

Community Volunteers Deliver Integrated Prevention and Treatment Services to Reduce Child Wasting in Chad

Elodie Becquey, Mariama Touré, Ahmed D. Djoufouna, Aldo Affenou, Francisco Barba, Ampa D. Diatta, Malick Dione, Abdoulaye Sawadogo, and Lieven Huybregts

INTRODUCTION

Wasting is a persistent public health problem affecting 45 million children under five years of age worldwide. Wasting is responsible for the deaths of 875,000 children under the age of five every year. Children who survive often suffer from long-term cognitive and physical disabilities (UNICEF, the World Health Organization, and the World Bank 2021; Black et al. 2013). Member countries of the World Health Assembly (WHA) have agreed to reduce and maintain the prevalence of wasting to less than 5 percent by 2025. Most Sahelian countries are off track to meet the WHA targets and in Chad, the prevalence of wasting is still unacceptably high at 14 percent and shows large regional disparities (UNICEF, the World Health Organization, and the World Bank 2020).

While both wasting prevention and treatment programs hold the potential to reduce child wasting, substantial synergies can be expected when prevention is integrated with screening, referral, and treatment services. Such integration should happen at the community level to maximize the accessibility of services for caregivers and their children.

In 2020, the International Food Policy Research Institute (IFPRI), UNICEF, AfricSanté, and the Sahel Association for Applied Research and Sustainable Development (ASRADD) partnered to implement the Integrated Research on Acute Malnutrition (IRAM) study in Chad to assess the implementation and impact of interventions delivered along the continuum of care for wasting (from prevention to treatment) through community-level platforms. The main objective was to generate evidence on the reach, adoption, effectiveness, implementation,

and maintenance of an integrated package of services designed to drastically reduce child wasting over a short timeframe. The study was conducted in the Mongo Health District in Chad, with a companion study conducted in Mali (Huybregts et al. 2023).

KEY MESSAGES

We evaluated an integrated wasting prevention and treatment program relying on a platform of community volunteers. The program provided nine months of preventive food supplements to young children, and soap and bleach to treat water for their family; screened children for wasting; and counseled caregivers on child feeding, hygiene, and health. Our results show:

- **Low to moderate coverage** of the program
- **Small improvements** in primary caregivers' **knowledge and practices** related to health, hygiene, child feeding, and wasting, but **no impacts on child wasting**

Moving forward, the strategy may be enhanced by:

- **Better leveraging of platforms** with higher reach, such as input distribution, to integrate services with lower demand such as counseling
- Monitoring coverage of eligible and ineligible beneficiaries through **post-event coverage surveys** and triangulating with reach data
- Being intentional about **engaging fathers**
- Strengthening the **selection, training, supervision, and motivation** of community volunteers
- Strengthening **collaboration** between community platforms and the health system

THE APPROACH: DELIVERY OF INTEGRATED PREVENTION, SCREENING, AND TREATMENT SERVICES THROUGH COMMUNITY CARE GROUP VOLUNTEERS TO TACKLE WASTING

Delivery platform: Community care group volunteers

For the IRAM program, community care groups were deemed the most promising platform to achieve scale. As part of the process, the community appointed 15 people to serve as community care group volunteers (*Volontaire de Groupe de Soin*, or VGS). These VGS then formed a community care group, which covered 15–20 households. The number of groups varied depending on the size of the village, so that all beneficiaries who accepted the VGS services would be covered. The care groups were facilitated, trained, and monitored several times per month by promoters who were staff members of ASRADD, the implementing nongovernmental organization (NGO). Each beneficiary household was scheduled to receive a home visit by a VGS at least once a month (and up to once a week). Inputs were distributed monthly during a community group gathering in the presence of the NGO promoter.

Intervention package: Integrated prevention, screening, and treatment services

In intervention villages, all households with a pregnant woman and/or a child below two years of age were eligible for follow-up with a VGS to receive the intervention package including counseling and behavior change communication (BCC); screening services; water, sanitation, and hygiene (WASH) inputs; and/or a food supplement, depending on the child’s age and nutritional status (Table 1).

Table 1 Intervention package delivered by VGS along the continuum of care for wasting

Intervention and target group	Intervention components
Prevention (pregnancy and child 0–23 mo. of age)	<ul style="list-style-type: none"> • Weekly home visits: counseling related to breastfeeding, complementary feeding, WASH, and health • Monthly village-level distribution of 360 g of soap, 1 L of bleach (all 6–11 mo. old) and 3 kg of CSB++ (non-wasted 6–11 mo. old) or micronutrient powders (non-wasted 12–23 mo. old)
Screening (6–23 mo. of age)	<ul style="list-style-type: none"> • Family-led MUAC: tricolor MUAC tape distribution, training, and supervision of caregivers to conduct MUAC screening and take action in case of wasting • MUAC screening during home visits and before distributing inputs • Referral of wasting cases to community or health center wasting treatment unit
Treatment (6–23 mo. of age with wasting)	<ul style="list-style-type: none"> • Weekly home visits: general and wasting-related counseling, and promotion of compliance to RUTF/RUSF • Participation in monthly village-level distribution of 360 g of soap and 1 L of bleach
Relapse prevention (recovered 6–23 mo. Of age)	<ul style="list-style-type: none"> • Weekly home visits: specific counseling on IYCF practices • Participation in monthly village-level distribution of 360 g of soap, 1 L of bleach and 3 kg of CSB++ for six months following recovery

Note: CSB++=enhanced corn soy blend, MUAC=mid-upper arm circumference, RUTF/RUSF=ready-to-use therapeutic/supplementary food, IYCF=infant and young child feeding practices

THEORY OF CHANGE

The IRAM-integrated package of interventions aimed to reduce the prevalence of child wasting through two distinct pathways, as shown in Figure 1. Along the “treatment pathway,” increased interactions between VGS and caregivers and the introduction of screening by

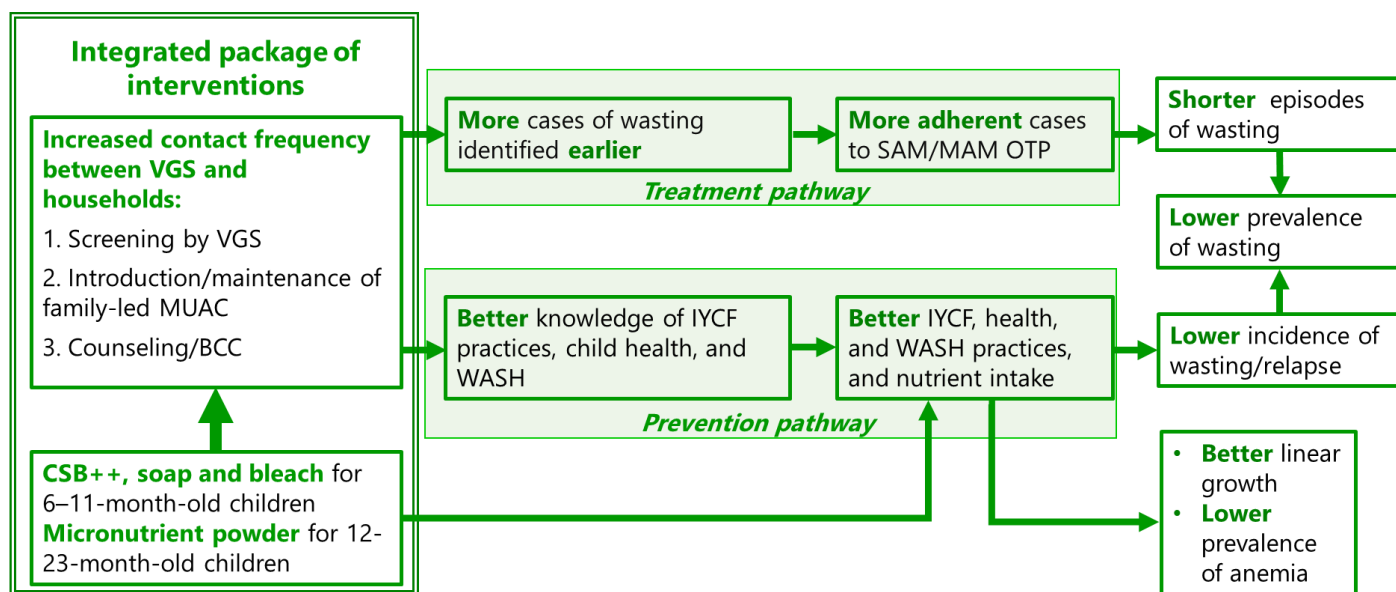
families were expected to increase screening coverage, which in turn would lead to early detection of more cases of wasting and higher rates of referral and treatment. In addition, the VGS home visits of children admitted to a wasting treatment program were expected to increase

treatment adherence and compliance. More frequent screening, early case detection and referral, and better adherence to wasting treatment would then lead to shorter wasting episodes and thus, a lower prevalence of wasting. Along the “prevention pathway,” frequent caregiver exposure to individual counseling, BCC, an enhanced corn soy blend (CSB++) for the child, bleach to treat household drinking water, and soap for hand washing were expected to improve child feeding, health, and WASH practices and to increase nutrient intake. As a result, the intervention was expected to lower the number of incident cases of wasting, as well as relapse

cases. Improved child feeding, health, and WASH practices combined with increased nutrient intake through CSB++ consumption were also expected to improve child linear growth and reduce anemia.

A key element in this theory of change is the integration of input distribution in the monthly interactions between caregivers and VGS, which was designed to also serve as an incentive to facilitate the delivery of other services. Caregivers were invited to the distribution site after receiving home counseling or BCC and received inputs after their child was screened for wasting.

Figure 1 Impact pathways of the integrated package of interventions delivered by care group volunteers



Note: VGS=Volontaire de Groupe de Soins (community care group volunteer), MUAC=mid-upper arm circumference, BCC=behavior change communication, IYCF=infant and young child feeding practices, WASH=water, sanitation, and hygiene, SAM/MAM OTP=Severe acute malnutrition/moderate acute malnutrition outpatient therapeutic program.

EVALUATION OF THE INTERVENTION

We designed a two-arm, cluster-randomized, non-blinded effectiveness trial to study the impact of the integrated package of interventions on child wasting, as compared to the standard of care. From May 2021 until February 2022, the study team conducted a monthly survey of a population-representative sample of 1,586 children enrolled at the age of six months and living in the 100 most-populated villages in the Mongo Health District. All of these villages received standard of care,

including passive screening for wasting in the community and at the health center and treatment of detected cases. Due to COVID-19, the government modified the admission criteria and treatment schedule: mid-upper arm circumference (MUAC) of less than 115 mm or edema for severe acute malnutrition (SAM) treatment with consultations every two weeks, or MUAC between 115 and 125mm for moderate acute malnutrition (MAM) treatment with monthly consultations. In addition to this standard of care, a random selection of 50 villages (the intervention group) received the intervention package

delivered by VGS. We also analyzed the health records of all children aged 6–23 months admitted for wasting treatment in health center or community treatment units in the 100 villages during the study period.

This impact evaluation was combined with mixed-methods implementation research for which we also collected qualitative data through 45 direct observations

of service delivery and 60 in-depth interviews with community actors and beneficiaries. Using the RE-AIM analytical framework (Holtrop et al. 2021), we organize our key findings around the program’s reach, effectiveness, adoption, quality of implementation, and maintenance of prevention, screening, and treatment services.

KEY FINDINGS

Reach

Prevention and screening

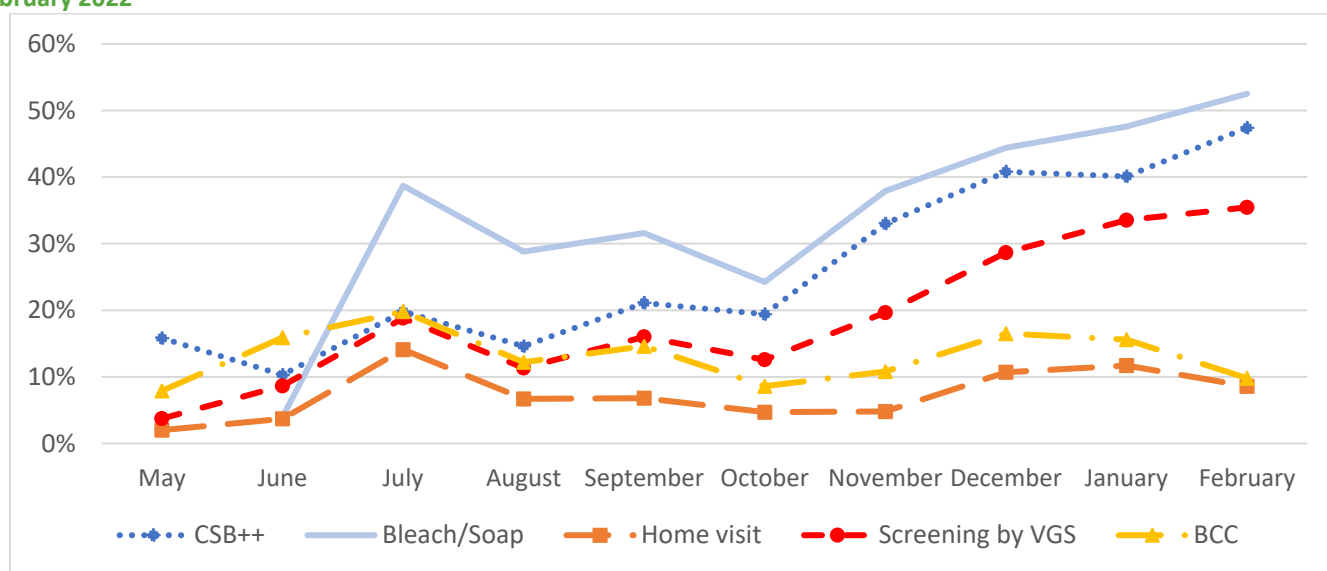
During the first five months of implementation, up to 20 percent of households with children eligible for the prevention package received CSB++ and 30–40 percent received WASH inputs. In the second half of the study, CSB++ and WASH input coverage continued to increase and reached approximately 50 percent (Figure 2). The program ended while the evolution of coverage was still in the upward phase. Most of the mothers interviewed were happy with the inputs received.

"Our benefit is that they have sent inputs to our children, and we are happy for that, so that these children can recover their health." —Mother

The proportion of households who received home visits from a VGS remained very low throughout the study (7.7 percent) (Figure 2), and most households were never visited or even assigned a VGS. Yet, beneficiaries welcomed the visit of the VGS even though field work, social visits, going to the market, and other obligations sometimes limited their availability.

Screening for wasting was primarily done by the VGS, and coverage remained below 40 percent throughout the study period (Figure 2). The family-led MUAC contributed little to overall screening coverage, with two-thirds of the children screened by family-led MUAC also screened by VGS or other health care workers (results not shown).

Figure 2 Monthly coverage in the study sample of services delivered by VGS throughout the program, from May 2021 to February 2022



Note: BCC=behavior change communication, CSB++=enhanced corn soy blend, VGS=Volontaire de Groupe de Soins (community care group volunteers)

Overall, the coverage of children and their mothers over the study's nine-month period was low to moderate for the distribution of a MUAC tape to the household (33 percent), screening by VGS at home or in group gatherings (35 percent), and BCC at home or in group gatherings (11 percent).

Treatment and relapse prevention

Child wasting is defined by a weight-for-length Z-score (WLZ) below -2 , a MUAC under 125 mm, or the presence of edema. Under the COVID-19 pandemic, a simplified MUAC-only admission to the wasting treatment program was introduced, which limited treatment coverage. Indeed, in our survey, one in four children with wasting had a WLZ below -2 but a MUAC above 125mm and were without edema. As such, they were not detected by MUAC and remained ineligible for the program.

When wasting was detected in the community, it was not followed by care seeking in about a third of cases. The qualitative and quantitative data indicated that the main barriers to seeking treatment were a lack of knowledge on what to do after detecting wasting, confusion about treatment eligibility for children who relapsed, awareness of ready-to-use therapeutic or supplementary foods (RUTF/RUSF) shortages, limited financial and transportation resources, the use of alternative treatments, and a lack of women's decision-making power to seek treatment.

In addition, there was a discrepancy between admission into the treatment program (46 percent of program-eligible children) and the receipt of RUTF/RUSF in the past month (34 percent of eligible children), often attributable to RUTF/RUSF shortages or cancellation of consultations by program staff due to shortages of products or staff. Notably, a lower proportion of severely wasted children received RUTF/RUSF in the intervention compared to the comparison group (-11 percentage points [pp]), and a large part of this gap was filled by these children receiving preventive CSB++ instead, which was contrary to protocol. This negative result suggests that some caregivers might have been disincentivized to seek treatment for SAM at the health center because they could receive CSB++ (intended to be used only for prevention) in the community. It is likely that caregivers were not aware that CSB++ in preventive doses is not a

substitute for RUTF and that medical examination is required for children with SAM.

Overall, VGS follow-up of children treated for wasting or discharged as cured was very low (monthly coverage of 4.7 percent for home visits and 20 percent for input distribution). Toward the end of the program, emerging collaborations between the VGS and health staff proved useful to identify and enroll additional vulnerable children to receive VGS services.

Effectiveness

Prevention and screening

VGS services led to improved maternal knowledge on the appropriate age to introduce semisolid or soft foods (+8.9 pp), use of iodized salt (+9.8 pp), use of bleach to treat drinking water (+11 pp), use of MUAC to detect wasting (+9.2 pp), meaning of the three MUAC colors (+9.3–12 pp), and action to take if the MUAC measurement was yellow or red (+6.6–6.8 pp).

Mothers said they applied the advice that they received. Indeed, the survey showed an increased daily consumption of CSB++ (+26 pp), and improved practices related to water treatment (+20 pp), vaccination against tuberculosis (+8.9 pp), and use of soap in the household (+7.3 pp).

"As soon as they give us advice, we apply it immediately. Because the longer you wait, the more likely you are to forget what they've told you." —Mother

These improved practices may have helped to reduce anemia prevalence (-5.0 pp) and SAM incidence (-21 percent) through both increased nutrient intake (CSB++) and reduced infection related to improved WASH practices. These differences, however, were only marginally significant ($P < 0.10$). No impacts were found on the prevalence of wasting, stunting, or morbidity signs.

Treatment and relapse prevention

Among caregivers who did seek care for wasting and enrolled their child in treatment, the intervention led to slightly better adherence to treatment (+4.2 pp), which was largely attributable to better adherence, specifically in children admitted for MAM treatment in the

community (+9.1 percent). These children were also admitted slightly earlier, at a MUAC higher by 0.57 mm. This suggests the VGS intervention is effective when treatment services are also accessible in the community. However, these effects did not result in measurable improvements in treatment performance such as cure rate or treatment duration.

Adoption

The VGS considered all their activities to be important in preventing malnutrition. The VGS also found the work mostly motivating and easy, with a very small-to-medium perceived workload. Satisfaction was mainly driven by the acquisition of knowledge, the acknowledgement of their work by their community, and the perceived impact of their efforts on child well-being.

"We have benefited from a lot of things: we've been trained, we've reduced the number of wasted children in our village. That's really an added value for us."—VGS

Families with a MUAC tape largely underused it throughout the study (28 percent on average used it at least once a month), initially through lack of training on how to use them and then increasingly through lack of interest.

"At the very beginning it was a bit complicated, but currently, I am used to it, I do it easily." —Mother

The research team's observations showed that the VGS supervised family-led MUAC in fewer villages (4 of 15 home visits and 4 of 15 group gatherings) than direct child screening (6 home visits and 5 group gatherings), which might partially explain the caregivers' lack of interest.

Implementation

Prevention and screening

The VGS were trained at the beginning of the study and supervised monthly by an NGO promoter. The latter reported that the large number of VGS, as well as their low literacy, required continuous training and supervision, which was hindered by distance and accessibility issues. Within a community care group, the VGS built on their own individual characteristics to

reassign some tasks to each other, such as literate VGS filling in registers and female VGS raising awareness on gender-sensitive topics.

Observations, interviews of VGS, and quantitative data all showed that during home visits, the VGS delivered interpersonal counseling to mothers (and to a much lesser extent to fathers), screened children for wasting, and sometimes tested salt for iodine and verified the use of distributed inputs. The main counseling topics reported by mothers and confirmed during observations included WASH, breastfeeding, complementary feeding, child screening for wasting, and child health. The quality of counseling delivery, evaluated through observations, was quite good: key messages were generally clearly explained, although a flipchart was not used in half of the observed villages as recommended during training.

The NGO promoter led the group sessions for input distribution, and the VGS assisted with MUAC measurement, input distribution, and sometimes counseling. Observations and quantitative data both showed that the distribution of inputs was consistent with eligible amounts, but included many ineligible children (such as wasted children receiving CSB++ or older children [more than 24 months old] receiving the inputs) and failed to refer some of the children identified as wasted.

To screen for wasting, the NGO promoter trained the VGS who then trained the caregivers. Overall, the quality of screening was acceptable for both caregivers and VGS, but poor screening quality by a few VGS affected the mothers they trained. Because the coverage of home visits was low, the input distribution site was the major screening platform where the VGS could supervise mothers measuring MUAC, and the promoter could also supervise and measure MUAC.

The distribution of MUAC tapes did not reach the expected scale. It was conducted in two phases, and timely distribution to families of children as they reached six months of age largely failed.

Treatment and relapse prevention

Overall, mothers were satisfied with the quality of the treatment services. However, interviewed health staff were unanimously critical of the simplified protocol

implemented during COVID-19: they deplored the fact that it reduced detection capacity (MUAC only) and complicated efficient follow-up of children (reduced frequency).

In observations carried out over 10 months at 26 SAM and 25 MAM treatment units at the health center, and 17 MAM treatment units in the community, we recorded that consultations were cancelled due to stock shortages or unavailability of staff in 14 percent, 16 percent, and 19 percent, respectively, of the months of observation and an additional 22 percent, 22 percent, and 29 percent, respectively, of months with shortages of treatment inputs. This finding calls for closer monitoring of the treatment units. We observed, for example, that supervision was not carried out with the expected frequency, and input tracking systems to prevent stock shortages were suboptimal. Coordination was insufficient between and within the health system actors and the implementing partners.

CONCLUSION AND POLICY IMPLICATIONS

In conclusion, using community care groups like VGS to deliver a preventive package including a food supplement, WASH inputs, BCC, family-led MUAC, and screening for wasting was not sufficient to reach scale and drastically reduce wasting in a short timeframe. It is possible that 9 months of implementation was too short to achieve the full potential of the intervention model, although it was originally designed to do so through the rapid scale-up of evidence-based preventive services. However, improvements in health, WASH, and feeding knowledge and practices, and possible reduction of SAM (meaningful but not statistically significant) indicate that the approach may have potential to reduce wasting if implemented over a longer period that also allows for adjustments to be made as challenges and inefficiencies are identified through implementation research.

Specifically, monthly home visits to all households were too ambitious for a volunteer-based model with few

Maintenance

The VGS showed strong interest in continuing their activities after the study. To enable them to continue, external support is necessary, especially for inputs. Strategies are also needed to facilitate care seeking by mothers of wasted children after referral.

Factors that could facilitate the continuation of activities include knowledge and experience of the VGS, their motivation to continue the work, local government ownership to help mobilize local resources, and the integration of the VGS approach into the health system for training, supervision, and synergy of action. A critical point that emerged was the need for an ongoing formal process of monitoring and supervising activities to motivate the VGS groups. Mothers who benefited from VGS services often showed interest in becoming VGS themselves, provided they received proper training.

Proposed options for change included replacing inputs with cooking demonstrations using local foods, organizing exchange visits between VGS from different villages, and integrating VGS activities with MAM treatment activities in the community.

incentives and should be complemented by other delivery platforms that allow reaching a larger number of caregiver-child pairs more efficiently. Among the possible platforms, monthly gatherings for input distribution reached half of the eligible children toward the end of the project, showing that caregivers valued the inputs and were able to find time to participate. These gatherings created contacts between mothers, the VGS, and the NGO promoters, which also facilitated formative supervision. However, this platform was not leveraged enough to integrate BCC and other services suffering from lower demand.

As also found in our companion study in Mali (Huybregts et al. 2023), the Chad study showed the potential risk of preventive approaches involving nutrient supplements to displace the treatment of wasting. It is therefore critically important for programs that integrate prevention, detection, and treatment of wasting to emphasize and enforce the eligibility criteria for preventive food supplements, which should be restricted

to non-wasted children; and to refer (or directly admit) wasted children to the OTP treatment program and ensure that they receive appropriate food supplements, care, and follow-up to speed recovery. Our study also showed slightly earlier enrollment and higher adherence to treatment when MAM treatment was offered in the community, highlighting the potential synergies obtained by further integrating the prevention and treatment of wasting into the same community-based platforms. For this approach to be successful, however, both volunteers and mothers have to be well informed of the dangers of failing to enroll wasted children in MAM/SAM treatment and of giving them supplements targeted to non-malnourished children.

The family-led MUAC approach was well received by families but was insufficiently disseminated by the VGS and was eventually poorly adopted by caregivers who

received a MUAC tape. As a result, it led to only a slight increase in screening coverage. Regular support from the VGS was found to be important in giving mothers the confidence that they could measure MUAC. Fathers were rarely involved in family-led MUAC measurements, but including them could help resolve some of the barriers to referral follow-up, such as authorization, financial means, transportation, or preference for alternative treatments.

Finally, the VGS platform struggled to reach universal coverage. Adaptations need to be made to better cover children most at risk of wasting. Collaborations between VGS and other platforms, including health centers, could increase VGS coverage by identifying all children who have sought treatment for illness or malnutrition at the health center, and referring them back to a VGS for frequent follow-up.

REFERENCES

Black, R.E., C.G. Victora, S.P. Walker, Z.A. Bhutta, P. Christian, M. De Onis, M. Ezzati, et al. 2013. "Maternal and Child Undernutrition and Overweight in Low-Income and Middle-Income Countries." *The Lancet* 382 (9890): 427–451.

Holtrop, J.S., P.A. Estabrooks, B. Gaglio, S.M. Harden, R.S. Kessler, D.K. King, B.M. Kwan, et al. 2021. "Understanding and Applying the RE-AIM Framework: Clarifications and Resources." *Journal of Clinical and Translational Science* 5 (1).

Huybregts, L., L. Diop, A.D. Diatta, T. Fall, M. Ouedraogo, F. Barba, A. Sawadogo, and E. Becquey. 2023. "Reducing Child Wasting through Integrated Prevention and Treatment in Mali." IFPRI Policy Note. Washington, DC: International Food Policy Research Institute.

UNICEF, the World Health Organization, and the World Bank. 2021. Joint Child Malnutrition Estimates (JME). Geneva: World Health Organization.

ACKNOWLEDGEMENTS

This publication has been prepared as an output of the IRAM project and has not been independently peer reviewed. Any opinions expressed here belong to the authors and are not necessarily representative of or endorsed by IFPRI.

This implementation study was made possible by a grant from the Implementer-Led Design, Evidence, Analysis and Learning (IDEAL) Activity. The IDEAL Small Grants Program is made possible by the generous support and contribution of the American people through the United States Agency for International Development (USAID). The contents of materials produced through the IDEAL Small Grants Program do not necessarily reflect the views of IDEAL, USAID, or the United States Government.

Program implementation and the impact study were made possible by a grant from FCDO through UNICEF. The content of the documents produced does not necessarily reflect the views of FCDO or UNICEF.

ABOUT THE AUTHORS

Elodie Becquey is a senior research fellow, **Mariama Touré** and **Ampa D. Diatta** are senior research analysts, and **Aldo Affenou** and **Malick Dione** are research analysts, in the Nutrition, Diets, and Health Unit of the International Food Policy Research Institute (IFPRI), based in Dakar, Senegal. **Ahmed D. Djoufouna** is an independent consultant, consulting for IFPRI. **Abdoulaye Sawadogo** is a university lecturer and researcher at University Joseph Ki-Zerbo, Ouagadougou, Burkina Faso and consultant for AfricSanté, Bobo-Dioulasso, Burkina Faso. **Francisco Barba** is a senior research analyst and **Lieven Huybregts** is a senior research fellow in the Nutrition, Diets, and Health Unit of IFPRI, based in Washington, DC, USA.

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE

A world free of hunger and malnutrition

IFFPRI is a CGIAR Research Center

1201 Eye St, NW, Washington, DC 20005 USA | T. +1-202-862-5600 | F. +1-202-862-5606 | Email: ifpri@cgiar.org | www.ifpri.org | www.ifpri.info

© 2023 International Food Policy Research Institute (IFPRI). This publication is licensed for use under a Creative Commons Attribution 4.0 International License (CC BY 4.0). To view this license, visit <https://creativecommons.org/licenses/by/4.0/>.