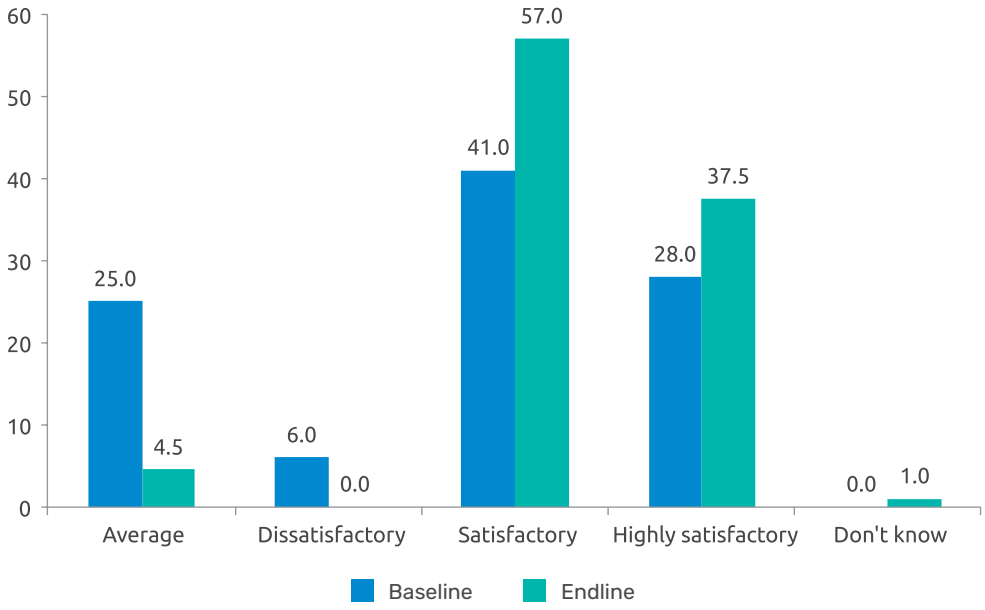
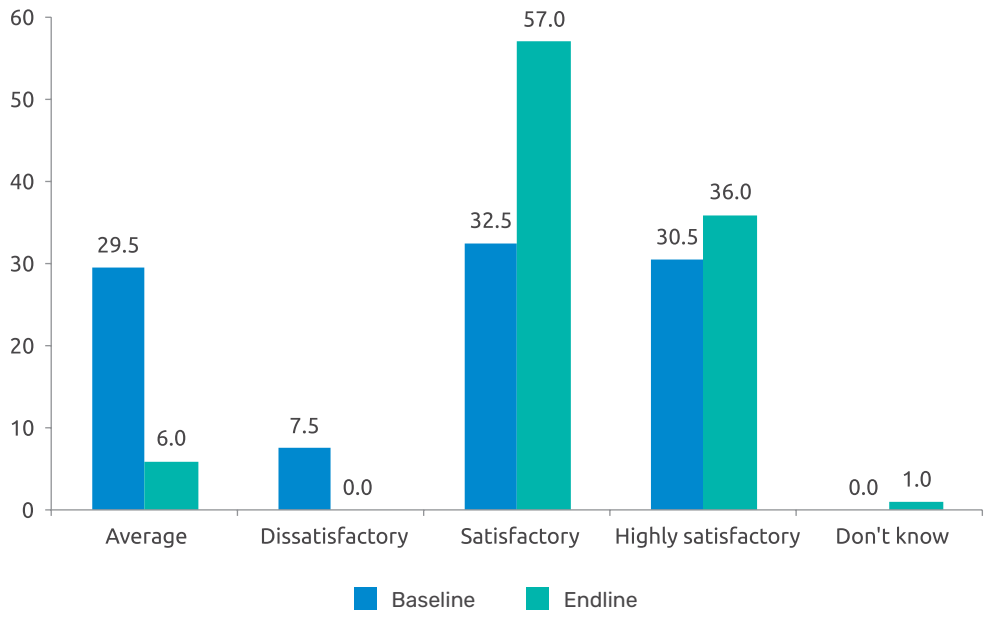


Figure 5.3: Lactating women's perception on quantity of food (n=197)



AWW has visited their home to provide post-natal care. Comparative study reveals that the percentage of visits by AWW/ANM/ASHA after delivery has increased by 16%. 62% were visited more than 3 times by ANM/AWW/ASHA.

Looking at the overall perception of the lactating women on the health check-up services being provided by AWC, the services received were perceived as satisfactory by majority of the women (65% satisfactory services and 32.5% highly satisfactory) (Figure 5.4).

5.5. ASSESSMENT OF HEALTH AND NUTRITION EDUCATION SERVICES UTILIZATION

In figure 5.5, It is important to note that though AWW are supposed to counsel all the lactating women on the importance of health and nutrition services, only 70.3% were counselled on the early detection of complications during postnatal period by AWW and 67.6% were counselled on initiation of complementary feeding to the baby.

In case of counselling received on importance of Postnatal checkup, a total of 53% mothers received counselling on importance of postnatal checkup while endline survey shows that a total of 74% of mothers received counselling on importance of postnatal checkup, which is 21% increase over the baseline. While 8% did not receive any kind of counselling, 18% said they were not aware about such counselling services under Endline assessment.

Counselling services received on diet intake during 6 months after delivery increased from 71% to 84% when compared with baseline assessment. Also, there was an increase in percentage of change in the meal frequency pattern post counselling, from 62.5% at the baseline to 94.6% in the endline survey.

The survey provided insight on knowledge about consuming IFA tablets and counselling on consumption of IFA tablets for six months after delivery. In endline assessment, 93% of mothers were aware that consumption of IFA supplementation is important during delivery, an increase of 28% from baseline assessment. Counselling on consumption of IFA tablets

Figure 5.4: Lactating women's perception on health check-up services by AWC (%)

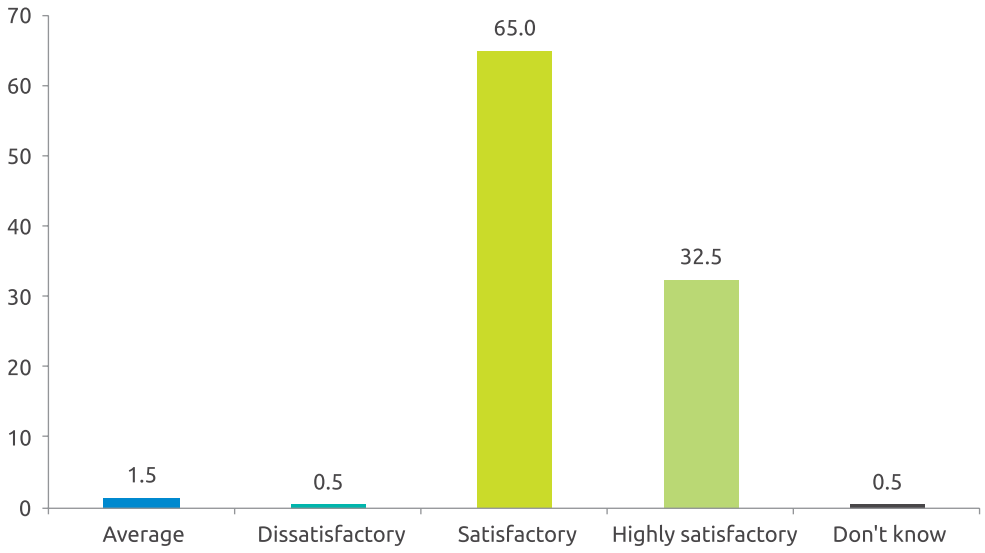
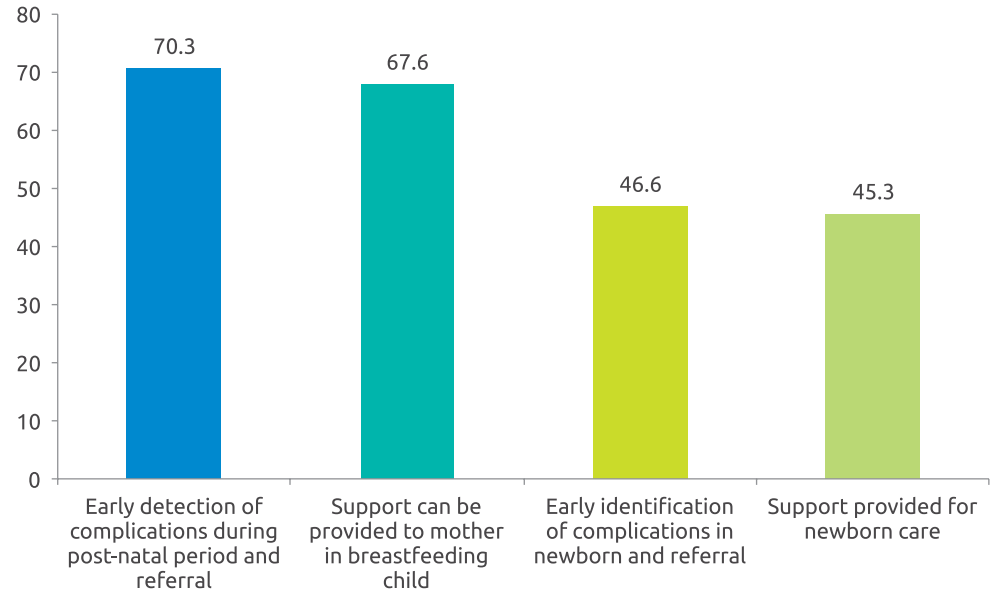


Figure 5.5: Counselling services received by lactating women (n=148)



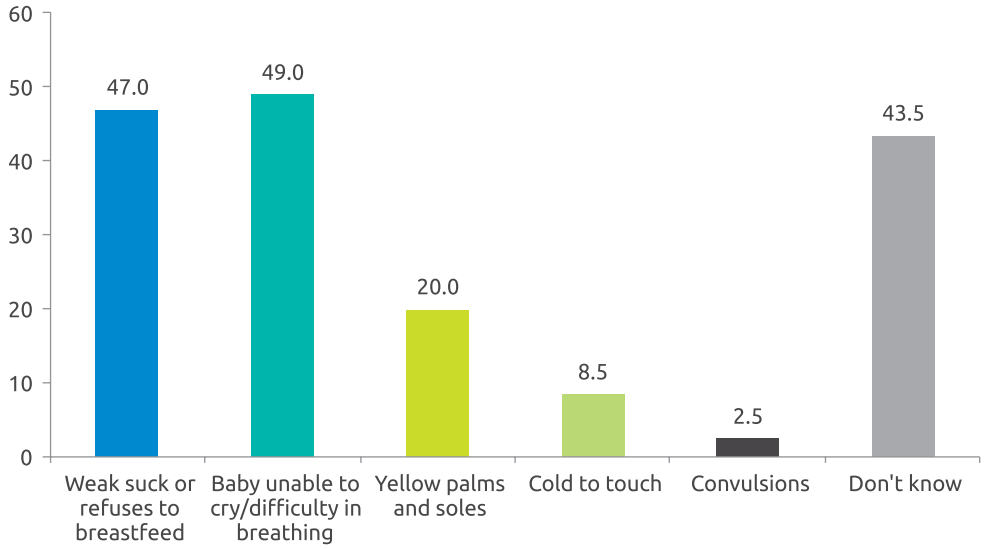
for six months post-delivery increased from 58.5% at baseline to 94% in the endline survey. Moreover, the data illustrated that 86.5% of lactating mothers completed the course of IFA as suggested by AWW which was 52.5% in baseline assessment.

Counseling about consuming calcium tablets after delivery has increased from 65.5% to 96.5% when compared to baseline assessment.

The end line survey shows the increase in percentage of consumption of complete course of calcium as suggested by AWW. 86% had completed the course of calcium, a 36% increase from baseline assessment. 1% of the women had not received the calcium tablets.

Figure 5.6 reveals the knowledge amongst lactating women about danger signs for new-born and young children. 49% knew about the

Figure 5.6: Knowledge amongst lactating women about danger signs for newborn and young child



difficulty in crying/ breathing and weak suck or refused breastfeed as the danger sign in babies. However, 43.5% women did not know about any danger signs for newborn and young children.

5.6. ASSESSMENT OF COUNSELLING ON CHILD FEEDING PRACTICES (IYCF)

5.6.1. Counselling on Initiation of Breastfeeding within 1 Hour of Birth

Comparative study reveals that counselling about initiation of breastfeeding within 1 hour of birth has increased from 84.5% at baseline to 97.5% at endline. There was an increase in the percentage of time of initiation of breastfeeding after birth of the baby from 84% to 95% at endline assessment.

5.6.2. Counselling on Exclusive Breastfeeding up to 6 Months

94% of mothers were counselled about exclusive breastfeeding up to 6 months, a 13% increase from baseline assessment. However, a parallel increase in the percentage of mothers who exclusively breastfed their child was not observed. In the endline, 86.9% of mothers exclusively breastfed their child for 6 months and above whereas in baseline, 92% of the mothers informed that they exclusively breastfed their child for 6 or more than 6 months. 13.1% of mothers exclusively breastfed their child for less than 6 months which was 9% at baseline. There was a significant difference in the counselling about the exclusive breastfeeding of the baby from baseline. Furthermore, 80.4% of the women were aware about the importance of exclusive breastfeeding as it helps to strengthen the immunity of the baby.

5.6.3. Counselling on Initiation of Compulsory Food to Baby

The endline data illustrated that 63.5% of the lactating women received counselling on initiation of complementary food to the baby whereas, in baseline 96% of the lactating women received counselling. 83% of the lactating women reported that they had initiated complimentary food to the baby at 6 months of age, which was 86% at baseline. This shows that the program requires focusing on increasing awareness of initiation of complementary food to the baby.

Figure 5.7: Perception of lactating women on health and nutrition education and counselling services in the last six months after delivery (n=166)

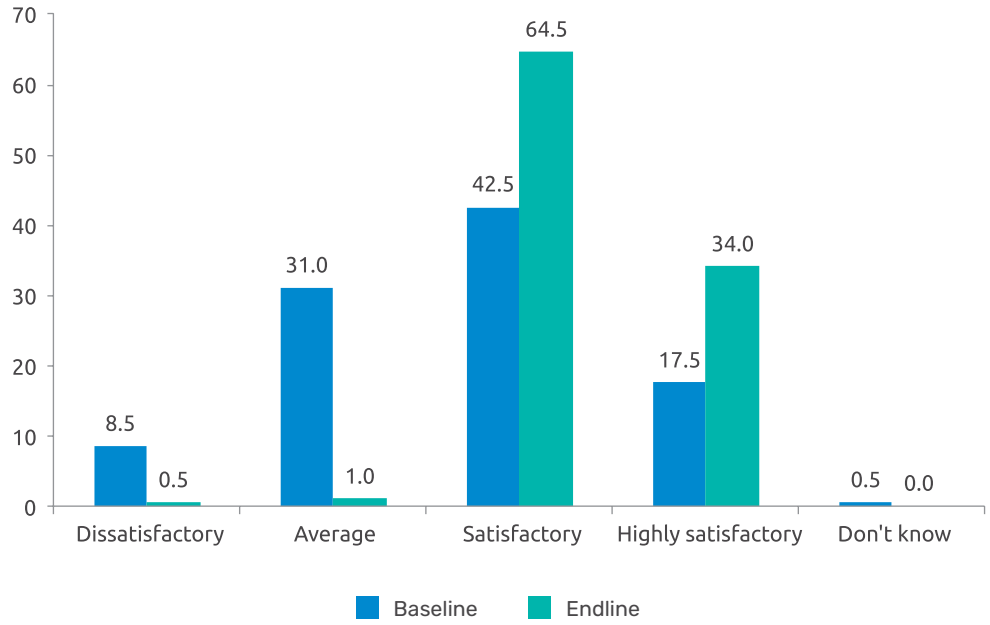


Figure 5.7 depicts that 64.5% mothers were satisfied with health and nutrition and counselling services in the last six months after delivery which was 42.5% in baseline assessment. 34% mothers were highly satisfied with the services provided by AWC.

Counselling during the postpartum period to increase awareness about issues such as diet, danger/warning signs and health check-ups is crucial for maternal and child health. Counselling on maternal diet and weight gain during post pregnancy is a useful intervention to support healthy maternal diet and weight gain. Studies have shown that the postpartum period can be an opportune time to provide resources and motivation for dietary changes because women are more likely to follow-up with doctor's on issues related to health and nutrition. Not many have assessed the impact of nutrition education and counselling services on improving ICDS service utilization among lactating mother. This section aims to assess the performance of Project Spotlight in improving the ICDS service utilization among lactating mothers. The analysis is based on data from randomly selected 40 AWCs spread across 8 administrative blocks of Palghar district in Maharashtra. As sample of 200 lactating mothers each with children aged 6 to 12 months were interviewed during baseline and endline survey.

During endline survey, the ICDS service utilization by lactating mothers has improved significantly. Among the counselling services, counselling on calcium consumption, initiating breastfeeding, excluding breastfeeding and IFA consumption has improved after the implementation of the program. Some of the least utilized services such as information about danger sign, importance of PNC, which was reported below 55% has improved significantly during endline. Percentage of lactating mothers receiving health check ups and Health and Nutrition Education services has increased during endline assessment. In the endline survey data revealed that percentage of mothers receiving health and nutrition services from AWC has increased from 38% to 78.7% and referral services availed from AWC has increased from 5.6% to 57.9%.

Table 5.1: Coverage and receipt of ICDS services and counselling by lactating mothers, Palghar, 2018 and 2020

Key Indicators of AWC Services and Counselling	2018		2020	
	N	%	N	%
Enrolment in AWC	197	98.5	197	98.5
Benefits from AWC	195	97.5	197	98.5
Supplementary nutrition from AWC	194	97.0	197	98.5
Importance of PNC	106	53.0	148	74.0
Awareness about IFA	131	65.5	186	93.0
Counselled on IFA consumption	117	58.5	188	94.0
Informed about danger signs	95	47.5	146	73.0
Counselled on diet	142	71.0	169	84.5
Counselled on calcium consumption	131	65.5	193	96.5
Counselled on initiating breastfeeding	169	84.5	195	97.5
Counselled on exclusive breastfeeding	162	81.0	188	94.0

Table 5.2: Logistic regression based odds ratio of coverage of counselling services post-intervention, Palghar 2018 and 2020

Key Indicators of Counselling	Odds Ratio (2020 vs 2018)	95% CI	N
Importance of PNC	3.77***	[2.21,6.42]	400
Awareness about IFA	7.68***	[3.79,15.56]	400
Counselled on IFA consumption	14.40***	[6.84,30.30]	371
Informed about danger signs	4.00***	[2.39,6.67]	400
Counselled on diet	2.23**	[1.23,4.07]	400
Counselled on calcium consumption	17.28***	[7.17,41.67]	400
Counselled on exclusive breastfeeding	4.00***	[1.82,8.79]	400

Note: The Odds Ratio compares the chances of service uptake in 2020 with reference with 2018. The model is adjusted for socioeconomic correlates such as age, education and income.

****, ** and * denotes significance at 1%, 5% and 10% level.*

The paper estimated the odds of coverage of various services by lactating women post intervention. In endline, compared to baseline, the likelihood of utilization of various counselling services was significantly higher among lactating women. Such as counselling on importance of PNC was (OR: 3.77; 95% CI: 2.21; 6.42), awareness about IFA (OR: 7.68; 95% CI: 3.79; 15.56), counselling on IFA consumption (OR: 14.40; 95% CI: 6.84; 30.30), counselling on initiating breastfeeding (OR: 8.95; 95% CI: 2.92; 27.41) and counselling on calcium counselling (OR: 17.28; 95% CI: 7.17; 41.67).

Table 5.3: Status of key ICDS services for lactating mothers, Palghar 2018 and 2020

Key Indicators of AWC Services and Counselling	Sub-components	2018		2020	
		N	%	N	%
Services AWC	Supplementary nutrition	190	95.0	194	97.0
	Health check-ups	146	73.0	187	93.5
	Health and nutrition education	74	37.0	155	77.5
	Counselling services	73	36.5	150	75.0
	Immunization	139	69.5	170	85.0
	Referral services	11	5.5	114	57.0
	Personal hygiene	89	44.5	138	69.0
Reason for satisfaction with food quality	Adequate quantity	160	80.0	128	64.0
	Good taste of the food	168	84.0	119	59.5

Table 5.4: Status of key counselling components among lactating mothers, Palghar 2018 and 2020

Key Components of Counselling	Sub-components	2018		2020	
		N	%	N	%
Importance of PNC check up	Early detection of complications	63	31.5	104	52.0
	Support to mother in breastfeeding child	82	41.0	100	50.0
	Early identification of complications	37	18.5	69	34.5
IFA benefits	Blood loss recovery	132	66.0	144	72.0
	Regenerate the body iron stores	82	41.0	111	55.5
	Baby growth	83	41.5	97	48.5

The utilization of AWC services has improved over the period of time as the program has emphasised on the implementation gaps of the ICDS services. As a result, the quality and quantity of the services has improved after the implementation of the program. During baseline, the service utilization of referral services was around 5.5% that has reported to improve to 57% after the implementation of the program. The data suggested during baseline counselling and health and nutrition education service utilization was low among lactating women. However, after the implementation of the program the utilization of those services improved from 36% to 75% and from 37% to 77% respectively. Moreover, in case of counselling received on importance of postnatal checkup, a total of 52% mothers received counselling on early detection of complications and 50% in endline which was only 31% in baseline. In addition, 50% mothers received support in breastfeeding child and 34% mothers received counselling on early identification of complications during endline. Both the services reported to improve after the implementation of the program. The survey provided insight

counselling on consumption of IFA tablets for six months after delivery. Counselling on Blood loss recovery as one of the benefit of consumption of IFA tablets increased from 66% at baseline to 72% in the endline survey. While counselling on regenerate the body iron stores and baby growth as other two components of IFA consumption benefit also reported to improve from 41% at baseline to 55% and 48% during endline respectively.

Table 5.5: Ordered logit model based odds ratio for greater use of ICDS services and recalling AWW counselling, Palghar (2018 and 2020)

	2018	2020	Pooled
Education level			
Up to Primary	1.00	1.00	1.00
	-	-	-
Above Primary	1.27	1.53	1.3
	[0.60,2.70]	[0.74,3.14]	[0.78,2.18]
Below Poverty Line			
APL	1.00	1.00	1.00
	-	-	-
BPL	0.83	3.12	1.61
	[0.27,2.53]	[0.99,9.79]	[0.74,3.47]
DNK	0.6	0.36	0.59
	[0.16,2.24]	[0.09,1.34]	[0.23,1.48]
Employed			
Not employed	1.00	1.00	1.00
	-	-	-
Employed	1.84	1.19	1.47
	[0.97,3.51]	[0.43,3.30]	[0.87,2.47]
Income categories			
0	1.00	1.00	1.00
	-	-	-
1	2.14	0.91	1.53
	[0.97,4.72]	[0.33,2.51]	[0.83,2.84]
2	2.62	2.16	3.38**
	[0.62,11.05]	[0.69,6.78]	[1.37,8.34]
3	3.95**	0.95	2.15*
	[1.53,10.22]	[0.33,2.73]	[1.08,4.29]
4	2.58*	0.64	1.62
	[1.00,6.61]	[0.19,2.10]	[0.79,3.33]
Period			
2018			1.00
2020			5.21***
			[2.97,9.16]
N	200	200	400

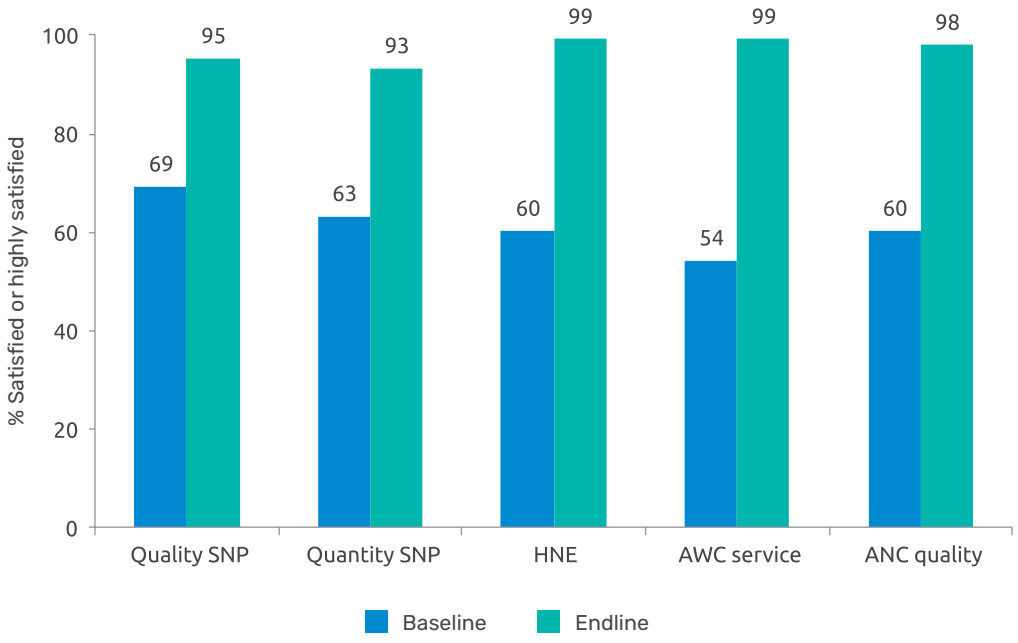
****, ** and * denotes significance at 1%, 5% and 10% level.*

Table 5 presents the results of ordered logit model indicate that the odds of use of services and recalling about counselling are higher for those who have complete more than primary education and have a higher household income. The gradient for income is not strong when the model is run for 2020. Also, women from BPL category are more likely to use the services. During the endline the use of services and recalling of counselling is much higher than the baseline period.

Beneficiary Satisfaction

The implementation of the program has aided to improve the quality and quantity of six integrated services. The endline survey has captured self-reported service utilization satisfaction rate at an aggregate level among beneficiary group. The figure showed that after the implementation of the program, 95% lactating women were satisfied with the quality and quantity of supplementary nutrition, which were less than 69% during baseline. During baseline, less than 60% beneficiaries were satisfied with ANC quality and AWC services. While after the implementation of the program above 98% beneficiaries has reported that they were satisfied with AWC services and ANC qualities (Figure 5.8).

Figure 5.8: Satisfaction among lactating mothers with quality and quantity of ICDS services, Palghar, 2018 and 2020



06. ASSESSMENT OF SERVICES PROVIDED THROUGH AWCS FOR 6-36 MONTHS OLD CHILDREN

"Early childhood care is the care provided to a young child in an integrated and holistic manner, with the rights perspective, leading to his/ her survival, growth, development and protection, through child centered, family focused and community based interventions"

- National Institute of Public Cooperation and Child Development (2006): Handbook of Anganwadi Workers

6.1. INTRODUCTION

Nutrition is a core pillar of human development and concrete; large-scale programming not only can reduce the burden of undernutrition and deprivation in countries but also can advance the progress of nations. Programmatic evidence around the world strongly suggests that reduction of child undernutrition can be achieved through improvement in women's nutrition before and during pregnancy, early and exclusive breastfeeding and good quality compulsory feeding for infants and young children with appropriate micronutrient intervention. According to NFHS-4, children from scheduled tribes have the poorest nutritional status on almost every measure and the high prevalence of wasting in this group is of particular concern.

Wasting and stunting are widely used indices for describing the prevalence of malnutrition in children in between 6 to 36 months of age. Stunting or short height for age and wasting or low weight for length/ height are important public health indicators. Stunting, or low height for age, is caused by long-term insufficient nutrient intake and frequent infections. Stunting generally occurs before age two, and effects are largely irreversible. These include delayed motor development, impaired cognitive function and poor school performance. Nearly one third of children under five in the developing world are stunted. Stunting and wasting were presented in series as distant problems, for example contributing separately to mortality and burden of diseases. These two forms of

malnutrition are closely related; often occur together in the same populations and often in the same children. Wasting and stunting are both associated with increased mortality, especially when both are present in the same child. Preschool children constitute the most vulnerable segment of any community. Their nutritional status is a sensitive indicator of community health and nutrition. Poor early nutrition leads to poor school readiness and performance, resulting in fewer years of schooling, reduced productivity. Thus, poverty, undernutrition, and ill-health are passed on from generation to generation. Undernutrition impedes economic progress in all developing countries. Therefore, the key objective of this chapter is to assess the knowledge, attitude and practices among caretakers including mothers of young children regarding nutrition related practices and services.

6.2. SOCIO-DEMOGRAPHIC AND ECONOMIC OVERVIEW

To assess the services provided to children between 6-36 months children, a total 120 mothers of children between age group 6-36 months were interviewed. The block wise distribution of the number of beneficiaries interviewed were almost similar to that were in baseline evaluation. The study covered 120 children of age 6-36 months in baseline. In baseline assessment the highest percentage (33.3%) of children were in the age group of 19-23 months and lowest (11.7%) belongs to the age group of 6-12 months. Whereas in endline assessment, the age group 19-23 months covers the maximum children (50.8%). Out of 120 respondents, 66.7% respondents belong to poor household economic status. There was a significant increase in institutional deliveries from the baseline survey (87.5%) to endline survey (99.17%).

Endline evaluation shows among all the mothers, 94.2% mothers were aware of the services available at AWC and 83.3% enrolled in the first trimester at AWC for availing the services.

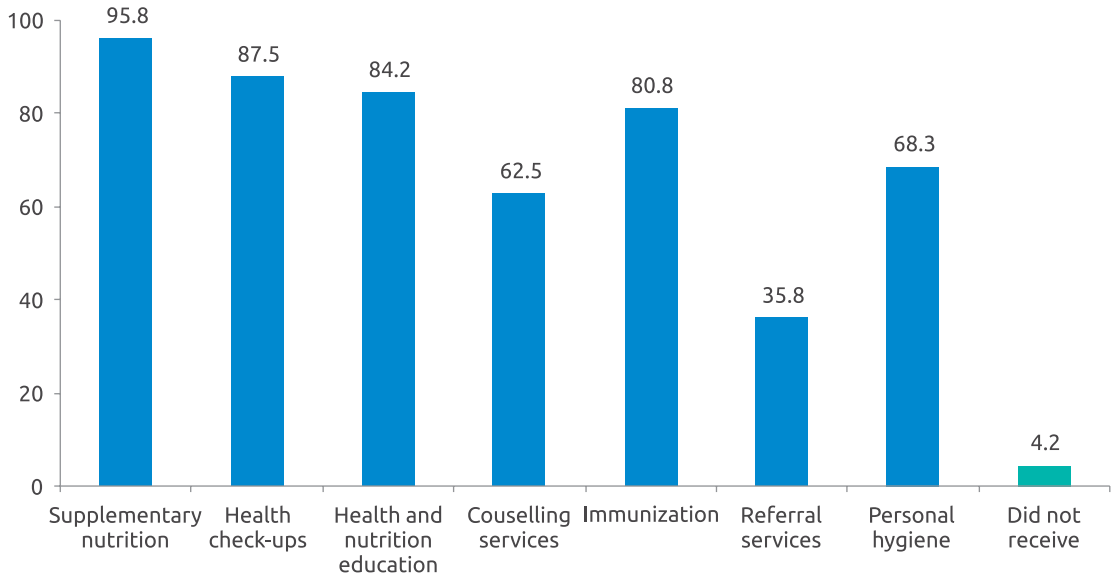
Endline evaluation shows that during endline a drop in enrolment was observed among children aged 6-36 months. However, mothers reported that services like counselling on breastfeed has increased after the implementation of the program.

Among the types of services that are provided by AWC to mothers, 95.8% were receiving supplementary nutrition, health check-ups and

Table 6.1: Utilization of ICDS services among children 6-36 months

Key Indicators of AWC Services and Counselling	Baseline		Endline	
	N	%	N	%
Enrolled at AWC (6-36 months)	119	99.2	116	96.7
Availing services offered by AWCs (6-36 months)	119	99.2	115	99.1
Receiving supplementary nutrition at AWC (6-36 months)	119	99.2	116	96.7
Counselled on initiating breast feeding within 1 hr of birth (6-36 months)	104	86.7	109	90.8
Counselled on exclusive breast feeding up to 6 months (6-36 months)	96	80.0	116	96.7
Counselled on when to start giving food other than breast milk (6-36 months)	110	91.7	116	96.7

Figure 6.1: Type of ICDS services received during pregnancy from AWC (n=120)



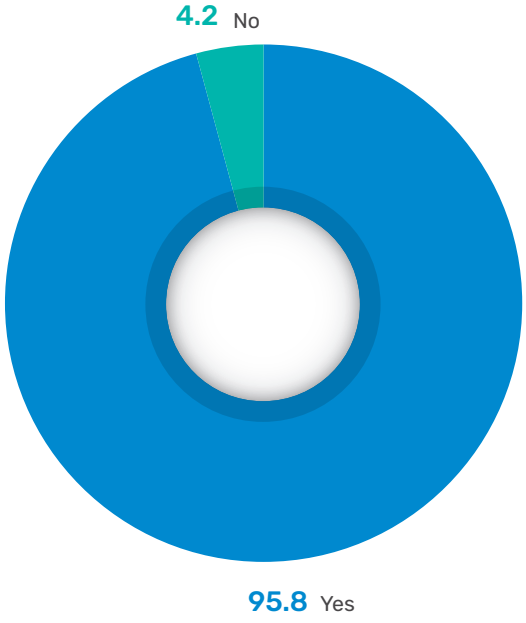
Health and nutrition education were 87.5% and 84.2% respectively and counselling services was received by 62.5% (Figure 6.1).

Overall study across different blocks reveals that mostly mothers are aware of services like supplementary nutrition being available at AWC. More than 70% of mothers from all blocks had knowledge about health check-ups services being provided by AWC except Dahanu where only 30% of mothers are aware. About enrolment, 100% of the children were enrolled in AWC in both Baseline and Endline assessment.

7.2.1. Assessment of Health and Nutrition Education Services Provided by AWC

Comparative study reveals that almost all services which children were availing from AWC has increased like percentage of children getting supplementary nutrition form AWC has increased from 96.7% to 100%, treatment of common childhood and referral services increased from 22.5% to 38.3% except growth monitoring services where slight decline has been observed; 84.2% to 83.3%.

Figure 6.2: Percentage of mother who received supplementary nutrition during pregnancy from the AWC (N=120)



In the case of supplementary nutrition received, 95.8% of mothers of 6-36 months children received it during pregnancy (Figure 6.2).

Figure 6.3: Percentage of mother who received take home ration during the first six months after child was born (N=120)

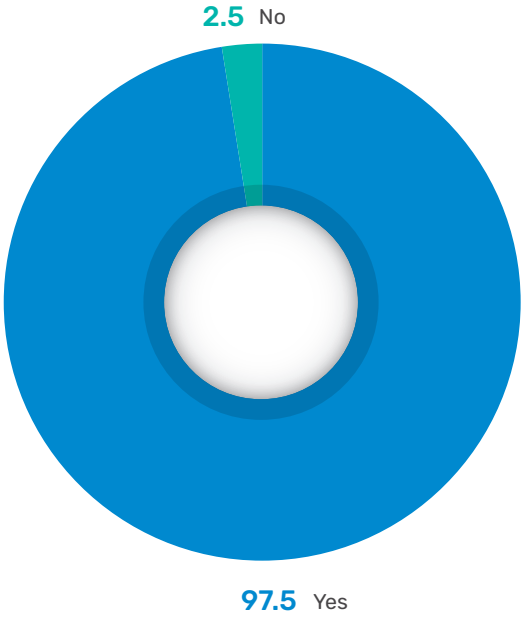
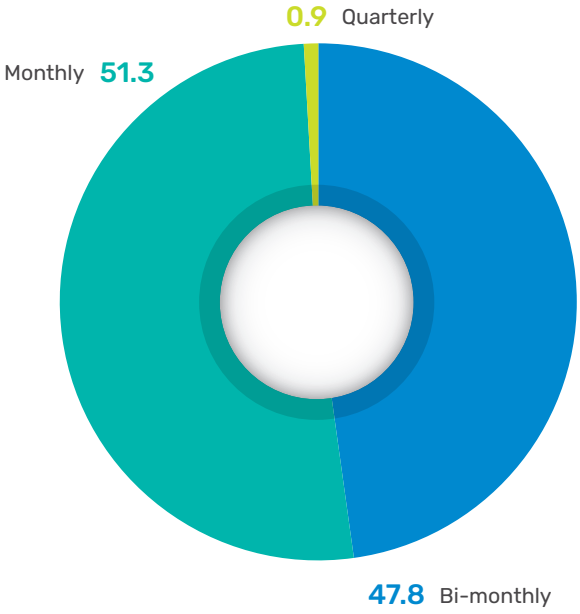
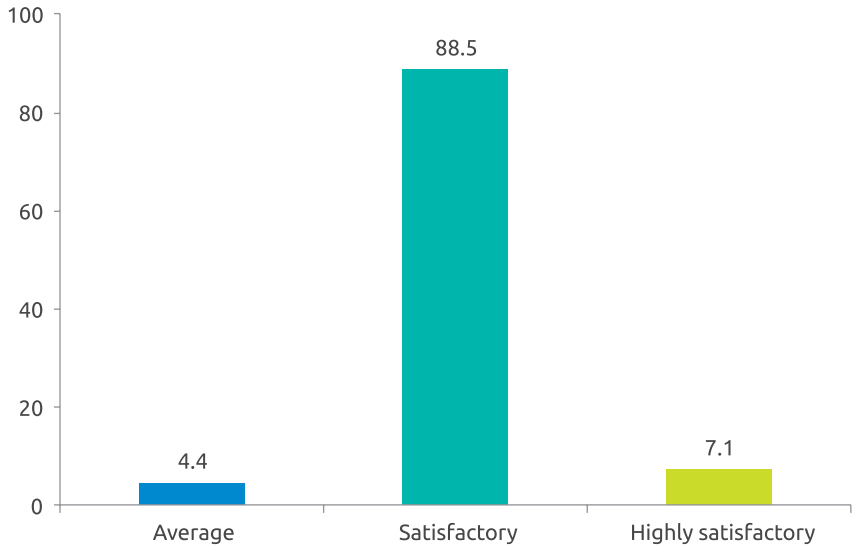


Figure 6.4: Frequency of take-home ration received by mothers of 6-36 months children during pregnancy (N=120)



97.5% mothers received during the first six months after the child was delivered. While 51.3 % of mothers received the take home ration on a monthly basis whereas, 47.8% received bi-monthly and 0.9% received it quarterly (Figures 6.3 and 6.4).

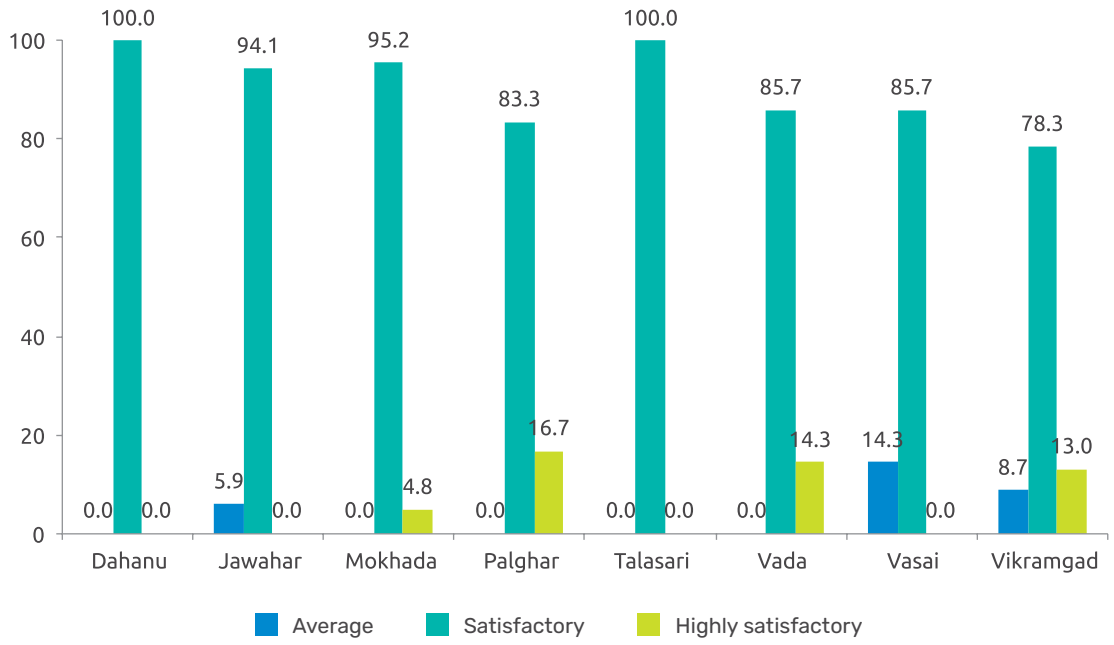
Figure 6.5: Perception of mothers on quality of supplementary nutrition services provided by AWC (n=120)



Around 88.5% of mothers were satisfied with the quality of supplementary nutrition received from AWC (Figure 6.5).

Based on the overall perception of the women on the quality and quantity of the food, it can be stated that Dahanu and Talasari has the

Figure 6.6: Block wise perception of mothers on quality of supplementary nutrition services provided by AWC (n=120)



highest satisfaction rate (100% satisfied) with the quality of the food being provided by AWC (Figure 6.6).

6.2.2. Awareness About Health Check-up During and After Pregnancy

With regard to awareness about antenatal check-up service, overall 86.7% of mothers were aware about the importance of ANC during pregnancy whereas 75% of mothers were about the benefits of post-natal check-ups.

84.2% mothers received counselling about Importance of ANC check-ups during pregnancy. Similarly, 89.2% were counselled on the importance of health checkups post-delivery.

6.2.3. Assessment of Counselling Services for Your Last Child on Infant and Young Child Feeding (IYCF) Practice

With regard to time of initiation of breastfeeding to baby after birth, the graph depicts that there is considerable increase in the practice of feeding the baby within 1 hour of birth from baseline survey (73.3%) to endline survey (92.5%).

The percentage of women who breastfed the baby exclusively for 6 months has also increased from 80% in baseline survey to 96.7% in endline survey.

Comparative study reveals that 96.7% of the women were counselled by AWW when to initiate complementary feeding to the baby which was 5.1% more than that in Baseline. There was an increase in the percentage of mothers who initiated the complementary feeding at 6 months from 48.3% to 64.2% in endline assessment.

6.2.4. Assessment of Immunization Services Provided by AWC

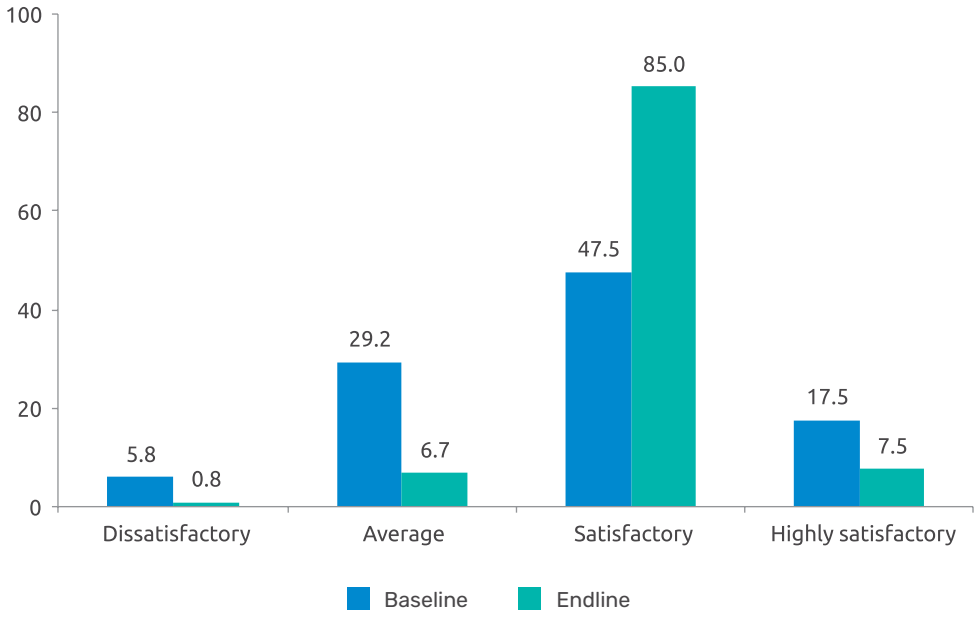
Out of 120 mothers interviewed 69.2% were aware about TT immunization during pregnancy and 79.2% were counselled about the importance of TT immunization during pregnancy from AWW. Only 30% of the mothers knew about the correct dose required for TT immunization while 28% were not aware about the same. The percentage of children getting Bi-annual vitamin A supplementation has decreased from 83.3% to 76.7%. The reason for decrease could be inability to recall during telephonic survey by the mothers since the percentage of respondents who were not aware whether the children had got Vitamin-A supplementation has increased to 22.5%. Study revealed that the percentage of children who received full immunization as per their age has reported a slight increase in endline (93.3%) from baseline (92.5%).

6.2.5. Assessment of Growth Monitoring Services Provided by AWC

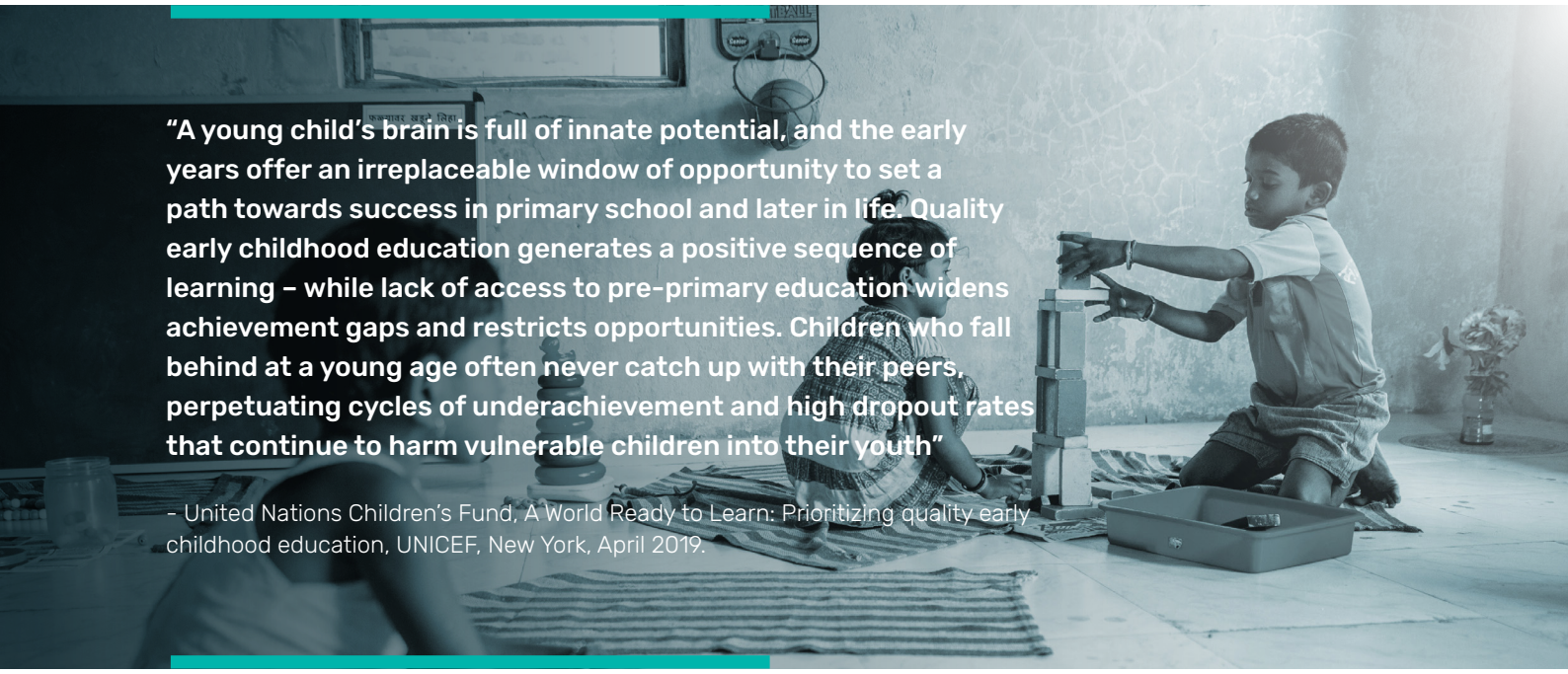
In the Endline study, 78.6% of mothers informed that they were aware of the importance of growth monitoring whereas 84.2% of mothers (an increase of 6.7% from baseline) informed that they received counselling on the importance of growth monitoring.

Looking at the overall perception of the mothers on the growth monitoring services being provided by AWC. 85% of services received were perceived as satisfactory by the women (Figure 6.7).

Figure 6.7: Perception on growth monitoring services provided by AWC (n=120)



07. ASSESSMENT OF SERVICES PROVIDED THROUGH AWCS FOR 3-6 YEARS OLD CHILDREN



"A young child's brain is full of innate potential, and the early years offer an irreplaceable window of opportunity to set a path towards success in primary school and later in life. Quality early childhood education generates a positive sequence of learning – while lack of access to pre-primary education widens achievement gaps and restricts opportunities. Children who fall behind at a young age often never catch up with their peers, perpetuating cycles of underachievement and high dropout rates that continue to harm vulnerable children into their youth"

- United Nations Children's Fund, A World Ready to Learn: Prioritizing quality early childhood education, UNICEF, New York, April 2019.

7.1. INTRODUCTION

Children between 3-6 years of age need good nutrition, education and care in order to meet their full potential of health, well being and capacity for the rest of their lives. The anganwadi system works as a ccrèches for working mother's children. Children 3-6 years of age need 3-4 small but nutritious meals a day. All these children also require organized play and learning in areas that are safe, to help them develop adequate motor and learning skills appropriate to their age, acquire concepts, language, habits and develop relationships with peers and adults. Moreover, for this age group pre-school education is very significant in helping children to prepare for formal schooling. Pre-school education assists children both to enter school and to remain in the system.The preschool education is an imperative activity of the ICDS program. This focuses on holistic development of children from 3-6 years. The non-formal pre-school education bid joyful play way learning activity that emphasizes motor and cognitive development of children. It does not impart formal learning but develops in the child desirable attitude, values and behaviour pattern, aimed at providing environmental stimulation. Therefore, the key objective of this section is to assess the utilization of services provided by AWC for 3-6 years old children.

7.2. SOCIO-DEMOGRAPHIC AND ECONOMIC OVERVIEW

During the endline survey, 120 mothers of children between age group 3-6 years telephonically interviewed across 8 blocks to understand the services they received during preschool education. The survey provided socio-demographic characteristics of the respondent such as age and economic characteristics. The survey covered 120 children of age 3-6 year in both baseline and endline assessment. In baseline assessment the highest and equal percentage (34.2%) of children are in the age group of 48-59 and 60-71 months and lowest (4.2%) in age of 72 months. Whereas in endline assessment the age group 36-47 months covers maximum children (44.2%). The average monthly household income of 3-6 years old children were reported in both baseline and endline study, which further helped in predicting the socio-economic status of the family. The average monthly household income tends to increase from Rs. 6597 in baseline to 6942 in the endline.

7.2.1. ICDS Services Utilization by Mothers of 3-6 Years Old Children

In the endline survey, 98.3% children aged 3-6 years were availing services offered by AWCs. However, all enrolled beneficiaries was receiving supplementary nutrition at AWC. Approximately 90% of the mother reported that they were been counselled on type of diet to be given to their children and importance of regular growth monitoring (Table 7.1).

Figure 7.1 shows that among all the mothers, 96.7% were aware of the services available at AWC for children. The data showed that 91% decline was observed in enrollment of 3-6 years children for availing AWC services during the endline survey.

Comparative study reveals that almost all services which children were availing from AWC has increased as compared to baseline assessment such as percentage of children getting supplementary nutrition from AWC has increased from 95.8% to 100% and growth monitoring services increased from 69.2% to 79.7% except Pre-School Education services which has decreased slightly from 72.5% to 64.4% (Figure 7.2).

7.2.2. ICDS Services Utilization by Mothers of 3-6 Years Old Children: Block-wise

ICDS services utilization across different blocks revealed that in almost all blocks 100% children were getting supplementary nutrition from AWC except Vikramgad wherein 96% of the children were getting supplementary nutrition. Across the ICDS service composition, blockwise utilization of counselling services reported the lowest (average 34.6%). The

Table 7.1: Coverage and receipt of ICDS services and counselling by 3-6 years old children

Key Indicators of AWC Services and Counselling	Baseline		Endline	
	N	%	N	%
Availing services offered by AWCs (3-6 years)	117	97.5	118	98.3
Receiving supplementary nutrition at AWC	116	96.7	120	100.0
Counselled on the type of diet to be given (3-6 years)	73	60.8	108	90.0
Counselled on importance of regular growth monitoring (3-6 years)	78	65.0	105	87.5

Figure 7.1: Distribution of children based on their enrolment in AWC (n=120)

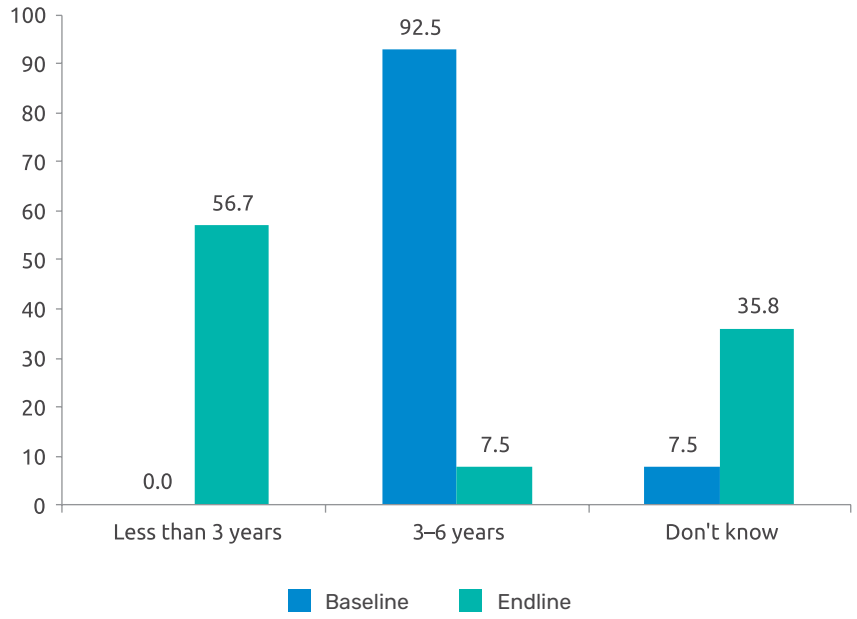
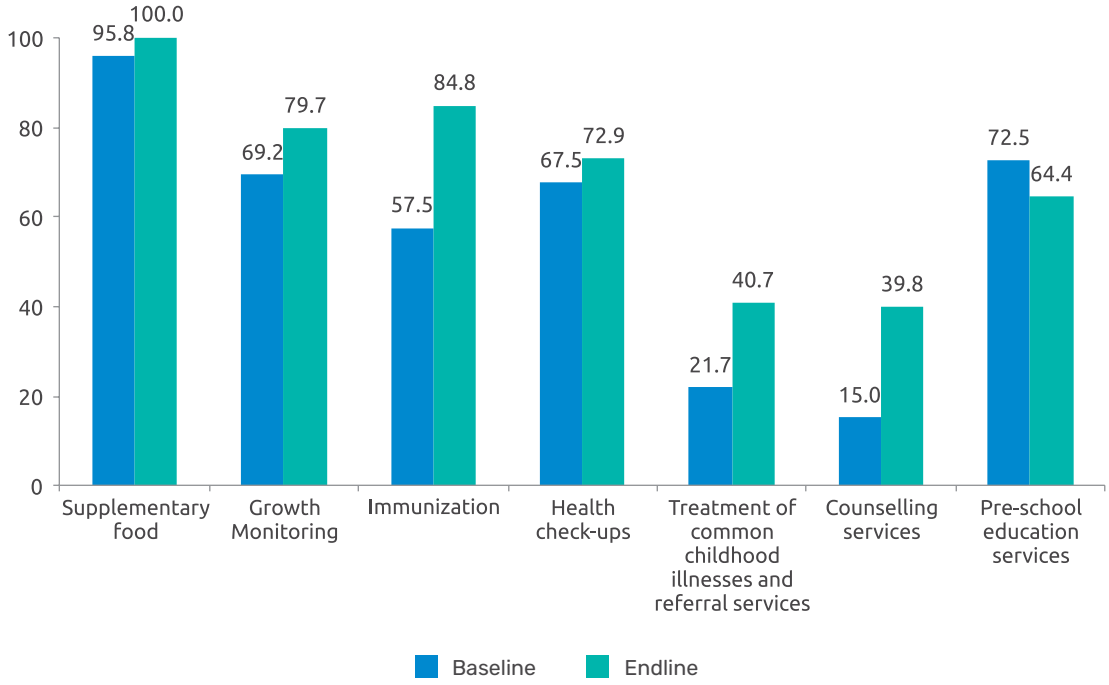


Figure 7.2: Type of service availed from AWC by children of 3-6 years age (BL: n=117) (EL: n=120)



pre-school education services utilization was also varied within blocks. Vasia reported the highest number of children aged 3-6 years receiving preschool education services (93.3%) and Mokhada reported the lowest number of children receiving pre-school education services (25%). Vada is the best performing block as it has reported that 100% children age 3-6 received in Growth Monitoring, Immunization and Health checkup services.

7.2.3. Assessment of Supplementary Nutrition Services Utilization: Overall

Compared to baseline, the percentage of children getting any form of supplementary nutrition from AWC has increased from 96.7% to 100%.

The percentage of children getting THR has increased by 30% in endline assessment as compared to baseline. Whereas, HCF and both type of supplementary nutrition from AWC has decreased from 37.1% to 17.5% and 62.9% to 52.5% respectively (Figure 7.3).

Figure 7.3: Type of supplementary nutrition received from AWC by children of age 3-6 year (BL: n=116) (EL: n=120) (%)

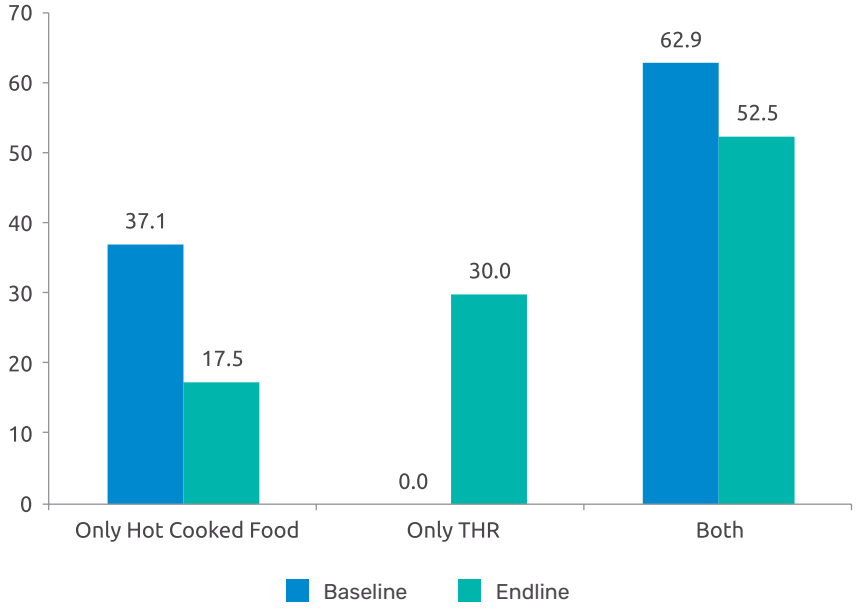


Figure 7.4: Frequency of receiving HCF in last six months (BL: n=116) (EL: n=83) (%)

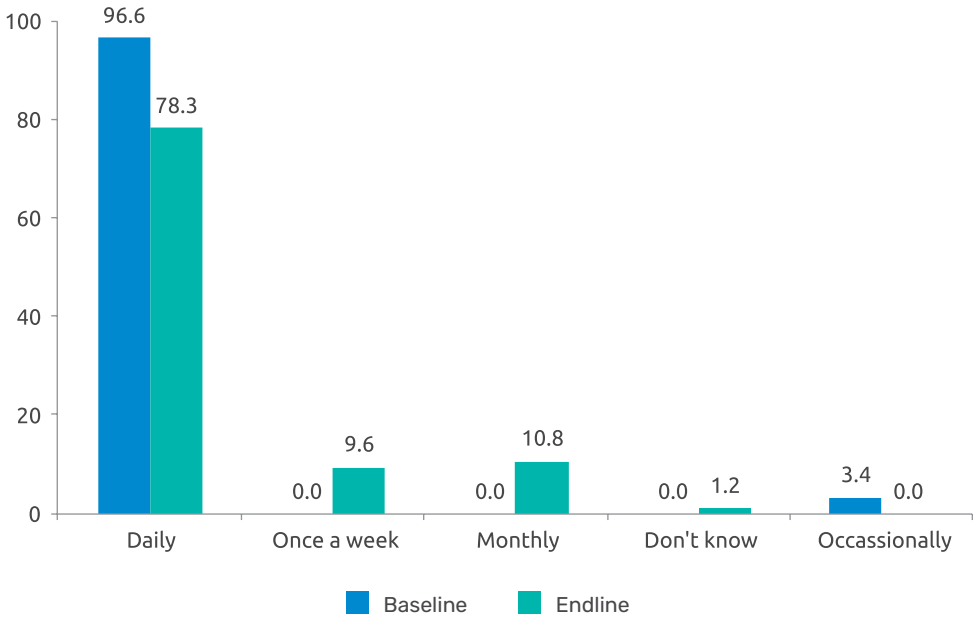


Table 7.2: Number of days received HCF in a month

	Mean	Std. Err.	[95% Conf.	Interval]
Baseline N=116	23.8	0.318073	23.15444	24.41452
Endline N=83	21.5	0.838975	19.87318	23.21116

In Baseline assessment, majority of respondents (96.6%) received HCF daily and 3.4% received it occasionally, whereas in Endline assessment the percentage of respondents getting HCF daily and occasionally has decreased to 78.3% and 0.0% respectively (Figure 7.4).

Figure 7.5: No. of Months received THR in last six months (BL: n=73) (EL: n=98)

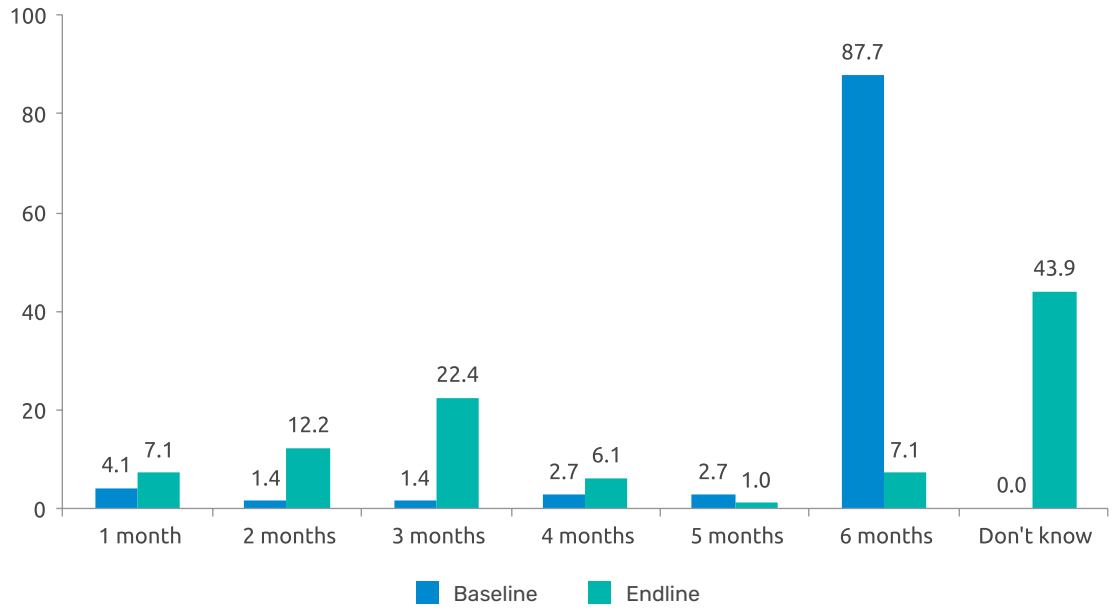
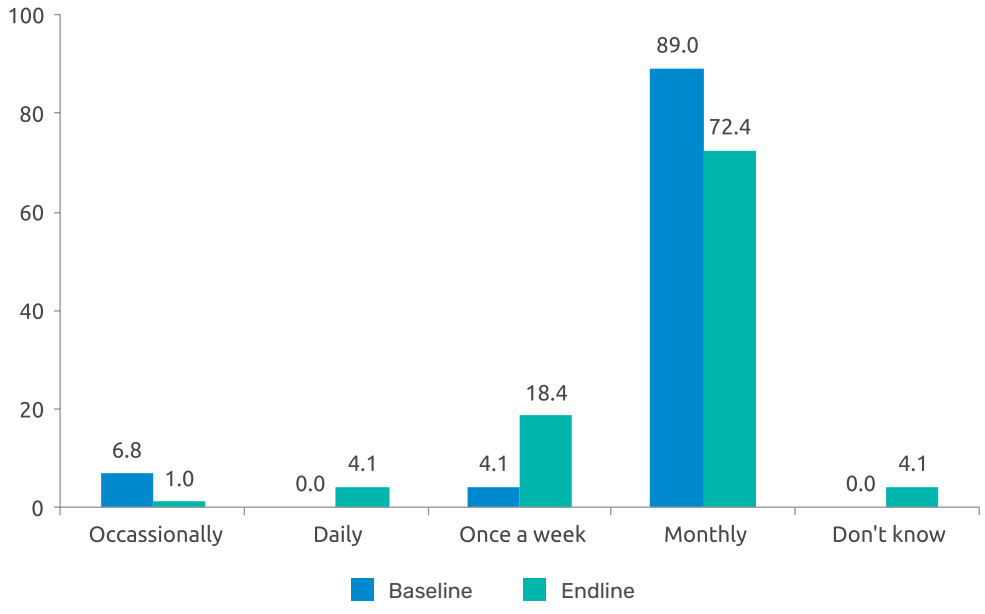


Figure 7.6: Frequency of receiving THR in a month (BL: n=73) (EL: n=98)



Comparative assessment depicts that, during baseline assessment maximum (87.7%) respondents got the THR for 6 months and also 89% got that on Monthly basis. In the endline assessment majority (43.9%) of respondents were not able to recall the duration of months they had received the THR but at the same time 72.4% respondents confirmed that they had received the THR on a monthly basis (Figures 7.5 and 7.6).

Figure 7.7: Mother's perception on the quality of food (n=120)

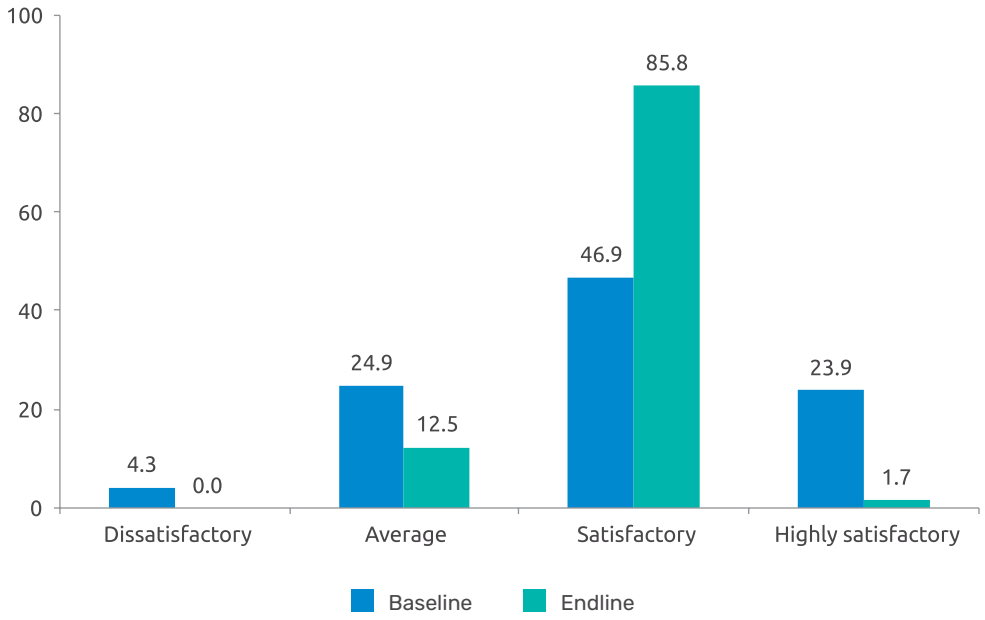
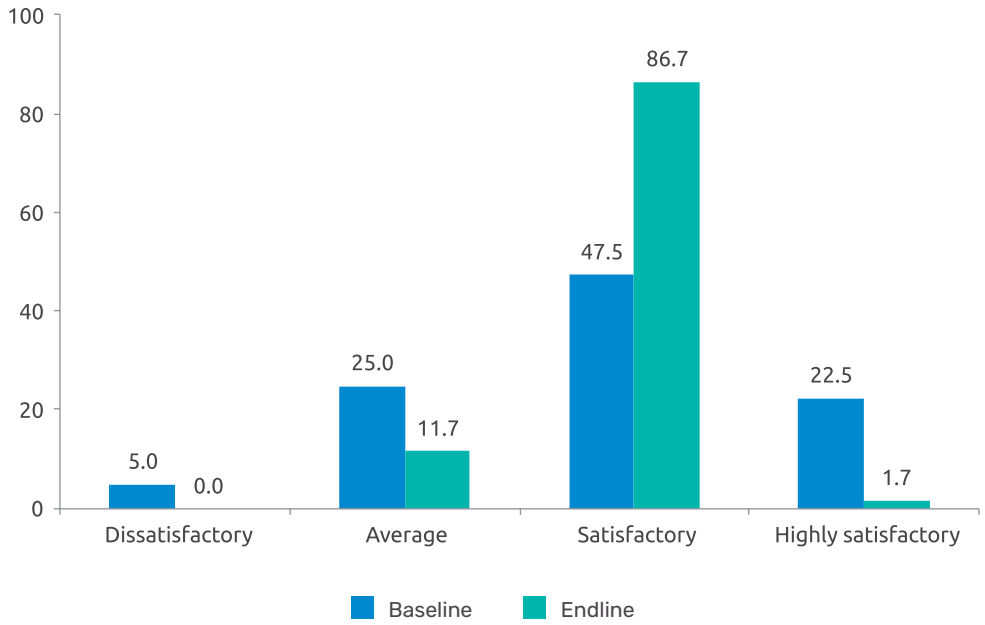


Figure 7.8: Mother's perception on the quantity of food (n=120)



The level of satisfaction for quality of food has increased from 46.9% to 85.8% and level of dissatisfaction decreased from 4.3% to zero in endline assessment (Figure 7.7).

Comparative assessment shows that level of satisfaction for quantity of food has been increased from 47.5% to 86.7% and level of dissatisfaction decreased from 5.0% to 0 (Figure 7.8).

7.2.4. Assessment of Health and Nutrition Education Services Provided by AWC

In Endline study it was observed that 93.3% mothers were aware of the type of diet needed to be given to a child. In case of counselling received on the type of diet, 90% mothers were counselled on the type of diet to be given to the child, an increase of almost 30% from the baseline assessment. However, 97.5% of the mothers started feeding semi-solid or solid food to the child in endline study.

7.2.5. Assessment of Immunization Services Provided by AWC

The percentage of children getting Bi-annual vitamin A supplementation showed a decline from 90.8% to 80.8% when compared with baseline assessment. Also, there was an increase in percentage of respondents who were not aware whether the children had got Vitamin-A supplementation.

Comparative study reveals that in baseline assessment almost all (100%) children received all (BCG, Penta, OPV & Measles) immunizations however, in endline assessment it has decreased for all types of vaccines. The maximum decrease was reported for measles vaccine from 98% in baseline to 63% in the endline. The reason behind this could be mothers not being able to recall the names of vaccines during the telephonic survey.

Figure 7.9: Distribution of mother's received counselling by AWW on type of diet to be given to child (n=120) (%)

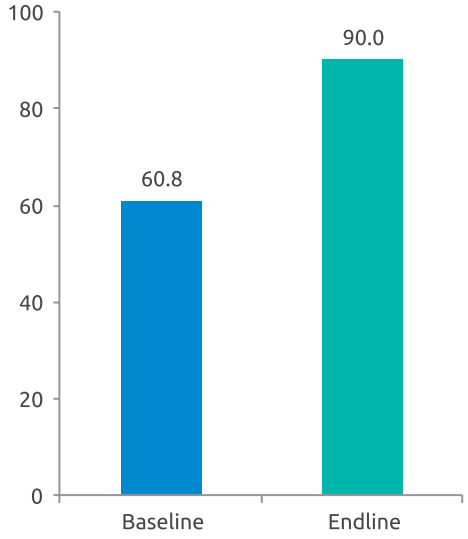


Figure 7.10: Distribution of mother's started feeding semi-solid or solid food to child (n=120) (%)

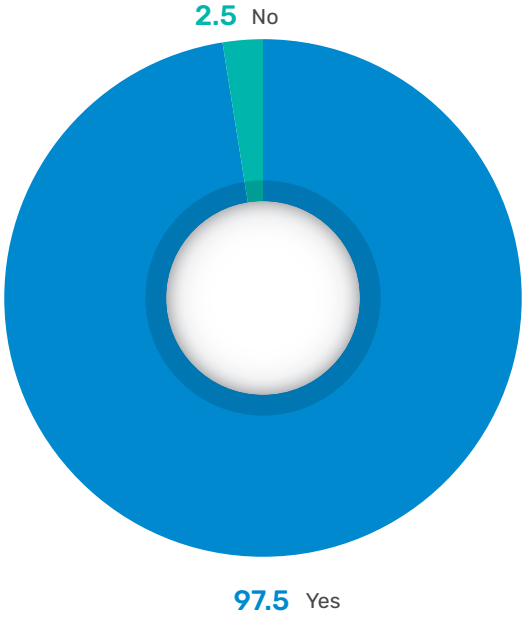


Figure 7.11: Distribution of children getting Bi-annual vitamin-A supplementation (n=120)

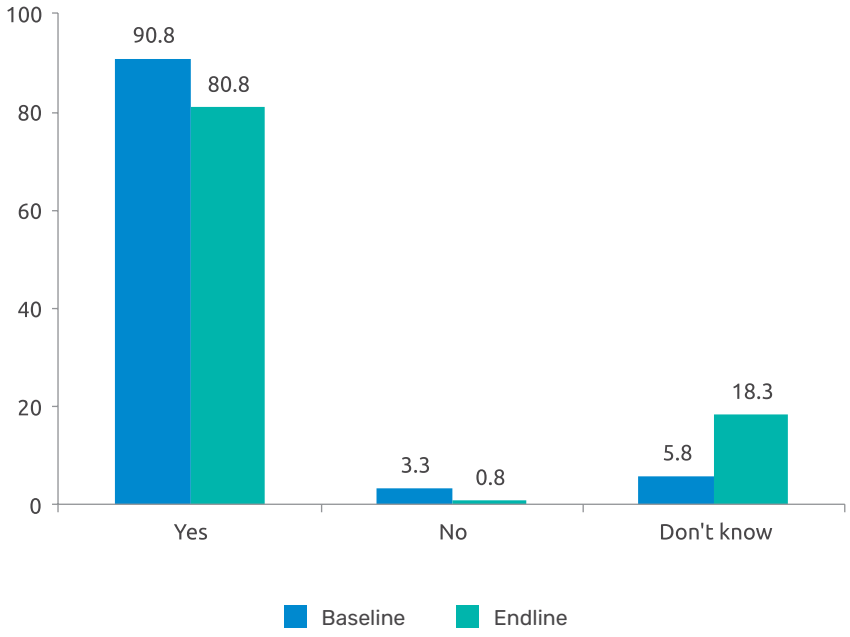


Figure 7.12: Distribution of children received immunization within one year of age (n=120)

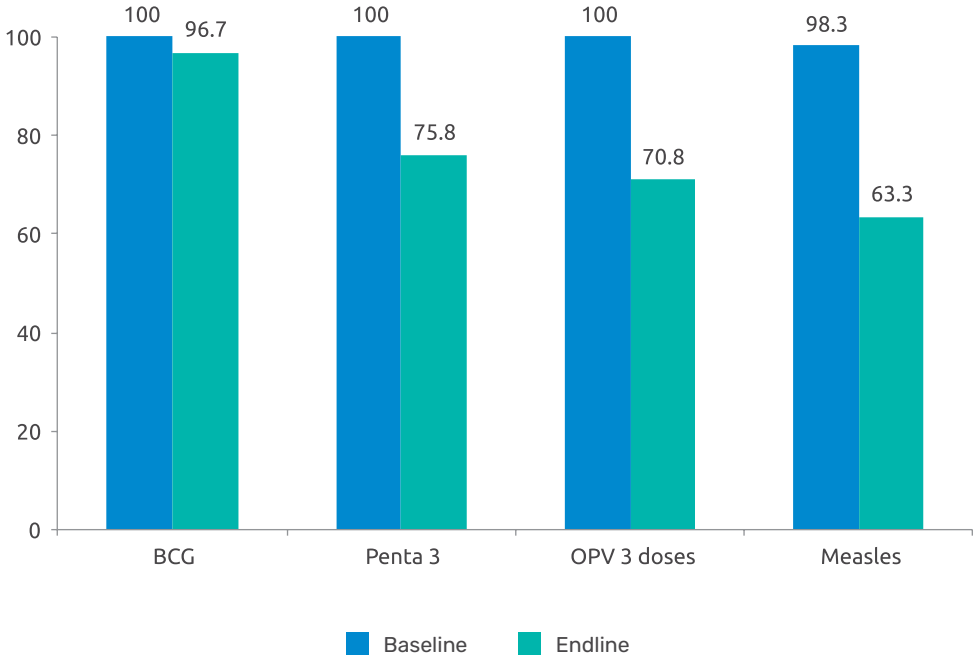
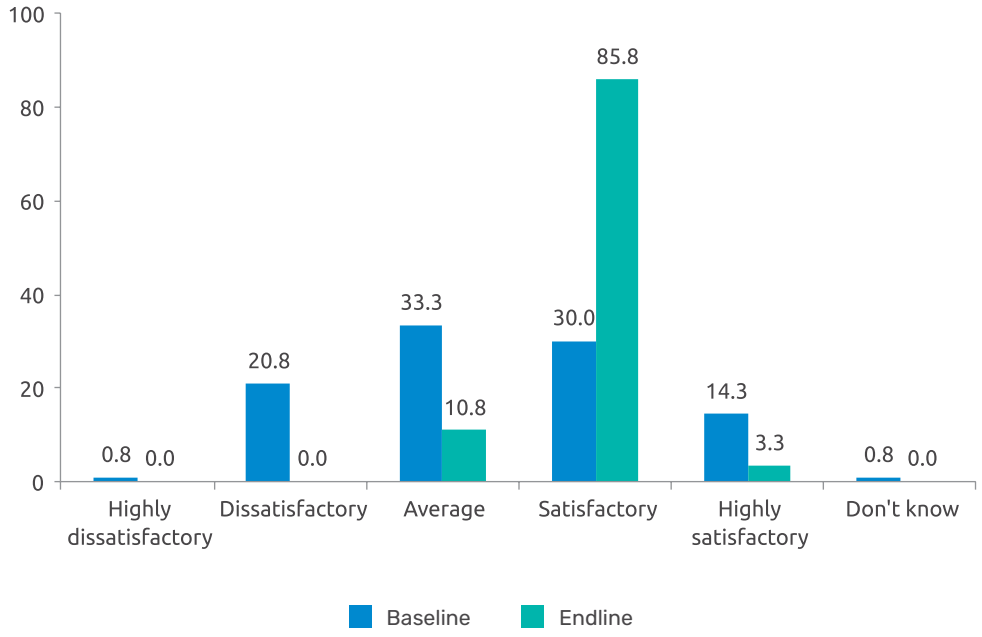


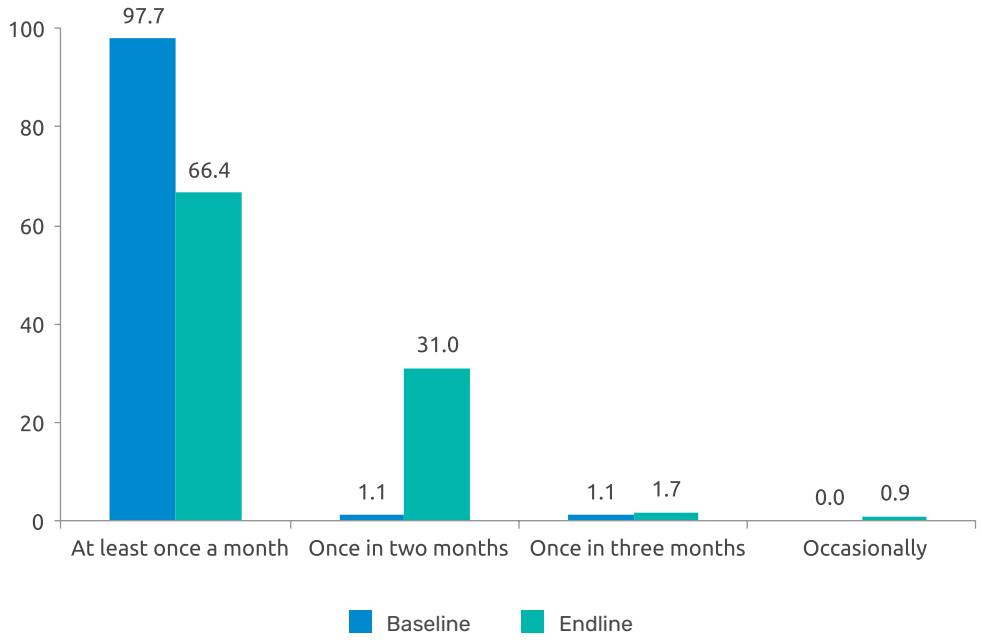
Figure 7.13: Mother's perception on immunization services provided at AWC (n=120)



The level of satisfaction for immunization services has been increased. from 30.0% to 85.8% when compared with baseline assessment (Figure 7.13).

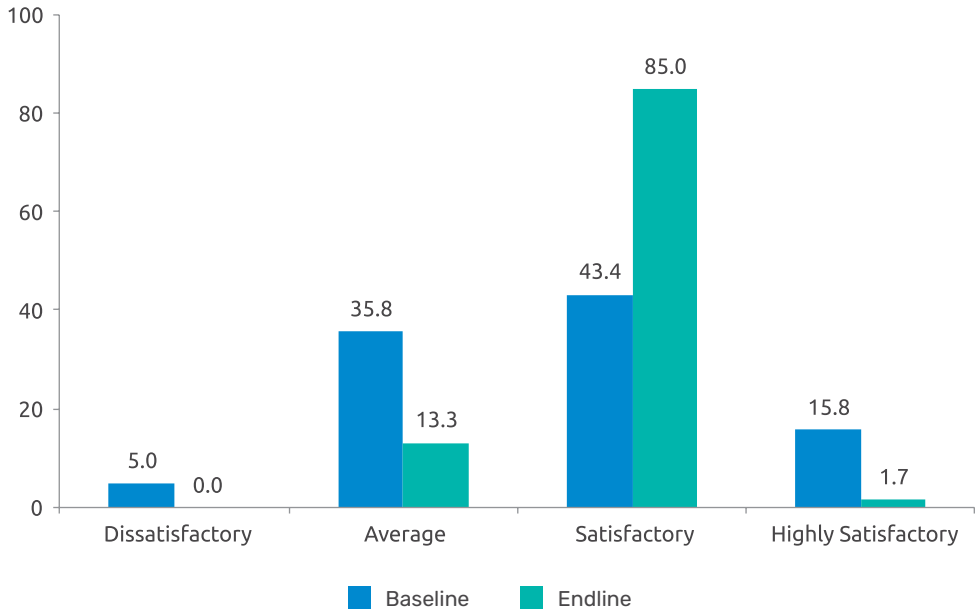
7.2.6. Assessment of Growth Monitoring Services Provided by AWC

Figure 7.14: Frequency of child weighed at AWC by (BL: n=88) (EL: n=116) (%)



In the Endline study, it was observed that 83.3% of mothers informed that they were aware of the importance of growth monitoring and 87.5% of mothers (increased by 22.5% from baseline) informed that they received counselling on the importance of growth monitoring. The percentage distribution of children weighed at AWC has increased from 73.3% to 96.7% as compared to baseline assessment.

Figure 7.15: Mother's perception on growth monitoring services provided by AWC (n=120)



With regards to frequency of child weighed at AWC, the percentage of frequency of child weighed once in two months increased to 31% whereas, frequency of child weighed at least once a month decreased from to 66.4% (Figure 7.14).

Looking at the overall perception of the mothers on the growth monitoring services being provided by AWC, the services received were perceived as satisfactory by majority of the women (85%) in endline assessment (Figure 7.15).

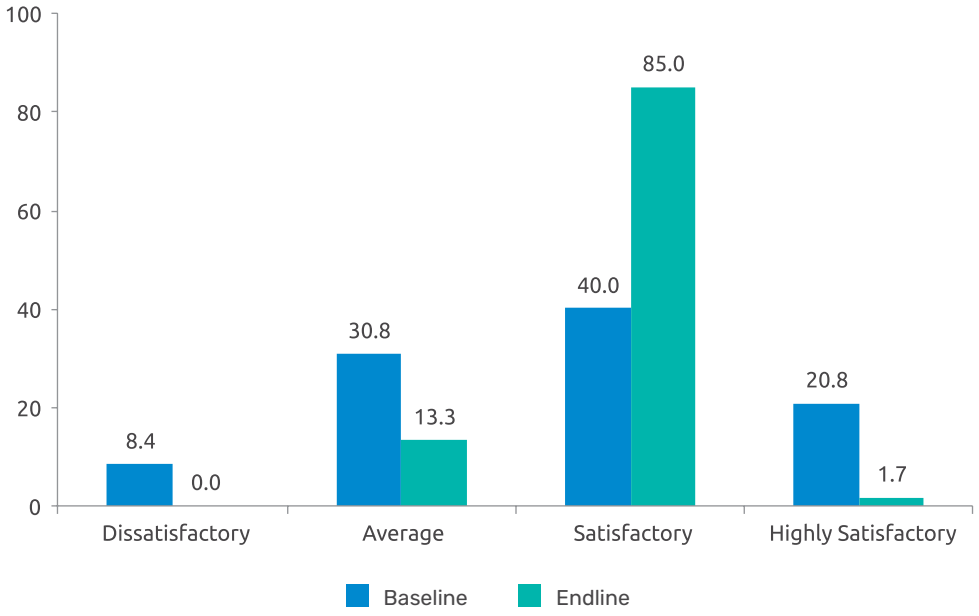
7.2.7. Assessment of Health Check-ups & Referral Services Provided by AWC

In baseline assessment, 85.8% children availed health checkup services and 66.0% reported that they availed the services on a monthly basis. In endline assessment, the percentage of children availing health checkup services has increased to 95.0% and the children who got the service every month has decreased to 54.4% in endline assessment. The percentage of children received treatment for illness (ARI/ Skin/ Diarrhea) has slightly increased from 41.6% to 45% when compared with baseline assessment.

The endline survey reported that 57.5% mothers were aware of the availability of referral services at AWC and 66.7% received counselling by AWW for the referral services.

Overall perceptions depict that the majority of mothers (85.0%) perceived to be satisfied in endline assessment, which was only 40.0% in baseline study.

Figure 7.16: Mother's perception on child health check –up services provided at AWC (n=120)



7.2.8. Non-formal Pre-school Education Services Utilization by 3-6 Years Old Children: Overall

Figure 7.17: Distribution of mother counselled for availability of PSE services in AWC (n=120) (%)

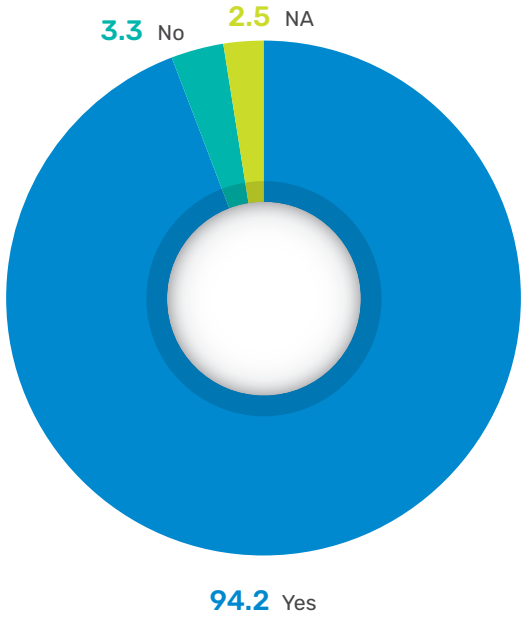
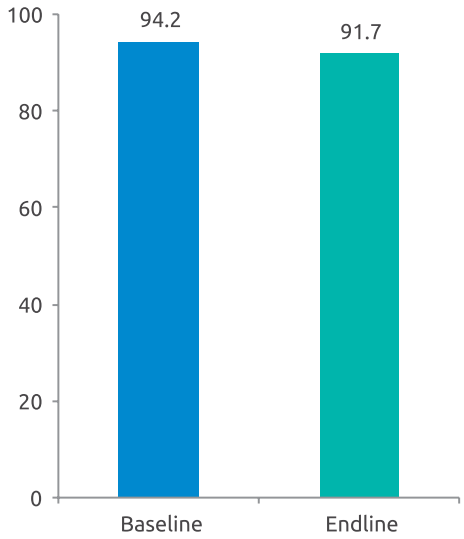


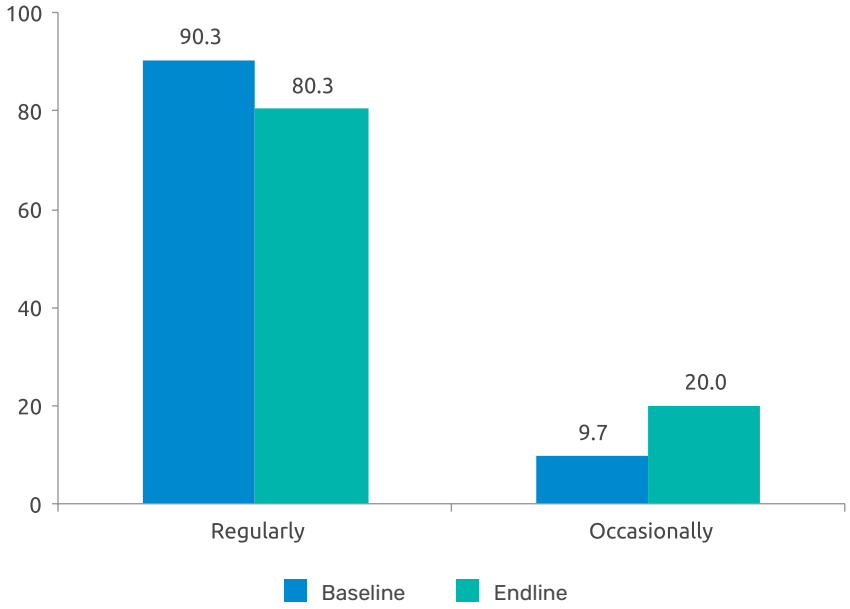
Figure 7.18: Distribution of children attending AWC (n=120) (%)



90.8% of mothers were aware about the availability of Pre-School Education services in AWC and 94.2% were counselled for the availability of PSE services.

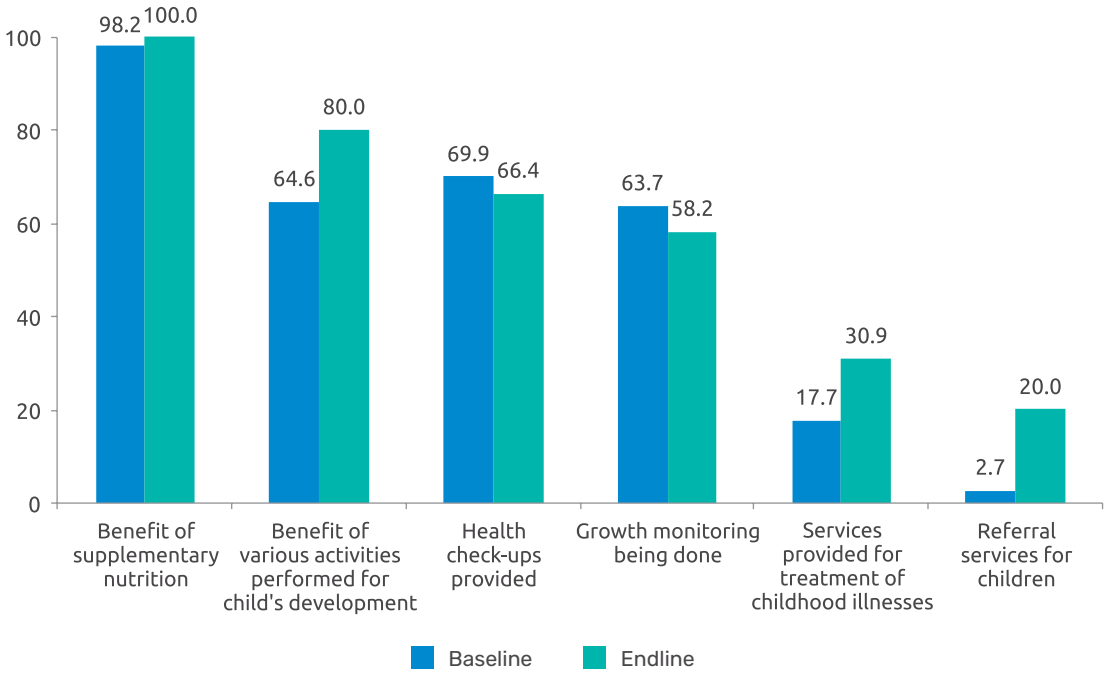
The percentage of children attending AWC decreased as compared to baseline assessment. The probable reason for this could be due to COVID-19, with the highest number of positive cases in Maharashtra. So, to maintain social distancing norms, children are not attending AWC.

Figure 7.19: Frequency of children attending AWC (BL: n=113) (EL: n=110)



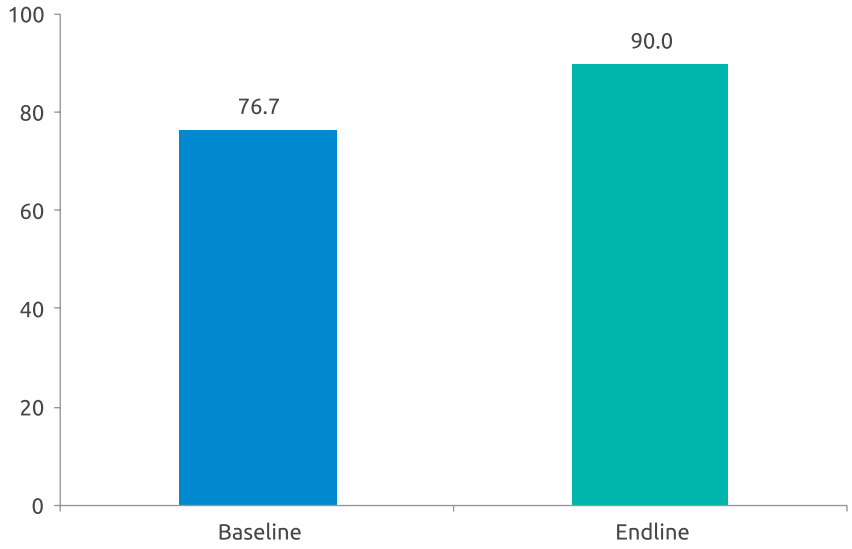
The percentage of children attending AWC currently and regularly both decreased from 94.2% to 91.7%, and 90.3% to 80.0% respectively, whereas children attending AWC occasionally increased to 20% due to COVID-19 crisis (Figure 7.19).

Figure 7.20: Motivation factors for sending child to AWC (BL: n=113) (EL: n=110) (%)



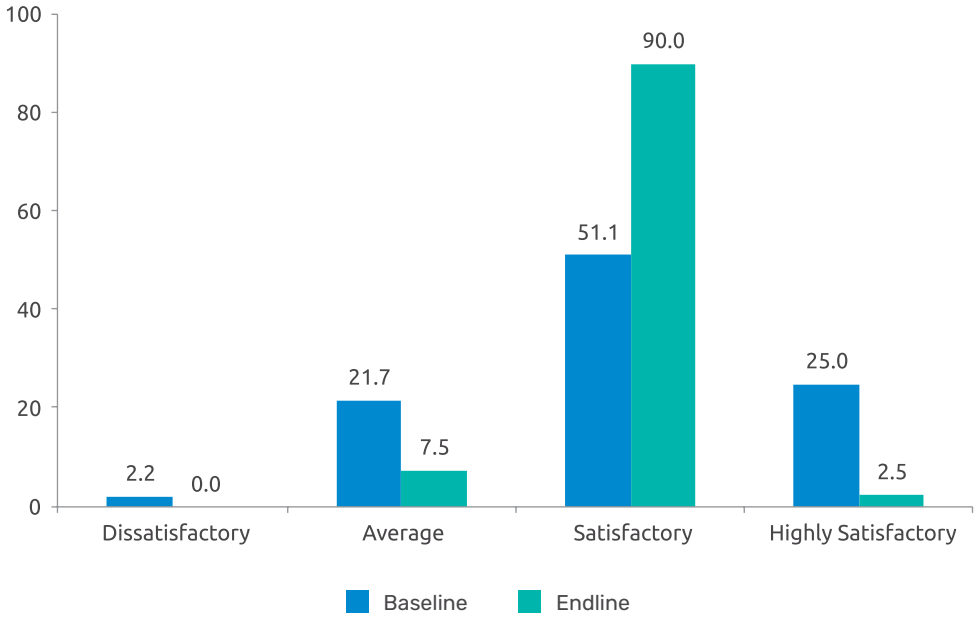
Comparative study reveals that the benefit of supplementary nutrition was the major motivating factor for sending the child to AWC between both baseline and endline study.

Figure 7.21: Distribution of mother's aware of PSE activities being performed in AWC (n=120)



Comparative study shows that the percentage of mothers aware of PSE activities being performed in AWC has increased from 76.7% to 90.0% (Figure 7.21).

Figure 7.22: Mother's perception regarding PSE related services at AWC (n=120)



90.0% mothers were satisfied with PSE services available at AWC which was 51.1% in baseline assessment. None of the mothers was found to be dissatisfied with the PSE related services (Figure 7.22).

7.2.9. Minimum Dietary Diversity in Mothers of 3-6 Years Old Children

There are several questions on the diet diversity levels of individual in the 10 categories i.e., Grains, White Roots and Tubers, Pulses (beans, peas and lentils), Nuts and Seeds, Dairy (Milk, Dahi, Chach, etc.), Meat, Poultry & Fish, dark green leafy vegetables, Other Vit A rich fruits and vegetables, Other vegetables, and Other fruits and standardized all the items and re coded all the variables in binary format. However, for effective analysis, it is classified into two broad categories: Less than 5 food items and More than equal to 5 food items in the last 24 hours.

Relating to mothers consuming food items, above figure depicts that in endline study, 49.2% of mothers consumed five or more than five food items whereas, still 50.8% of mothers consumed less than five food groups.

Relating to children consuming food items, above figure depicts that in endline study, only 35% of the children of 3-6 years of age were consuming 5 or more than 5 food items.

Figure 7.23: Number of food items consumed previous day by mother (%) (n=120)

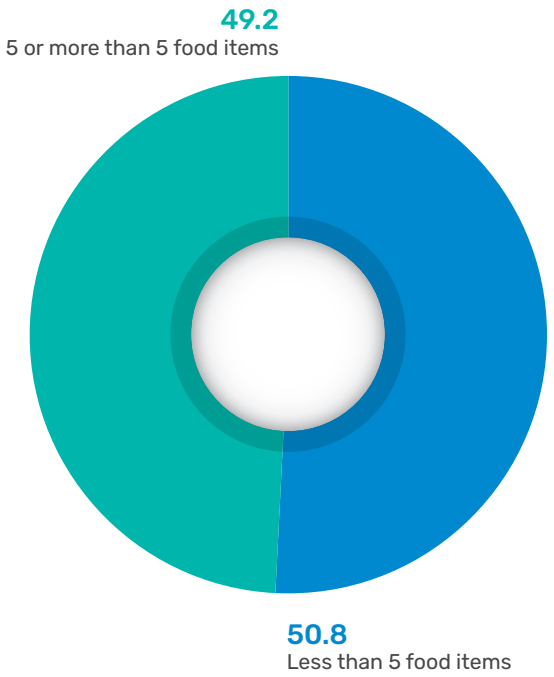
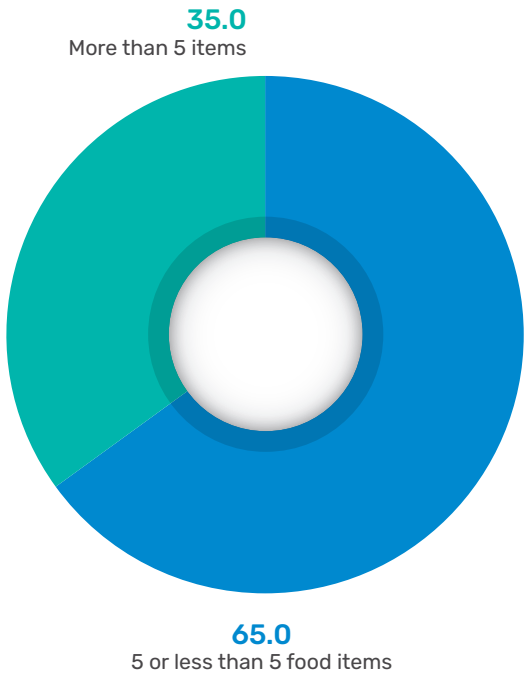


Figure 7.24: Number of food items consumed previous day by the child (%) (n=120)



08. DIETARY DIVERSITY AMONG MOTHERS AND CHILDREN

"Women of reproductive age (WRA) are often nutritionally vulnerable because of the physiological demands of pregnancy and lactation. Requirements for most nutrients are higher for pregnant and lactating women than for adult men …. Insufficient nutrient intakes before and during pregnancy and lactation can affect both women and their infants. Yet in many resource poor environments, diet quality for WRA is very poor, and there are gaps between intakes and requirements for a range of micronutrients."

- FAO and FHI 360. 2016. Minimum Dietary Diversity for Women: A Guide for Measurement. Rome: FAO.

8.1. DIETARY DIVERSITY AMONG MOTHERS

8.1.1. Introduction

Dietary intake among women is central in determining their own as well as children's' overall growth and development. Nutritional deficiencies via poor dietary intake results in growth faltering (such as stunting), and is also associated with poor cognitive and educational outcomes among children causing adverse social and economic implications in later life. Numerous studies have observed a strong bearing of mother's dietary intake on their child's diet and their nutritional outcomes. Given the high nutritional requirement during pregnancy and lactation, an adequate and a well diverse diet among women during the same is critical for optimum physical growth as well as cognitive development of children.

Dietary deprivations in India remains high despite rapid economic growth and notable health advancements. In this regard, it is worth noting that despite being among the richest states in India, about half of the women in reproductive age in Maharashtra are unable to attain a minimum diversified diet. The problems are expected to have now intensified due to the economic disruptions caused by the COVID-19 pandemic. Therefore, it is imperative to have an understanding on the dietary patterns among lactating mothers. The estimates can offer valuable insights on important policy questions such as, which of the food groups are most difficult to be received by during exclusive and extended breastfeeding period.

This section assesses the dietary patterns among mothers of 0-6 months children and 6-36 months children in Palghar. This assessment has three specific objectives, (a) to assess the levels of dietary diversity among mothers of 0-6 months and 6-36 months children; (b) to identify the food groups which are most difficult to attain by them; (c) to test the association of health and nutrition counselling with dietary diversity.

8.1.2. Dietary Diversity Analysis

It may be noted that "Dietary Diversity" is the most widely used indicator reflecting the quality and quantity of dietary pattern among adults as well as children. It is defined as the sum of well identified food groups consumed during a certain period of time. Dietary diversity is a reliable proxy for measuring nutrient intake which simply reveals what is there in the family's pot, instead of complex dietetics details.

Information on 10 diet items was collected based on a 24 hour recall period: Grains, White Roots and Tubers; Pulses; Nuts and Seeds; Dairy; Meat, Poultry, Fish; Eggs; Dark green leafy vegetables; Other Vitamin A rich fruits/veg; Other vegetables and Other fruits. Diversified Dietary diversity is defined as consumption from at least 5 food groups and is coded "1" if the women is consuming diversified diet and "0" otherwise.

Of the total sample for lactating mothers of 0-6 month child, 56.2 percent were less than 24 years of age, 34 percent were between the age of 25-29 years and 9.7 percent were above 30 years or above. About 61 percent of them had primary-level education, and rest 39 percent were educated above primary. In terms of household income, 26 percent belonged to household income more than INR 9000. The share of employed women in total sample was 13.5 percent. Out of the total sample for lactating mothers, 55.5 and 36.0 percent were 0 to 24 years and 25 to 29 years old, respectively. Approximately 80 per cent of the lactating women belonged to households with income less than Rs. 9000 per month.

Meals based on grains, white roots and tubers were found to be most common among lactating mothers of young infant (0-6 months old) in Palgarh. About 95 percent and 85 percent of lactating mothers (with 0-6 months child) did not have any fruits in the morning and evening breakfast meal, respectively. More than two-third of lactating mothers (with 0-6 months child) did not have any dark green leafy vegetables or Vitamin-A rich fruits in any major or minor meals of the day. Across all the four meals, a very small proportion of lactating mothers (with 0-6 months child) were reported consuming fruits (Vitamin-A or other). For instance, only 5.5 and 2.0 percent of lactating mothers (with 0-6 months child) had fruits (other) in breakfast and lunch. Further, more than two-third of lactating mothers (with 0-6 months child) did not receive any dairy products across all four meals of the day.

More than two-third of lactating mothers (with 6-36 months child) were reported to have all four meals dominated by food based on grains, white roots, and tubers. Compared to pregnant women, a higher proportion of lactating mothers (with 6-36 months child) have dairy products in the morning (33.0 percent) breakfast. The consumption of green leafy vegetables and fruits was also lower among lactating mothers (with 6-36 months child) as well. For example, only 10.5 and 8 percent of lactating mothers (with 6-36 months child) had dark green leafy vegetables and other vitamin-A rich fruits.

About three-fourth of lactating mothers (with 6-36 months child) and two-third of lactating mothers (with 6-36 months child) did not have fruits even single time in last 24 hours. Importantly, the consumption of dairy

Table 8.1: Distribution of daily meals among lactating mothers in Palghar, 2020

Lactating Mothers (Children 0-6 months)	Breakfast		Lunch		Evening		Dinner	
	N	%	N	%	N	%	N	%
Grains, White Roots and Tubers	149	74.5	124	62.0	125	62.5	116	58.0
Pulses	92	46.0	128	64.0	81	40.5	109	54.5
Nuts and Seeds	19	09.5	01	00.5	07	03.5	4	02.0
Dairy	46	23.0	02	01.0	07	03.5	46	23.0
Meat, Poultry, Fish	10	5.0	21	10.5	08	04.0	44	22.0
Eggs	70	35.0	14	07.0	13	06.5	16	8.0
Dark green leafy vegetables	27	13.5	57	28.5	27	13.5	64	32.0
Vitamin-A rich fruits/veg.	04	02.0	28	14.0	12	06.0	44	22.0
Other vegetables	19	09.5	63	31.5	31	15.5	84	42.0
Other fruits	11	05.5	04	02.0	31	15.5	16	08.0
Lactating Mothers (Children 6-36 months)	**Breakfast**		**Lunch**		**Evening**		**Dinner**	
	N	%	N	%	N	%	N	%
Grains, White Roots and Tubers	139	69.5	138	69.0	115	57.5	127	63.5
Pulses	91	45.5	126	63.0	83	41.5	114	57.0
Nuts and Seeds	24	12.0	03	01.5	09	04.5	05	02.5
Dairy	66	33.0	07	03.5	14	07.0	34	17.0
Meat, Poultry, Fish	01	00.5	22	11.0	06	03.0	32	16.0
Eggs	57	28.5	10	5.0	17	08.5	08	04.0
Dark green leafy vegetables	21	10.5	62	31.0	16	08.0	91	45.5
Vitamin-A rich fruits/veg.	01	0.5	26	13.0	06	03.0	46	23.0
Other vegetables	20	10.0	52	26.0	21	10.5	67	33.5
Other fruits	12	6.0	08	04.0	41	20.5	15	07.5

products and eggs was also low as about half of lactating mothers were did not have a single meal including dairy products and eggs. On the other hand, the grains and pulses-based diets were reported to be most frequent in daily diet of both groups of lactating mothers. For example, about 42 percent and 37.5 percent of lactating mothers (with 0-6 months child) and lactating mothers (with 6-36 months child) respectively, were reported to have meals including grains, white roots and tubers 4 times in a day. The consumption of non-vegetarian diet was also not included in the daily meals of lactating mothers. About 69 percent of lactating mothers (with 0-6 months child) and 76 percent of lactating mothers (with 6-36 months child) did not have meat, poultry, or fish in their daily diets. The consumption of green leafy vegetables was observed to be present (i.e., at least 1 time in a day) among only 29 percent of lactating mothers (with 0-6 months child) and 35 percent of lactating mothers (with 6-36 months child).

Table 8.2: Distribution of meal frequency by food groups among lactating mothers in Palghar, 2020

Meal frequency:	0		1		2		3		4		Total	
Lactating Mothers (Children 0-6 months)	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Grains, White Roots and Tubers	17	8.5	37	18.5	45	22.5	17	8.5	84	42	200	100
Pulses	38	19	42	21	46	23	20	10	54	27	200	100
Nuts and Seeds	176	88	18	9	5	2.5	1	0.5	0	0	200	100
Dairy	111	55.5	81	40.5	4	2	4	2	0	0	200	100
Meat, Poultry, Fish	138	69	48	24	8	4	5	2.5	1	0.5	200	100
Eggs	101	50.5	86	43	12	6	1	0.5	0	0	200	100
Dark green leafy vegetables	90	45	58	29	40	20	11	5.5	1	0.5	200	100
Other Vitamin A rich fruits/veg	141	70.5	31	15.5	27	13.5	1	0.5	0	0	200	100
Other vegetables	71	35.5	78	39	35	17.5	15	7.5	1	0.5	200	100
Other fruits	149	74.5	42	21	7	3.5	2	1	0	0	200	100
Lactating Mothers (Children 6-36 months)	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Grains, White Roots and Tubers	16	8	31	15.5	46	23	32	16	75	37.5	200	100
Pulses	30	15	49	24.5	40	20	39	19.5	42	21	200	100
Nuts and Seeds	167	83.5	25	12.5	8	4	0	0	0	0	200	100
Dairy	100	50	85	42.5	11	5.5	2	1	2	1	200	100
Meat, Poultry, Fish	152	76	37	18.5	9	4.5	2	1	0	0	200	100
Eggs	116	58	76	38	8	4	0	0	0	0	200	100
Dark green leafy vegetables	73	36.5	70	35	51	25.5	6	3	0	0	200	100
Other Vitamin A rich fruits/veg	146	73	29	14.5	25	12.5	0	0	0	0	200	100
Other vegetables	99	49.5	56	28	31	15.5	14	7	0	0	200	100
Other fruits	133	66.5	59	29.5	7	3.5	1	0.5	0	0	200	100

Overall, about half of the lactating mothers had minimum dietary diversity. Across educational groups, no significant difference in the prevalence of minimum dietary diversity was observed. A clear gradient in the prevalence of MDD was observed across households' income groups with relatively higher diversity among economically affluent households. While 51 percent of lactating mothers (with 0-6 months child) from lowest income group had MDD, it was more than double (73.1 percent) among richest household group. A similar gradient was noted among lactating mothers (with 6-36 months child) as well with 49.7 percent and 62.8 percent MDD reported in poorest and richest groups, respectively. Further, dietary diversity was reported to be higher among older women compared to younger ones.

Table 8.3: Percentage of women with minimum dietary diversity among lactating mothers by background characteristics, Palghar, 2020

	Lactating Mothers (Children 0-6 months)		Lactating Mothers (Children 6-36 months)	
	N	%	N	%
Education level				
Up to Primary	74	60.7	64	57.7
Above Primary	39	50.0	41	46.1
Below Poverty Line				
APL	08	44.4	10	43.5
BPL	99	58.9	86	57.0
DNK	06	42.9	09	34.6
Employed				
Not employed	100	57.8	89	52.0
Employed	13	48.1	16	55.2
Income				
0-9000	75	50.7	78	49.7
More than 9000	38	73.1	27	62.8
Block ID				
Dahanu	04	25.0	02	09.1
Jawahar	32	80.0	23	65.7
Mokhada	20	60.6	28	66.7
Palghar	20	90.9	12	80.0
Talasari	06	46.2	02	20.0
Vada	06	40.0	12	63.2
Vasai	01	8.3	04	23.5
Vikramgad	24	49.0	22	55.0
Age of woman				
Less than 24 years	46	44.2	57	51.4
25 to 9 years	40	63.5	37	51.4
More than 30 years	15	83.3	11	64.7
Overall	113	56.5	105	52.5

Figures 8.1 and 8.2 present the trends and patterns in consumption of specific food items among lactating mothers based on dietary diversity. Intake of each food item is higher among women who are consuming a diversified diet. Substantial difference are observed across the two groups with respect to consumption of Nuts and Seeds; Dairy; Meat, Poultry, Fish; Eggs; Dark green leafy vegetables; Other Vit A rich fruits and vegetables; Other vegetables and Other fruits.

Figure 8.1: Consumption of food items by dietary diversity groups, lactating mothers (0-6 month child), Palghar 2020

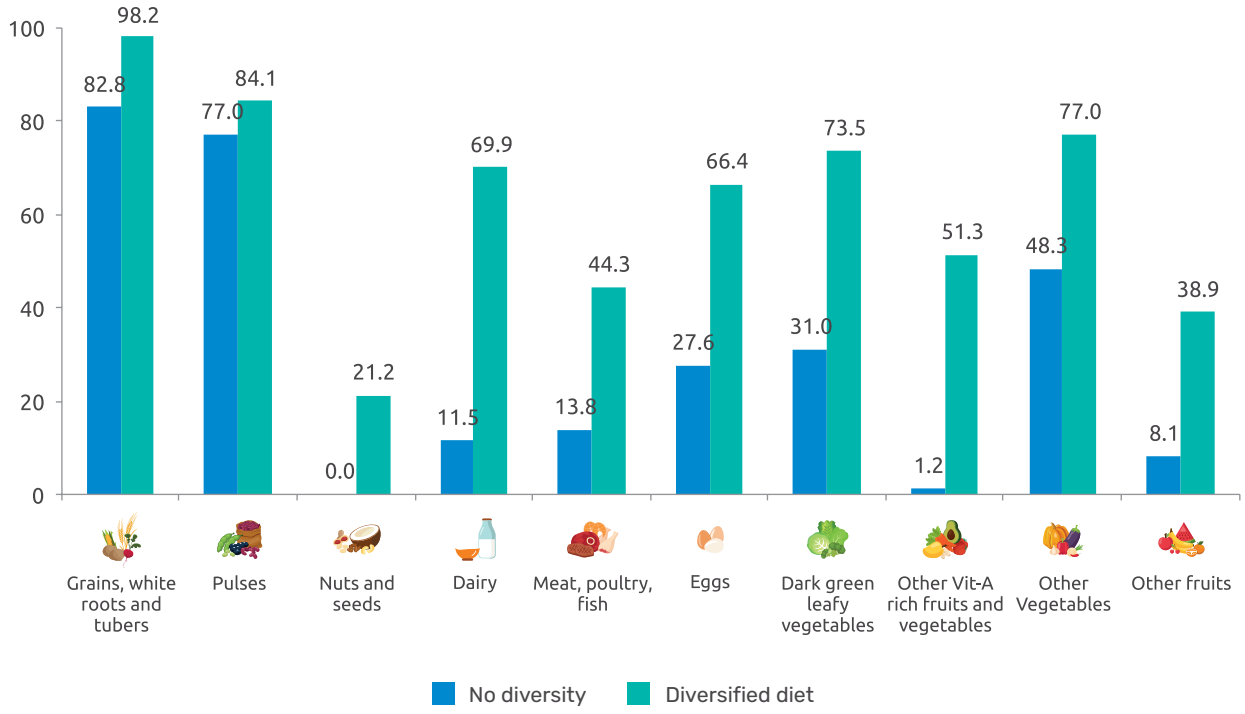
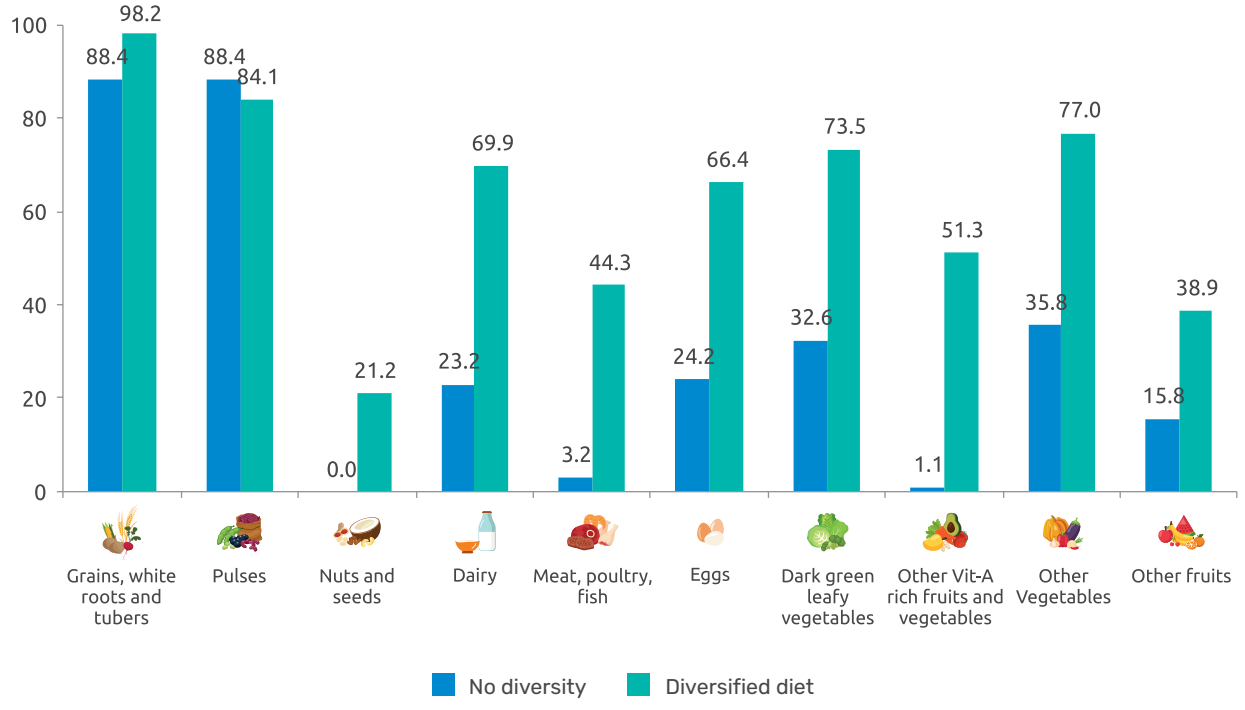


Figure 8.2: Consumption of food items by dietary diversity groups, Lactating mothers (6-36 month child), Palghar 2020



The logistic regression-based odds of attaining MDD among lactating mothers (0-6 months child) is significantly higher for richest section (OR: 3.54; 95% CI: 1.46,8.59) compared to poorest group. In case of age groups as well, compared to younger age-group (less than 24 years), pregnant women above 30 years of age are about five times (OR: 5.81; 95% CI: 1.38,24.40) more likely to receive a minimum diversified diet. Lactating mothers (0-6 months child) who have received HNE training are 2 times more likely to consume a diversified diet. If the interaction effect of counselling and income are considered. It seems that lactating mothers who belong to the richer group are more likely to benefit from HNE counselling as compared to their peers who did not receive the counselling.

Table 8.4: Odds ratios based on multilevel logistic regression estimates regarding association between MDD among pregnant women and lactating mothers and socioeconomic correlates, Palghar, 2020

	Lactating mothers (0-6 months child)	Lactating mothers (6-36 months child)	Overall
Health and Nutrition Counselling			
0-9000*No counselling	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
More than 9000*No counselling	0.79	1.03	1
	[0.14,4.54]	[0.32,3.31]	[0.39,2.53]
0-9000*Counselled	1.21	1	1.06
	[0.39,3.76]	[0.48,2.08]	[0.59,1.92]
More than 9000*Counselled	7.41**	1.98	3.88**
	[1.75,31.33]	[0.62,6.27]	[1.64,9.15]
N	178	189	367

The population attributable risk (PAR) methodology is applied to understand the proportion of lactating mothers who are consuming a diversified diet and to what extent a change in intake of a particular food item can enhance the dietary diversity score. For scenario 1: given that all variables assume the value as given in the sample; and for a counterfactual scenario in which the diet variable is set to its best value. The difference between the scenarios is also presented. Increasing the intake of dairy; and meat, poultry and fish can increase the proportion consuming a diversified diet to 72 percent from 54 percent in the overall sample. Consumption of dairy product can improve dietary diversity to 71% among lactating mothers (0-6 months child) and 68% among lactating mothers (6-36 months).

Table 8.5: Population Attributable Risk (PAR) estimates for consumption of diversified diet associated with selected dietary factors, Palghar, 2020

	Lactating mothers (0-6 months child)			Lactating mothers (6-36 months child)		
	Scenario 0	Scenario 1	PAR	Scenario 0	Scenario 1	PAR
Grains, White Roots and Tubers	0.54	0.58	-0.036	0.53	0.55	-0.020
Pulses	0.54	0.60	-0.060	0.53	0.55	-0.020
Dairy	0.54	0.71	-0.169	0.53	0.68	-0.152
Meat, Poultry, Fish	0.54	0.72	-0.173	0.53	0.83	-0.300
Eggs	0.54	0.61	-0.069	0.53	0.61	-0.079
Dark green leafy vegetables, Nuts, Vita-a fruits/veg and Oth-er fruits	0.54	0.62	-0.077	0.53	0.64	-0.113
Other vegetables	0.54	0.65	-0.109	0.53	0.64	-0.112

8.2. DIETARY DIVERSITY AMONG CHILDREN

8.2.1. Introduction

Adequately diversified diet is crucial to improve overall growth of a child and have implications for future cognitive and physical development. However, the focus of policies and programmes have been primarily on anthropometric measurement of child undernutrition rather than dietary practices and outcomes. Poor diet is associated with frequent infections among children and higher child mortality. The 6-23 months window is particularly crucial as during this stage the nutrition requirement of child is quite high which is required for overall growth. Also, after age of 6 months a child requires nutrient rich food to prevent growth faltering. Very few studies have analyzed the gradual transition in consumption patterns as the child is more than 2 years old. As a priori it is expected that the intake of solid food items should increase with age.

The trends and patterns in dietary intake among children in India are available through NFHS. As per NFHS-4 among 6-23 months children only 22 per cent are having an adequately diversified diet and only 10 per cent are having a minimum acceptable diet. In this regard, Maharashtra is no exception. The consumption of diversified diet and acceptable diet among children is below the national average. Moreover, these figures conceal the socio-economic and regional disparities.

This section therefore aims to assess the dietary patterns among children in the tribal dominated district of Palghar in Maharashtra. The section aims to address four specific objectives, (a) to assess the levels of dietary diversity among children; (b) to study the transition in consumption patterns as a child enters a higher age group; and (c) to test the association of AWC counselling with dietary diversity.

The analysis is based on the data from 40 AWCs spread across 8 administrative blocks of Palghar district in Maharashtra. A total of 120 children in the age group of 6 months to 36 months and 120 children between 3-6 years were considered for the analysis on dietary diversity. The interviews were conducted with their mother or caregiver. Information on 10 diet items was collected: Grains, White Roots

and Tubers; Pulses; Nuts and Seeds; Dairy; Meat, Poultry, Fish; Eggs; Dark green leafy vegetables; Other Vitamin A rich fruits/veg; Other vegetables and Other fruits. Diversified Dietary diversity is defined as consumption from at least 5 food groups and is coded "1" if the child is consuming diversified diet and "0" otherwise. Counselling received by child from AWC was also included as a covariate.

Meals based on grains, white roots and tubers were found to be most common among children 6-36 months in Palgarh. About 90 percent children 6-36 months did not have any fruits in the morning and lunch. Only a quarter of children 6-36 months in Palgarh did have any dark green leafy vegetables in lunch. Across all the four meals, a very small proportion of children 6-36 months were reported consuming fruits (Vitamin-A or other). Further, more than 60 percent children did not receive any dairy products in breakfast.

Compared to children below 36 months, a low proportion of children above 36 months were reported to have dairy products in the morning (25.8 percent) breakfast. The consumption of grains, white roots and tubers was low among children 36 months and above. Also, more than 90 per cent children reported they do not consume nuts and seeds during the day. Only 10.8 per cent reported to have consumed eggs in breakfast. The consumption of meat, poultry and fish is also low in this age group.

Table 8.6: Diet pattern children 6-36 months, Palghar, 2020

Food Items	Breakfast		Lunch		Evening		Dinner	
	N	%	N	%	N	%	N	%
Grains, white roots and tubers	86	71.7	84	70.0	78	65.0	72	60.0
Pulses	63	52.5	82	68.3	57	47.5	52	43.3
Nuts and seeds	5	4.2	0	0.0	3	2.5	3	2.5
Dairy	45	37.5	0	0.0	4	3.3	19	15.8
Meat, poultry, fish	3	2.5	14	11.7	10	8.3	18	15.0
Eggs	28	23.3	7	5.8	11	9.2	8	6.7
Dark green leafy vegetables	14	11.7	31	25.8	13	10.8	55	45.8
Other vitamin A rich fruits/veg.	2	1.7	16	13.3	3	2.5	19	15.8
Other vegetables	10	8.3	28	23.3	9	7.5	40	33.3
Other fruits	5	4.2	4	3.3	14	11.7	13	10.8

Table 8.7: Consumption pattern 3-6 years, Palghar, 2020

Food Items	Breakfast		Lunch		Evening		Dinner	
	N	%	N	%	N	%	N	%
Grains, white roots and tubers	62	51.7	74	61.7	37	30.8	120	100
Pulses	43	35.8	1	0.8	3	2.5	14	11.7
Nuts and seeds	4	3.3	3	2.5	5	4.2	1	0.8
Dairy	31	25.8	13	10.8	5	4.2	1	0.8
Meat, poultry, fish	4	3.3	7	5.8	2	1.7	3	2.5
Eggs	13	10.8	25	20.8	2	1.7	1	0.8
Dark green leafy vegetables	5	4.2	11	9.2	3	2.5	80	66.7
Other vitamin A rich fruits/veg.	9	7.5	24	20.0	3	2.5	48	40.0
Other vegetables	3	2.5	3	2.5	1	0.8	73	60.8
Other fruits	94	78.3	35	29.2	120	100	43	35.8

Table 8.8: Dietary Diversity, 6-36 months and 3-6 years children, Palghar, 2020

	6-36 months		3 to 6 years	
	N	%	N	%
Education level				
Up to Primary	28	50.0	29	38.2
Above Primary	28	43.8	30	68.2
Age of Mother				
Less than 24 years	26	65.0	15	48.4
25 to2 9 years	24	40.7	32	54.2
More than 30 years	6	28.6	12	40.0
Birth order				
1	18	51.4	23	59.0
2	32	46.4	29	45.3
3 and above	6	37.5	7	41.2
Low birth weight				
No	52	48.1	50	51.0
Yes	4	33.3	9	40.9
Income				
0-9000	40	44.4	39	43.8
More than 9000	16	53.3	20	64.5
Block ID				
Dahanu	0	0.0	2	16.7
Jawahar	11	64.7	10	52.6
Mokhada	7	33.3	7	35.0
Palghar	15	83.3	6	50.0
Talasari	1	16.7	3	33.3
Vada	3	37.5	6	85.7
Vasai	9	52.9	10	62.5
Vikramgad	10	43.5	15	60.0
Total	56	46.67	59	49.17

Overall, about 47 percent of children 6-36 months and 49 percent of children 36 months and above had minimum dietary diversity. Across educational groups, a significant difference in the prevalence of minimum dietary diversity was observed. Dietary diversity is (68.2 per cent) higher among children 36 months and above in case mother has completed more than primary education. A clear gradient in the prevalence of MDD was observed across households' income groups with relatively higher diversity among economically affluent households. While 53.3 percent of children 6-36 months from highest income group had MDD, it was 64 percent among children above 36 months.

70 percent of children 6-36 months and at least 50 percent of children 36 months and above did not have fruits even single time in last 24 hours. Importantly, the consumption of dairy products and eggs was also found bleak as among children 36 months and above 70 per cent did not consume dairy and 80 percent

Table 8.9: Distribution of meal frequency, 6-36 months and 3-6 years children, Palghar, 2020

Meal frequency	0		1		2		3		4		Total	
6-36 months	N	%	N	%	N	%	N	%	N	%	N	%
Grains, white roots, tubers	16	13.3	7	5.8	19	15.8	37	30.8	41	34.2	120	100
Pulses	15	12.5	27	22.5	27	22.5	31	25.8	20	16.7	120	100
Nuts and seeds	110	91.7	9	7.5	1	0.8	0	0.0	0	0.0	120	100
Dairy	59	49.2	55	45.8	5	4.2	1	0.8	0	0.0	120	100
Meat, poultry, fish	92	76.7	17	14.2	5	4.2	6	5.0	0	0.0	120	100
Eggs	71	59.2	44	36.7	5	4.2	0	0.0	0	0.0	120	100
Dark green leafy veg.	46	38.3	43	35.8	23	19.2	8	6.7	0	0.0	120	100
Other Vit A rich fruits/ vegetables	96	80.0	8	6.7	16	13.3	0	0.0	0	0.0	120	100
Other vegetables	66	55.0	25	20.8	25	20.8	4	3.3	0	0.0	120	100
Other fruits	91	75.8	23	19.2	5	4.2	1	0.8	0	0.0	120	100
3 to 6 years												
Grains, white roots, tubers	0	0.0	12	10.0	50	41.7	33	27.5	25	20.8	120	100
Pulses	28	23.3	38	31.7	35	29.2	16	13.3	3	2.5	120	100
Nuts and seeds	113	94.2	5	4.2	2	1.7	0	0.0	0	0.0	120	100
Dairy	86	71.7	29	24.2	4	3.3	1	0.8	0	0.0	120	100
Meat, poultry, fish	104	86.7	11	9.2	1	0.8	4	3.3	0	0.0	120	100
Eggs	97	80.8	23	19.2	0	0.0	0	0.0	0	0.0	120	100
Dark green leafy veg.	27	22.5	77	64.2	13	10.8	3	2.5	0	0.0	120	100
Other Vit A rich fruits/ vegetables	67	55.8	44	36.7	9	7.5	0	0.0	0	0.0	120	100
Other vegetables	36	30.0	64	53.3	17	14.2	1	0.8	2	1.7	120	100
Other fruits	72	60.0	46	38.3	2	1.7	0	0.0	0	0.0	120	100

did not consume eggs. On the other hand, the grains and pulses-based diets were reported to be most frequent in daily diet of both the age groups.

The consumption of non-vegetarian diet was also not included in the daily meals of children. For example, about 77 percent of 6-36 months children and 87 percent of 36 months and above children did not have meat, poultry, or fish in their daily diets at all. The consumption of green leafy vegetables was observed to be higher among 36 months and above.

These patterns in dietary diversity were also confirmed by econometric estimates. Table 5 presents the odds of attaining MDD among 6-36 months children and children in 3-6 years age bracket who have received HNE counselling. Children up to 36 months whose mothers or caregivers have received counselling are more likely (OR: 1.05; 95% CI: 0.34, 3.20) to consume

a diversified diet. The association between counselling and dietary diversity is slightly stronger in case of children who are more than 3 years old (OR: 2.70; 95% CI: 1.27, 5.72).

Table 8.10: Multilevel model random slope, odds ratio dietary diversity, Palghar, 2020

	6-36 months	3-6 years	Overall
Counselling			
No	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
Yes	1.05	2.70**	1.77
	[0.34,3.20]	[1.27,5.72]	[0.98,3.21]
N	115	116	231

These patterns in dietary diversity were also confirmed by econometric estimates presented in table 6 obtained for fully adjusted multilevel model. For example, across income groups, the odds of attaining MDD among children 6-36 months is significantly higher for richest section (OR: 1.5; 95% CI: 0.45,5.01) compared to poorest group. Similarly, 3-6 years children from rich families who have average income more than 9000 are 70 percent more likely to consume a diversified diet. Children with birth order more than 2 are also less likely to consume a diversified diet.

Children in 36 and above were approximately three times more likely to consume a diversified diet in case mothers have completed more than primary education (95% CI: 1.23,7.24). Children 3-6 years who have received counselling are 3 times more likely to consume a diversified diet. Children in 6-36 months age bracket who have received counselling are 40 percent more likely to consume a diversified diet (95% CI: 0.40, 4.95).

Item Response Theory (IRT) based single parameter logistic regression models informs that across all 10 food groups, meal based on grains, white roots and tubers is least difficult to attain, whereas consuming nuts and seeds were found to be most difficult (results omitted here). In simple words, providing a diet rich in nuts and seeds to children requires most efforts on account of the households. Food groups such as meat, poultry and fish, other fruits, other eggs and Vitamin-A rich have high discriminatory parameters. In other words, it is difficult to find a protein-rich diet based on meats, poultry and fish and relatively easier to observe pulses and vegetable-based meals among children.

Figures 8.3 and 8.4 presents the trends and patterns in consumption of specific food items among children based on dietary diversity. Intake of each food item is higher among children who are consuming a diversified diet. Substantial difference are observed across the two groups with respect to consumption of Nuts and Seeds; Dairy; Meat, Poultry, Fish; Eggs; Dark green leafy vegetables; Other Vit A rich fruits and vegetables ; Other vegetables and Other fruits. In the 3-6 year age bracket all the children are consuming Grain, white roots and tubers. The intake of dairy and meat is lower in higher age bracket but the consumption of vegetables and fruits is higher.

Table 8.12 presents the proportion of children who are consuming a diversified diet for scenario 1: given that all variables assume the value as given in the sample; and for a counterfactual scenario in which the diet variable is set to its best value. The difference between the scenarios is also presented. Increasing the intake of eggs, meat, poultry and fish; and dairy can increase the proportion consuming a diversified diet to 78 percent, 76 per cent and 63 per cent respectively from 50 percent in the overall sample.

Table 8.11: Multilevel model random slope, odds ratio dietary diversity, Palghar, 2020

	6- 36 months	3-6 years	Overall
Counselling			
No	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
Yes	1.4	3.32*	1.9
Education level	[0.40,4.95]	[1.30,8.43]	[0.97,3.72]
Upto Primary	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
Above Primary	0.66	2.98*	1.3
	[0.26,1.68]	[1.23,7.24]	[0.72,2.34]
Mother age			
Less than 24 years	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
25 to 9 years	0.4	1.32	0.7
	[0.14,1.16]	[0.46,3.81]	[0.35,1.42]
More than 30 years	0.19*	0.74	0.44
	[0.04,0.81]	[0.22,2.52]	[0.19,1.05]
Birth order			
1	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
2	0.91	0.42	0.62
	[0.33,2.51]	[0.15,1.16]	[0.32,1.19]
3 and above	0.8	0.38	0.59
	[0.18,3.54]	[0.09,1.68]	[0.22,1.58]
Low weight at birth			
No	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
Yes	0.82	0.69	0.85
	[0.17,3.81]	[0.23,2.05]	[0.36,2.00]
Income			
Less than 9000	1	1	1
	[1.00,1.00]	[1.00,1.00]	[1.00,1.00]
More than 9000	1.5	1.71	1.69
	[0.45,5.01]	[0.64,4.57]	[0.84,3.38]
Child age group			
6-36 months			1
			[1.00,1.00]
3-6 years			1.01
			[0.55,1.87]
N	115	116	231

Figure 8.3: Consumption of food items by dietary diversity groups, Children 6-36 months, Palghar 2020

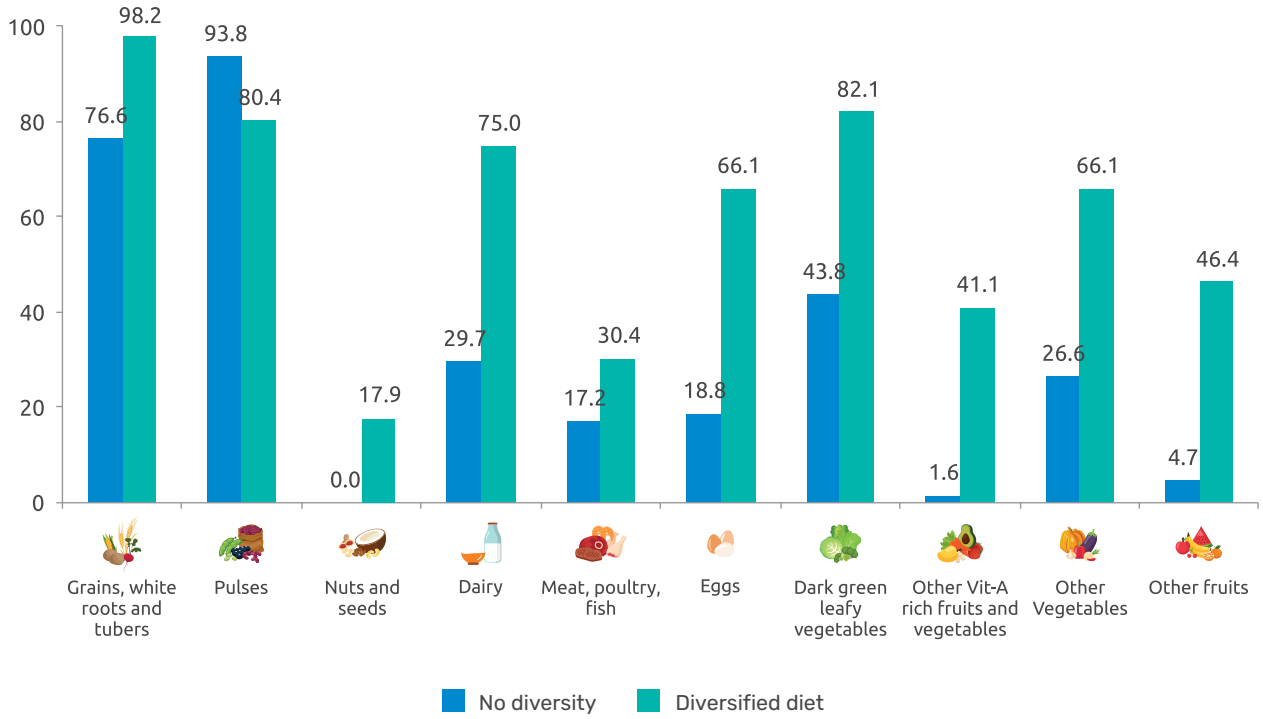


Figure 8.4: Consumption of food items by dietary diversity groups, Children 3-6 years, Palghar 2020

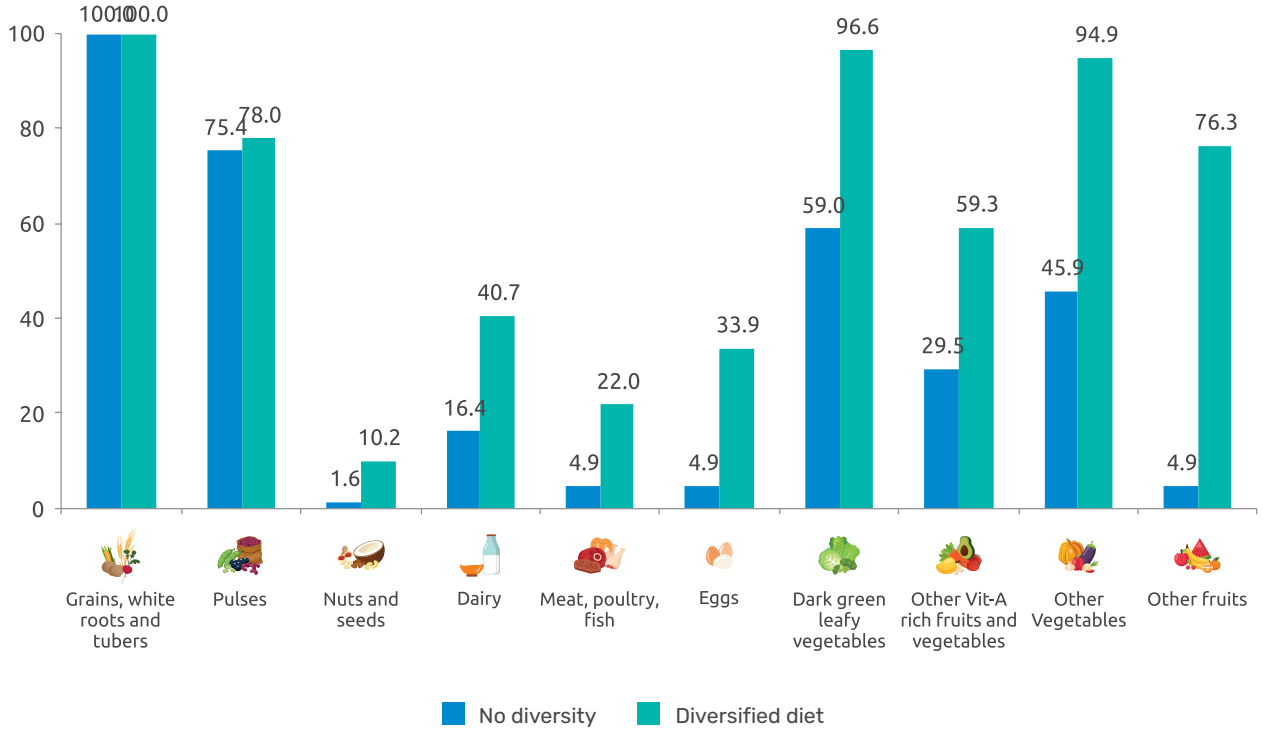


Table 8.12: PAR approach estimates for consumption of diversified diet associated with selected dietary factors, Palghar, 2020

	6-36 months			3-6 years			Overall		
	Scenario 0	Scenario 1	PAR	Scenario 0	Scenario 1	PAR	Scenario 0	Scenario 1	PAR
Dairy	0.49	0.68	-0.189	0.51	0.61	-0.097	0.50	0.63	-0.135
Meat, Poultry, Fish	0.49	0.76	-0.275	0.51	0.73	-0.226	0.50	0.76	-0.263
Eggs	0.49	0.78	-0.293	0.51	0.74	-0.231	0.50	0.78	-0.280
Dark green leafy vegetables	0.49	0.66	-0.173	0.51	0.60	-0.091	0.50	0.62	-0.119

Finally, we show that addition of which type of dietary product would lead to greater change in the dietary diversity pattern of the children in Palghar. Analysis based on the approach of population attributable risk (PAR) suggests that if all children belonging to age group 6-36 months are provided with dairy products then the dietary diversity of the group will increase from 49% to 68%. This implies an increase of 19% points then the current level of 49%. Addition of eggs to the diet of all the children would lead to maximum change in the dietary diversity score from 49% to 78% (a change of 29% points). Inclusion of non-vegetarian diet of meat, chicken or fish can also substantially increase the dietary diversity of the children 6-36 months from 49% to 76%. In fact, providing dark green leafy vegetables to all children also has good potential to increase dietary diversity from 49% to 66%.

Among children 3-6 years addition of eggs for all children can provide highest increase in the dietary diversity score from 51% to 74%. Addition of non-vegetarian food for all children can have a similar effect on dietary diversity. However, inclusion of dairy or inclusion of dark green leafy vegetables for all children can increase the dietary diversity score by 9-10% points only. This analysis suggests that inclusion of eggs or dairy products can be an important area for enhancing the dietary diversity of children, particularly those in the age group of 6-36 months.

09. NFHS-5 (2019-20)

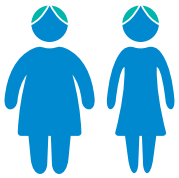
Maternal and Child Health and Nutrition Indicators for Palghar

ANC and Delivery Care	Maharashtra (%)	Palghar (%)
Mothers who had an antenatal check-up in the first tri-mester	70.9	84.7
Mothers who had at least 4 antenatal care visits	70.3	86.3
Mothers who consumed iron folic acid for 180 days or more when they were pregnant	30.9	44.3
Registered pregnancies for which the mother received a Mother and Child Protection (MCP) card	95.5	92.9

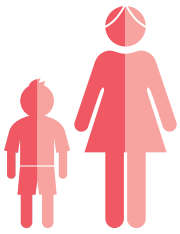
Institutional Delivery Indicators	Maharashtra (%)	Palghar (%)
Institutional births	94.7	94.2

Vaccinations and Vitamin A Supplementation	Maharashtra (%)	Palghar (%)
Children age 12-23 months fully vaccinated based on information from either vaccination card or mother's recall	73.5	94.0
Children age 9-35 months who received a vitamin A dose in the last 6 months	72.2	72.7

Child Nutritional	Maharashtra (%)	Palghar (%)
Children under 5 years who are stunted (height-for-age)	35.2	33.0
Children under 5 years who are wasted (weight-for-height)	25.6	23.9
Children under 5 years who are severely wasted (weight-for-height)	10.9	10.5
Children under 5 years who are underweight (weight-for-age)	36.1	37.1
Children under 5 years who are overweight (weight-for-height)	4.1	9.3



Maternal Nutrition	Maharashtra (%)	Palghar (%)
Women whose Body Mass Index (BMI) is below normal (BMI <18.5 Kg/m2)	73.5	94.0
Women who are overweight or obese (BMI ≥25.0 kg/m2)	23.4	17.0



Anemia among Women and Children	Maharashtra (%)	Palghar (%)
Children age 6-59 months who are anaemic (<11.0 g/dl)	68.9	70.3
Non-pregnant women age 15-49 years who are anaemic (<12.0 g/dl)	54.5	57.2
Pregnant women age 15-49 years who are anaemic (<11.0 g/dl)	45.7	48.5
All women age 15-49 years who are anaemic	54.2	56.9
All women age 15-19 years who are anaemic	57.2	52.1

Data source: NFHS-5 Factsheet

Maternal and child health (MCH) care is the health service provided to mothers (women in their child bearing age) and children. The targets for MCH are all women in their reproductive age groups, i.e., 15 - 49 years of age, children, school age population and adolescents. Maternal and child health (MCH) programs focus on health issues concerning women, children and families, such as access to recommended antenatal care, prenatal and postnatal care, infant and maternal mortality prevention, newborn screening, child immunizations, maternal and child nutrition and services for pregnant and lactating mothers and children with special health care needs.

Even though Palghar is located adjoining to Mumbai – the financial capital of India – it is tagged as one of the most backward districts in Maharashtra, where maternal and child anemic and nutritional status is a very serious concern. Based on National Family Health Survey (NFHS) 2019-20 estimates there is a scope to focus on areas like child and maternal nutrition by strengthening ICDS system and emphasizing on improving the coverage and consumption of IFA supplementation for 180 days or more when they were pregnant that will in future reduce pediatric and maternal anemia in Palghar district.

10. CONCLUSION AND RECOMMENDATIONS

The endline assessment was carried out among 197 Anganwadi Centers (AWC) across 8 blocks of Palghar district of Maharashtra. The sample of 197 consists of 84 AWCs selected for full refurbishment and 113 AWCs proportionate sample selected for partial refurbishment. Further, a total 200 women each were interviewed in 40 randomly selected AWCs (Fully and partially refurbished in 8 blocks to understand the services they received during their antenatal and postnatal period. A total of 120 mothers each for the child age group 6 to 36 months and 3 to 6 years were interviewed for ICDS services received by their children. In view of the Covid-19 pandemic guidelines, the Endline survey was done telephonically with ethical protocols approved by Sigma Institutional Review Board.

The main findings of the endline survey are summarized as follows:

Status of Fully Refurbished AWCs

- Out of 84 AWCs selected for full refurbishment across 3 blocks of Palghar district, 69 AWCs were having government allocated building and 15 had community given structure. None of the fully refurbished AWCs are rented. The need for major or minor repairs of these AWCs reduced considerably during the project period.
- Post-refurbishment the condition of the roof, exterior walls, kitchen area and outdoor area for activities has improved for most of the AWCs. However, space of storage, availability of boxes and jars, condition of floor, and universal availability of LPG for cooking are some of the important areas that needs further attention for refurbishments and provisions.
- Usage of hand pump water and tap water for cooking purposes has increased over the baseline. 43.4% out of 83 of fully refurbished AWCs were using ground well water for cooking, whereas in 34.2% tap water was being used for cooking which was 13.3% at baseline.
- Availability of toilets in AWCs has increased from baseline. The toilets were available in 90.5% of AWCs which was 71.9% at baseline. Out of AWCs with available toilets, 65.8% AWCs toilet is in working condition whereas it was only 31.5% at baseline. 68.4% had reported water availability in toilet which was only 23.6% at baseline and 94.7% had soap for handwashing which was 20.2% during baseline.
- Small mats and durries were available in 97.6% of AWCs which was 65.2% at baseline. Pre-school education (PSE) kit was available in 69% of AWC, an increase of 30.8% from baseline.
- During endline survey, adult weighing machine was available in almost all AWCs except one (98.8%); weighing scale for infants was available in 89.3% AWCs; Salter weighing scale for children was available in 84.5%; and in 90.5% AWCs height measuring tape was available.

- Availability of essential items like first aid box, ORS sachets and IFA tablets has increased over the baseline however, there is still need improvement to ensure 100% availability in all AWCs. Availability of MCP cards and growth charts has also increased when compared with baseline. In endline, MCP cards were available in 68 (81%) out of 84 fully refurbished AWCs whereas, in baseline only 11 (12.3%) out of 89 fully refurbished AWCs had MCP cards available. Growth charts were available in 85.7% of AWCs.

Status of Partially Refurbished AWCs

- 61% of the partially refurbished AWCs were functioning in government allotted buildings, 8% were functioning in a rented premise while remaining 31% were had community given structure or any other.
- Ventilation and lighting of these AWCs is an area for further improvement. This requirement is critical in view of the fact that some of these AWCs have to accommodate over 40 children for the pre-school component.
- Almost half of these AWCs need minor repairs and 30% of these AWCs need major repairs. While the condition of the roof has improved in most AWCs when compared with baseline but 50% of these AWCs still have complains of seepage.
- Presence of compound wall in AWCs, painted exterior walls and availability of demarcated area for outdoor play or kitchen has increased from baseline. Storage of food items has also improved but storage of food items with proper labelling and demarcated boxes and jars still needs to be improved. Usage of LPG gas stove as fuel for cooking has improved from baseline. In 95.4% of the AWCs LPG gas stove is being used cooking fuel by AWCs which was 70.5% at baseline.
- Ground well water was main source of water for drinking and cooking purposes. Provision of tap water connection with running water supply to all AWCs is an important area for policy action. While availability of water filters in AWCs has increased from baseline but ensuring clean and filtered water for drinking purposes should be made universal across AWCs.
- Availability of toilets in AWCs has increased from baseline. The toilets were available in 81.4% of AWCs for partial refurbishment which was in 64% in baseline. However, not all the toilets are functional mainly because of lack of water facility. Availability of soap for handwashing and demarcation of areas for handwashing are important practices that has improved during the course of the project.
- Among other amenities, small mats and durries were available in 98.2% of AWCs but only in 76.6% they were in usable condition. Adult weighing machine was available in 95.6% however, 88% were in working condition. Weighing scale for infants was available in 86.7% however, 94.9% were in working condition. Salter weighing scale for children was available in 81.4% AWCs however, 97.8% were in working condition. Height measuring tape was available in 93% of AWCs. First aid box was available in 35.4% whereas, medicine kit only in 31.9%.
- Availability of MCP cards, growth charts and PSE kits has increased when compared with baseline. MCP cards were available in 91 (80.5%) partially refurbished AWCs which was just 11 AWCs (9.9%) at baseline. Growth charts were available in 85.8% of AWCs. Pre-school education (PSE) kit was available in 60.1% of AWCs which was 40.5% at baseline. IFA tablets were available in 8.8%. ORS sachets were available in 39.8% whereas in baseline, it was available in only 11.7% of AWCs.

ICDS Services Utilization During Antenatal Period

- Registration of pregnant women in the first trimester of pregnancy has increased from baseline. 84.1% of mothers had registered themselves in the first trimester of pregnancy which was 58.5% at baseline.
- Utilization of supplementary nutrition services increased from 91.5% to 97.9% during the project period. Supplementary nutrition in form of take-home ration has increased from baseline whereas percentage of beneficiaries receiving supplementary nutrition in form hot cooked food has decreased from baseline. 75% of the beneficiaries who received hot cooked food from AWC, received it on daily basis. 80% of the beneficiaries who received take home ration, received it on monthly basis.
- 62% of beneficiaries were satisfied with quality of food being provided through AWC whereas in baseline 66.7% of beneficiaries were dissatisfied with quality of food.
- Availability of Mother and Child protection card has increased when compared with baseline. In endline, MCP card was available with 96.5% of beneficiaries and these were also registered during first trimester of pregnancy whereas, in baseline MCP card was available with 86.5%.
- 77.5% mothers informed that they were counselled on importance of ANC checkup during pregnancy which was 65% at baseline. Overall, antenatal checkups done for four or more times has increased from 65.5% to 70.0 % in endline.
- Advantage of taking IFA tablets increased when compared to baseline. 77% of mothers were aware about benefits of IFA as it helps in development of brain of baby which was 62.5% at baseline and 68.5% trusts that it reduces the risk of development of iron deficiency anemia. 95.5% of mothers informed that they consumed complete course of IFA whereas, in baseline 76.5% completed course of IFA.
- 84% received counselling for exclusive breastfeeding. 79% of mother were aware that exclusive breastfeeding strengthens the immunity of the baby which was almost similar to that in baseline. However, counselling services on TT immunization needs improvement.

ICDS Services Utilization During Postnatal Period

- Supplementary nutrition services were received by 98.5% of mothers which was 97% at baseline assessment. 45.2% received both type of supplementary nutrition at endline whereas 77.8% received both type of nutrition at baseline. 52.8% only THR and 2% hot cooked food which was 10.3% and 11.9% at baseline respectively. In endline, 77.4% out of these women received Hot Cooked Meals on daily basis and 79.3% of the women received the THR on monthly basis.
- Percentage of home visits by AWW/ANM/ASHA after delivery has increased from 82% at baseline to 98.5% at endline. The services received were perceived as satisfactory by majority of the women (65% satisfactory services and 32.5% highly satisfactory). In baseline, 38.5% perceived as satisfactory services and 21% as highly satisfactory.
- Increase in the percentage of availability of MCP card with LWs observed from 92.5% to 96%.
- Overall, counselling and consumption of IFA tablets increased when compared with baseline. 93% informed that they received counselling on the importance of consuming Iron folic acid, an increase of 28% from baseline assessment. Counselling on consumption of IFA tablets for six months post-delivery increased from 58.5% at baseline to 94% in the endline survey.

- 86.5% completed the course of IFA which was 52.5% in baseline assessment. But mostly women had not received the tablets who could not complete the course. Counseling about consuming calcium tablets after delivery has increased from 65.5% to 96.5% when compared to baseline assessment.
- Counselling about initiation of breastfeeding within 1 hour of birth has increased from 84.5% at baseline to 97.5% at endline. 94% of mothers were counselled about exclusive breast feeding up to 6 months, a 13% increase from baseline assessment.
- Counselling on initiating complementary food needs improvement. 63.5% of the lactating women received counselling on initiation of complementary food to the baby whereas, in baseline 96% of the lactating women received counselling.

ICDS Services Utilization by Children 6-36 months

- Almost all services which children were availing from AWC has increased from baseline to endline. 97.5% of mothers informed they their children received only take-home ration. In baseline, 78.3% of mothers informed they their children received both (THR and HCF) nutrition.
- There is an increase in the percentage of mother breastfeeding their child within one hour of birth from 73.3% to 92.5% at endline. The percentage of women who breastfed the baby exclusively for 6 months has also increased from 80% in baseline survey to 96.7% in endline survey. 64.2% of mothers initiated complimentary feeding at 6 months of age whereas in baseline, 48.3% of mothers initiated complimentary feeding at 6 months of age.

84.2% of mothers had received counselling on importance of growth monitoring which was 77.5% at baseline. 76.7% of mothers informed that their child received biannual Vitamin A supplementation which was 83.3% at baseline.

ICDS Services Utilization by Children 3-6 years

- Percentage of children availing services from AWC has been increased from 97.5% to 100%. Percentage of children getting supplementary nutrition form AWC has increased from 95.8% to 100%. All Children received some form of Supplementary nutrition, 52.5% received both (THR & HCF), 17.5% received only hot cooked food and 30% received only take-home ration. In baseline, 62.9% received both (THR & HCF) and 37% received only hot cooked food. 86% mothers were satisfied with the quality and quantity of the supplementary nutrition received.
- Growth monitoring services increased from 69.2% to 79.7% except Pre-School Education services which has decreased slightly from 72.5% to 64.4%
- Percentage of mothers aware of PSE activities being performed in AWC has increased from 76.7% to 90.0%. 90% of mothers were satisfied with PSE services at AWC.
- 87.5% of mothers informed that they received counselling on importance of growth monitoring which was 65% at baseline.
- 95% of mother informed that Health checkup services are available in AWC which was 85.8% at baseline. 54.4% of children were receiving health checkup on a monthly basis which has decreased from baseline where 66% of children were receiving health checkup on a monthly basis.

Dietary Diversity Among Lactating Mothers

- Daily diet of most of the lactating mothers in Palghar contains a substantially higher component (frequency) of grains, white roots, tubers, and pulses and much lower frequency of dairy, eggs, and non-vegetarian food. In fact, one in every two pregnant women / lactating mothers did not have any dairy-based food (or dairy products) in even a single meal of the day.
- About half of the lactating mothers did not have a minimum diversified diet and were confined to selected food groups in all the meals of a day. Econometric estimates suggest that increasing the intake of dairy or non-veg items such as (meat, poultry and fish) can increase the proportion consuming a diversified diet to 72 percent from 54 percent
- About 95 percent and 85 percent of lactating mothers (with 0-6 months child) did not have any fruits in the morning and evening breakfast meal, respectively. More than two-third of lactating mothers (with 0-6 months child) did not have any dark green leafy vegetables or Vitamin-A rich fruits in any major or minor meals of the day.
- A clear socioeconomic gradient was observed in the proportion of women with MDD across income groups with higher likelihood of diversity among women from richer households. Such patterns were further confirmed through multilevel regression models and concentration index.
- Food groups such as fruits, meat, poultry, fish, nuts and seeds are among the most difficult components to be attained and therefore attention on these items is necessary at the policy front.
- A significant association between HNE counselling and consumption of a diversified diet is observed.

Dietary Diversity Among Children

- Daily diet of most of the children in both the age groups in Palghar contains a substantially higher component (frequency) of grains, white roots, tubers, and pulses and much lower frequency of dairy, eggs, and non-vegetarian food. The daily intake of dairy and eggs is lower among children 36 months and above. More than 90 per cent children did not have nuts and seed in even a single meal of the day which are a rich source of protein.
- 50 per cent of children in both age group did not have a minimum diversified diet and were confined to selected food groups in all the meals of a day. Econometric analysis suggests that if all children belonging to age group 6-36 months are provided with dairy products then the dietary diversity of the group will increase from 49% to 68%. Similarly, addition of eggs or non-vegetarian food for all children aged 3-6 years can provide highest increase in the dietary diversity score from 51% to 74%.
- A clear gradient was observed in the proportion of children with MDD across income groups with higher likelihood of diversity among children from both age group from richer households.
- Food groups such as meat, poultry and fish, other fruits, other eggs and Vitamin-A rich; and nuts and seeds are among the most difficult components to be attained and therefore substantial interventions are required in this regard at policy front.

MAIN RECOMMENDATIONS

- Continued investments and support for AWC assets and amenities: The Project Spotlight supported full refurbishment of AWCs and partial refurbishment of other AWCs in the project area. This is important because better AWC infrastructure is associated with higher attendance for pre-school services. Our assessment shows that the AWC assets and amenities has improved during the project period but this activity of infrastructure upgradation should be treated as a continuous process. Provisioning of such items requires greater coordination within the government departments as well as across stakeholders (including the community and various development partners).
- Development of monitoring framework for AWC assets and amenities: Project Spotlight based its monitoring on a wider set of indicators that capture the AWC amenities such as its locational characteristics (pollution free and safe surroundings), importation AWC features for interior and outdoor activities as well as identification of refurbishment and repair requirements. The ICDS can, therefore, consider expanding the monitoring framework to include some of these items for a comprehensive assessment of status and progress in AWC infrastructure. This can also allow various stakeholders to compete in service strengthening and upgradation and motivate them to improve the AWC infrastructure.
- Boosting convergence and intersectoral coordination in service delivery: The POSHAN Abhiyaan has emphasized on convergence action to improve delivery of maternal and child health and nutrition services. Project Spotlight has implemented its activities in full spirit and principle of convergence action across stakeholders. Nevertheless, major and minor aspects of such services should be specifically prioritised. For instance, convergence support from Health Department, Panchayats, Electricity Department etc. is necessary for some of the items demanded by AWCs as follows: electricity connection, building repairs and refurbishments, toilet facility, drinking water facility, compound wall and outdoor play area, first aid kits, medicine kits, IFA tablets, ORS sachets etc.
- Capacity building of AWWs for counselling services and communication effectiveness: The analysis noted variations in recall ability of the beneficiary on different aspects of counselling information during pregnancy and lactation phases. This can be improved with continued engagement with beneficiaries as well as improving the capacity and communication strategies of the AWWs. Counselling services such as on exclusively breastfeeding for first 6 months, danger signs during and in post-natal period of pregnancy, counselling on support provided to new born, counselling on child receiving bi-annual Vitamin A supplementation and treatment services should be improvised. Awareness regarding benefits of early registration, number of ANC and PNC needs to be increased.
- Enhance dietary diversity among women and children: Dietary intake and behaviors are among the most important factors determining nutritional health and well-being of women and children. The assessment shows that dietary diversity is an important area for counselling but at the same time it is also noted that it is sensitive to socioeconomic context. Econometric analysis suggests that provision of dairy products or eggs or fruits, etc. for all ICDS beneficiaries can enhance dietary diversity by 25% points. Efforts for provision of these food items emerges as an important area for policy considerations.

NOTES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