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# *Strengthening*
# Maternal Nutrition
## *in Antenatal Care Services*

JULY 2022

RESULTS FROM IMPLEMENTATION RESEARCH
*in Ethiopia and India*

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# Strengthening Maternal Nutrition
## *within Antenatal Care in Ethiopia*

KEY FINDINGS FROM IMPLEMENTATION RESEARCH

## Background

There is wide recognition of the importance of integrating maternal nutrition interventions in antenatal care (ANC) to improve maternal and child health. In Ethiopia, despite the availability of national maternal nutrition guidelines and promising maternal nutrition interventions, key maternal nutrition indicators still lag. According to the Ethiopian Demographic Health Survey (EDHS 2016), 23.6% of women (15-49 years), 29.1% of pregnant women, and 28.6% of lactating women are anemic. Only 5.1% of women took 90+ iron-folic acid (IFA) tablets during pregnancy. There are interventions available to address maternal nutrition needs, but little is known about how well they are implemented in routine health services.

Alive and Thrive (A&T) provided technical assistance to the Government of Ethiopia (GOE) to strengthen the delivery and uptake of ANC services and immediate postnatal care (PNC) services while carrying out implementation research between 2019 and 2021 to better understand how to effectively integrate proven maternal nutrition interventions into Ethiopia's existing package of maternal nutrition interventions (National Nutrition Program – NNPII). To strengthen the evidence base for maternal nutrition programs and policies, A&T developed and tested the integration of an intensive package of maternal nutrition interventions into existing ANC services delivered through government health facilities that will align with the latest global evidence and the NNPII.

## Evaluation design

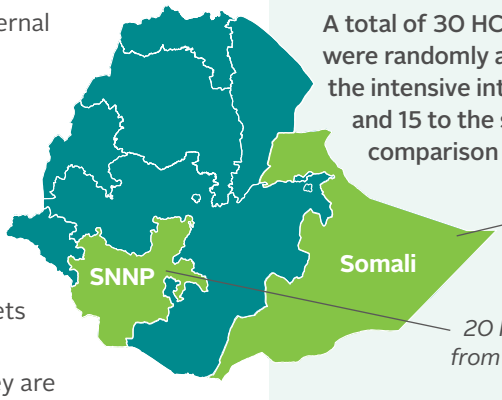
The evaluation was designed as a two-arm cluster-randomized non-masked trial, consisting of two cross-sectional surveys at baseline and endline. The baseline survey was used to check comparability between the intervention and comparison groups. The endline survey evaluated the impacts by comparing the two groups. Data was collected from pregnant women, recently delivered women (RDW), health centers (HC), health posts, ANC observations, nurse-midwives, and Health Extension Workers (HEW). The study was designed to answer these questions:

- What are the **impacts** of the interventions on maternal nutrition practices (consumption of diversified foods during pregnancy; consumption of IFA supplements; and early breastfeeding practices)?
- Can the **coverage and utilization** of key maternal nutrition interventions during ANC be improved through health system strengthening approaches?
- What **factors influence** the integration and strengthening of maternal nutrition interventions into the government ANC service delivery platform?

This brief summarizes the notable highlights from the household and facility surveys.

## STUDY LOCATION

**A total of 30 HC catchments were randomly assigned — 15 to the intensive intervention group and 15 to the standard ANC comparison group.**




## ABOUT THE SAMPLE

### Household survey

The endline sample included:

**540**
Pregnant women
*(270 Intervention, 270 Comparison)*

**1,889**
RDW within 6 months
*(945 Intervention, 944 Comparison)*

**920**
Husbands of RDW
*(475 Intervention, 445 Comparison)*

### Health facility survey

**30**
Nurse-midwives — 1 per HC
*(15 Intervention, 15 Comparison)*

**90**
HEWs — 1 per health post
*(45 Intervention, 45 Comparison)*

### Health facility assessment

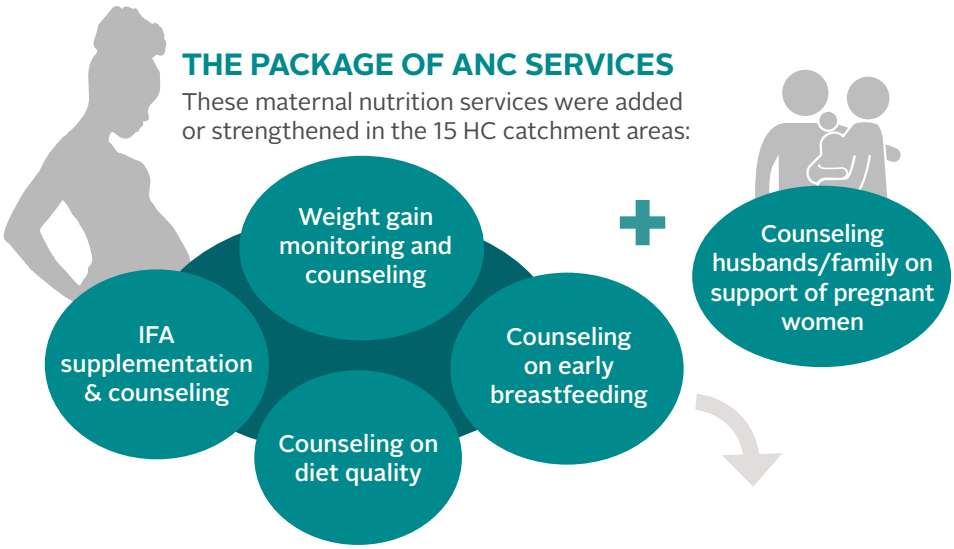
**30**
Health centers
*(15 Intervention, 15 Comparison)*

**118**
Health posts
*(59 Intervention, 59 Comparison)*

# INTERVENTION OVERVIEW

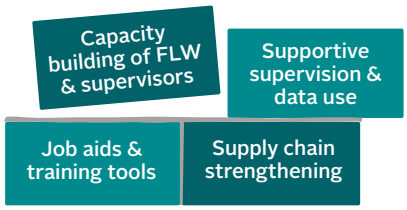
## THE PACKAGE OF ANC SERVICES

These maternal nutrition services were added or strengthened in the 15 HC catchment areas:




## DELIVERY OF ANC SERVICES

Home visits by HEWs and community volunteers were used to deliver the enhanced ANC package and to refer women to the Pregnant Women's Conference (PWC) and mother's support groups.




## SYSTEM STRENGTHENING INPUTS

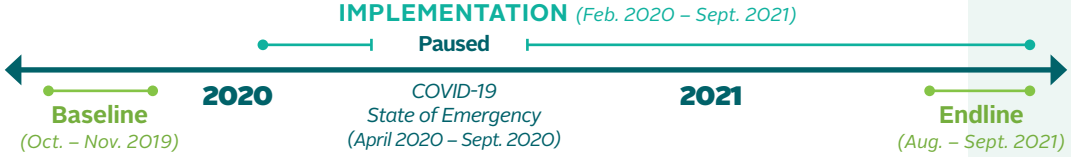
Health system support included:

- Training on maternal nutrition for heads of health centers, nurse-midwives, HEWs, community volunteers, and other health staff.
- Supportive supervision of health staff on maternal nutrition activities.
- Data review meetings of health facility data and feedback sessions at *woreda* health offices for service delivery managers.
- Capacity building for healthcare providers on early forecasting and requisition of IFA tablets and stock monitoring.

## COMMUNITY MOBILIZATION

Local support for maternal nutrition was garnered by raising awareness through community gatherings.

## TIMELINE




## CHARACTERISTICS OF THE SAMPLE

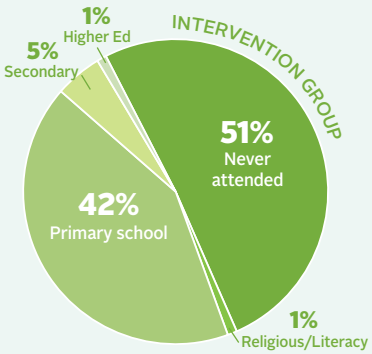
Most of the RDW surveyed were married housewives who had their first child at age 20, on average. There were no major differences between the intervention and comparison groups. Below are more statistics for RDW:

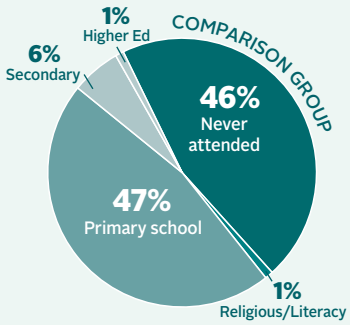
### Average age

**28 years old**

### Education

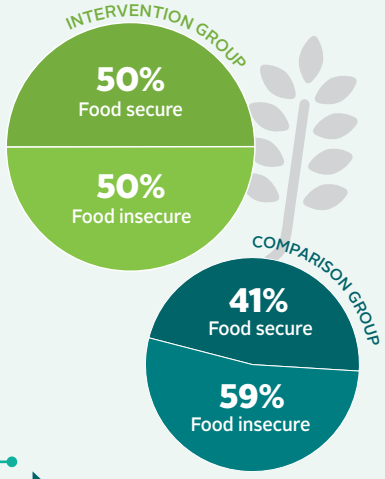
Most RDW never attended school or only attended primary.




### Household food security

More than half of the RDW's households surveyed were mildly to severely food insecure.



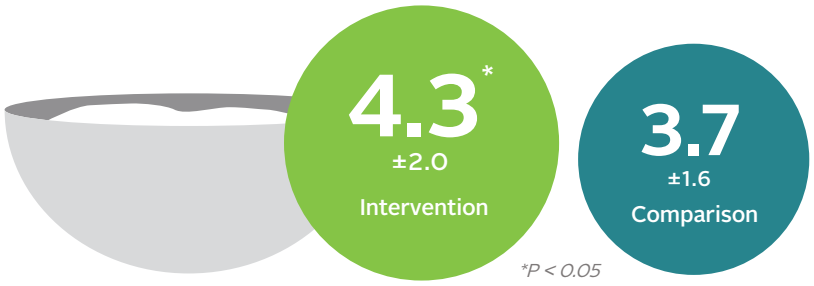
# Results

## MATERNAL DIET

### Diet diversity and nutrients

- Minimum dietary diversity requires women to eat at least 5 of 10 recommended food groups.
- A significant impact was observed on the number of food groups consumed by pregnant women in the intervention group as compared to the comparison group at endline.

### Number of food groups consumed by pregnant women




*P < 0.05

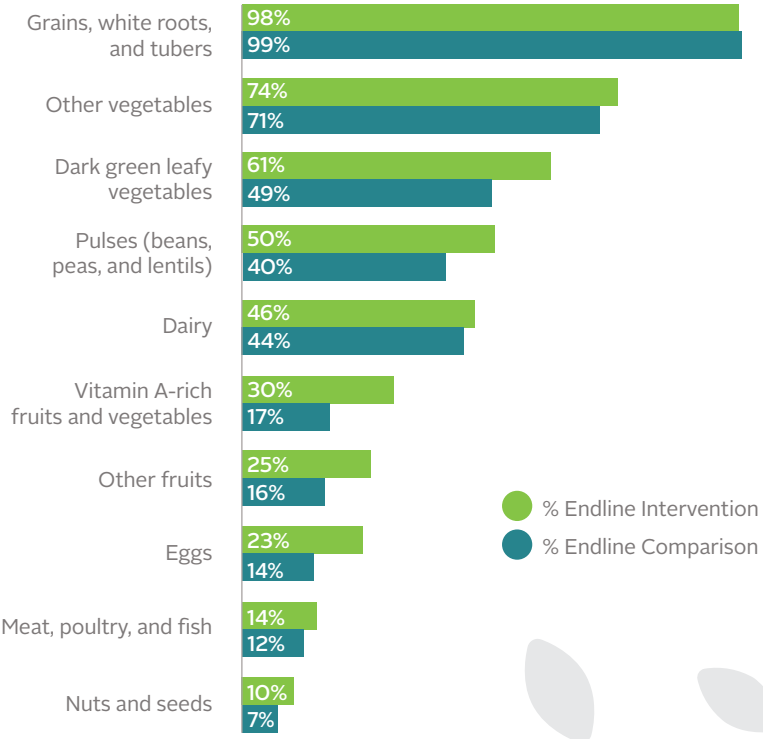
### Pregnant women who consumed at least 5 food groups in the last 24 hours


*P < 0.05

### Types of foods consumed

- Pregnant women in the intervention group appeared to have slightly higher consumption of nearly all food groups compared to the comparison group.

### Foods consumed by pregnant women in last 24 hours*




*The differences between intervention group, accounting for clustering are designated as follows for all results in this document:*

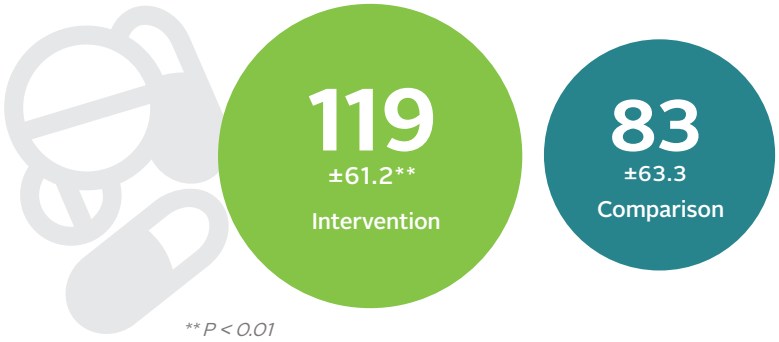
**P < 0.05, **P < 0.01, ***P < 0.001*

# SUPPLEMENTATION

## IFA consumption

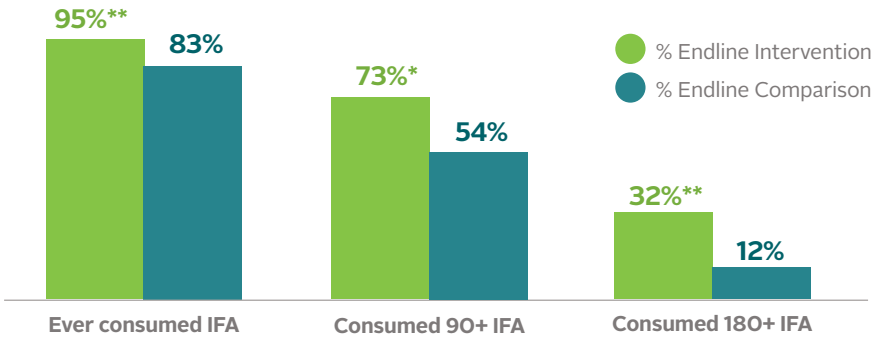
- During their last pregnancy, RDW in the intervention group consumed significantly more IFA tablets at endline than women in the comparison group.
- The proportion of RDW who consumed the recommended 180+ tablets during their last pregnancy was significantly higher at 32% in the intervention group compared to 12% in the comparison group.

### Number of IFA tablets consumed by RDW during pregnancy




*** P < 0.01*

### Consumption of IFA supplements by RDW during pregnancy



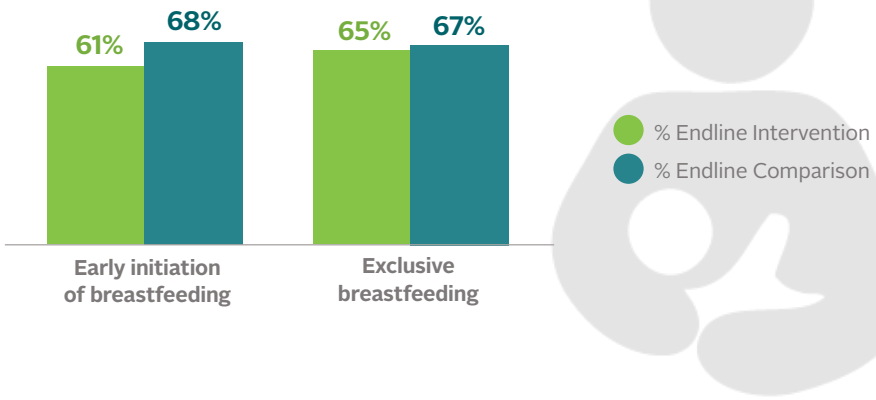

**P< 0.05, **P < 0.01*

# BREASTFEEDING PRACTICES

## Early initiation of breastfeeding (EIBF) and exclusive breastfeeding (EBF)

- There was no impact of the intervention on EIBF or EBF.

### Recently delivered women who practiced recommended breastfeeding practices

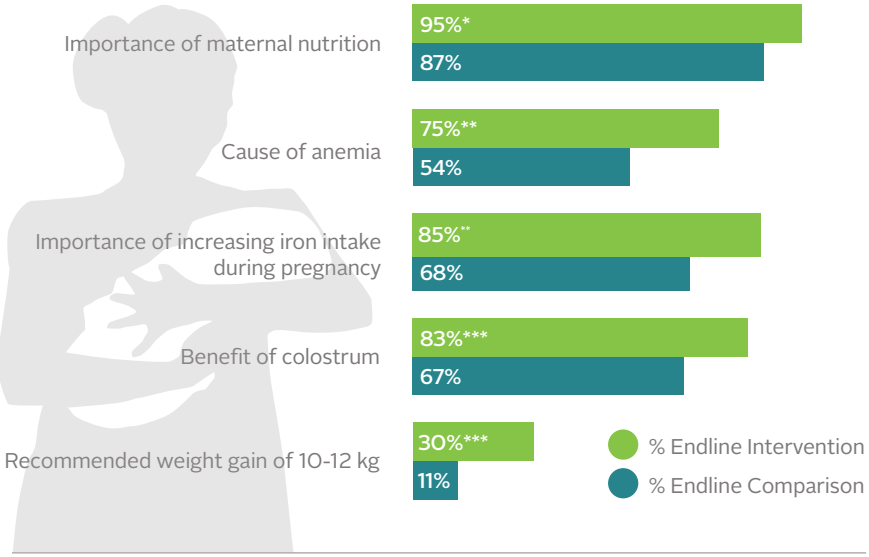


# MOTHERS' KNOWLEDGE

## Maternal nutrition knowledge

- A significantly higher proportion of RDW in the intervention group could recall the key messages on maternal nutrition than those in the comparison group.

### Recall of key messages by recently delivered women




*P < 0.05, **P < 0.01, ***P < 0.001

# USE AND DELIVERY OF ANC SERVICES

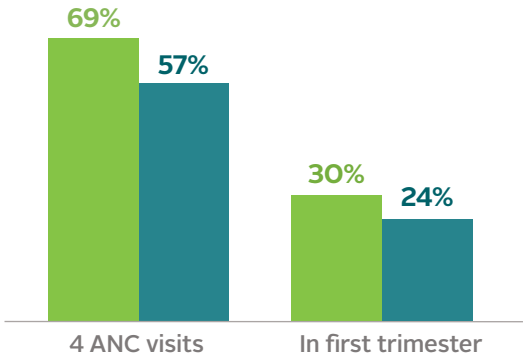
## ANC visits

- RDW in the intervention group attended more ANC visits, and they started attending earlier than RDW in the comparison group at endline.

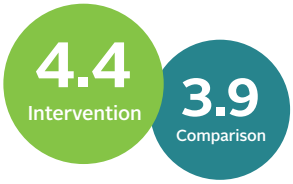


The average gestational age at the first ANC visit was **4.4 months** in the intervention group and **4.7 months** in the comparison group.

### Attendance of ANC visits at health facilities



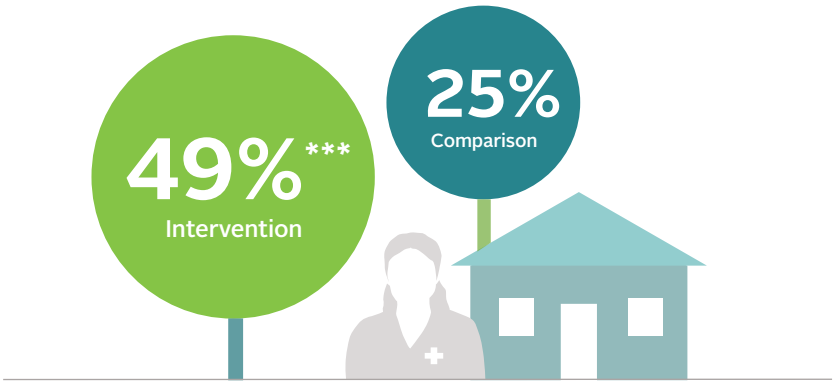

### Total ANC visits




## Home visits

- RDW in the intervention group were twice as likely to receive home visits by HEWs compared to those in the comparison group.

### Pregnant women who ever received a home visit

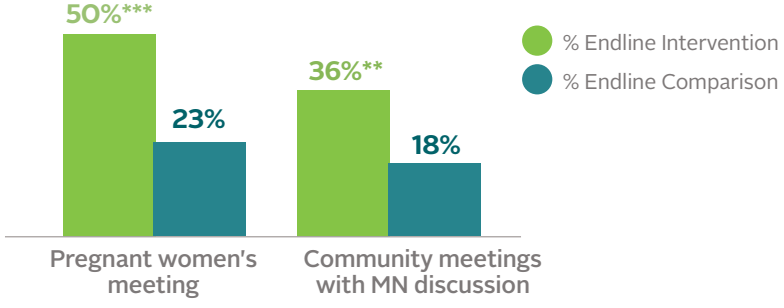



*** P < 0.001

## Community events

- There were significantly higher levels of community-based contacts with pregnant women in the intervention group compared to the comparison group.

### Pregnant women who ever attended community events for maternal nutrition




**P < 0.01, ***P < 0.001

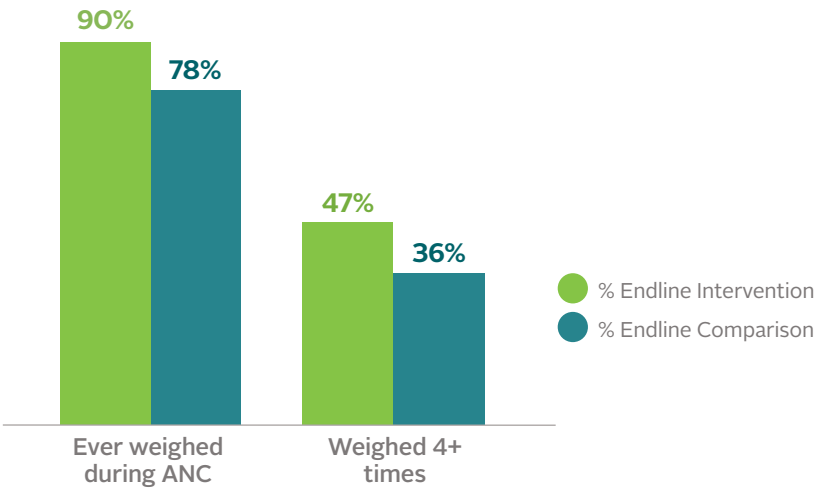
# MATERNAL WEIGHT GAIN

## Weight monitoring

- The proportion of pregnant women weighed by providers was high in both the intervention and comparison groups.

Nearly half of women in the intervention group were **weighed 4+ times** during pregnancy.

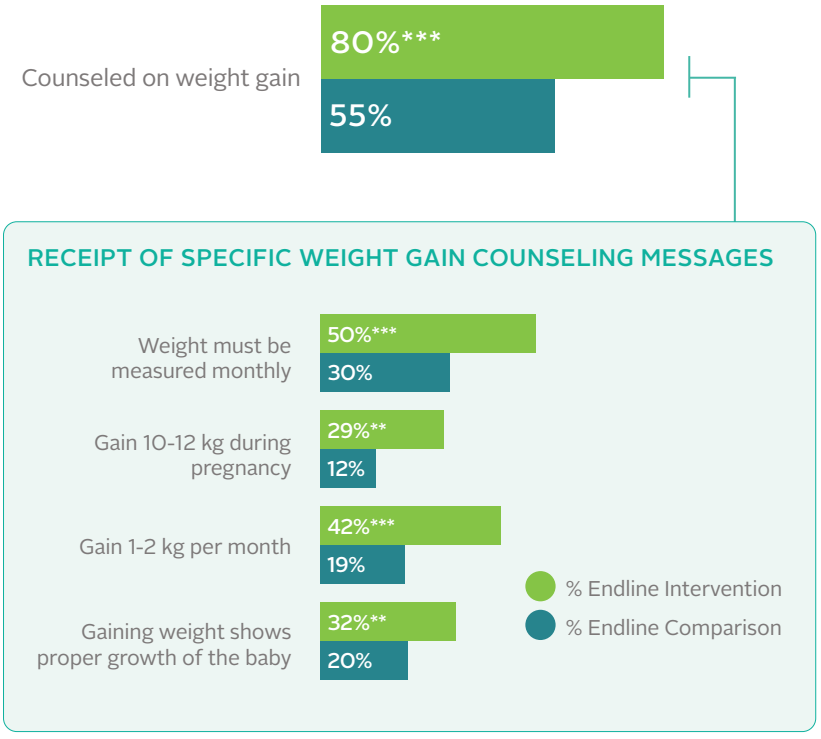
### Pregnant women weighed during ANC




## Weight gain counseling

- Counseling on weight gain was significantly higher in the intervention areas.

### Pregnant women counseled on weight gain during ANC



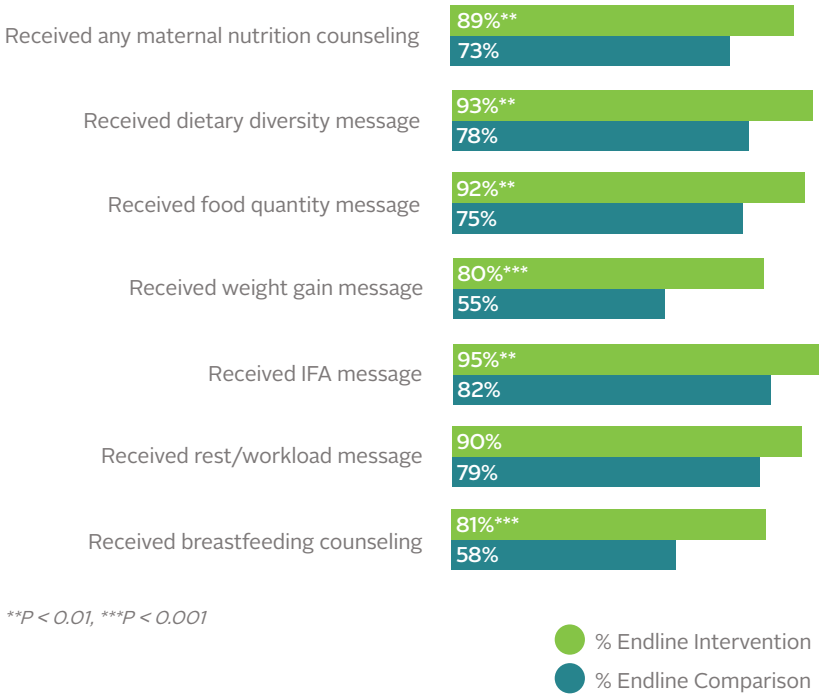

***P < 0.01, ***P < 0.001*

# MATERNAL NUTRITION COUNSELING

## Exposure to nutrition counseling

- RDW had received significantly higher levels of counseling on maternal nutrition topics during ANC visits in the intervention group compared to the comparison group at endline.

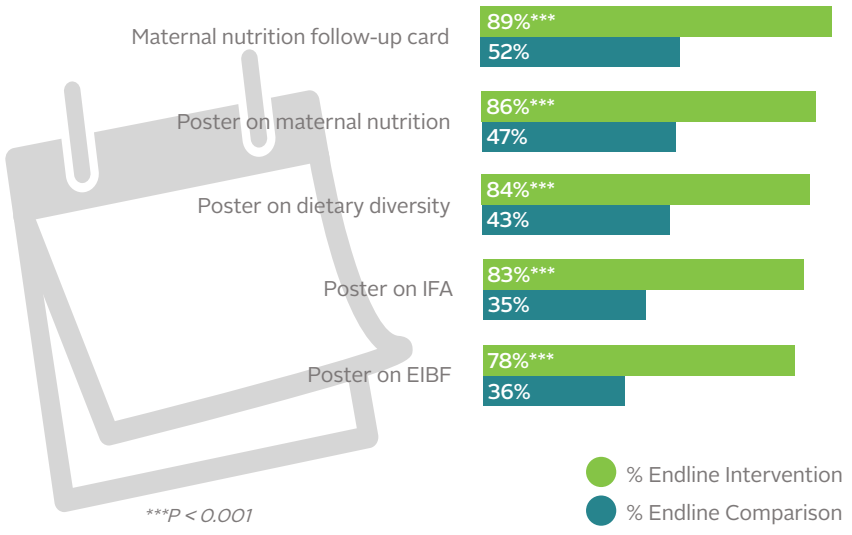
## Counseling received during ANC visits




## Exposure to educational materials

- Significantly more RDW in intervention areas had seen educational materials on maternal nutrition during their last pregnancy.

## RDW who had ever seen educational materials during pregnancy



# Conclusion

## KEY FINDINGS

1. Can the **coverage and utilization** of key maternal nutrition services be improved within the government's existing ANC platform?

- Yes, it is feasible to strengthen MN interventions in ANC services through contacts at health facilities and community level utilizing the existing government health system. Improvements were documented even within a short implementation period amid the COVID-19 pandemic.

2. What were the notable **impacts of the intervention package** on maternal nutrition practices (consumption of diversified foods during pregnancy; consumption of IFA supplements; and early breastfeeding practices)?

- A significant impact was observed on maternal dietary diversity (number of food groups consumed during pregnancy).
- A large significant impact of 35 additional IFA tablets consumed during pregnancy was observed.
- RDW in the intervention group had better knowledge on maternal nutrition and IFA tablets than those in the comparison group.
- During ANC visits at health facilities, more RDW in the intervention group received maternal nutrition counseling compared to those in the comparison group.
- There were no significant impacts on EIBF, EBF in the last 24 hours, or on the number of ANC visits during pregnancy.

3. What **factors should be considered when integrating maternal nutrition** interventions into a well-established government ANC service delivery platform?

- Detailed service delivery protocols were specified for each MN intervention.
- Capacity to deliver MN in ANC services improved through training, supervision, job aids and IEC materials, record keeping and use of data. SBCC approach was used to convert knowledge into practices.

4. What **external factors** might have affected the results?

- There appeared to be substantial spillover in comparison areas, potentially reducing impacts and differences observed between groups.
- COVID-19 restrictions affected service delivery and utilization of ANC, reducing the exposure to MN interventions.

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# Strengthening Maternal Nutrition
## *within Antenatal Care in India*

KEY FINDINGS FROM IMPLEMENTATION RESEARCH

In India, despite national policy guidance based on global antenatal care (ANC) guidelines, some of the most critical maternal nutrition services do not reach the majority of pregnant women. In Uttar Pradesh, only 42 percent of pregnant women completed four ANC visits, and 10 percent consumed the recommended 180 tablets of IFA during pregnancy (IIPS, 2019-21).

Between 2017-2019, Alive and Thrive (A&T) provided technical assistance to the Government of India (GOI) to strengthen the delivery and uptake of ANC services while carrying out implementation research to better understand how to effectively integrate proven maternal nutrition interventions. These efforts informed the GOI's design of maternal nutrition program guidelines and identified a feasible package of maternal nutrition interventions—including iron and folic acid (IFA) supplementation, calcium supplementation, counseling on maternal diet, weight measurement, and counseling on breastfeeding—to incorporate into the government's community-based ANC platform. This brief shares the results of the implementation research conducted in Uttar Pradesh.

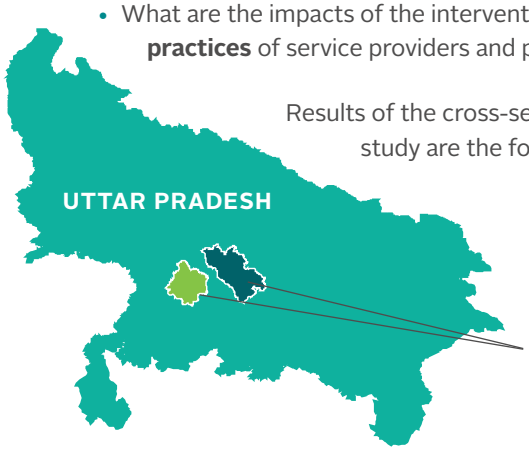
### Research design and study location

The research entailed four studies: a repeated cross-sectional study with baseline and endline surveys 24 months apart; a longitudinal study of a subset of pregnant women, a qualitative study on implementation, a process evaluation/quantitative midline survey, and a cost of diet survey.

The study was designed to answer the following research questions:

- Can the **coverage and utilization** of key maternal nutrition interventions be improved within the government's ANC service delivery platform?
- What **factors affect effective integration** of maternal nutrition interventions into a well-established government ANC service delivery platform?
- What are the impacts of the intervention package on the **knowledge and practices** of service providers and pregnant women?

Results of the cross-sectional study and the longitudinal study are the focus of this brief.




**Unnao District**
**Kanpur Dehat District**

*13 subdistricts randomly assigned to the intensive intervention (I-ANC) & 13 to the standard ANC comparison areas (S-ANC)*

## ABOUT THE SAMPLE

### Cross-sectional survey

The endline sample included:

**674** Pregnant women (PW)

**1,849** Recently delivered women (RDW) within 6 months

**393** Husbands of PW

**1,167** Husbands of RDW

**392** Mothers and mothers-in-law (MMIL) of PW

**1,043** MMIL of RDW

**479** Frontline Health and Nutrition Workers (FLW)

**209** Supervisors

### Longitudinal study

Pregnancies were tracked monthly from <4 months pregnant to postpartum <1 month of delivery.
The sample included:

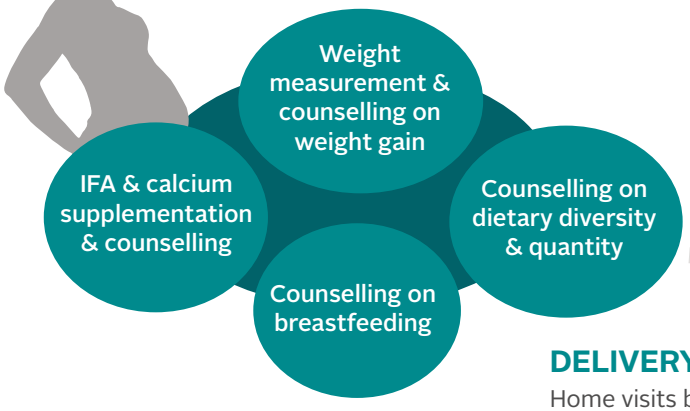
**198** PW (I-ANC)

**195** PW (S-ANC)

# INTERVENTION OVERVIEW

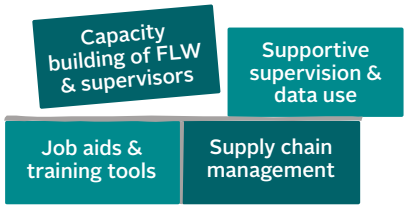
## THE PACKAGE OF ANC SERVICES

These maternal nutrition services were added or strengthened in the 13 I-ANC sub-districts:




## DELIVERY OF ANC SERVICES

Home visits by government FLWs and Village Health, Sanitation, and Nutrition Days (VHSND) were used to deliver the enhanced ANC package to pregnant women.




## SYSTEM STRENGTHENING INPUTS

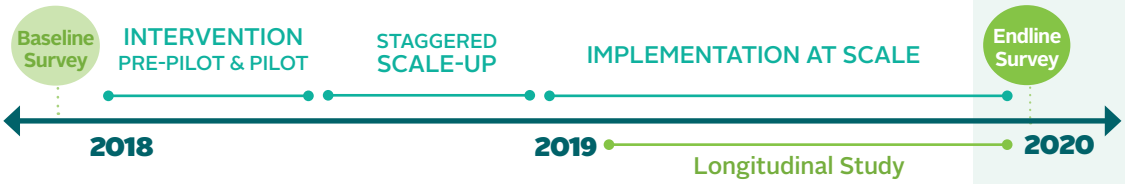
Health system support included:

- Maternal nutrition training and monthly refreshers to strengthen technical knowledge and counseling skills of FLWs
- Job aids for FLWs and PW including a maternal nutrition calendar to help PW track IFA/calcium consumption
- Supportive supervision training in coaching, problem solving, and giving feedback for government supervisors, paired with supervision checklists and on-the-job mentoring
- Support of government health and Integrated Child Development Services supervisors at the block and sub-block levels to identify and correct gaps by conducting reviews of routine data and findings from supervision visits
- Support for adequate IFA and calcium procurement, need-based distribution, and stock monitoring and management to ensure supply availability at the last mile

## COMMUNITY MOBILIZATION

Support for maternal nutrition was garnered by raising awareness among the village self-governance bodies (Panchyat) and other opinion leaders and by activating the Village Health Sanitation and Nutrition Committees (VHSNCs). The husbands' maternal nutrition forum (Ratri Chaupal) and VHSNCs encouraged men to support their pregnant wives to adopt optimal nutrition practices and seek early and timely care.

## TIMELINE




## CHARACTERISTICS OF THE SAMPLE

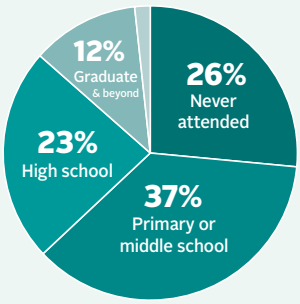
Most respondents were Hindu housewives, in their mid-20s from rural areas. Below are more statistics from the baseline survey:

### Average age

**26 years old**

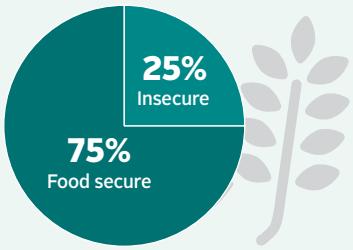
### Education

On average, RDW completed seven years of school.




### Household food security

Most households surveyed had adequate food to feed the family.




### Body mass index (BMI)

Most RDW surveyed had a normal BMI, however almost a quarter were underweight.


**22%** Underweight

**68%** Normal

**10%** Overweight/ Obese

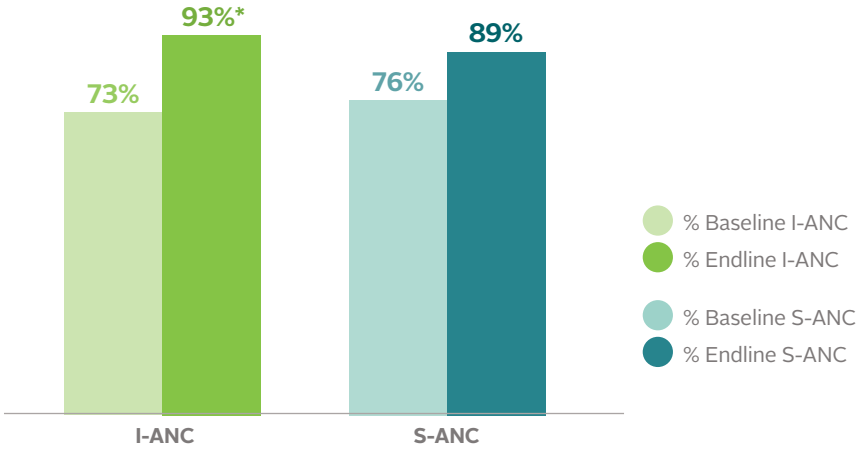
# Results

## IFA SUPPLEMENTATION

### IFA access

- The proportion of RDW who ever received IFA increased from baseline to endline in both intervention and comparison areas.
- Over 90 percent of women in intervention areas and 87 percent in comparison areas received IFA. The increase was significantly greater in intervention areas.

### RDW who ever received IFA supplements during pregnancy

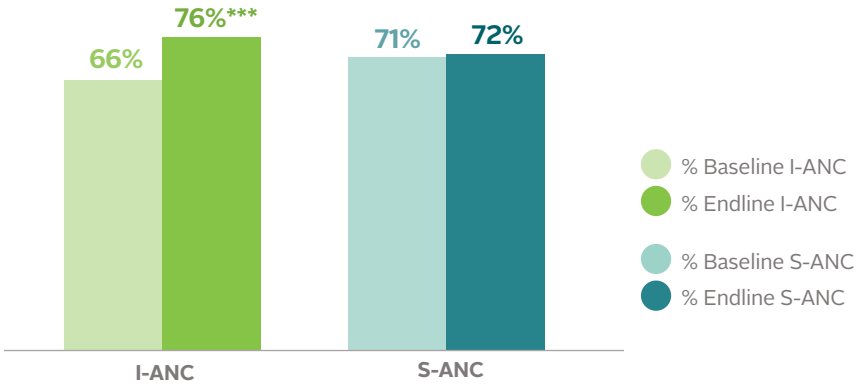



*P < 0.05

### IFA consumption

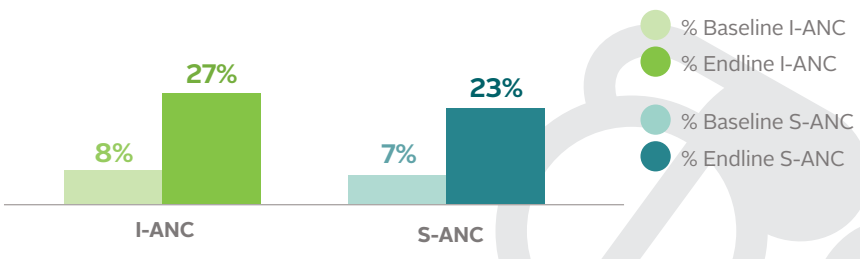
- The percentage of RDW who ever consumed IFA during their last pregnancy increased in both the intervention and comparison areas. There was no significant difference in levels of consumption of IFA.
- Despite the increase in IFA ever consumed, consumption of the recommended number of tablets remained low.
- By endline, only about one-quarter of women consumed 100+ IFA tablets. There was no significant difference across the intervention and comparison areas.

### RDW who ever consumed IFA supplements during pregnancy




***P < 0.001

### RDW who consumed 100+ IFA tablets during pregnancy




*The differences between intervention group, accounting for clustering are designated as follows for all results in this document:*

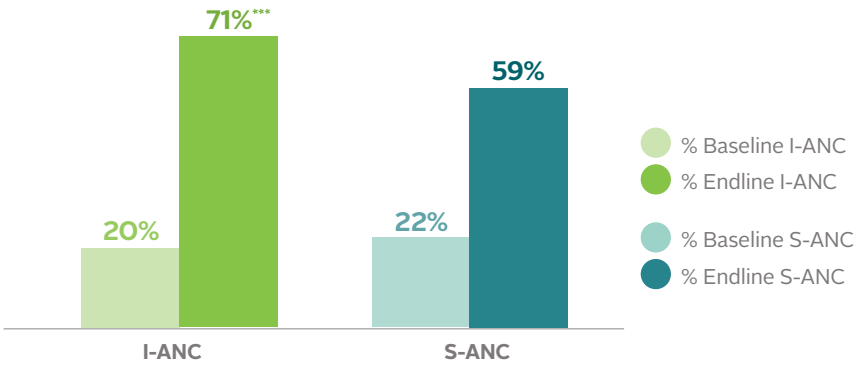
**P < 0.05, **P < 0.01, ***P < 0.001*

# CALCIUM SUPPLEMENTATION

## Calcium access

- Receipt of calcium increased dramatically—more than three-fold in the intervention areas—reaching more than 70 percent of women. While calcium receipt increased in the comparison areas to almost 60 percent, the increase was significantly higher in the areas with intensive interventions.

### Pregnant women who ever received calcium supplements

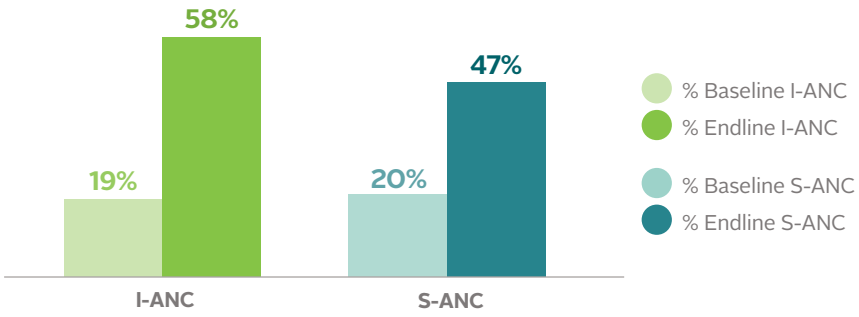



*** P < 0.001

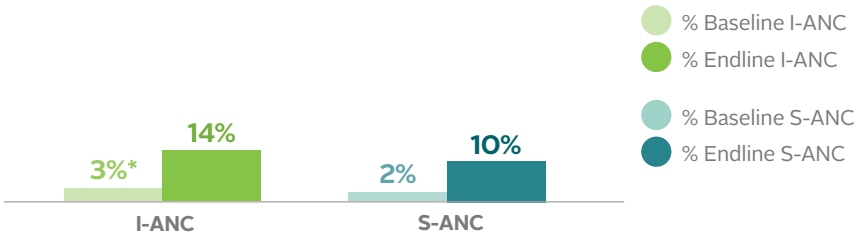
## Calcium consumption

- Consumption of calcium increased dramatically across both the intervention and the control areas; the proportion of women who consumed calcium was significantly higher in the intervention areas; increasing almost three-fold to 58 percent at endline from 19 percent at baseline.
- Despite the increase in calcium ever consumed, consumption of the recommended number of tablets remained low.
- By endline, only around 10 percent of women consumed the 100 + calcium tablets. There was no significant difference across the intervention and comparison areas.

### Pregnant women who ever consumed calcium supplements




### Pregnant women who consumed 100+ calcium tablets



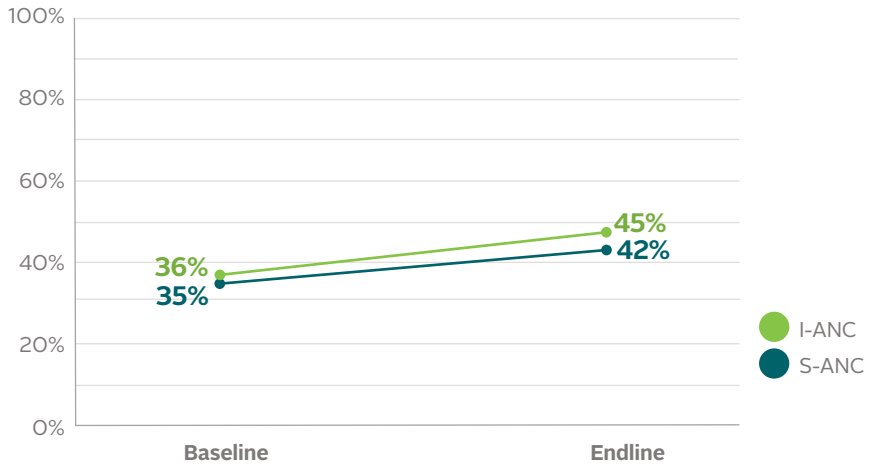

* P < 0.05

# MATERNAL DIET

## Dietary diversity and nutrients

- Minimum dietary diversity requires women to eat at least 5 of 10 recommended food groups. Minimum dietary diversity increased across both intervention and comparison areas according to 24-hour recall data from the cross-sectional survey.
- Improvement in dietary diversity among pregnant women did not differ across the intervention and comparison groups. Less than half of all pregnant women consumed at least 5 different food groups at endline.

### Pregnant women who consumed at least 5 food groups in the last 24 hours




## Types of foods consumed

- Food consumption remained similar over time in both areas (with the exception of significantly higher consumption of vitamin A-rich food items in intervention areas).
- All pregnant women ate grains according to the 24-hour recall and most consumed milk and milk products.
- About half of women consumed pulses (beans, peas) and one-third consumed dark green leafy vegetables.
- Flesh foods and eggs were hardly consumed by any women.
- The types of food eaten did not differ significantly between baseline and endline measurements. (Endline data shown.)

### Foods consumed by pregnant women in last 24 hours*


** Endline data*

# MATERNAL WEIGHT GAIN

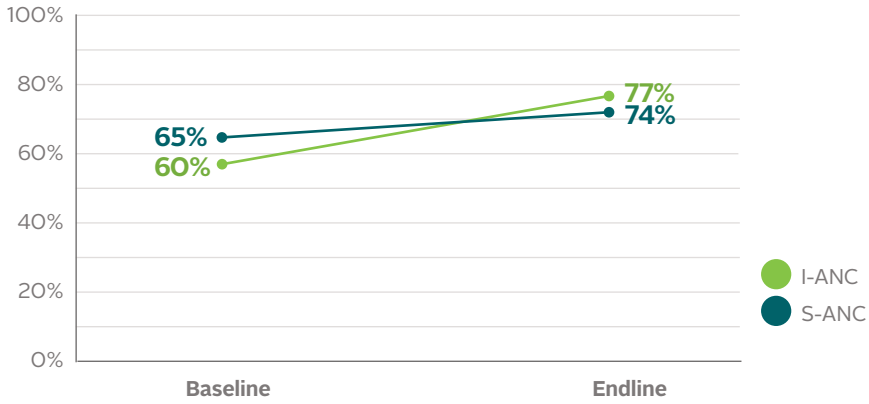
## Weight monitoring

- Overall monitoring of weight gain was limited.
- However, the proportion of pregnant women weighed by providers increased between baseline and endline. By endline about three-quarters of women reported ever being weighed during their pregnancy across both the intervention and comparison areas.

Pregnant women were only weighed about

**1-2 times during their pregnancy**

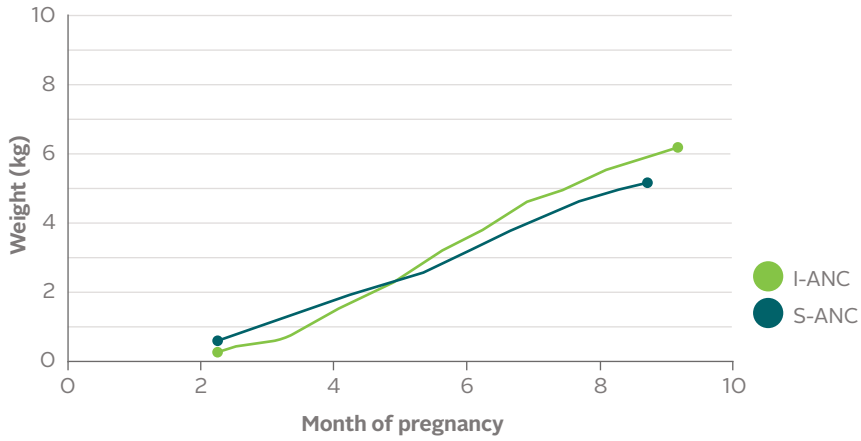
### Pregnant women ever weighed during pregnancy



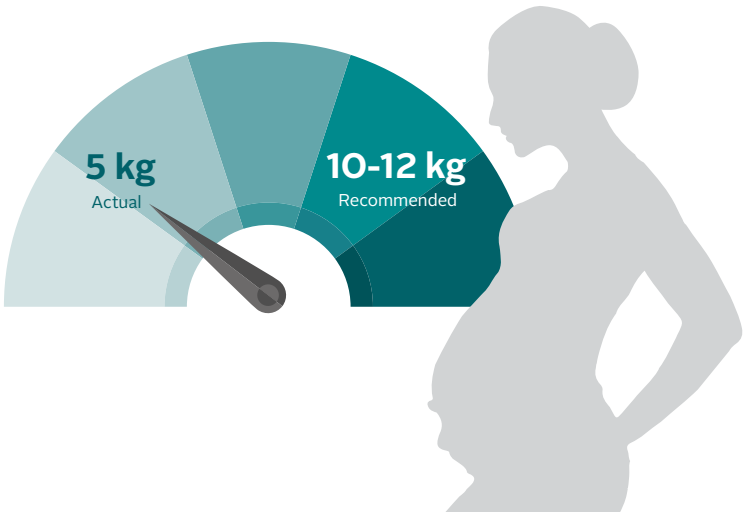

## Gestational weight gain

- On average, women gained approximately 5 kg during their pregnancy, much lower than the recommended 10-12 kg.
- Longitudinal data showed that women in the intervention areas significantly improved their gestational weight gain by a modest 0.4 kg from early to late pregnancy compared to the comparison area.

### Average weight gained during pregnancy




### Actual GWG compared to recommendation

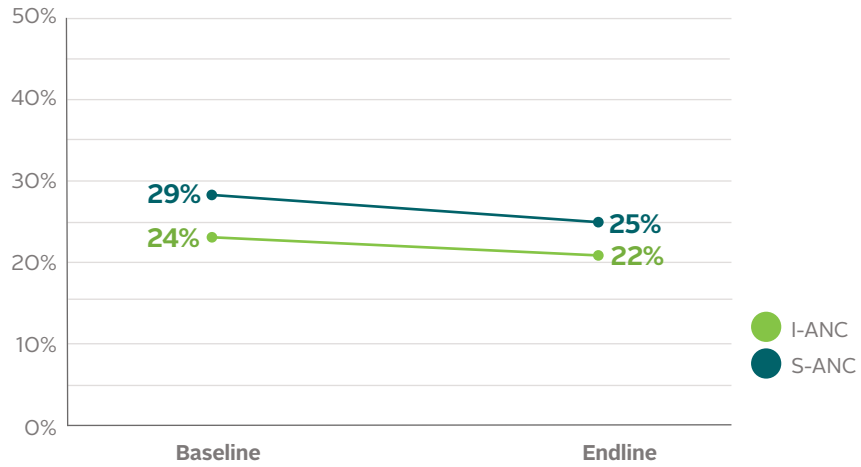


# BREASTFEEDING PRACTICES

## Early initiation of breastfeeding (EIBF)

- Only about one-quarter of RDW across the research areas reported that their newborns were breastfed within one hour of delivery. There was essentially no change in this practice over the course of the study.

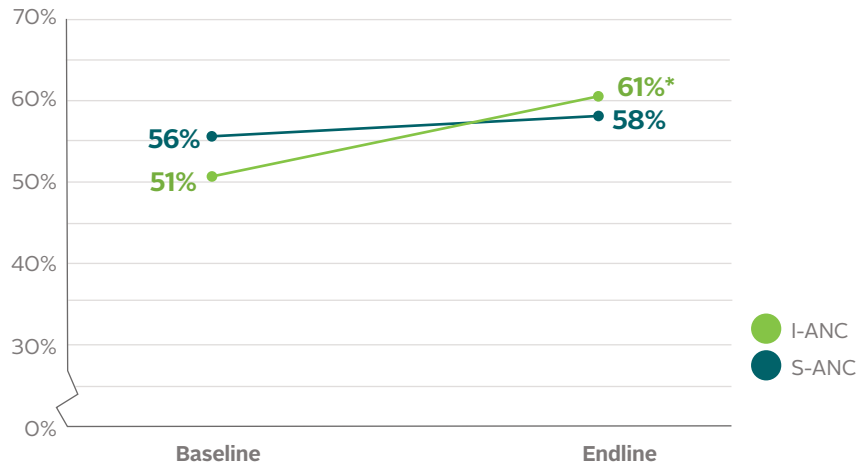
### Recently delivered women who breastfed within one hour of delivery




## Exclusive breastfeeding (EBF)

- RDW practicing exclusive breastfeeding (EBF) increased significantly in the intervention areas over the course of the research.

### Recently delivered women who gave only breastmilk for the first 6 months



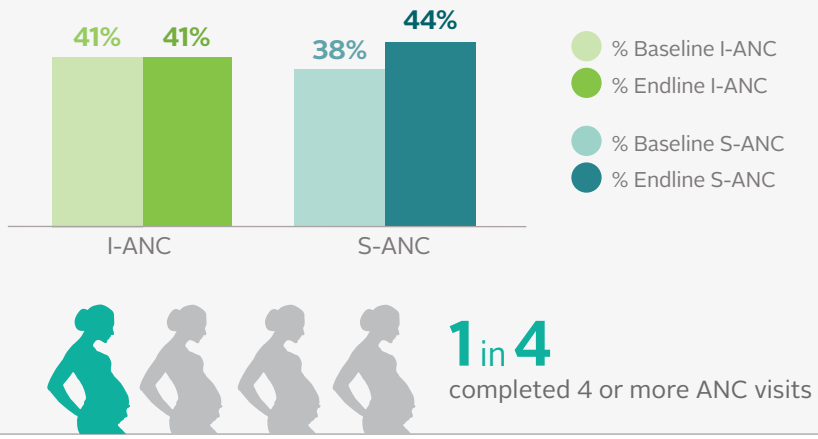

** P < 0.05*

# USE AND DELIVERY OF ANC SERVICES

## Completion of critical ANC contacts

- Only about 40 percent of women received ANC services in the first trimester. This did not change during the study and was similar across the intervention and comparison areas.
- About one-quarter of women received four or more ANC visits over the course of their pregnancy. Likewise, this did not change during the intervention period and there was no difference across the intervention and comparison areas.

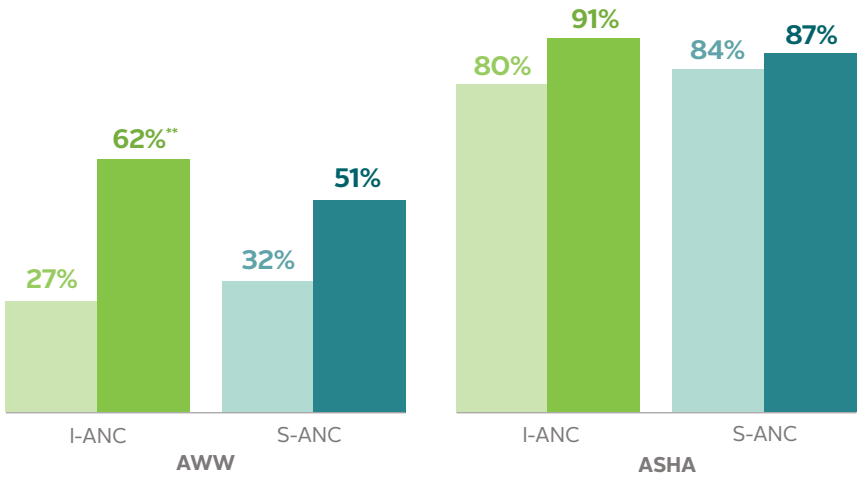
### Receipt of ANC services in first trimester




## Frontline worker home visits

- Both Agnanwadi Worker (AWW) and Accredited Social Health Activist (ASHA) frontline workers increased the home visits they made to pregnant women in all areas over the research period.
- Home visits provided by AWWs increased significantly in the intervention area, more than doubling from baseline, compared to the comparison area.

### Home visits to pregnant women by AWW and ASHAs

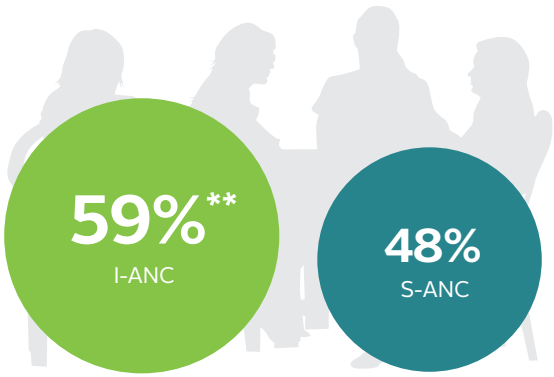



*** P < 0.01*

## Outreach events

- Pregnant women in the areas where the interventions were implemented were significantly more likely to attend VHSND and receive individual and group counseling.

### Pregnant womens' attendance of ANC services at VHSND

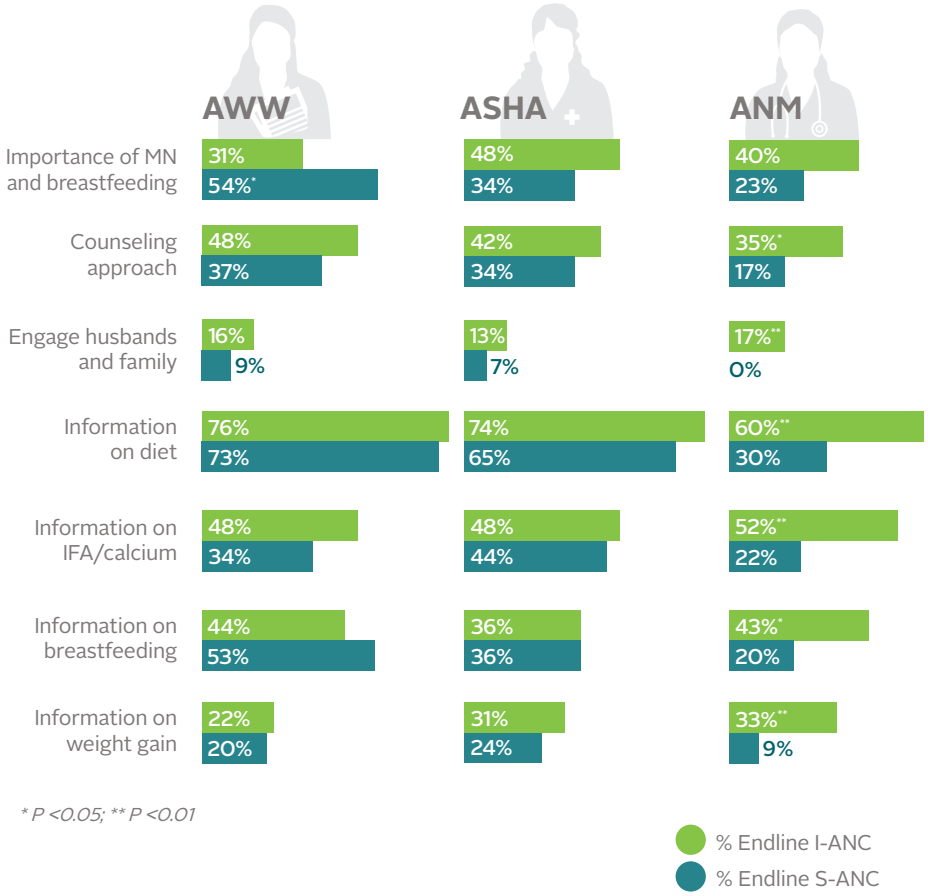


# HEALTH SYSTEM SUPPORT FOR ANC

## FLW training

- At endline, most AWWs had received training in the last year in both the intervention and comparison.
- There was a significantly higher percentage of ASHAs and ANMs trained in the intervention than the comparison areas.
- As the endline data shows, ANMs exposure to information on diet, IFA and calcium, breastfeeding, and weight gain was at least two times greater in the intervention group.

## Frontline health worker exposure to maternal nutrition content during training

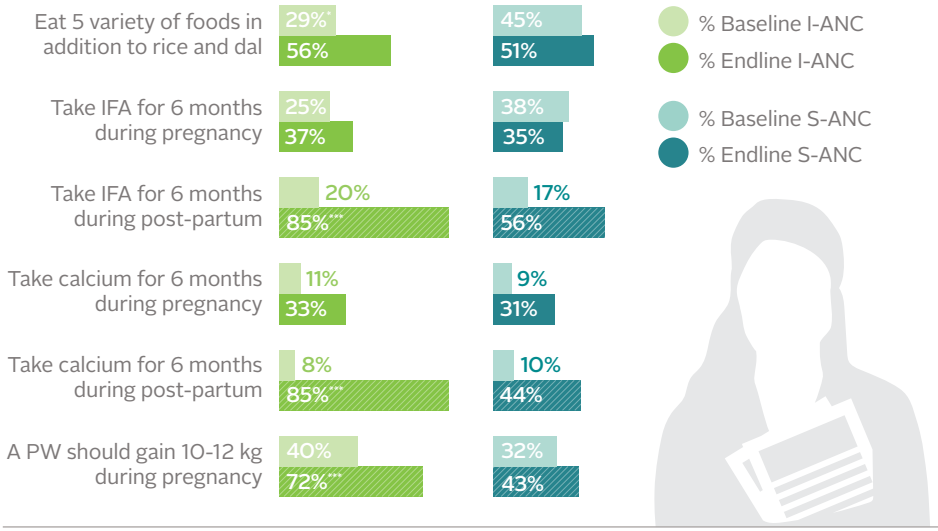



** P <0.05; ** P <0.01*

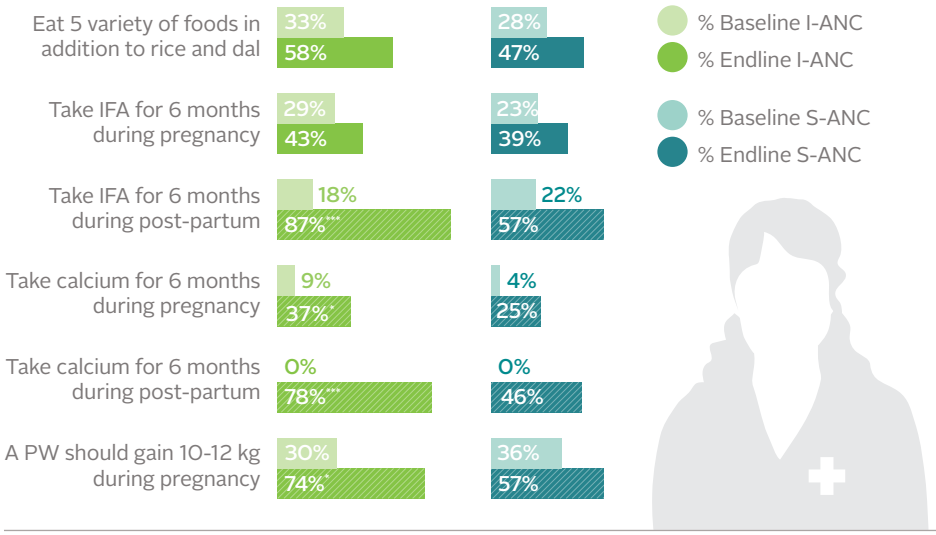
## FLW knowledge of maternal nutrition

- Knowledge of essentially all maternal nutrition topics increased among all frontline workers over the research period.
- Frontline worker knowledge in the intervention area increased significantly more than in the comparison areas for topics including, eating a variety of foods (ANMs); consumption of IFA for 6 months post-partum (all FLWs); the number of days to take calcium pre- and postpartum (AWWs and ASHAs); and recommended weight gain (all FLWs).

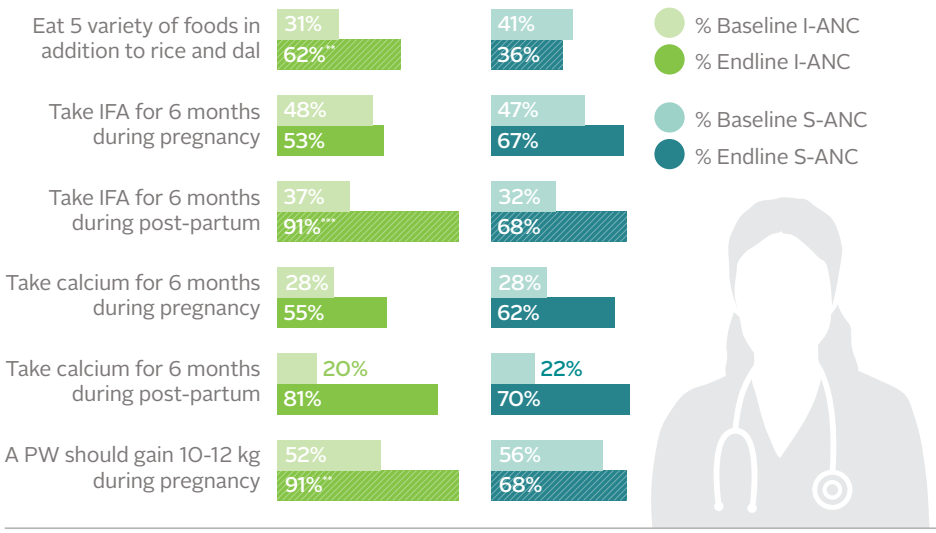
### AWW knowledge of nutrition




### ASHA knowledge of nutrition




### ANM knowledge of nutrition



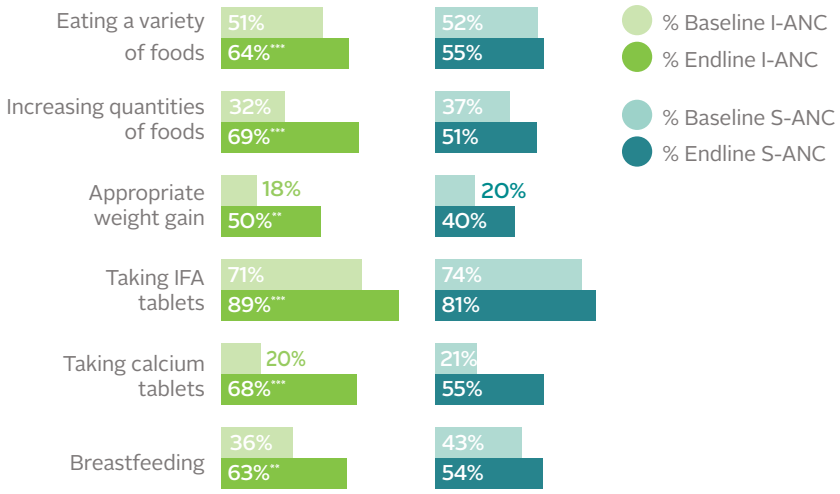

*$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

# MATERNAL NUTRITION COUNSELING

## Exposure to nutrition counseling during pregnancy

- Overall, exposure to counseling from any platform or any service provider improved in both areas over time, covering advice on diet diversity, adequate dietary intake, taking IFA and calcium, weight gain, and breastfeeding.
- Some counseling topics received significantly more attention in interventions areas, including counseling on diet diversity, adequate dietary intake, taking IFA and calcium, weight gain, and breastfeeding.

## Coverage of nutrition counseling during pregnancy




*$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

## Frontline workers access to maternal nutrition materials and job aids

Frontline health workers in the intervention areas had **greater access to maternal nutrition materials & job aids** than those in the comparison areas.

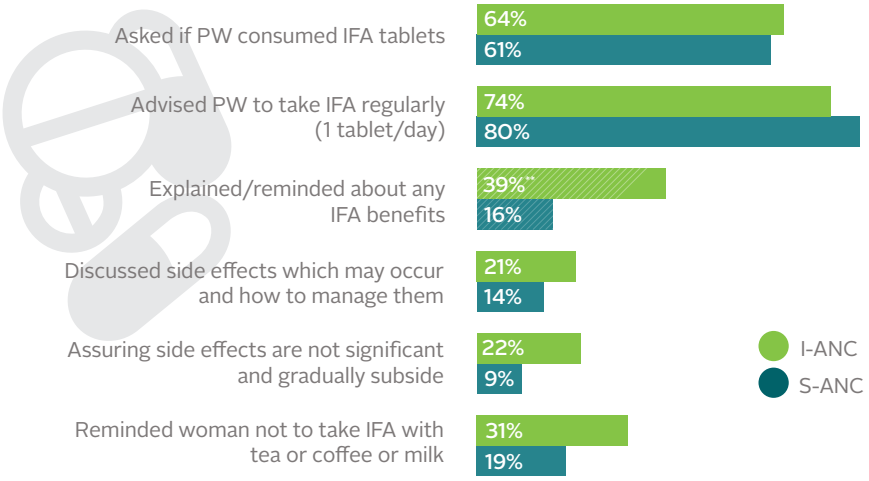
**95%** of ANMs in I-ANC had access to the printed job aid

**44%** of ANMs in S-ANC had access to the printed job aid

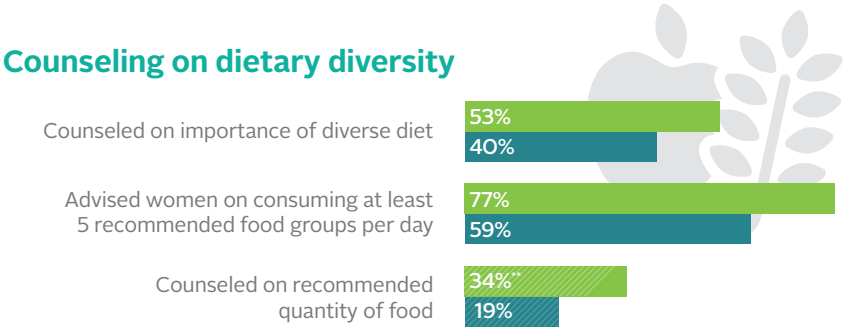
## Quality of nutrition counseling by ANMs

- Observation of counseling by ANMs showed higher quality maternal nutrition counseling in the intervention areas.
- Counseling improved significantly for some topic areas, including the quantity of food to eat during pregnancy, explaining or reminding pregnant women of IFA benefits, and on weight gain.
- Despite improvements, the quality of counseling deserves more attention, especially related to breastfeeding.

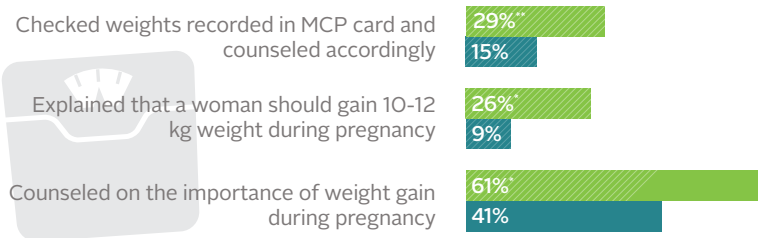
### Counseling on taking IFA



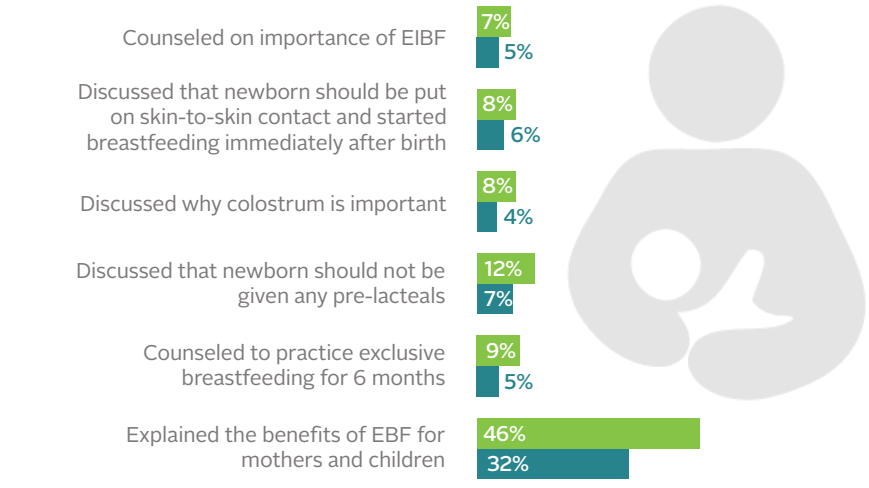

### Counseling on dietary diversity




### Counseling on weight gain




### Counseling on breastfeeding



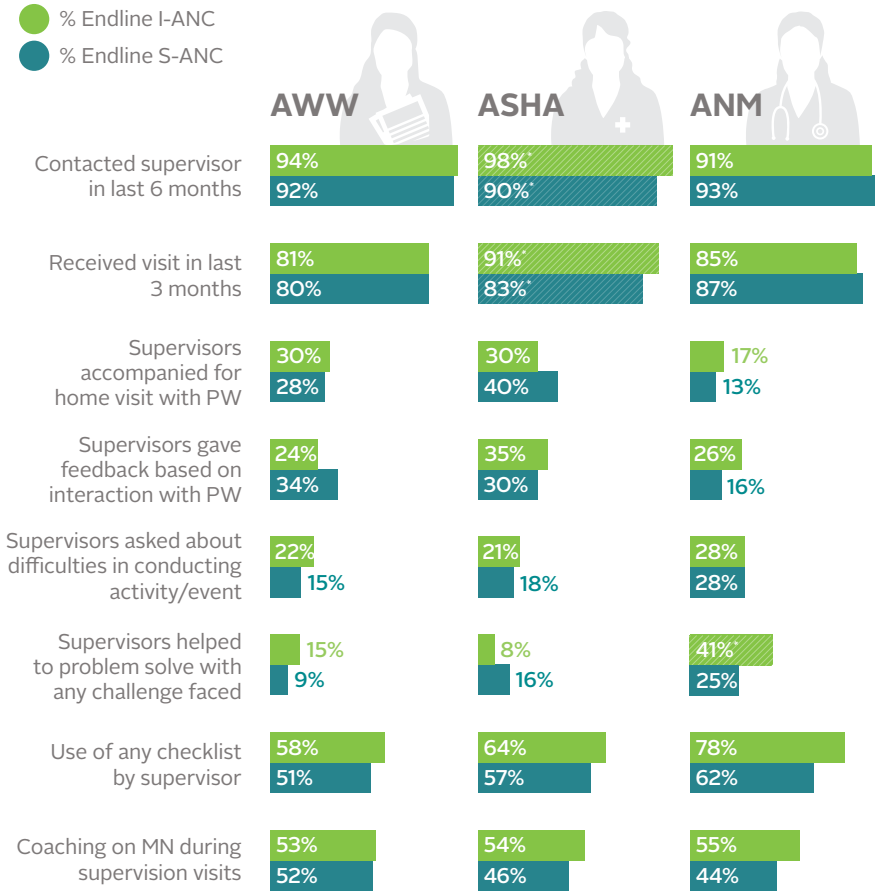

*$p < 0.05$; **$p < 0.01$

## Supportive supervision of FLWs

- At endline, most supervision activities among FLWs were similar between intervention and comparison areas.
- ASHAs in the intervention areas were more likely to contact their supervisors and receive visits in the last 3 months and ANMs in the intervention areas received more help with problem-solving than in the comparison areas.

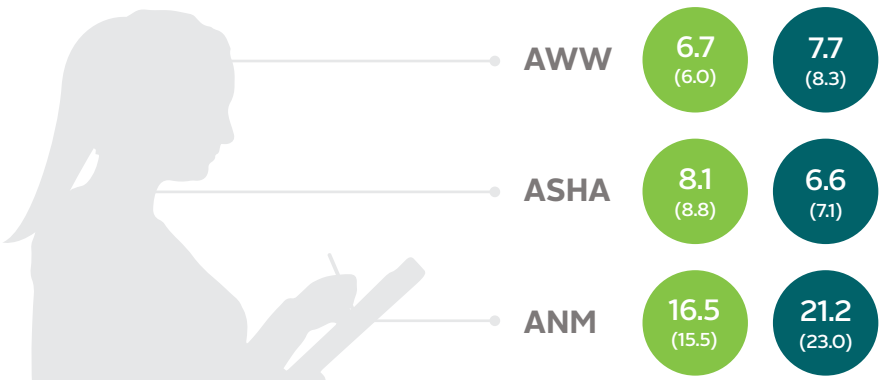
# Nearly all FLWs in both intervention and comparison areas **received visits from their supervisors** in the last 3 months.

### Support provided to FLWs




*$p < 0.05$

### Average number of contacts with supervisor in last 6 months

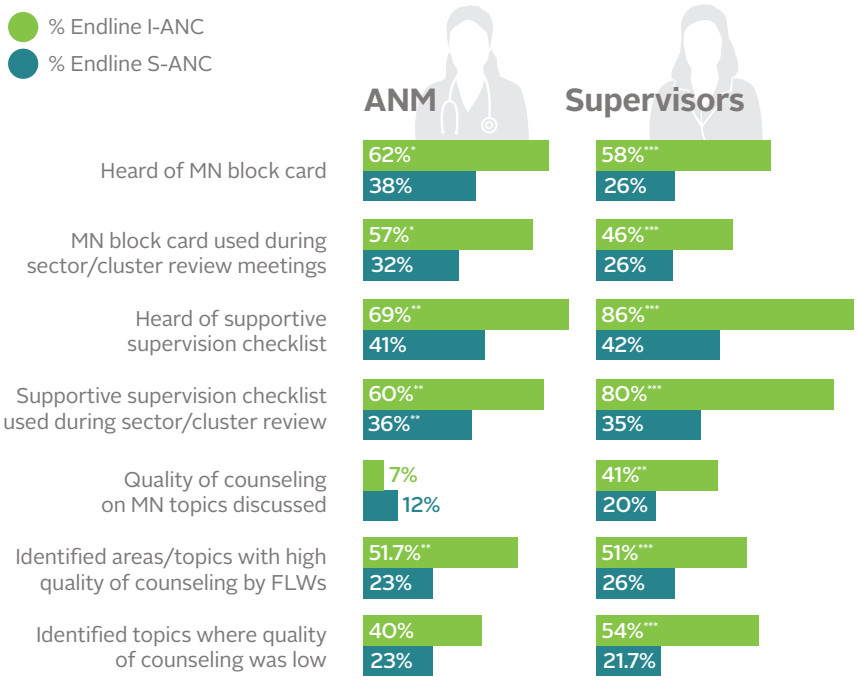



*Numbers in parentheses represent mean and standard deviation*

## Data use

- At least two-thirds of ANMs and supervisors in intervention areas had exposure to and used MN block cards and checklists compared to only about one-third or fewer of ANMs and supervisors in comparison areas.
- ANMs and supervisors reported using this data for sharing feedback during sector/cluster review meetings and identifying focus topics for counseling on maternal nutrition.
- Use of the data from the supportive supervision checklists was significantly greater among ANMs and supervisors in intervention compared to the comparison areas. ANM and supervisors discussed quality of MN counseling, identifying topics with high and low quality of counseling.

## Use of maternal nutrition block card and supportive supervision checklist data



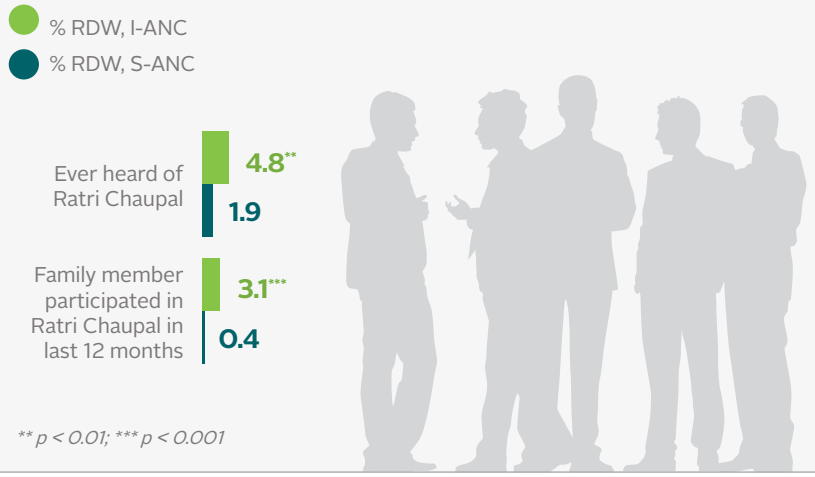

*$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

# FAMILY SUPPORT

## Community mobilization for ANC

- Exposure to the husbands' forums using a video (Ratri Chaupal) was very low at endline.
- Hardly any RDW reported hearing of the event or had a family member attend. Exposure was slightly higher in the intervention versus the comparison areas.

### Exposure to husbands' forum (Ratri Chaupal)

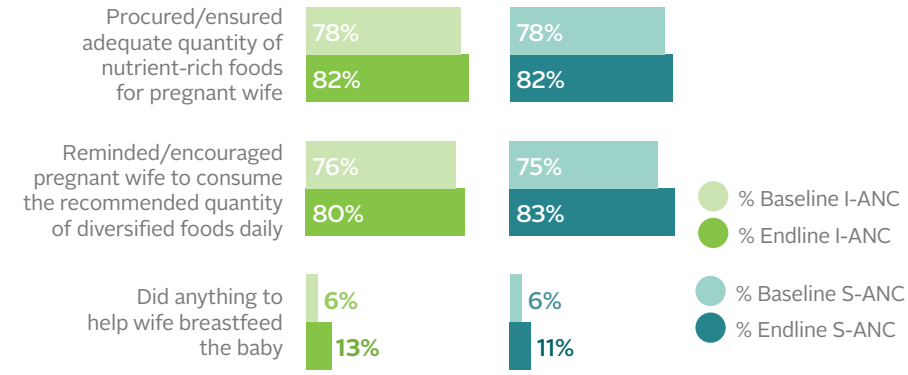



** $p < 0.01$; *** $p < 0.001$

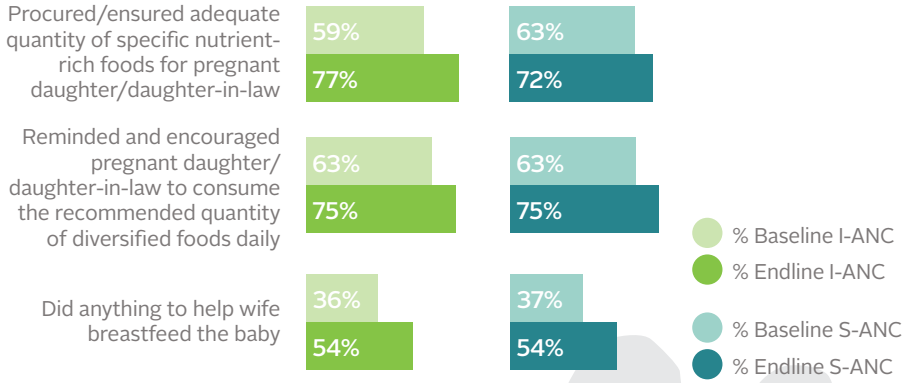
## Supportive practices by family members

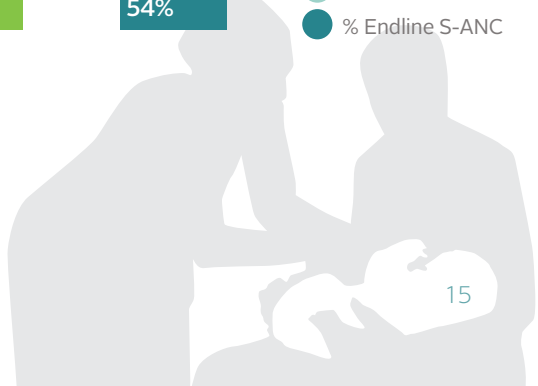
- Family support to pregnant women improved from baseline to endline, however with generally no differences between the intervention and comparison areas.
- Support for the procurement and consumption of the recommended quantities of nutritious foods from husbands and mothers/ mothers-in-law improved similarly across the entire research area.
- During the delivery and postnatal period, the proportion of husbands and mothers/mothers-in-law who provided breastfeeding support generally increased over time but remained low to moderate in both areas.

### Support from husbands




### Support from mothers/mothers-in-law



# Conclusion

## KEY FINDINGS & OPPORTUNITIES FOR ACTION

1. Can the **coverage** of key maternal nutrition services be improved within the government's existing ANC platform?

2. What were the notable **results of the intervention package** on the knowledge and practices of service providers and pregnant women?

3. What **factors should be considered when integrating maternal nutrition** interventions into a well-established government ANC service delivery platform?

4. What **external factors** might have affected the results?

5. What are the **key takeaways** for future initiatives?

**The research showed that it was feasible to integrate maternal nutrition into a community-based ANC platform.** System strengthening was key to improving services and social and behavior change communications in the intervention areas.

**The intervention successfully improved some maternal nutrition practices, but some need additional promotion and support to change.** FLWs provided more maternal nutrition counseling, resulting in some changes in practices, but additional efforts are needed to improve maternal diets and EIBF. The rates of exclusive breastfeeding and consumption of IFA and calcium improved significantly within the intervention areas. Gaps remain in the delivery of maternal nutrition through ANC during VHSND and home visits. Increasing knowledge and awareness of maternal nutrition among both mothers and family members requires further attention. Addressing socio-economic and gender issues is needed to ultimately ensure sustainable change in maternal nutrition practices.

**Capacity, data use, supervision, and supply chains were the factors that were considered when strengthening the existing system.** FLW capacity was strengthened by providing technical training on maternal nutrition and practical training to boost counseling skills. Regular refresher sessions on emerging issues at monthly cluster/block and sector meetings and on-site coaching sessions from project staff also improved FLW capacity. Structured supervision, feedback sharing and use of data to improve quality of service delivery was addressed through capacity building and supporting health and ICDS supervisors to regularly undertake such visits. Sector/cluster review meetings were strengthened by training supervisors and managers on the use of data, developing and implementing report cards based on routine data, and conducting supervision visits during monthly cluster/sector and block review meetings. The on-the-job coaching, problem-solving, and strategic use of data strategies for better supervision were well-accepted by the government. Supply chain improvements for IFA and calcium supplements included the development of a forecasting tool, on-the-job training on accurate estimates for procurement at state- and district-levels, accurate indent at block- and sub-block-level, development of rational need-based distribution plan from district to blocks, inventory management, collection of monthly stock and consumption data from district/block pharmacists and FLWs, and facilitated reviews of supply chain data at the block level.

**Secular improvements affected maternal nutrition service delivery across the entire research area, not just the intervention areas.** The implementation research rolled out at the same time that anemia prevention and management activities were underway through the Anemia Mukt Bharat initiative. Improvements made by this initiative through district- and state-wide social and behavior change campaigns and community-based events for promoting nutrition behaviors may have had an impact on practices. In addition, project activities may have reached both the intervention and comparison areas through the dissemination of project learnings at District Nutrition Committee meetings, through the endorsement of project communication and other materials by the state government, and through the exchange of counseling practices/tools at the district level. Insufficient delivery and reach of the ANC services in the intervention areas was also likely to diminish results.

**The existing health system in Uttar Pradesh still needs additional support to enable the delivery and use of maternal nutrition services.** Health and nutrition system strengthening efforts need to prioritize: 1) Filling vacant positions of FLWs and supervisors; 2) Creating a supportive culture and institutionalizing a mechanism of improving supportive supervision and use of data at local levels to improve program performance; and 3) Continuing efforts to strengthen the procurement and supply chain management to ensure last mile availability. Management and supervision of services require additional efforts to ensure that review meetings are data-driven and responsive to supply chain constraints. Quality improvement efforts could help to address gaps in the coverage and delivery of maternal nutrition counseling within health facilities and communities. Increasing the demand for maternal nutrition services calls for a better understanding of the social norms that affect both ANC-seeking and maternal nutrition—e.g., socio-economic status, food environment, women's education, lack of transportation, etc.—and ways to address them.

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