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Endline Assessment of Fortification of Mid-Day Meal Programme in Varanasi, Uttar Pradesh

February-November 2020
Draft Report



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Executive Summary

Background

Prevalence of micronutrient deficiencies (MND) among school aged children of Uttar Pradesh (UP) is high. Varanasi District in the State of Uttar Pradesh (UP) has a population of around 3.68 million¹ and, like any district in the state, the nutritional status of women and children is quite poor. In Varanasi around 45 percent (Rural 49% and Urban 39%) of children under 5 years are chronically malnourished or stunted². Prevalence of stunting is similar among boys and girls (Boys: 46.3%; Girls: 46.2%). Nearly 60 percent of children aged 6-59 months (using WHO cut-off values of Hb < 11.0 g/dl) and more than half (51%) of all women aged 15-49 years (using WHO cut-off values of Hb < 12.0 g/dl for non-pregnant and Hb < 11.0 g/dl for pregnant women) are anaemic³ in the district.

The overall objective of the pilot project was to provide GoUP with an operationally feasible and economically viable model on integrating fortified staples in the MDM to create a positive impact on the micronutrient status and functional performance of school children for potential scale-up across the state.

Assessment purpose and objectives

The purpose of the assessment is to determine how well the pilot has achieved its intended objectives. This was done by using pre and post intervention assessments based on the assessment criteria and a set of indicators for measuring the results. While the baseline study provided an in-depth analysis of the situation and benchmarks against key performance indicators, the end line survey provides an assessment of performance along with the cost-effectiveness, operational-feasibility and scalability analysis.

Overall objectives and sub-objectives of the assessment are as following:

1. To examine the operational feasibility and cost-effectiveness of the project.
 - 1.1. To assess the acceptability of fortified MDM among critical stakeholders, such as students, parents, teachers, Cook cum Helpers (CCH), government officials.
 - 1.2. To assess consumption pattern of MDM among the school children of Varanasi district.
 - 1.3. To study the cooking practices of MDM in schools.
 - 1.4. Assess the capacity of the rice miller built on blending of regular rice with fortified rice kernels and maintaining quality assurance protocols.
 - 1.5. Hygiene and safety practices by the CCH.
 - 1.6. To assess the monitoring mechanism of the project.

¹Census 2011 (www.census2011.co.in/census/district/568-varanasi.html)

² NFHS-4(2015-16)

³Anaemia is characterized by a low level of haemoglobin in the blood. Haemoglobin is necessary for transporting oxygen from the lungs to other tissues and organs of the body. Anaemia usually results from a nutritional deficiency of iron, folate, vitamin B12, or some other nutrients. This type of anaemia is commonly referred to as iron-deficiency anaemia.

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- 1.7. To assess the availability of the adequate infrastructure and human resources.
 - 1.8. To calculate the cost of fortification per child and cost of scaling-up in the state.
 2. To examine the morbidity among the target children during last six months.
 - 2.1. To examine the reporting of illness among the target children in the 15 days prior to survey.
 - 2.2. To calculate the average medical expenditure on child in last 6 months
 3. To evaluate the awareness of the causes, consequences and solutions to micronutrient malnutrition and anaemia
 - 3.1. To assess the awareness about the causes, symptoms and prevention about the anaemia and undernutrition among children and teachers
 - 3.2. To investigate the source of information about the anaemia and undernutrition
 - 3.3. Awareness about the IEC activities under the project among the stakeholders such as children and parents
 - 3.4. To examine the hygiene practices in terms of washing hands among children, parents, teachers, and CCH
 4. To examine the infrastructure of school in terms of availability of safe drinking water, toilet, handwashing facility etc.
 5. To assess the type of health services in terms of distribution of Iron Folic Acid (IFA), deworming, and health check-ups provided at the school
 6. Based on the findings of the assessment, to provide the specific recommendations to concerned authorities

Main expected users

The main expected users of the assessment findings will primarily be the Government of Uttar Pradesh, along with WFP and donors of the pilot programme.

Main features of the methodology

The end line data collection for the assessment of the 'Fortification of MDM Programme in Varanasi District' was carried out in February-March 2020. The assessment methodology was similar to the baseline assessment conducted in October 2018. Using a mixed methods approach, the data and information was collected. The assessment exercise was commissioned by the World Food Programme (WFP) India Country Office.

Assessment objectives and sub-objectives formed the basis for developing the survey tools for administering with the different respondent groups. The assessment questions were formed to address the four assessment criteria namely, Relevance, Efficiency, Effectiveness, and Sustainability. As ample evidence is available on impact of fortified food, 'impact' was not included in the assessment framework.

Due to the discontinuation of the wheat flour fortification component in the initial phase of the programme, the endline assessment focused only on fortification of rice distributed under MDM.

The endline assessment was comprised of three phases: (1) Secondary/Desk Research; (2) Primary Data Collection; and (3) Data Collation, Tabulation, Analysis and Reporting. The endline assessment collected data from all 10 blocks of Varanasi district.

Selection of schools: In order to select the sample schools, stratified sampling method was followed. The schools were divided in three strata- Primary level schools, Upper Primary schools and Primary with Upper Primary level schools. Probability Proportional to Size (PPS) method was used to select schools from each block. Total 63 sample schools from the 10 blocks of Varanasi were selected for this assessment. A school observation checklist was used to capture data and information on enrolment, attendance, absenteeism, school infrastructure and activities related to nutrition and health issues undertaken from the sample schools.

Selection of students and parents: From each of the sample school, using the attendance register, sample children were randomly selected. From the 63 sample schools, total 732 sample students were selected, 356 (49%) were male students and 376 (51%) were female students. Sample students have equal representation from each of the class (1st to 8th class). Detailed quantitative information was collected from the sample students.

In addition to the survey of the 732 sample students, corresponding parent (mother or father) of the selected sample children were also interviewed. Thus, 732 parents were interviewed at their house and detailed information was collected from the parents. The household level survey schedule used to collect end line data from the parents was similar to the one used during baseline round with additional questions related to fortification of MDM programme such as awareness about fortified rice being served during MDM, its benefits, acceptability as well as programme specific Information, Education, Communication (IEC) activities carried out at the school and community levels.

In addition to this, in depth interviews (IDIs) with other stakeholders such as government officials at state, district and block levels, PRI/ward members, school principal/teacher, CCHs for preparing MDM, and with the owner of the mill identified for fortification of rice were conducted.

Key findings

The demographic-and socio-economic profile of the households surveyed in the endline as well as baseline rounds were similar.

Demographic Profile: Similar to the baseline round and Census 2011 data, most of the households of the sample are Hindu (EL: 90%; BL: 88%) while rest were Muslim. The average household size too was the same as the district average-7 members.

Educational status of parents: 81 percent fathers (BL: 77%) and around 55 percent of the mothers (BL: 49%) were found to be literate, which is also similar to the Census data for the district.

Occupational status of parents: 42 percent of the fathers (BL: 41%) engaged as skilled labour⁴ and around 33 percent (BL: 37%) as unskilled labour. Among mothers, nearly 85 percent were homemakers (BL: 72%) while 6 percent were engaged in unskilled⁵ services (BL: 15%).

Average monthly household income was around Rs. 12000, in both the rounds.

Access to food: Around 3 percent households (BL: 2%) reported experiencing a situation when a member(s) had to eat less due to household food shortages. The Food Consumption Score (FCS) which is a measure of food frequency and dietary diversity shows that the majority (EL: 94%; BL: 93%) of households have acceptable consumption.

Intra-household food distribution: Comparison of the endline and baseline findings at household level shows that male members (both children and adults) receive preference for food, regarding quantity of food and eating practices within the household. In almost nine out of every ten surveyed households, female adults including elderly females, eat last during the mealtime.

Morbidity status of students: Compared to the baseline, fewer students reported suffering from some sickness in the last 15 days prior to the interview (EL: 31%; BL: 43%) while there was no difference in prevalence of recent morbidity between male and female students. In both endline and baseline, around 2 percent of the parents reported that their child was hospitalized during the six months prior to the survey. The average day of absence, which includes leave due to sickness and/or due to other reasons, was around 1.5 days (BL: 2 days).

Enrolment and Attendance: Out of 63 sample schools, 60 schools were co-educational (BL: 58) and the female to male ratio in these schools was similar in both endline and baseline rounds (1:1). During endline, the average attendance of female students was better (63%) than male students (57%). However, due to peak winter season (Dec-Feb), which is the reference period for endline assessment, as compared to baseline round (July-Sep), the absenteeism rate was higher (EL: 40%; BL: 34%).

MDM related Infrastructure and practices in school: On average all the schools have 1 cook and 2 helpers for preparing and serving MDM. In both endline and baseline rounds, three schools, all located in urban Varanasi, were serving food from centralized kitchen run by NGOs. For the remaining schools where MDM is cooked within the school premises, all schools had a separate room for kitchen and in almost all (93%) the kitchen rooms were *pucca*. More than 92 percent of the schools (BL: 72%) were found to have facility for storage (in covered utensils) of grains and other MDM items.



⁴**Skilled labor** is a segment of the workforce with specialized know-how, training and experience to carry out more-complex physical or mental tasks than routine job functions

⁵**Unskilled labor** is a segment of the workforce associated with a limited skill set or minimal economic value for the work performed.

Cleanliness: More than 90 percent of the schools (BL: 67%) were found to have a properly cleaned kitchen.

Management of solid wastes and MDM wastes: More than half of the sample schools (56%) gave the solid wastes to garbage collectors; compared to 23 percent at baseline. However, around one-fourth schools still throw solid wastes in open space. For MDM-generated waste, most of the schools used a green waste-bin while leftovers are taken home by the cooks-cum-helpers.

Awareness about fortification of MDM programme: Around one-third of the parents were aware that



fortified rice is being served to their children. Regarding IEC activities, around 21 percent of the parents were aware about at least one IEC activities carried out at the community level. Among students, 75 percent were aware of IEC activities, with female students (78%) more likely to be aware than male

students (71%). Nearly 60 percent of the female and male students were aware that 'the rice served during MDM is fortified with nutritive ingredients. This was more common amongst upper primary students (male: 82%; female: 76%).



Availability and Acceptance of MDM: Most of the students reported consuming MDM on all six days in a week. On 'regularity of supply of MDM', teachers gave a rating of 4.6 out of 5 (BL: 4.2) while 'quality of fortified MDM' was rated 5 out of 5. Among the key benefits of fortified MDM identified by the students from both genders included, 'prevents anaemia' and 'better physical and mental growth'. Nearly three-quarters of all students mentioned fortified MDM as better or same as non-fortified MDM. Overall, more than 80 percent of the students and all stakeholders supported the fortification of rice in context of its benefits for the overall growth and development of students. With less than 2 percent of students having a complaint about the quality of fortified MDM, it could be concluded that

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