

IMPACT EVALUATION

An Impact Evaluation of WFP Malnutrition Interventions in Niger

Summary Evaluation Report

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Executive Summary

1. This impact evaluation was commissioned by the WFP Office of Evaluation as part of a wider series. Four of the evaluations look at the impact of WFP programmes on nutrition and food security in the Sahel. This evaluation focuses on the impacts of four different aspects of the WFP protracted relief and recovery operation (PRRO) on the prevalence of moderate acute malnutrition (MAM) in Niger.
2. The broad remit of the PRRO in Niger is to reduce MAM prevalence through multiple targeted and universal activities. This evaluation focuses on four of these activities. The first two activities, targeted food assistance (TFA) and blanket supplementary feeding (BSF), are implemented during Niger's lean season with the aim of preventing MAM developing due to seasonal fluctuations in food availability. The third activity, targeted supplementary feeding (TSF), is a treatment programme and is provided to children already assessed to be suffering from MAM. The fourth activity, food assistance for assets (FFA), is designed to increase poor households' access to food and assets, particularly through land rehabilitation, water harvesting and local purchases, and is an agriculturally sensitive form of assistance.
3. This impact evaluation focuses on three primary evaluation questions:
 - a) What is the impact of, in addition to FFA, gaining at least one of BSF, TSF or TFA in comparison to a "control group" who receive no assistance in the end line?
 - b) What is the impact on individuals who receive at least one of TFA, TSF and BSF in the end line, compared to individuals who receive no assistance?
 - c) What is the impact on individuals who receive FFA and at least one of TFA, TSF and BSF in the end line to those who do not receive FFA but who receive at least one of TFA, TSF and BSF?
4. In combination, the empirical analysis of these research questions isolates the impact of food assistance for assets, the impact of (combinations of) other forms of assistance, and the synergies that may be built through joint provision of food assistance for assets with other forms of assistance. In addition, using two waves of panel data collected in March 2014 and in September 2016, the impact of receiving at least one of the other three activities (targeted food assistance, targeted supplementary feeding or blanket supplementary feeding), compared to receiving nothing, is isolated. Also any synergies that are present between the receipt of food assistance of assets and the three MAM interventions are studied. The impacts for the following three groups are compared, where all the groups received food assistance for assets during the baseline survey but their status during the end line survey had changed:
 - a) Group 1 received only food assistance for assets in the baseline and no assistance in the end line (-FFA)
 - b) Group 2 received only food assistance for assets in the baseline and no food assistance for assets but at least one other form of assistance (targeted food assistance, targeted supplementary feeding or blanket supplementary feeding) in the end line (-FFA+)
 - c) Group 3 received only food assistance for assets in the baseline, continued to receive food assistance for assets in the end line, and received at least one other form of WFP assistance (targeted food assistance, targeted

supplementary feeding or blanket supplementary feeding) in the end line (FFA+).

5. The evaluation used joint instrumental variables and a selection correction model within a difference-in-difference framework to measure and compare nutritional outcomes across the different treatment groups in order to understand the different PRRO impacts and their synergies.

6. Nutritional outcomes were measured by three indicators: a binary indicator for whether a child suffers from MAM; the weight-for-age z-score; and the mid-upper arm circumference (MUAC). These indicators are of specific interest for MAM in children aged 6-59 months at baseline (March 2014) and end line (September 2016).

7. The evaluation found that certain modalities of WFP assistance significantly improved the MAM situation in Niger. Specifically, children who lived in households receiving food assistance for assets plus treatment and / or prevention (FFA+) assistance were almost 20 percent less likely to suffer MAM than those in households who received no assistance (-FFA) in the end line. Children in households that received FFA+ were 15.5 percent less likely to experience MAM than those in households that received only treatment and / or prevention assistance (-FFA+). In other words, the combination of agriculturally sensitive and more standard assistance provided by WFP turned out to have the strongest positive impact on child MAM in Niger.

8. The evaluation found no evidence of positive impacts from treatment and / or prevention programming only. Rather, this programming approach could have negative impacts. At first sight, this is a surprising finding. It could be that the expected benefits decline over time and come to be dominated by one or two other influences on child malnutrition. Specifically, the evaluation posits two reasons for this finding: either that other coping strategies are more effective than the receipt of this form of food aid; or that receipt of this assistance alters intra-household decisions on nutrition. For example, a highly food-insecure household that does not access a standard WFP programme may choose to engage instead in migration. Remittances received can, in turn, reduce food insecurity and may, in fact, dominate the impact of the programme itself. Alternatively, a household that receives such programmes may channel scarce resources away from eligible children to other household members, leading to reductions in those children's level of nutrition, but not that of the household as a whole.

9. Qualitative work to help understand the impact mechanisms of WFP interventions was undertaken in November 2017. This work included interviews with groups of beneficiaries, non-beneficiaries and key stakeholders. Villages were selected for the qualitative sample using random stratified sampling. Villages within a cut-off of 250km from Niamey were stratified by agro-ecological zone and two villages each randomly selected from these lists.

10. Broadly speaking, qualitative results supported the quantitative findings and provided intuition for the underlying theories that might explain these findings. The qualitative research suggested that the behaviour of men and women was changed positively thanks to WFP interventions. Nevertheless, evidence of perverse effects was also found to be quite common. For example, households sometimes sold the received malnutrition treatment products in markets rather than consume them at home. In the case of some households, it was found that malnutrition was induced in "cured" children, in order to maintain eligibility for support (mostly by feeding them tamarind to trigger diarrhoea). WFP's agriculture-sensitive intervention enabled the most

vulnerable households in some villages to meet their food needs and even make financial savings. The interventions allowed households to mitigate food crises and malnutrition and to create productive assets.

11. An analysis of non-FFA programming suggests that the children who receive no FFA but one of the other three activities (blanket supplementary feeding, targeted supplementary feeding or targeted food assistance) may have better nutrition indicators, a priori, than children in households who do not receive the assistance. Either this implies errors in the targeting strategy, or that uptake of the assistance is lowest amongst those who may stand to benefit most from it. This is in contrast to the FFA programming which appears well targeted.

12. The cost effectiveness analysis undertaken as part of this evaluation indicates that the combined approach in WFP programming has been the most cost-effective compared to single interventions. Interventions combining blanket supplementary feeding, targeted supplementary feeding and food assistance for assets, lead to improved nutrition indicators in the range of USD 0.28 per USD 100 spent, implying the average cost of bringing a MAM child to a non-MAM status is estimated at USD 352.60.

13. The evaluation also notes important lessons learned on monitoring and evaluation and data collection. A large initial investment in the collection of baseline data did not lead to optimal monitoring and evaluation due to the poor design of the follow-ups. While a large baseline was collected at the beginning of the PRRO period, this was never designed to be followed-up, which resulted in high attrition.

14. The impact evaluation puts forward the following points for consideration:

15. Point 1: The WFP, in Niger and more generally, should consider food assistance for assets an effective nutrition-sensitive model for malnutrition programming and adopt and further analyse it in other complex environments. The relative and absolute extent of food assistance for assets programming should be expanded as far as possible, within budget allowances.

16. Point 2: Where possible and feasible, food assistance for assets programming should be provided alongside treatment and / or prevention programming.

17. Point 3: There is an urgent need to understand the intra-household behavioural responses to the provision of treatment and / or prevention programmes.

18. Point 4: A second end line survey should be conducted with the original sample in Niger in 2018 to analyse long-term programme impacts.

Introduction

19. The treatment and prevention of moderate acute malnutrition is a fundamental pillar of WFP and nutrition-specific interventions feature heavily in its current strategic plan and operational manuals. Accordingly, in order to target millions of children worldwide who are wasted, WFP moderate acute malnutrition (MAM) programmes have grown significantly in scope and reach in recent years. Although there is considerable evidence for the effectiveness of MAM assistance provision in optimal conditions, there is insufficient understanding and clarity about the relationship between the treatment and prevention of malnutrition, and the building of resilient livelihoods in more challenging environments. This raises a number of related issues: the need to consider relative impacts of the various forms of assistance; when it might be optimal to switch from one kind of assistance provision to another;

the cost-effectiveness of various approaches; and the presence of synergies between different forms of provision. Such knowledge is critical for WFP and similar actors, as it feeds directly into the setting of priorities and the strategies to deliver on these priorities.

20. This evaluation focuses on the impacts of the WFP protracted relief and recovery operation (PRRO) – a multifaceted grouping of nutrition interventions – on the prevalence of MAM in Niger. The broad remit of the PRRO in Niger is to reduce MAM through multiple targeted and universal activities. This evaluation focuses on four of these activities: the first two activities, targeted food assistance (TFA) and blanket supplementary feeding (BSF), are implemented during Niger’s lean season with the aim of preventing MAM developing due to seasonal fluctuations in food availability. The third activity, targeted supplementary feeding (TSF), is a treatment programme and is provided to children already assessed to be suffering from MAM. The fourth activity, food assistance for assets (FFA), is designed to increase poor households’ access to food and assets, particularly through land rehabilitation, water harvesting and local purchases, and is an agriculturally sensitive form of assistance.

21. This evaluation seeks to fill key knowledge gaps in assessing the impacts of various components of multi-strand malnutrition programming, such as the WFP PRRO. It is unclear if different programme typologies should, or do, have differing effects or if there are layers of complementarity in such approaches. It is also important to test whether the joint provision of two (or more) kinds of assistance can produce greater impacts compared to single assistance typologies or to separate provision of both kinds of assistance. While the different strands of the PRRO are substantively different from each other, the interactions between them could potentially be crucial for the effectiveness of the programme as a whole.

Country Context

22. WFP has a number of on-going interventions to prevent and treat MAM in Niger under the broad remit of its PRRO, which seeks to build resilience, protect livelihoods and reduce MAM amongst very poor people in Niger. The current PRRO in Niger was implemented across three years from early 2014.

23. Niger ranks at the very bottom of many development indicators, including the human development index and the United Nations Index of Gender Equality. The country: suffers systematic institutional weakness; faces a range of internal and external security threats; has porous borders; has faced episodes of involuntary migration; and has suffered a number of food crises in recent history.

24. Malnutrition is incredibly widespread in Niger, particularly among infants and young children. In 2012, 14.8 percent of children aged 6-59 months suffered from global acute malnutrition (GAM). In rural areas, this rose to 15.7 percent of children. Children aged 6-23 months were significantly more likely to experience GAM than older children. In four regions of Niger, GAM prevalence was above the emergency threshold. One in three children was underweight; chronic malnutrition affects 42 percent of children aged 6-59 months. Since 2007, the proportion of chronically malnourished children has remained above the 40 percent critical threshold. Seventy three percent of children suffer micronutrient deficiencies and 46 percent of women are anaemic. The country has suffered four acute food crises since 2000.

25. Numerous factors contribute to malnutrition in Niger. Poverty is widespread with over 40 percent of the population living on less than USD 1.25 per day. Reliance

on rain-fed agriculture, deteriorating natural resource endowments, unstable and corrupt political structures, low education levels, gender biases, and high fertility rates have led to a sizeable population that is vulnerable to food insecurity.

26. Women in Niger are particularly disadvantaged due to a convergence of poverty, vulnerability to agricultural shocks, and dominant patriarchal social norms. These issues, coupled with population movements, terrorist threats, and the rise of radical Islamic opposition movements, exacerbate the political and economic exclusion experienced by women.

Summary of Intervention, Theory of Change and Research Hypothesis

Description of WFP intervention

27. The PRRO is designed to tackle multiple facets of Niger's food crises over a three-year time horizon. Within this wider strategy, four components are of particular interest for the treatment and prevention of MAM:

- Targeted food assistance (TFA)
- Blanket supplementary feeding (BSF)
- Food assistance for assets (FFA)
- Targeted supplementary feeding (TSF)

28. The first two programmes aim to reduce the impact and constraints of seasonal livelihoods on nutritional outcomes. Food assistance for assets aims to increase access to food and assets for the poorest households in Niger. Targeted supplementary feeding aims to treat acute malnutrition among children whose nutrition indicators lie under specific thresholds. Given the timing of the lean season in Niger, these programmes are sequenced throughout the year according to non-crisis year calendars. As food availability decreases in the lean season, malnutrition peaks, and in response WFP increases its programming activities.

29. Targeted supplementary feeding, in the form of food, cash or vouchers, offers a safety net for very poor households during lean seasons and is implemented to protect assets and livelihoods. Blanket supplementary feeding provides nutritional supplements to very poor households and targets children aged 6-23 months. Blanket supplementary feeding is linked to the lean season targeted food assistance safety net, and has the capacity to transfer children with acute malnutrition into treatment programmes. Food assistance for assets uses nutrition-sensitive programming to focus on land rehabilitation, water harvesting and irrigation, through partnerships in pastoral zones.

Theory of change

30. The PRRO seeks to tackle the prevalence and incidence of malnutrition in Niger by screening for malnutrition; preventing malnutrition; treating malnutrition; retaining children in school (where school feeding can take place); and engaging in nutrition-specific education. Treatment (targeted supplementary feeding) and prevention (blanket supplementary feeding and targeted food assistance) programmes are offered by the PRRO to households in order to treat and prevent the onset of malnutrition. The food assistance for assets programme is designed to contribute to treatment and prevention programming through land rehabilitation, which in turn boosts access to food. The programme anticipates that the intervention should have at

least three outcomes: a reduction of moderate acute malnutrition; an improved diet; and better school outcomes. The reduction of the prevalence and incidence of MAM is the main interest of this impact evaluation.

31. To achieve this reduction in moderate acute malnutrition, the PRRO seeks to directly provide supplementary nutrition and build resilience to climatic and agricultural hazards. Through the development of agricultural livelihoods, the PRRO seeks to boost food security, as households that are more food secure stand the best chances of adapting to hazards and seasonal variations in food availability. For example, the two activities of strategic objective 1 of the PRRO (targeted food assistance and blanket supplementary feeding), which coincide with the lean season, will allow households to avoid a peak of acute malnutrition and mortality during this period. Food assistance for assets, instead, focuses on land rehabilitation, water harvesting, and irrigation infrastructures through partnerships in pastoral areas and local purchases from small farmers to promote access to markets, economic growth and agricultural development.

32. Despite the intuitiveness of this theory of change, two major concerns might mitigate the attainment of these goals. The first is the take up of offered assistance, and the second is the use of what Olivier de Dardan (2008)¹ calls “makeshift” strategies. In terms of take up, a number of challenges remain. Despite the fact that all of the baseline sample was technically eligible to receive targeted supplementary feeding, only 95 individuals (less than 2 per cent of the sample) actually reported receiving it. If assistance is not taken up by those who could benefit from it, it seems unlikely that the PRRO can obtain its key objectives. That said, this is a problem that is likely to affect the theory of change in aggregate, rather than at the individual level. With regard to the second concern, during previous major food crises, “makeshift” strategies for survival (for example, migration, borrowing, sale of possessions, and change of food habits) tended to be more effective approaches than food aid (Olivier de Dardan, 2008).

33. Unlike the three activities (blanket supplementary feeding, targeted food assistance and targeted supplementary feeding), the food assistance for assets programme is not, specifically, designed to be either a nutrition-specific programme or a form of assistance to counter MAM. However, the programme does possess the potential to provide MAM relief. WFP has produced guidelines on how food assistance for assets programming can be tailored to have a strengthened focus on nutrition and how it can be transformed into a nutrition-sensitive (as well as agriculturally-sensitive) programme.

34. Food assistance for assets interacts with a number of underlying determinants of improved nutrition, including: improved access to food; better access to clean water, healthcare and WASH; provision of livelihoods and assets; and education, particularly of mothers, leading to better care-giving decisions.

35. WFP encourages the inclusion of nutrition as an outcome goal of food assistance for assets during the planning phase. This ensures that, alongside its normal activities, nutrition-sensitivity is built into the particular food assistance for assets modalities that are rolled out. Such actions can include: targeting food assistance for assets towards women or other vulnerable groups; timing the rollout to coincide with particular seasonal fluctuations in nutrition and food security in the areas where the

¹ Olivier de Dardan, J. (2008): “La crise alimentaire de 2004-2005 au Niger en contexte.” In: *Afrique Contemporaine – Afrique et développement* 225(1): 17-38.

programme will take place; educating participating households on the production and consumption of particular kinds of nutrients; and identifying asset-creating processes that develop nutrition as a by-product.

36. Longer-term planning is also important for the impact of food assistance for assets. Assistance that boosts nutrition-linked assets in the medium- to long-term may influence the volume or diversity of goods that are produced. Those that improve access to markets provide opportunities for exchange. This implies that the effects of the food assistance for assets programme could endure over time in a way that the other activities (blanket supplementary feeding, targeted food assistance and targeted supplementary feeding) may not.

Primary evaluation questions

37. The evaluation poses three primary questions:

- a) What is the impact of, in addition to FFA, gaining at least one of BSF, TSF or TFA in comparison to a “control group” who receive no assistance in the end line?
- b) What is the impact on individuals who receive at least one of TFA, TSF and BSF in the end line, compared to individuals who receive no assistance?
- c) What is the impact on individuals who receive FFA and at least one of TFA, TSF and BSF in the end line to those who do not receive FFA but who receive at least one of TFA, TSF and BSF?

38. Nutrition outcomes, as measured by three indicators of specific interest for MAM (binary indicator for whether a child suffers from MAM, weight-for-age z-score, and mid-upper arm circumference) are compared across three assistance groups: Group 1 received only food assistance for assets in the baseline and no assistance in the end line; Group 2 received only food assistance for assets in the baseline and no food assistance for assets, but at least one other form of assistance in the end line; and Group 3 received only food assistance for assets in the baseline, continued to receive food assistance for assets in the end line, and received at least one other form of assistance in the end line.

39. The initial hypotheses of this evaluation revolved around attempting to understand how well WFP treatment and prevention programmes worked, both compared to each other, and in combination when compared to single forms of assistance. However, the sample sizes in the panel survey data of individuals receiving only these forms of assistance were found to be too small to conduct robust empirical analyses of these relationships. In contrast, almost all households in the baseline received food assistance for assets, with very few individuals receiving either no assistance, or food assistance for assets in combination with any other form, or forms, of assistance. Thus the control group is composed of households that received food assistance for assets. Therefore, the analysis looks at the dynamic changes in assistance combinations received, which allows for the isolation of the impact of various forms of assistance in the spirit of the original research proposal.

Evaluation Design, Methods, and Implementation

40. This evaluation focusses specifically on the impact of the PRRO on MAM indicators. Four main hypotheses are tested:

- Hypothesis 1: Recipients of WFP assistance (Group 2 and Group 3) will exhibit significantly better MAM indicators than those who have stopped receiving assistance (Group 1).
- Hypothesis 2: Individuals in Group 2 and Group 3 should both experience improved MAM indicators. More so, at the marginal level, the –FFA+ group should benefit more than a FFA-only group due to the focus of the three activities (targeted supplementary feeding, blanket supplementary feeding and targeted food assistance) on MAM.
- Hypothesis 3: Individuals in Group 3, who receive more programmatic strands than Group 2, should exhibit overall better MAM indicators than those in Group 2.
- Hypothesis 4: The presence of synergies is unlikely, due to hypothesis 1 raising MAM indicators for all recipients of assistance.

Table 1 shows the combinations of different types of assistance received.

Table 1: Assistance groups in evaluation

		End line status		
		No assistance	no FFA but at least one of TFA, TSF, BSF	FFA and at least one of TFA, TSF, BSF
Baseline status	FFA only	Group 1 -FFA	Group 2 -FFA+	Group 3 FFA+

41. The evaluation uses two waves of panel survey data and econometric techniques (joint instrumental variables and a selection correction model within a difference-in-difference framework) to estimate impact at the household level on children who were aged 6-59 months during the first data collection in March 2014 at baseline, and were re-surveyed in September 2016 at end line.

42. Inclusion in a given programme is based on self-reported household participation in each form of assistance within the PRRO. In part, inclusion is therefore based on targeting criteria and budgetary capacity at WFP and cooperating partners. For this reason, the evaluation was not able to be implemented as a randomised control trial. To overcome biases that may have arisen from selection into the sample, the evaluation team employed instrumental variables analysis. The analysis was conducted on all children in both waves of the survey giving rise to significant attrition bias, which was overcome through the use of selection bias correction models. The final sample contained approximately 1,900 children.

43. In order to test the hypotheses, the evaluation deployed a difference-in-difference estimator as the workhorse empirical approach. This approach works on the assumption of parallel trends: whilst nutrition indicators of beneficiary and non-beneficiary households may be different, it is assumed that they were evolving similarly. The methodology is based on three main variables: 1) the assistance variable²; 2) the time variable³; and 3) the interaction of these two variables, which shows the treatment effect when the parallel trends assumption holds. The assistance

² The assistance variable takes the value of 1 if a household receives a particular combination of assistance, and a value of 0 otherwise.

³ The time variable takes the value of 1 for all households in the period following the intervention, and a value of 0 for the period before the intervention.

variable measures the varied impact of combined treatments, while the time variable allows for a measurement of impact based on when treatment was disseminated to treatment groups.

44. A joint instrumental variables and selection correction model was implemented in a difference-in-difference framework to estimate the average treatment effect, based on self-reported assistance receipt.

Impact and Analysis of Findings

45. This evaluation focuses on three indicators of specific interest for MAM:

- A binary indicator on whether a child suffers MAM or not
- The weight-for-age z-score
- The mid-upper arm circumference (MUAC)

46. The findings suggest that, despite not being specifically designed to target MAM, food assistance for assets is the strongest and most effective form of assistance in terms of improving nutrition indicators. This shows that WFP programmes are having positive and significant impacts on MAM in Niger and that the largest proportion of these effects is being driven by agriculturally sensitive programmes, which, amongst other strategies, include land rehabilitation.

47. The second major finding is that the targeting success of WFP programming is decidedly mixed. FFA+ programmes, generally, are well-targeted and reach children with worse nutrition indicators. However –FFA+ programmes tend to reach children with better nutrition indicators than those in the –FFA group. It is, in some ways, difficult to understand these mixed findings as some forms of assistance are well-targeted and others are not. WFP, therefore, should revisit the targeting processes used in delivering non-food assistance for assets forms of assistance and invest in ensuring these forms of assistance reach those most in need.

48. The positive coefficient 0.894 (Table 2, row 2) shows that, when receipt of assistance is controlled-for, children in Group 2 are significantly less likely to suffer MAM than those in Group 1. This implies, partially, that WFP targeting may not reach households who need it most, as those who receive nothing are worse off nutritionally than those who receive assistance. However the effects of the assistance received by Group 2 are also of concern. Children who receive the -FFA+ assistance combination at end line are 90 percent (-0.0910, Table 2, row 3) more likely to suffer MAM at end line than those who receive no assistance. For example, if the MAM prevalence rate in Group 1 at end line is 10 percent, we would expect it to be 19 percent for Group 2, had the groups started from the same point at baseline. This finding, however, is only marginally significant, due to the potential bias arising from the use of a weak instrument, and should be interpreted with caution. Additionally, children in this group are significantly less likely to suffer from MAM than those who receive no assistance. This gives rise to two concerns. Firstly, outside the programme children in households that do not receive any assistance at end line are more likely to be malnourished than those who receive assistance, implying some failure in targeting. Secondly, receipt of treatment and / or prevention assistance may actually make matters worse.

Table 2: Impact of –FFA+ (Group 2) on MAM vis-à-vis –FFA (Group 1) on probability of experiencing MAM

Variables	Heckman and IV Model
Time dummy	0.297** (0.119)
Group 2 vs. Group 1	0.894** (0.400)
Time dummy x Group 2 vs. Group 1	-0.910* (0.468)

Standard errors cluster robust at village level and presented in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

49. It is unlikely that the assistance itself causes these outcomes. The outcomes are more probably a result of the impact of assistance on household behaviour. Two plausible explanations arise: firstly, that households not receiving assistance are more likely to turn to more effective makeshift strategies; and secondly, that intra-household decision-making often changes.

50. Table 3 shows that children in Group 3 (beneficiary group) are 19 percent more likely to exit MAM between the baseline and end line than those in the control and that the underlying prevalence of MAM in Group 3 is higher than in the control. This implies both a successful targeting of the FFA+ group to benefit children with poorer nutrition indicators, and a strong and positive impact of the programming on the likelihood of experiencing MAM. This implies that FFA+ treatment is working to reduce MAM. Three reinforcing effects are likely to explain this finding. Firstly, land rehabilitation under food assistance for assets increases access to food at the household level. Secondly, receipt of treatment and / or prevention programmes leads to a one-time improvement in MAM. Thirdly, this improvement is sustained in the longer-term due to the increased access to food from food assistance for assets in conjunction with other forms of assistance (blanket supplementary feeding and targeted supplementary feeding).

Table 3: Impact of FFA+ (Group 3) on MAM vis-à-vis –FFA (Group 1) on probability of experiencing MAM

Variables	Heckman and IV Model
Time dummy	0.0183 (0.0260)
Group 3 vs. Group 1	-0.158** (0.0723)
Time dummy x Group 3 vs. Group 1	0.192** (0.0818)

Standard errors cluster robust at village level and presented in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

51. Table 4 reports findings in the comparison between Group 2 and Group 3 (beneficiary groups), which allows the evaluation to garner additional understanding on the impact food assistance for assets has on outcomes. Children in Group 3 are

more than 15 percent more likely to exit MAM than those in Group 2 but, ex-ante, suffer worse MAM, again implying successful targeting and strong programme impact. Tables 3 and 4 combined can be taken to imply synergies as well as scale effects in the joint provision of food assistance for assets with treatment and / or prevention programming.

Table 4: Impact of FFA+ (Group 3) on MAM vis-à-vis –FFA+ (Group 2) on probability of experiencing MAM

Variables	Heckman and IV Model
Time dummy	-0.0192 (0.0442)
Group 3 vs. Group 2	-0.160** (0.0679)
Time dummy x Group 3 vs. Group 2	0.155** (0.0753)

Standard errors cluster robust at village level and presented in parenthesis

*** p<0.01, ** p<0.05, * p<0.1

52. The evaluation finds the presence of synergies when at least one of the three activities (blanket supplementary feeding, targeted food assistance and targeted supplementary feeding) is provided along with food assistance for assets. In contrast, the group who did not receive food assistance for assets in the end line, but who received at least one of the other forms of assistance, were worse off than the group who received nothing in the end line.

53. Children in Group 3 were found to have significantly larger MUAC than those in Group 1. Changes in the weight-for-age z-score, however, were not found to be statistically significant between Groups 1 and 3. Children belonging to Group 2 tended to see minimal effects on the weight-for-age z-score and negative effects on MUAC at end line.

54. Uptake of targeted supplementary feeding, a MAM prevention programme, is found to be extremely low in both waves of data, despite it being technically available to almost all individuals in need in the survey.

55. Given the costs involved in delivering the PRRO, these results imply interventions combining blanket supplementary feeding, targeted food assistance and food assistance for assets activities lead to improved nutrition indicators in the range of USD 0.28 per USD 100 spent. In other words, the average cost of bringing a MAM child to a non-MAM status is estimated at USD 352.60, combining prevention and agriculturally sensitive programming. The cost effectiveness analysis indicates that the combined approach in WFP intervention was the most cost-effective, compared to the single interventions.

Discussion

56. The headline findings of this impact evaluation report a mixture of positive and negative impacts of WFP assistance under the PRRO in the challenging environment of Niger.

57. Despite not being specifically designed as a nutrition programme, agriculturally sensitive programming (food assistance for assets), particularly when provided alongside treatment and / or prevention programming, has a large impact on the reduction of MAM. Compared with children who graduate from the food assistance for assets programme, those who continue to receive food assistance for assets alongside other treatment and prevention programming are 20 percent more likely to exit MAM classification. Compared with children who graduate from the food assistance for assets programme but receive treatment and prevention programmes, children who receive food assistance and assets and treatment and / or prevention assistance are almost 16 percent more likely to exit MAM classification.

58. Not only is food assistance for assets an effective counter-MAM strategy but it works in synergy with other forms of WFP assistance. This finding is particularly impressive as, although food assistance for assets can be tailored to have nutritional impacts, it is not currently specifically conceived as a counter-MAM programme.

59. The analysis also highlights mixed results with respect to successful targeting of beneficiaries. This evaluation takes place in the context of a reduction in the WFP budget in Niger, which reduced the number of targeted communes from 70 to 33. In principle, a successful adaption to this downsizing would have located on-going programmes in areas with the worst observable nutrition indicators. In this context, the apparent failing of targeting of treatment and / or prevention programmes in non-food assistance for assets areas is of particular concern. However, it should also be noted that the choice of communes in which WFP operates may not have been entirely at the discretion of WFP.

60. The provision of treatment and / or prevention programmes without food assistance for assets is associated with worsening nutrition status. This is unlikely to be a direct result of the assistance typologies, given their role in the direct provision of nutrition. It is more likely to relate to the relationship between programming and intra-household decision-making. For example, highly food insecure households that do not have standard access to WFP programming may turn towards migration. Alternatively, a household that receives such programmes may channel scarce resources away from eligible children to other household members, leading to reductions in those children's level of nutrition but not that of the household as a whole. Thus, more research is required on precisely why these apparently negative effects arise, not least given the potential for harm these results highlight.

Points for Consideration

61. The key finding in this evaluation is that agriculturally sensitive programming (food assistance for assets) operating in Niger, has a large and positive impact on a child's probability of moving out of moderate acute malnutrition between the baseline and end line. Based upon this and other aforementioned findings, four points for consideration have been identified.

62. Point 1: WFP, in Niger and more generally, should consider food assistance for assets an effective nutrition-sensitive model for malnutrition programming and adopt and further analyse it in other complex environments. The relative and absolute extent of food assistance for assets programming should be expanded as far as possible, within budget allowances.

This point is addressed to actors such as the WFP country and regional offices and headquarters and should, therefore, be taken as a policy recommendation. It relates,

specifically, to the positive impact of the food assistance for assets programme in Niger. The target actors have the capacity to revisit the perceived purpose of the food assistance for assets programme. Whilst it is known that this form of assistance can be made nutrition-sensitive, the results from this impact evaluation suggest that food assistance for assets has a key role to play at the centre of moderate acute malnutrition programming. At the same time, any scaling up of food assistance for assets in other challenging contexts should be accompanied by further deep-learning activities to improve the collective understanding of the role and impact of such programmes.

63. Point 2: Where possible and feasible, food assistance for assets programming should be provided alongside treatment and / or prevention programming.

This point is addressed to the WFP country office in Niger and, potentially, other country offices where impact evaluations have shown similar synergistic effects. It is based on the strong positive impact that food assistance for assets programming has on reducing moderate acute malnutrition and the fact that the impact of joint provision of food assistance for assets with other forms of assistance has even greater effects. This implies that joint provision of these assistance typologies maximises the impact of the protracted relief and recovery operation's impact on moderate acute malnutrition.

64. Point 3: There is an urgent need to understand the intra-household behavioural responses to the provision of treatment and / or prevention programmes.

This point is addressed to the WFP country offices in Sahelian countries and, potentially, to headquarters, as well as to research groups focussing on impact evaluations, and should be considered a research recommendation. It is based on the apparently negative impact of the phasing out of receipt for food assistance for assets but receiving treatment and / or prevention programmes relative to those who phase out and receive nothing. Given the nature of the prevention and treatment programmes, it is difficult to believe that this finding is directly linked to receipt of the assistance. Plausible explanations all focus on the behaviour of households in the context of receipt of these forms of assistance. Research that collects information on the coping strategies of households receiving different assistance combinations and how they adapt their behaviour in respond to the assistance would help in designing better interventions in the future.

65. Point 4: A second end line survey should be conducted with the original sample in Niger in 2018 to analyse long-term programme impacts.

This point is a research recommendation and is addressed to research teams and to the WFP country and region offices and headquarters. This would bring about a number of benefits: firstly, it would further involve the research team in the monitoring and evaluation process; secondly, it would significantly enhance the sample size; thirdly, this in turn would enhance the research capacity and analytical power to answer a number of the outstanding question raised in this document; fourthly, it would facilitate analysis of households and children who were included in the baseline but not the 2016 end line.

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