



BASELINE REPORT FOR THE JOINT RESILIENCE ACTION PROGRAM IN GEDO REGION



May 2023





FAO, UNICEF and WFP are committed to priority areas of economic, social and human development in Somalia. Therefore, the joint resilience action (JRA) program, the resilience strategy for the three UN agencies in Somalia, are aligned with the Somalia National Development Plan (2020-2024), UN in Somalia strategic framework, drought impact needs assessment; recovery resilience framework and Sustainable development goal targets

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ACRONYMS

ABS	Access to Basic Services
AC	Adaptive Capacity
ANC	Antenatal care
AST	Assets
BL	Baseline
CECs	Community Education Committees
CHWs	Community Health Workers
DID	Difference-in-differences
FCS	Food Consumption Score
FMSs	Federal Member States
FS	Food Security
FSNAU	Food Security and Nutrition Analysis Unit
GAM	Global Acute Malnutrition
Ha	Hectare
HDDS	Household Dietary Diversity Score
IDPs	Internally displaced Persons
IGAs	Income generating activities
IPC	Integrated Food security Phase classification
IYCF	Infant and Young Children Feeding
JRP	Joint Resilience Program
MHHs	Male Headed Household
MoECHE	Ministry of Education, Culture and Higher Education
MoH	Ministry of Health
MUAC	Middle Upper Arm Circumference
NGOs	Non-governmental Organizations
OCHA	UN Office for the Coordination of Humanitarian Affairs
r-CSI	Reduced Coping Strategy Index
RIMA	Resilience Index Measurement and Analysis
SAM	Severe Acute Malnutrition
SBCC	Social and Behavior change communication
SDHS	Somalia Demographic Household Survey
SSN	Social Safety Nets
SWB	Subjective well-being
TLU	Tropical Livestock Units
USD	United States Dollar
VSLA	Village Savings and Loan Associations
WASH	Water Sanitation and Hygiene
WHO	World Health Organization
WHZ	Weight-for-Height z-score



EXECUTIVE SUMMARY

Introduction: This is the first study (baseline) out of six planned quantitative (6-wave panel) studies to be conducted to assess the impact of the Joint Resilience Action program- JRP in Somalia. This baseline will be followed by a midline, an endline as well as three mid-season studies. The JRP is a three phased program. Phase I was implemented between 2018 and 2022 and focused on nutrition interventions. Phase II ran between the years 2019 and 2022 and was majorly concerned with education and WASH (Water Sanitation and Hygiene) interventions. Phase III (for which this baseline data was collected), started its activities in 2021 and is expected to run for three years (until 2023, however, its activities were delayed and it is likely to extend until 2025). Phase III beneficiaries consists of the most vulnerable households referred from participants of both phases I and II. Their nutrition and education activities were transitioned and additional ‘livelihoods and food security’ interventions included to their bundle of support. This therefore, provided three distinct types of beneficiaries/ treatment groups for phase III, that is; - nutrition + livelihoods and food security (T1), education + livelihoods and food security (T2) and both nutrition and education + livelihoods and food security (T3). This baseline assessment also selected a comparison group (C), to enhance evaluation of program impacts over time. Four outcomes with specific key variables are envisaged for phase III as in table 1.

Table 1: Phase III outcomes, definition and key variables

Outcome	Definition	Key variables/measurement
Outcome 1 Education	Increased access for young (4-5 yrs.) and school-aged (6-18 yrs.) girls and boys to integrated, inclusive, child-friendly education, school WASH, health and nutrition in a safe and protective learning environment at pre-primary, and primary education levels	<ul style="list-style-type: none"> • School Enrolment • School feeding • Education materials • School WASH
Outcome 2 Nutrition	Reduced micronutrient deficiencies for children under five, and pregnant and lactating women, including adolescents and increased uptake of malnutrition treatment and prevention services, health support, nutrition-sensitive social and behavioural change communication, and WASH interventions.	<ul style="list-style-type: none"> • Care for and women nutrition • Women health seeking behaviour • Care to and child nutrition • Micronutrients and Vitamin A supplementation • Anthropometry • Child morbidity and deworming
Outcome 3 Livelihood and food security	Households maintain and improve food security and livelihood status through improved agricultural production and income generation.	<ul style="list-style-type: none"> • Livelihood types • Coping mechanisms • Food security • Agricultural production • Marketing • Value addition • Savings and credit
Outcome 4 Strengthened government systems Resilience	Strengthened government decentralized service delivery systems to promote and sustain quality integrated health, nutrition, education and WASH services in schools and health facilities.	<ul style="list-style-type: none"> • Inter-ministerial coordination • Strengthened capacity of MOECHE
	Households access to integrated school feeding, nutrition, WASH, and education services, including livelihoods support would enable them and communities to improved food security and resilience to withstand economic and climate-related shocks and stressors’	<ul style="list-style-type: none"> • Resilience capacity index • Subjective resilience

Evaluation goals, scope and purpose: This is a first series of a six wave panel data aimed at conducting a quasi-experimental evaluation of the JRP impacts and whether the program results in changing lives for the better. The goal is to evaluate delivery of the program's key inputs and services while assessing the impact of the program on the target beneficiaries. Its results are purposed to contribute to organizational learning (among the implementing agencies-FAO, WFP and UNICEF-, BMZ, KfW and other organizations that share the vision of strengthening regional resilience in Somalia) about the impact of different program design features, and particularly, the impact of new program components (Livelihood and food security).

The scope of work covers the entire geographic area of the Gedo region and targeted Stakeholders such as Government line ministries (at both federal and regional levels), national and International Non-Governmental Organizations (NGOs), professional associations, community-based and civil society organizations, and both beneficiary and comparison households. For this quasi-experimental design, impact assessment and resilience measurement are the key evaluation elements. The impact of the joint program on a broad range of outcomes is understood as identifying any key positive and negative changes generated through the implementation of the project (directly or indirectly, intended or unintended). Resilience measurement, on the other hand, denotes tracking or measuring the ability of households and communities to cope, adjust and stabilize their well-being in light of a shock, stressor, or disturbance. With this baseline data, an analysis of households' resilience has been done using the Shiny RIMA (Resilience Index Measurement and Analysis) tool, and a 'starting' resilience index established. This baseline resilience index will be used as the basis for measuring improvement/not in resilience building.

Methodology: Data for this baseline study were collected using a mixed quantitative and qualitative methods with both beneficiary and comparison households. Beneficiaries were randomly selected from a list/sampling frame while comparison households were selected following similar inclusion criteria as those of beneficiaries (see section 2.5). Difference-in-differences (DID), a quasi-experimental approach, was the technique chosen to analyze the panel data and evaluate the impacts, by comparing changes in outcomes over time between the population enrolled in the program (treatment groups) and the comparison group. The quantitative survey covered a total of 1,868 households, out of which, 1,276 were sampled from a pool of JRP beneficiaries from Gedo region while the remaining (592 households) made up the comparison group. Additionally, the surveyed households had 646 children aged between 4 – 5 years and 4,829 aged 6 – 18 years.

Findings and recommendations

Education: The study finds very low enrollment rate (only 3%) among young children aged 4-5 years. Conversely, enrollment was considerably higher among the 6 – 18 years age group (52% were enrolled in school at the time of survey). Variations in school enrollment rate for children aged 6 – 18 years was noted by respondent category. Enrollment rate was considerably high across intervention arms (nutrition 56%, education & WASH and education and nutrition each at 66%) while comparatively low among the comparison group (17%). Overall, school enrollment rate at the time of baseline survey for all school going/age children (4 – 18 years) was 46%. This is relatively high (as compared to recent national average estimate of 33% according to United Nations office for the Coordination of Humanitarian Affairs -OCHA¹), and can be attributed to education interventions from phases I and II. For example, key informant interviews indicated a possible drought driven influx of children to schools with feeding programs. This is an interesting phenomenon that will need to be tracked going forward. In all, JRP should target enhanced enrollment efforts at the 4 -5 years age bracket. One way of doing this may include, leveraging Koranic education (combining it with formal schooling) that is initiated early (within the age bracket of interest) and which has been successful across the country.

Overall, a greater majority (83%) of the children "currently enrolled" received food in school. Nearly all households with currently enrolled children in Education & WASH (92%) and Education & Nutrition (91%) intervention arms, reported receiving food in school. This was followed by 77% of those from Nutrition intervention arm. For the comparison group, slightly below a third (32%) said they received food in schools. While these results could have been driven by school feeding interventions, there is need to monitor such phenomena as 'temporary/artificial' drought instigated enrollment that may not hold beyond program support.

On education support, this baseline study found that three quarters (75%) of the 'currently enrolled children' from beneficiary households received books and other learning materials in school. Similar to the school feeding program, majority of the children who received educational materials were from education-related interventions – both education & Nutrition (86%), Education & WASH (75%) – followed by Nutrition only intervention at 72%. These results were meaningfully different from the comparison group where less than half (45%) of currently enrolled children 'ever received learning materials in school'. It will be imperative to assess (going forward) whether these efforts contribute to expanding access to education as well as enhancing literacy levels for resilience building.

Nutrition for Women: A total of 864 females were surveyed for nutrition related interventions. Out of this 15% (n=130) were pregnant, 18% (n=152) were lactating and 67% (n=582) were caregivers of children aged 7 – 59 months. Assessment of maternal nutrition via women’s MUAC indicated that about 3% were malnourished while a further 8% were at risk of malnutrition. Overall, the overwhelming majority (89%) was normal and well nourished, perhaps a result of nutrition intervention support. Relatedly, two thirds (66%) of ‘currently lactating or caregiver’ mothers affirmed to have been breastfeeding their new-born babies. The proportion of women breastfeeding their new-born babies was considerably higher across all respondent categories, except for those in Nutrition intervention arm (possibly because nutrition group self-selected malnourished women). While efforts were already in place to boost behaviour change around breastfeeding, additional resources should be devoted to women sampled from the Nutrition intervention arm if gains from nutrition intervention are to be maximized.

Overall, 71% of mothers initiated complementary feeding after six months. Across respondent categories, no significant difference was observed on the timing of initiating complementary feeding. However, it is worth noting that, contrary to the recommendation that, children below 6 months should exclusively be breastfed, 1 out of 4 mothers in Education & Nutrition and Education & WASH intervention arms, introduced their babies to complementary feeding before 6 months. This is due to a number of barriers to exclusive breastfeeding noted during group discussions. These included; – influence from elderly mothers who hold different traditional knowledge and attitude towards child feeding (e.g giving water and or animal milk alongside breast milk), breast milk insufficiency as a result of poor feeding and nutrition among mothers, cultural believes, for example, women in the riverine areas believe that an exclusively breast-fed child becomes ‘dhagol’ (deaf) and therefore water and other forms of milk must be fed alongside. Finally, women engage in competing activities. A common practice in Gedo is for women to go out and fend for the family, in doing so, they leave children in the care of older mothers, siblings or other relatives . This can reduce the frequency of breastfeeding and can hence potentially result in insufficient breastmilk and therefore early initiation of complementary feeding. Good knowledge alone on infant feeding is consequently insufficient to spur behaviour change or improved practice, a knowledge attitudes and practices assessment would be necessary to design an all-inclusive approach to improving Infant and Young Child Feeding (IYCF). This is mostly related to dedicated effort and a focus on social behaviour change and communication on the same (SBC/SBCC).

Nutrition for Children: The survey involved a total of 1955 children aged between 6-59 months whose anthropometric measurements for weight, height and MUAC were taken. Given the challenges in age estimation in Somalia, 95% of the children’s age was determined using the ‘Events Calendar’. The sex ratio for children 6 to 59 months was 1000 (51.2%) boys to 955(48.7%) girls. The overall GAM prevalence by WHZ in this baseline study indicated a critical situation (17.5%). The prevalence of GAM was higher in the comparison sample (21.1%) than in the beneficiary (16.1%). The critical finding could stem from selection design where the most vulnerable among beneficiaries of phase I and II were referred for phase III programming. Across the three samples (combined, beneficiary and comparison), the prevalence appeared higher among boys (19.8%; 17.8%; 25.1% respectively) than in girls (15.2%; 14.7%; 17.2%). The high prevalence of malnutrition across the three samples was similar to the findings from FSNAU’s Post Gu 2022 Assessment where critical GAM levels were recorded in North Gedo. On the other hand, the prevalence of SAM in the combined sample was found to be 3.9% whereas the prevalence within the beneficiary group was 3.1%. The burden of severe acute malnutrition was significantly higher in the comparison sample at a prevalence rate of 5.0%.

The prevalence of global acute malnutrition in Dollow, Belet Hawa and Garbahaarey was critical across the combined, beneficiary and comparison groups. In Particular, the prevalence of GAM in the comparison sample was extremely critical (>30%) in Belet Hawa district (43.7%) with somewhat higher prevalence among girls (45.7%) than boys (42%). The High rates of malnutrition can be attributed to the prevailing food insecurity levels in Belet Hawa and environs. Data indicates that the economy of Beled Hawa is largely based on livestock production. Given the prevailing drought, Beled Hawa and the surrounding villages have witnessed an influx of migrants fleeing devastating drought effects in other regions or areas of origin. The prevalence of global acute malnutrition was critical across education (19.3%) and nutrition arms (15.2%). The prevalence in combined nutrition and education arm was found to be 13.9% which is considered serious as per WHO and IPC classification. Except in the combined nutrition and education arm, the prevalence of GAM was higher among boys in both nutrition (17.6%) and education arms (21.3%).

In terms of livelihood distribution, the prevalence of GAM based on Weight-for-Height z-score was highest among IDPs (45.5%) in the comparison sample. This could be because IDPs sample size was relatively small (22 children), out of whom 10 children were malnourished. Nonetheless, the prevalence of GAM was critical (>15%) in pastoral, agro-pastoral and riverine zones across the combined, beneficiary and comparison samples. This is also in agreement with findings from FSNAU’s post Gu 2022 where the prevalence in pastoral and riverine livelihood zones were critical (>15%).

² <https://www.enonline.net/barrierstoexclusivebreastfeeding#footnotes>

Livelihood and food security: At baseline, very few households (only 3%, n=64) reported to having taken up new income generating activities (IGAs). There were no notable variations in diversification of income sources across respondent categories. An opportunity exists for the livelihoods component of the program to boost production and expand available capacity for employment or economic engagement. At baseline, close to half (44%) of the households drew their livelihoods from casual labor, 13% relied on farming, 10% on pastoral activities and 8% on agro-pastoralism. Owing to low incomes (majorly from informal economic activities), this study found very low saving rates. Overall, only 2% of the households interviewed had a member who had saved money within a six months' reference period before the survey. Conversely, 40% of the households borrowed money over the same period. This is because borrowing and buying food on credit were part of shock coping strategies. Therefore, alongside improving and making agricultural production more market facing, an opportunity exists for pooling resources and spurring savings. For instance, data showed very low participation in and or belonging to an association or a lobby group. This can be a 'go to avenue' for enhancing group action, resource pooling and building a saving culture. Overall, only 2% (n=31) of the surveyed households belonged to a Village Savings and Loans Association (VSLA). Low membership in VSLA was evident across all the respondent categories. Given very low membership in VSLA, only 1% (n=11) of the study respondents affirmed to have made savings in a VSLA within the last 12 months reference period.

On average, the food consumption scores (FCS) was 46.3. By respondent category, average FCS was 52.5 for Education & nutrition, 48.4 for Education & WASH, 47.4 for Nutrition and 40.1 for comparison group. Except for education and nutrition beneficiaries, the other groups recorded almost similar results to the comparison group. This points to a need to promote food production in the medium to long term and access in the short term (to positively impact consumption at the household level). Note also that drought remains an important shock that has been experienced over the last six consecutive seasons. Therefore, the thinking around improving production should include boosting immediate access to food or money to buy food (cash assistance) as well as access to water for both domestic and irrigation use. This study also found very low levels of agricultural production, overall, only 12% of the surveyed households cultivated crops. About a fifth (22%) of beneficiaries in the Nutrition intervention arm engaged in crop production. However, there were no notable variations on crop cultivation among other respondent categories. By livelihood zones, 27% and 17% of households in Riverine and agro-pastoral areas engaged in crop production respectively. Maize was the main crop cultivated by 71%, Sorghum and Tomatoes were cultivated by 31% and 29% of those who cultivated respectively. Given the drought situation, riverine households were likely to produce since they were able to practice some level of irrigation. Data indicated that maize was cultivated on an average of 0.987 Hectares (Ha) and sorghum on a mean land area of 1.245 Ha. Consequently, maize and sorghum productivity averaged 0.203 tons/Ha and 0.261 tons/Ha respectively. Slightly higher productivity for sorghum as compared to maize, can be attributed to sorghum's relative resilience to high temperatures and ability to produce under below average rainfall conditions. The clear insight here is perhaps the need to build farmer and households' capacity to understand farming enterprises that fit environments of climate change. In this case, preference for sorghum should be encouraged.

Reduced coping strategies index (r-CSI) (-which considers both the frequency and severity of five pre-selected coping strategies that a household would utilize within a 'seven days reference period' when the household was faced with insufficient food or money to purchase food), showed an overall index of 14.5. Among beneficiary households, those in the Education & WASH intervention arm adopted the most severe coping strategies (averaging 18.7), followed by those in Education & Nutrition intervention arm (12.1) and lastly Nutrition only beneficiaries – an average of 11.4. Overall, results indicated that both beneficiary and comparison groups were likely to adopt similar livelihood coping strategies. There is need to support households to avoid severe coping strategies. For example, in times of scarcity, women tend to be the ones to go without food to allow other household members to feed. The ripple effect of that includes; malnutrition, insufficiency in breast milk among breastfeeding mothers and consequently malnutrition among children. If such coping strategies are not checked, they have the potential to negate gains made by such programs as JRP.

Strengthening government systems: From ministry representatives and project documents, the study found existence of coordination platforms including; - a project steering committee (PSC) and a technical working group at the federal level as well as a project implementation committee at the state/field level. The project steering committee meets bi-annually while both technical working group and project implementation committee were said to hold quarterly meetings. Overall, participating line ministries reported holding monthly coordination meetings and line ministries and UN agencies were allocated specific responsibilities within these coordination platforms

Data indicated that the ministry identified certain JRP related activities and their representatives were able to enumerate the following:

- Education officers – have enhanced capacity to conduct school supervision and monitoring
- CECs – trained on their roles and responsibilities for school administration
- Quality assurance activities conducted at school level by Ministry of education

Noteworthy however, was that there seemed to be a sense in which proper data tracking was lacking and so the ministry did not have any records on, for instance, number of monitoring visits to schools or number of sanitation facilities set up/constructed in participating schools. This notwithstanding, study showed that CECs in all the sampled schools had participated in training (partly lead by the ministry of education) on their roles and responsibilities in school administration. Asked how the trainings had improved their school management roles; doing their job better, improvement in decision making, developing detailed school time tables with teachers and participation in the management of school expenditure were some of the responses provided. At baseline, data corroborates the results framework's numbers that indicate that all participating 46 schools had CECs trained.

Resilience Index Measurement and Analysis: Overall, average baseline Resilience Capacity Index (RCI) for the study households was 49.4. This indicated a concentration of households slightly below the average resilience (based on a scale of 0 to 100, where 0 and 100 is the least and most resilient households respectively). Among the beneficiary households, analysis showed that households in the Education & WASH intervention arm had an RCI of 50.47, Nutrition only had an RCI of 49.82 and Education & Nutrition stood at 49.65. RCI for the comparison group was 48. These results are in keeping with the estimates from other indicators such as FCS, HDDS that showed better performance (albeit insignificant) for the beneficiary households comparatively. The pillars contributing the most to RCI were AC and SSN, followed by ABS. AST had the lowest relevance to the RCI. This finding implies that for immediate impact on household resilience, JRP should direct resource and time to contributing factors/variables of adaptive capacity such as education of household members, participation in income generating activities and social safety nets such as savings, access to credit and participation in associations and VSLAs

Subjective Resilience: Respondents were asked several questions to assess their subjective resilience (annex 5). The statements that recorded high affirmation incidence comparatively included **“My household can rely on the support of clan, neighbors, family and friends when we need help”** at 34%, followed by **“My household can rely on support from humanitarian agencies/international NGO's when we need help”** at 27%. While absorption capacity, social safety nets, networks defined resilience, perception and attitudes showed a lack of courage to build back better and therefore an indication of low resilience capacity. When the respondents were asked about the ability of their household to respond to a severe drought and floods if they were affected in the immediate term – ‘ie tomorrow’ – only 5% of the households agreed that their households would be well prepared in advance, 6% affirmed that their household could recover fully within six months, and 12% were optimistic that their household would still find a way to navigate severe droughts and floods. Again, indicating low abilities to bounce back from a shock.





SOMALIA COUNTRY OVERVIEW

Somalia is situated within the Sahel Zone of the Horn of Africa with a population estimated at between 14 and 16 million people⁴. Approximately 60% of the population subsists in the rural areas where livelihoods are largely embedded upon agriculture (pastoral and agropastoral). Incidence of poverty in Somalia is very high both in rural and urban areas. Nearly 7 in 10 Somalis live in poverty, the World Bank has described Somalia poverty as both widespread and deep⁵. Poverty is driven by, inter alia, protracted and cyclic periods of droughts and floods which sometime lead to famine. For example, latest estimates show that Somalia has had five consecutive seasons of poor rainfall with a likely sixth season of below-average rainfall from March to June 2023. The impact of this drought has been exceptionally high food prices, exacerbated by concurrent conflict/insecurity and disease outbreaks⁶. The same estimates indicate that approximately 8.3 million people across Somalia are expected to face Crisis (IPC Phase 3) or worse acute food insecurity outcomes between April and June 2023.

Somalia is a complex political, security and development environment, and much of its recent past has been marked by poverty, famine and recurring violence and environmental shocks and stresses. According to the World Bank, poverty cuts across sectors, locations, livelihood groups and genders, and its forms and causes vary. Some 70 percent of Somalia's population lives below the poverty line⁷. Southern parts of Somalia are comparatively poorer than northern regions (Somaliland and Puntland) and suffer from unstable economic conditions and fragile security conditions. The south is also subjected to conflict, food shortages and a lack of proper infrastructure⁸.

Conflict, political instability, and natural and economic shocks all contribute to chronic hunger and malnutrition in Somalia. Results of a 10 years nutritional data meta-analysis and eight seasons trend analysis showed variation of malnutrition level among the three zones. South central Somalia continued to register critical levels of malnutrition consistently followed by Northeast and Northwest Somalia. The malnutrition status of south and central Somalia is also more complex compared to northern regions. It is influenced by conflict, continued displacements, restrictions of movements and trade due to clan and insurgency, and low availability and poor quality of health services⁹. Malnutrition in Somalia is generally multi-causal, high levels of micronutrients deficiency are prevalent among children and women. Addressing acute malnutrition and micronutrient deficiencies is therefore crucial to preventing irreversible growth and development challenges in children that is likely to ultimately affect the economic development of the country.

Somalia's vulnerability resulting from conflicts, high susceptibility to environmental shocks and weak governance systems, has also negatively impacted access to education. Only about a third (33%) of Somali children are enrolled in primary schools, according to UN Office for the Coordination of Humanitarian Affairs (OCHA), which urged the international community to help humanitarian efforts to improve education access through the year 2022¹⁰. The low enrollment rate prevails notwithstanding Somalia's second-largest percentage of school-age children (aged 3 to 17) to total population in East Africa at about 44%. This is compared to a regional average of 41.5%, according to UNICEF Somalia. Despite the establishment of a central government in Somalia, the country's public education system has been hampered by 30 years of conflict, poverty, weak governance, budget cuts to the public education sector, introduction of a fee system in educational institutions and climate change, affecting nearly 3 million people, including 1.4 million girls, who require assistance to attend school.

Although Somalia faces many challenges, the country has great potential to improve its food security, -nutrition and resilience. People within and outside the country continue to build an enabling environment for stability through provision of essential services and support, especially in times of crises. The establishment of a federal government provides opportunities for political stability. A thriving private sector can provide services such as markets, health and education. Moreover, the country has a large agricultural base with two large rivers and the highest number of livestock per capita globally. The evolving policy and institutional landscape and a youthful population offers a promising basis for engagement.

⁴ <https://www.unfpa.org/data/world-population/SO>

⁵ <https://blogs.worldbank.org/african/data-development-poverty-and-policy-somalia>

⁶ <https://fsnau.org/downloads/Multi-Partner-Technical-Release-on-Updated-IPC-Analysis-for-Somalia-fo-October-2022-to-June-2023>

⁷ <https://blogs.worldbank.org/african/data-development-poverty-and-policy-somalia>

⁸ <https://bti-project.org/en/reports/country-report/SOM>

⁹ <https://fsnau.org/downloads/FSNAU-Technical-Series-Report-Post-Gu-2016-Nutrition-Analysis.pdf>

¹⁰ <https://www.aa.com.tr/en/africa/with-only-33-of-children-enrolled-schooling-in-somalia-takes-multiple-hits>

FAO, UNICEF and WFP are committed to priority areas of economic, social and human development in Somalia. Therefore, the Joint Resilience Action (JRA) program, the resilience strategy for the three UN agencies in Somalia, are aligned with the Somalia National Development Plan (2020-2024¹¹), UN in Somalia Strategic Framework (2017-2020), Drought Impact Needs Assessment; Recovery Resilience Framework and Sustainable Development Goal targets. The collective and multi-sectoral approach of the JRA is epitomized through the development of a Joint Results Framework, designed to address the needs of vulnerable and at-risk households in Somalia over a five-year period (2018-2023). Flexibility is embedded in all program elements and approaches to allow for changes over this period.



¹¹ Somalia National Development Plan 2020 to 2024 (NDP-9)



EVALUATION CONTEXT

With funding from BMZ through KfW, WFP and UNICEF, in coordination with the Ministry of Health (MoH) and Ministry of Education, Culture and Higher Education (MoECHE), have been implementing two phases of a joint resilience programme in the Gedo, Lower Juba and Banadir regions in southern Somalia.

The Joint resilience programs

Two phases of a joint resilience program in the Gedo and Lower Juba regions in southern Somalia and Banadir have been ongoing and are transitioning to phase III. Phase I included an integrated nutrition, health and water, sanitation and hygiene (WASH) program funded from 2018 until March 2022 and implemented by WFP and UNICEF. Phase II included an education, WASH and livelihoods program funded from 2019 – March 2022 and implemented by WFP and UNICEF. Phase I covered over 80 villages in the 6 districts in Gedo. The education/school feeding component in Phase II is being implemented in 3 out of the 6 districts in Gedo. FAO has joined the program in Phase III by integrating food security and livelihoods programming with the nutrition and education interventions under Phase I and Phase II. In this Phase, the program will focus on continuing implementation only in the existing villages in Gedo, adding 5 new schools in three districts. The timelines for the various Phases of the JRP can be visualized as in the figure below.

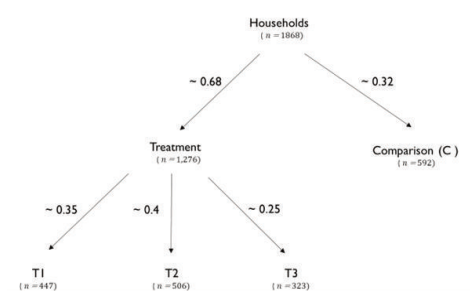


Figure 1: JRP phases and timelines

The new activities proposed in Phase III include livelihood programs; new social and behavior change communication (SBCC) activities for men; and expansion of education and home-grown school feeding to schools in six districts. This baseline data was collected within the third quarter (September) of the year 2022. Phase III envisages four outcomes as follows;

Table 2:Phase III Outcomes

Outcome	Outcome statement
Outcome 1	Increased access for young (4-5 yrs.) and school-aged (6-18 yrs.) girls and boys to integrated, inclusive, child-friendly education, school WASH, health and nutrition in a safe and protective learning environment at pre-primary, and primary education levels.
Outcome 2	Reduced micronutrient deficiencies for children under five, and pregnant and lactating women, including adolescents and increased uptake of malnutrition treatment and prevention services, health support, nutrition-sensitive social and behavioral change communication, and WASH interventions.
Outcome 3	Households maintain and improve food security and livelihood status through improved agricultural production and income generation.
Outcome 4	Strengthened government decentralized service delivery systems to promote and sustain quality integrated health, nutrition, education and WASH services in schools and health facilities.

The outcomes above are based on a theory of change premised upon improvement in access to services, resulting in resilience to withstand economic and climate related shocks and stressors. The integrated theory of change is captured as follows; - 'If parents and caregivers, children and adolescents have access to integrated school feeding, nutrition, WASH, and education services, including livelihoods support for vulnerable families with undernourished children, then, children will have improved learning, health, hygiene, and nutritional outcomes, and households and communities will have improved food security and resilience to withstand economic and climate-related shocks and stressors'. Theory of change by outcome is summarized as below while both the results framework and a pictorial representation of the theory of change are annexed to this report (annex 1);

Outcome 1 Theory of Change: If service delivery and supply of basic education materials, WASH facilities and school meals that support the holistic development of a child, increase for pre- primary and primary levels, and If state and local governments along with teachers, and Community Education Committees, have the capacity to prepare and support children to improve their access, retention and transition in pre-primary and primary levels, Then the education system is overall more resilient and more children, particularly the most marginalized and those affected by humanitarian crises will benefit from an inclusive and equitable quality education with improved learning outcomes.

Outcome 2 Theory of Change: If service delivery for prevention and treatment of malnutrition is increased and improved alongside health and WASH facilities and improved hygiene practices, and If state and local government along with Community Health Workers have the capacity to prepare and support communities to be more resilient and to improve access to nutrition services, and If communities engage and demand services, Then the health and nutrition system is more resilient and women and children will increasingly benefit from nutrition services and see an improvement in their nutrition status over time.

Outcome 3 Theory of Change: If livelihoods support and diversification are made available to vulnerable families in the form of climate-smart, markets-oriented and nutrition-sensitive farming inputs, methods and practices, and If farming opportunities and networks are made available – together with functioning productive community-based assets and financial support, Then households are less likely to default to negative coping strategies because they will be better positioned to produce their own food, generate income and accumulate savings, and thereby continue to access basic services even in the face of shocks and stresses.

Outcome 4 Theory of Change: If the capacity of the state and district level government for decentralized service delivery is enhanced, and If the government institutionalizes learning, monitoring and development of staff capacity, Then government systems at state and district level will be strengthened and capacities in health, education, WASH and agriculture domains will be reinforced.

The program aims to contribute to improved learning, health, hygiene, and nutritional outcomes for children and food security and to build resilience for households and communities to withstand economic and climate-related shocks and stressors. The program will achieve this by increasing access to integrated school feeding, nutrition, WASH, and education services for children, adolescents' parents and caregivers, and supporting livelihoods for vulnerable families with undernourished children.

Purpose and scope of the impact evaluation study

This is an independent impact evaluation assignment whose main objective is to conduct a quasi-experimental evaluation of the JRP. The goal is to evaluate the delivery of the program's key inputs and services and assess the impact of the program on the target beneficiaries. Its results are purposed to contribute to organizational learning (among the implementing agencies) about the impact of different program design features, and particularly, the impact of new program components (phase III).

The scope of work covered the entire geographic areas of Gedo region and targeted such Stakeholders as Government line ministries at both federal and regional levels; both national and international Non-Governmental Organizations (NGOs); professional associations, community-based and civil society organizations and both beneficiary and comparison households. Where possible, the analysis will triangulate the three UN agencies' monitoring data and the evaluation data. The results from the valuation can be leveraged by BMZ, KfW, the three implementing agencies and other organizations that share the vision of strengthening regional resilience in Somalia.

For this quasi -experimental design, impact assessment and resilience measurement are the key evaluation elements.

Impact of the joint program on a broad range of outcomes: This is understood as identifying any key positive and negative changes generated through the implementation of the project (directly or indirectly, intended or unintended).

Resilience measurement: This refers to tracking or measuring the ability of households and communities to cope, adjust and stabilize their well-being in light of a shock, stressor or a disturbance. With this baseline data, an analysis of households' resilience has been done using the Shiny RIMA (Resilience Index Measurement and Analysis) tool and a starting resilience index established. RIMA estimates household resilience to insecurity with a quantitative approach that allows for the establishment of a cause-and-effect relationship between resilience and its critical determinants

From the outcomes and the underlying theory of change above, this evaluation aims to track the following key outcome variables that are likely to be affected by program interventions; -

- i. **Education:** - access, enrolment, retention, quality, water sanitation and hygiene (WASH), impacts of school feeding
- ii. **Nutrition:** - reduction in Global acute malnutrition, increase in uptake of malnutrition treatment and prevention services, improved Infant and young child feeding practices, better birth outcomes, social behavior change, WASH and reduced vector and water borne diseases, early identification of malnutrition cases among children and pregnant and lactating mothers.
- iii. **Livelihoods and food security:** - equipped small holders, enhanced production, income diversification, food security (e.g FCS, HDDS) savings as a buffer for shocks and stressors and for financing livelihood opportunities.
- iv. **Strong government systems:** - Improvement in inter-ministerial coordination, quality implementation and monitoring capacity, strengthened health system capacity for monitoring and surveillance,
- v. **Resilience Building:** - improvement in the resilience index/ability to cope with shocks and stressors (assets, adaptive capacity, access to basic services, social safety nets and food security)

The impact evaluation is guided by three research questions conceptualized from both the theory of change and the program outcomes as follows: -

- What is the impact of the joint program activities on building resilience capacity of the target population? What is the additional impact of livelihood activities on building resilience capacity compared to the existing program focused on nutrition, WASH and education components?
- What are the gains and achievements in terms of composition of resilience capacity and in relation to the activities of the joint program? Are there differences in resilience composition by gender of the household heads or livelihood category?
- To what extent is the joint program more effective in terms of building and strengthening of resilience capacity in the target community when implemented in combination with home-grown school feeding systems and value chains, and with the support of Social and Behavioural Change Communication (SBCC) campaigns?

Ethical consideration

Permission to undertake research in Gedo region was sought from and granted by the ministry of planning and international cooperations. A consent protocol was developed and respondents gave verbal consents at each interview before proceeding to engage. Interviews were terminated in all cases where consent was not provided since respondents were given a right to refuse to participate in the interview, or to refuse to answer any specific survey questions. No compensation was provided to program beneficiaries for participating in the evaluation/interviews. For the comparison group however, a compensation for time lost was provided. This was calculated based off of the prevailing local labor market rates.

For increased validity and to assure respondents' privacy, interviews with each respondent were conducted in a manner was comfortable for them, and in spaces where they spoke openly and honestly. Interviews spaces respected cultural norms. For example, female respondents were interviewed by female field assistants and vice versa. Any engagement at the household, school or health facility involving a minor only materialized with consent from a parent, guardian or caregiver. Child protection policies and regulation within Somalia or those espoused by such agencies as UNICEF, were also be adhered to. At all times and all undertakings, our teams were guided by the principle of Do No Harm.

During the informed consent process, participants were informed of the precautions taken to protect the confidentiality of their data. They were informed that only the research team would have access to their data, that reports would be aggregated and that all individually identifiable data would be destroyed or password protected before data is stored for future use.

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Evaluation Methodology/Design

1. Phase III interventions (for which data for this baseline were collected) are to be carried out over a 3-year period. Given this, a mixed-methods approach was designed to measure impacts of the joint resilience Action program as follows:

- A quantitative, 6-wave panel study consisting of a baseline, a midline, an endline as well as three mid-season studies.
- Three mid-season studies will be undertaken in each year, at a different time point to when baseline, midline and endline happens, using the same instrument but with a focus on performance indicators.
- To measure how households cope with shocks and stressors and to estimate household-level resilience to food insecurity, relevant sections of the quantitative instrument are designed to capture key indicators that will be coded to establish resilience capacity index Access to Basic Services (ABS), Assets (AST), Adaptive Capacity (AC), Social Safety Nets (SSN), and Food Security (FS), following the RIMA (Resilience Index Measurement and Analysis) approach.
- Difference-in-Differences will be deployed to analyze the panel data.

Difference-in-differences (DID), a quasi-experimental approach, is the methodology chosen to analyze the panel data and evaluate the impact, by comparing the changes in outcomes over time between a population enrolled in a program (the treatment group) and a population that is not (the comparison group). It is an analytical approach that facilitates causal inference even when randomization is not possible. It measures the before-and-after change in outcomes for the program participants (the treatment group), then subtracts the before-and-after change in outcomes of the non-participants (the comparison group) to find the relative change in outcomes for program participants. To give an example in the context of this study, when endline data is received, calculate the before-and-after difference in the anthropometry (one of the nutrition outcome variables) for T1 and for comparison group, and compare the change in anthropometry for T1 (d_{t1}) with the change in anthropometry for comparison group (d_c), examine if d_{t1} and d_c are significantly different, or if $d_{t1} - d_c$ is significantly different from 0.

Of note, DID allows differences in characteristics between the treatment and comparison groups. The validity of the DID approach relies on the equal trends' assumption, that is, if the program had not existed, the participants and non-participants would have experienced identical trajectories during the study period. The treatment and comparison groups might have different starting status, but there are no time-varying differences exist between groups. The assumption is that any differences in characteristics between the treatment and comparison groups do not have more or less of an effect over time on outcomes. However, given the particular nature and complications of regional context, there might be various factors that potentially result in differences in characteristics between the treatment and comparison groups (see section 2.7), which will have implications when interpreting the results.

2. Qualitative interviews and activities alongside quantitative surveys to gain in-depth insights into trends and to validate highlights suggested by insights drawn from quantitative data analysis.

- At baseline, these qualitative engagements were done with select sub set of respondents participating in the panel study as well as school heads, health service providers, community members and local implementing agency representatives to gain an understanding of particularly outcome four of the result matrix on collaboration with government in programming.

The various planned studies making up data for the impact assessment will be carried out as follows; -

Table 3: Evaluation study timelines and purpose

Activity/Study	When to Carry Out	Purpose
Baseline Survey	Done during the implementation of Phase III	to capture the status of the "starting point"
Mid-season survey 1	Somewhere in Year 1 (same program year as BL but in a different season)	to track the impact indicators in a different season or a time of major external shocks
Midline Survey	After one year of implementation (same season or month as baseline but a different year)	to track change using the same instrument (albeit with a few necessary learning modules that cannot be administered at baseline)
Mid-season survey 2	In Year 2, - same program year as ML but different timepoint/season)	to track the impact indicators in a different season or a time of major external shocks
Mid-season survey 3	Somewhere in Year 3 (same program year as EL but different season/time point)	to track the impact indicators in a different season or a time of major external shocks
Endline	After completion in Year 3, at the same season as BL and ML	to capture the status of the "ending point"

In-between the six waves, qualitative interviews and participatory activities will be carried out.

Sampling and identification strategy

According to the Phase III referral system, among the 50,282 children under 5 and pregnant and lactating women who are the direct beneficiaries of Nutrition programs, approximately 9,000 households with severe acute malnutrition or moderate acute malnutrition children were referred to Livelihoods programming. Among the 16,000 school aged children who are the direct beneficiaries of Education programs, approximately 7,000 households with vulnerable school children were referred to Livelihoods programs. Therefore, 16,000 households were targeted with Livelihoods interventions (the additional interventions in phase III alongside continued nutrition and education interventions from Phases I and II). This gives approximately 56% (i.e., 9,000) direct beneficiaries of Nutrition programs and 44% (i.e., 7,000) direct beneficiaries of Education programs. Following the design of the JRP, beneficiaries were registered or assigned to phase III treatments as long as they met certain criteria, that is:

For nutrition program (T1):

- Any woman or caregiver regardless of clan/status from the targeted communities in Gedo region
- Able to present themselves at nutrition sites with their children in order to receive nutrition treatment or prevention services for their children if they fall within the defined criteria:
- treatment (OTP and TSFP) services target pregnant and/or lactating women and children under five who are identified as malnourished according to their anthropometric measurements
- prevention services (MCHN) target pregnant and/or lactating women and children under three who are not currently malnourished, but are at risk
- To be able to successfully enroll in Phase III, the women should previously have had a child enrolled in a nutrition treatment program (from January to March 2021)

For education program (T2):

- Any child from the targeted communities in Gedo region who may be enrolled into the schools, regardless of clan affiliation, ability and socio-economic status
- The priorities were given to those most vulnerable school children to receive Phase III:
- Out-of-school girls and boys
- Children from IDP (Internally Displaced Persons) families who are not receiving any other support
- Orphaned children (missing one or both parents)
- Children from female-headed households or child-headed households
- Children from minority clans/ethnic groups
- Children from pastoralist / nomadic families
- Children with special needs (including children with physical and learning disabilities).

Using the lists of beneficiaries reached as the sampling frame, multistage sampling was employed to extract finite samples for each beneficiary category (T1 and T2). Note that T1 and T2 denote phase III treatment assignments for Nutrition plus Food Security and livelihood support (FSL) and Education plus FSL support respectively. However, (and following the enrolment strategy of the two implementation partners -UNICEF, WFP) during data collection, a third distinct group strongly identifying as having benefitted from both nutrition and education interventions, and was now recruited for livelihood support, was noted (T3). Given multiplicity of intervention activities, stratification by activity/treatment was used to ensure activities were included followed by clustering to provide a chance for inclusion of respondent types (household, schools, health facilities and livelihood zones) by district and villages. A total random sample of 1246 beneficiaries were selected from the list of 16000.

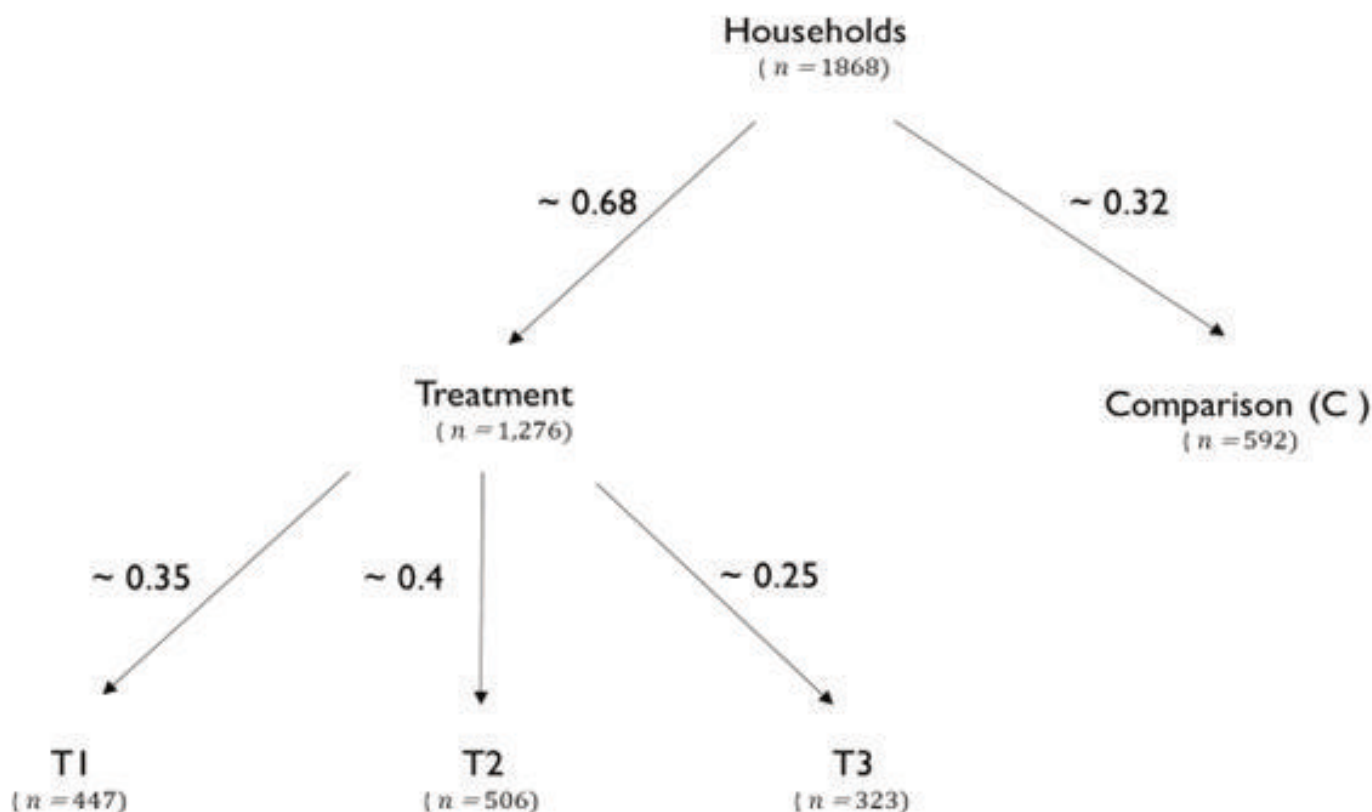


Figure 2: Design of experiment

Note: The experimental design randomly selected 1276 treatment households and 592 comparison households – ratio of 2:1. In Phase III of JRP, treatment group 1 (T1) received both nutrition and food security and livelihood support/ interventions. Treatment group 2 (T2) received both education and food security and livelihood support/ intervention while treatment group 3 (T3) received nutrition, education and food security and livelihood interventions. Finally, the comparison group did not receive any type of support and will only be engage in subsequent evaluations if and only if they do not enroll in any similar programs within the three years of JRP.

For the comparison group (C), the ideal scenario would have been to recruit households meeting the recruitment criteria for T1 and T2 from districts within Gedo but outside program areas. However, given that the only district untargeted for programming within Gedo was inaccessible by the field teams, recruitment was done from program districts but within villages outside a 10-15 Km radius of program areas. This was to substantially reduce chances of contamination. A sample of 623 was planned based similar power calculations as those used to determine beneficiary sample. Inclusion criteria for the comparison group also followed the following; -

- A household with pregnant and/or lactating women who have:
- children under five who are identified as malnourished according to their anthropometric measurements; or
- children under three who are not currently malnourished, but are at risk
- Or, a household with vulnerable school children who may be enrolled into the schools
- Consider the criteria above for identifying “vulnerable school children” and are not participants of any related program or external support.

Give difficulties in accessing certain areas and tracing listed households, this baseline study recruited a total of 1868 respondents as follows; - T1 = 447, T2 = 506, T3 =323 and C =592. These sample sizes still satisfy calculations based on; -

- Effect size of 0.2 (small effect), significant level of 0.05, power of 0.9, for two samples
- Considering a drop-out rate of 20% over the 3 years.

Data analysis

Data for this assignment was entered ‘instantly’ at the field level using ODK. Cleaned quantitative data sets were imported into STATA software for analysis where both descriptive, test of significance and balancing tests were conducted. For qualitative data on other hand, manual transcripts and recordings were transcribed verbatim and grouping of themes conducted by qualified experts (content analysis). Consolidation was then done by fact checking and in some cases consensus. Finally, emerging themes were triangulated with quantitative data where necessary and qualitative aspects used to explain enumerative findings. For outcome 4 (Strengthened government decentralized service delivery systems) however, content analysis of the qualitative data provided majority of the insights reported. This is because it had few quantitative data points. With the description of the various treatment groups in section 2.5, the goal of this impact study is to examine the effect of participation in each intervention group as compared to a comparison group. The baseline analysis will therefore, be disaggregated by treatment and each compared to the comparison group.

Limitations, risks and assumptions

- i. Phase III interventions (for which data for this baseline were collected) are to be carried out over a 3 years’ period encompassing interventions transitioned from phase I and II. Given this, it is key to note two important points. One, phase III includes a continuation of activities of phases I and II and therefore, among beneficiaries, this is not a typical baseline but rather progress data measuring effects of additional interventions. Secondly (and related to point number), some interventions for phase III had already started before data collection for this baseline. These have an implication in interpreting the results and matching treatment to the comparison group.
- ii. There were overlaps (in time and activities – see figure 1 on JRP phases and timelines) in program interventions. During data collection, a substantial proportion identifying as having benefitted from both Phases I (nutrition) and II (education) was identified and added to the beneficiary arms. These and transitioning of phases I and II activities, (highlighted in point number one), presented a difficulty in matching treatment to comparison group. However, the assumption made is that despite differences in key variables at baseline, difference in difference analysis is still possible since there is no time varying differences among groups.
- iii. In the project target areas, there is a likelihood of duplication of interventions from other support agencies targeting similar vulnerable groups. It is therefore not guaranteed that observed impacts will always be as a result of JRP. Given this and the need to attribute impacts to JRP activities, a propensity score matching has been done and sub samples will be used for attribution (see matching process in section 3.2 and detailed report in annex 14)
- iv. Similar to limitation number 3, much of the population in Somali adopt pastoralist lifestyles- i.e; frequent movement of people between homes of different relatives. Therefore, there could be spillover effects from the program that may impair comparison.



FINDINGS

Quantitative Sample

The quantitative survey covered a total of 1,868 households. Out of this, 1,276 households were sampled from a pool of joint resilience programme (JRP) beneficiaries in Gedo region who received three different but interrelated interventions: Nutrition (447 households); Education and WASH (506 households); and Education and Nutrition (323 households). A total of 592 households were selected for the group comparison (see definitions in section 2.1) to facilitate assessment of changes in key outcomes over-time,

Table 4: Sample reached

	Intervention arms			Combined intervention arms	Comparison group	Total
	T1	T2	T3			
Dollow	137	113	83	333	174	507
Belet Hawo	87	122	87	296	61	357
Luuq	7	235	104	346	203	549
Bardhere	197	1	4	202	0	202
Garbaharey	3	6	40	49	78	127
Burdhubo	16	29	5	50	76	126
Total	447	506	323	1,276	592	1,868

Household Demographic Characteristics and balancing tests

Overall, almost two thirds (62%) of the study households were male-headed (MHHs). Except for households in the nutrition intervention arm, all the other households (comparison, education and WASH, and education and nutrition) were largely male-headed. Household heads averaged 43 years, with the majority (81%) being married. Overall, the average household size was 6 members. This result is consistent with other surveys conducted in Somalia. For instance, the 2020 Somalia Demographic Household Survey (SDHS) shows the average household size in Somalia to be 6.2 persons¹².

Literacy levels among household heads were generally low. Data showed that, overall, only 43% of the household heads were able to read and write. Broadly, this result is similar to the findings from other surveys and reports conducted in Somalia. For example, the UNICEF Somalia Education Strategy Note 2018 – 2020, estimates overall adult literacy in Somalia to be 40%.¹³ A 2018 World Bank report indicates that adult literacy rate in Somalia was 55%.¹⁴ Notably, variation in adult literacy exists among federal member states (FMSs). Adult literacy rates were found to be lowest in South-Central Somalia where only 38.3% of Somalis could read and write, but quite higher in Puntland and Somaliland at 42.9% and 45.3% respectively.¹⁵ Note that Gedo, the JRP implementation region, situates in Southern-Somalia, a region with lowest level of literacy in Somalia. The low literacy aspect of Gedo, is particularly important because it underscores the project's rationale of integrating food security and livelihoods programming alongside continuation of nutrition and education interventions implemented in the previous phases – I and II. Numerous studies have shown that low literacy rate is associated with high levels of vulnerabilities to poverty, reduced income, hunger, malnutrition, risks of disease and diminishing health outcomes.¹⁶

¹² The Somalia Health and Demographic Survey 2020 (page 22). <https://reliefweb.int/report/somalia/somali-health-and-demographic-survey-2020>

¹³ UNICEF Somalia Education Strategy Note 2018-2020 <https://www.ecoi.net/en/file/local/2053023/Somalia+4.+Education.pdf>

¹⁴ World Bank. 2018. Federal Republic of Somalia Systematic Country Diagnostic Report. <https://openknowledge.worldbank.org/handle/10986/30416?show=full&locale-attribute=es>

¹⁵ World Bank. 2019. Somalia Economic Update, Fourth Edition: Building Education to Boost Human Capital (Page, 21) <https://documents1.worldbank.org/curated/en/811231567610111001/pdf/Somalia-Economic-Update-Building-Education-to-Boost-Human-Capital.pdf>

¹⁶ See for example; Gadsden, V. L. (2021). Literacy and poverty: Intergenerational issues within African American families. In Children of poverty (pp. 85-124). Routledge; Verner, D. (2004). Education and its poverty-reducing effects: The case of Paraiba, Brazil (Vol. 3321). World Bank Publications.

Table 5: Baseline descriptive statistics and balance test:

Variable	Total (1868)	C (592)	T1 (447)	T2 (506)	T3 (323)	T1 - C	T2 - C	T3 - C
	Mean/(SE)	Mean/(SE)	Mean/(SE)	Mean/(SE)	Mean/(SE)	Mean difference		
MHH (=1)	0.622 (0.011)	0.684 (0.019)	0.407 (0.023)	0.688 (0.021)	0.703 (0.025)	-0.277***	0.004	0.019
Age of HH head (years)	42.717 (0.314)	41.588 (0.573)	40.130 (0.610)	45.051 (0.618)	44.712 (0.692)	-1.458*	3.464***	3.124***
Household size	5.719 (0.061)	4.757 (0.094)	6.022 (0.120)	5.913 (0.117)	6.759 (0.150)	1.266***	1.156***	2.002***
Single (=1)	0.017 (0.003)	0.024 (0.006)	0.002 (0.002)	0.026 (0.007)	0.012 (0.006)	-0.021***	0.002	-0.011
Married (=1)	0.813 (0.009)	0.791 (0.017)	0.848 (0.017)	0.794 (0.018)	0.836 (0.021)	0.057**	0.004	0.045*
Divorced (=1)	0.072 (0.006)	0.074 (0.011)	0.063 (0.011)	0.091 (0.013)	0.053 (0.012)	-0.012	0.017	-0.022
Widow (=1)	0.081 (0.006)	0.088 (0.012)	0.069 (0.012)	0.077 (0.012)	0.093 (0.016)	-0.018	-0.011	0.005
Widower (=1)	0.016 (0.003)	0.024 (0.006)	0.018 (0.006)	0.012 (0.005)	0.006 (0.004)	-0.006	-0.012	-0.017*
HH literate (=1)	0.425 (0.011)	0.365 (0.020)	0.271 (0.021)	0.563 (0.022)	0.529 (0.028)	-0.094***	0.198***	0.165***

Note: (i) The first five columns report means of the descriptive/demographics data at baseline with standard deviations in parentheses. (ii) The final three columns report difference in means between the groups. (iii) ***, **, and * indicate significance levels at the 1%, 5% and 10% respectively. (iv) Difference-in-means table/balance tests was conducted using the *iebal* Stata command.

From the descriptive statistics, notable differences at baseline between treatment and comparison group have been highlighted (table 5). By comparing means of key variables between treatment and the comparison group (especially of variables not expected to vary by program exposure i.e, literacy level of household head or average family size), the null hypothesis is rejected in most of the variables because probability p-value is less than the predetermined level of statistical significance (5%). That is, there were significant statistical differences between treatment and control group in some of the key variables of interest at baseline, which implies an imbalance. The imbalance is likely to have emanated from program design that for example, targeted certain specific households as opposed to random selection. For instance, only the most vulnerable households, households with malnourished care givers or pregnant and lactating mothers etc. Secondly, Phase III households already benefitted from nutrition and education intervention support provided in phases I and II of the JRP and which were transitioned and continued in Phase III (the phase under review). Finally, program inclusion criteria (see section 2.5) meant that, for example, T1 beneficiaries were likely to be females while T2 and T3 were likely to be male headed with school age children and or supporting orphaned and vulnerable children. Despite these differences, it is conceivable that a difference in difference analysis that will control for the key covariates is still possible and will be utilized to highlight program impact.

It is worth noting, for demonstration purposes, that propensity score matching (PSM) technique was conducted to pair households from each of the group who shared a similar probability (propensity score) of assignment to either of the groups. Results establish that only a total of 493 households – 238 in the treatment groups and 255 in the comparison group – were found to be well suited for comparison based on key characteristics such as food security (food consumption scores, household dietary diversity scores) and household head education etc (see annex 14 for the processes and outcomes of the matching activity). the study will endeavor to utilize the matched 493 to show contribution even as difference in difference methodology will be the main approach to highlight impacts. Owing to field/challenges such as access/gatekeeping concerns, security issues, migration, and movements between villages/livelihood zones etc the matched sub sample will be used only to the extent that sufficient numbers will be traced throughout the six waves. Given this, results of the total 1,868 sampled households are presented in subsequent sections. Throughout the report, effort have been made to include a column in result tables that show statistical tests for key variables. For the continuous variables such as food consumption score (FCS), one-way ANOVA has been computed to test statistical significance in differences in means between the treatment groups and comparison group. For the categorical variables, chi-square test results have been included to show whether the relationship between categories are meaningful. Furthermore, analysis of key indicators disaggregated by districts are annexed to this report (annex 13)

Outcome 1: Education

Increased access for young (4–5 yrs) and school aged (6–18 yrs.) girls and boys to integrated, inclusive, child friendly education, school WASH, health, and nutrition in a safe and protective learning environment at pre-primary, and primary education levels.

This section presents baseline findings on educational outcomes for young (4 – 5 years) and school aged (6 – 18 years) in the project implementation region of Gedo. The sampled 1,868 households, had a total of 10,708 household members. Out of which 6% (n= 646) were children aged between 4 – 5 years and 45% (n=4,829) were aged between 6 – 18 years. Distribution of household composition by age categories presented in this study mimics a 2019 World Bank Somalia' Economic Update Report that indicates that 40% of Somalia population is aged 6 – 18 years.¹⁷

School Enrolment

School enrollment of young children (4 – 5 years) was generally low. Out of 646 children in the surveyed households, only 3% were enrolled in school at the time of survey. Conversely, of the 4,829 children aged 6 – 18 years, 52% were enrolled in school at the time of survey. Variations in school enrollment rate for the children aged 6 – 18 years was noted by respondent category. For instance, enrollment rate was considerably high across intervention arms (nutrition 56%, education & WASH and education and nutrition each at 66%) and comparatively low among the comparison group (17%). Overall, school enrollment rate at the time of baseline survey for school going children (4 – 18 years) was 46% (table 6). This finding has been corroborated in other surveys. The 2018 World Bank report indicated that, whereas slightly above half (52.9%) of Somali Children were enrolled in school, there existed serious disparities in enrollment by region and household's socio-economic outcomes. An estimated 63% of children in non-poor households were enrolled as compared to only 45% of children in poor households.¹⁸

As regards new enrollment in school, 64% (14 of 22) young children (4 – 5 years) were enrolled within the reference 'current academic year' (third school term of year 2022- between August and November). For the children aged 6 – 18, 32% of those currently in school, were enrolled within the reference current year (2022). Taken together, 32% of the currently enrolled children of school-going age (4 – 18 years) were enrolled in schools within the 'current academic year' (annex 2).

Table 6: Children currently in school

	Intervention arms			Combined intervention arms	Comparison group	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Young children (4-5 yrs) currently enrolled in school						
Yes	4% (n=7)	7% (n=12)	2% (n=3)	5% (n=22)	0% (n=0)	3% (n=22)
No	96% (n=184)	93% (n=154)	98% (n=128)	95% (n=466)	100% (n=158)	97% (n=624)
Children (6- 18 yrs) currently enrolled in school						
Yes	56% (n=624)	66% (n=983)	66% (n=703)	63% (n=2310)	17% (n=194)	52% (n=2,504)
No	44% (n=482)	34% (n=505)	34% (n=359)	37% (n=1346)	83% (n=979)	48% (n=2,325)
All children currently enrolled in school (total-418 yrs)						
Yes	49% (n=631)	60% (n=995)	59% (n=706)	56% (n=2332)	15% (n=194)	46% (n=2,526)
No	51% (n=666)	40% (n=659)	41% (n=487)	44% (n=1812)	85% (n=1137)	54% (n=2949)

¹⁷ World Bank. 2019. Somalia Economic Update, Fourth Edition: Building Education to Boost Human Capital (page, iv) <https://documents1.worldbank.org/curated/en/811231567610111001/pdf/Somalia-Economic-Update-Building-Education-to-Boost-Human-Capital.pdf>

¹⁸ World Bank. 2018. Federal Republic of Somalia Systematic Country Diagnostic Report (page, 42), <https://openknowledge.worldbank.org/handle/10986/30416?show=full&locale=attribute=es>

School Feeding Programme

Overall, a greater majority (83%) of the currently enrolled children received food in school. By respondent category, nearly all currently enrolled children in Education & WASH (92%) and Education & Nutrition (91%) intervention arms reported receiving food in school, followed by 77% of currently enrolled children in Nutrition intervention arm. For the comparison group, only 1 out of 3 (32%) of currently enrolled children said they received food in schools. This result is expected because, from the design of JRP, children in the education-related intervention arms were offered with food in school from previous phases of the project.

Among children receiving food in school, a greater majority (81%) received two meals in any given day. A significant proportion of those who receive two meals/day were in the beneficiary group – Education & Nutrition (94%), Education & WASH (86%) and Nutrition (61%).

Evidence indicates that provision of meals to school-going children (more so in volatile and unstable contexts like Somalia) forms an integral part in incentivizing enrollment and retention of rural children in schools. According to studies, the “magnet effect” of the meal programs greatly increases school attendance rates especially among young children.¹⁹ In addition to boosting enrolment, promotion of regular attendance and ultimately improvement in school general performance, school feeding program also alleviates short term hunger in children and promotes participation and concentration levels.

Overall, three out of four (75%) of currently enrolled children received books and other learning materials. Similar to school feeding programme, majority of the children who received educational materials were from education-related interventions – education & Nutrition (86%), Education & WASH (75%) – followed by Nutrition intervention at 72%. Less than half (45%) of the currently enrolled children in the comparison group also reported ever receiving books and other learning materials from school.

Table 7: Currently enrolled children (4 – 18 years) received foods and learning materials in school by intervention arms

	Intervention arms			Combined intervention arms	Comparison group	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Currently enrolled children (4 – 18 yrs) receive foods in school by intervention arms						
Yes	77% (n=486)	91% (n=910)	92% (n=650)	88% (n=2046)	32% (n=63)	83% (n=2,109)
No	23% (n=145)	9% (n=85)	8% (n=56)	12% (286)	68% (n=131)	17% (n=417)
Number of meals enrolled children received in a day						
1 meal	39%	14%	6%	18%	56%	19%
2 meals	61%	86%	94%	82%	44%	81%
Currently enrolled children (4 – 18 yrs) received books and learning materials by intervention arms						
Yes	72%	75%	86%	78%	45%	75%
No	28%	25%	14%	22%	55%	25%

Outcome 2: Nutrition

Reduced micronutrient deficiencies for children under five, and pregnant and lactating women, including adolescents and increased uptake of malnutrition treatment and prevention services, health support, nutrition-sensitive social and behavioral change communication, and WASH interventions

Women Nutrition

This section provides baseline findings for women and adolescent girls who “are currently” pregnant, lactating, or caregivers to under-five children. In 1,868 households, a total of 864 females were surveyed out of which 15% (n=130) were pregnant, 18% (n=152) were lactating and 67% (n=582) were caregivers of children aged 7 – 59 months. Overall, the average age of female surveyed was 33.4 years. This characteristic of Somali women is confirmed in the 2020 SDHS report that indicates all Somali women are married at age of 35 and that the percentage of married women increases with age and peaks at between the age 35 – 39 years.²⁰

¹⁹ World Bank. 2019. Somalia Economic Update, Fourth Edition: Building Education to Boost Human Capital (page, iv) <https://documents1.worldbank.org/curated/en/811231567610111001/pdf/Somalia-Economic-Update-Building-Education-to-Boost-Human-Capital.pdf>

²⁰ The Somalia Health and Demographic Survey 2020 (page 73) <https://reliefweb.int/report/somalia/somali-health-and-demographic-survey-2020>.

Table 8: Demographic information of women respondent type by intervention arms

	Intervention arms			Combined intervention arms	Comparison n (n)	Overall (n)
	Nutrition (n)	Education & WASH (n)	Education & Nutrition (n)			
Currently pregnant	10% (n=30)	13% (n=24)	12% (n=19)	11% (n=73)	27% (n=57)	15% (n=130)
lactating (<=6 months)	11% (n=34)	23% (n=42)	23% (n=38)	18% (n=114)	18% (n=38)	18% (n=152)
Caregiver (7-59 months)	79% (n=238)	65% (n=120)	65% (n=106)	73% (n=464)	55% (n=118)	67% (n=582)
Average age	34.1	34.5	36.1	34.71	29.3	33.4

Maintaining good nutrition and healthy diet during and after pregnancy are critical for the health of the mother and the infant. Both pregnancy and lactation place high demands on maternal stores of energy, protein and other nutrients. In our current survey, we sought to find out the physiological status of the women in the reproductive age of between 15–49 years. Assessment of maternal nutrition using women’s MUAC indicated that about 3% were malnourished while a further 8% were at risk of malnutrition. Overall, the overwhelming majority (89%) was normal and well nourished. The nutritional status of women before, during and after pregnancy affects women’s well-being and has long-lasting impacts on the growth, development and health of children across the first 1000 days and beyond²¹.

Table 9: Maternal nutrition based off of MUAC

Maternal MUAC	Beneficiary	Comparison	Combined
Malnourished <21cm	2.28%	4.46%	2.97%
At risk 21-23cm	7.76%	9.41%	8.28%
Normal >23cm	89.95%	86.14%	88.75%

Care to Women

Delivery at a hospital/health facility is critical in reducing health risks to both the mother and the child. Hospital/health facility increases chances of better attention (and hygiene), which is key in reducing risks of complications and infection that are both precursors for morbidity and mortality to both the mother and child. Overall, 36% of the currently lactating mothers delivered their babies at a hospital/health facility. Notably, a majority of those who delivered at a hospital/health facility were from beneficiary households – Education & WASH (57%), Nutrition 38% and Education & Nutrition (37%). For the currently lactating mothers in the comparison group, 45% delivered at home without a midwife, 44% at home with midwife and only 8% at a hospital/health facility. From experiences working in the project area as well engagements with key informants, this baseline noted that deliveries at a hospital/health facility are more common in public health facilities than in facilities supported by private sector/actors.

As regards whether women received a health check at a nutrition clinic/health facility in the “last 6-months” reference period pre-survey, one out of four (26%) were affirmative. Out of this group, majority were beneficiaries from the three intervention arms – nutrition (36%), Education & WASH (33%) and Education & Nutrition (26%). Only 4% of women in the comparison group reported to have had a health check 6 months before baseline data collection. As to why the women did not take part in a health check, 48% noted that “women know how to handle pregnancy and don’t need the check”, followed by 23% who reported that “other women in the household and community could share experiences and therefore they did not need checks”. 19% and 18% reported that “they were too busy to get a check” and “transportation cost was inhibitive to them” respectively. Furthermore, 14% said “the health check is costly”, 11% “did know where to go for a check” and 4% stated “other reasons”.

Concerning counselling and advice, overall, slightly above half (58%) of women received counselling and advice from elderly women within the household or community, followed by 41% who were advised by midwives and 24% by health providers/workers in clinics. 17% obtained counselling and advice from peer women in the community. Literature indicates that healthcare received by a mother during pregnancy, at the time of delivery and after delivery, is critical for the survival of the mother and child. Antenatal care (ANC) from trained personnel is important for monitoring pregnancy and reducing risks related to morbidity and mortality for the mother and child during and after pregnancy. At baseline, two out of three (65%) mothers received ANC or postpartum care at home (delivered by elderly women in the household or community), followed by 23% and 17% who were taken care of at home by male family members and given advice by health providers/workers respectively (annex 3).

²¹ <https://www.unicef.org/rosa/what-we-do/nutrition/adolescent-and-womens-nutrition/stop-stunting-power-maternal-nutrition>

Table 10: Place of delivery for currently lactating mothers and care for PLW

	Intervention arms			Combined intervention arms	Comparison n	Overall	Significance test
	Nutrition	Education & WASH	Education & Nutrition				
Place of delivery for currently lactating mothers							
Hospital/health facility	38%	57%	37%	45%	8%	36%	Pearson X ² (9, 152) =24.70; p=0.003***
Home	35%	21%	26%	27%	45%	32%	
Home with midwife	26%	21%	37%	28%	44%	32%	
Without midwife	0%	0%	0%	0%	3%	1%	
Woman received health check at health facility/nutrition clinic last 6 months							
Yes	36%	33%	26%	33%	4%	26%	Pearson X ² (3, 864) =75.09; p=0.000***
No	64%	67%	74%	67%	96%	74%	

Concerning counselling and advice, overall, slightly above half (58%) of women received counselling and advice from elderly women within the household or community, followed by 41% who were advised by midwives and 24% by health providers/workers in clinics. 17% obtained counselling and advice from peer women in the community. Literature indicates that healthcare received by a mother during pregnancy, at the time of delivery and after delivery, is critical for the survival of the mother and child. Antenatal care (ANC) from trained personnel is important for monitoring pregnancy and reducing risks related to morbidity and mortality for the mother and child during and after pregnancy. At baseline, two out of three (65%) mothers received ANC or postpartum care at home (delivered by elderly women in the household or community), followed by 23% and 17% who were taken care of at home by male family members and given advice by health providers/workers respectively (annex 3).

Health seeking behaviors among Women

Overall, 30% of mothers reported to have experienced illness or discomfort during pregnancy or lactation period. Relatively similar proportion of mothers experienced illness or discomfort during pregnancy.

Overall, for those who felt illness or discomfort during pregnancy or lactation period, slightly above half (53%) received treatment from a public health facility, followed a second distant by 27% who got treatment from private health facility. It is worth noting that whereas majority of women in beneficiary households obtained treatment from a health facility (public or private), 57% and 32% of women in the comparison group sought treatment from traditional birth attendant and mobile clinics respectively.

For the women that did not seek treatment after experiencing illness or discomfort during pregnancy or lactation period, 65% noted that “the symptoms were normal following pregnancy and birth” 15% said they “did not know what treatment to get” and the other 15% gave other reasons, mainly being lack of hospital/health facilities in the vicinity. The majority arguing for normality of symptoms as well as the group unaware of the type of treatment to get, indicate an opportunity for targeting with nutrition and health capacity intervention, including training on behavior change as regards handling pregnancies and lactation. Other stated reasons for not receiving treatment included: 9% of women noting “the transportation to get treatment is too high”, 8% “do not know where to get the treatment” and 7% said “treatment is too costly”.

Table 11: Health seeking behavior by Women

	Intervention arms			Combined intervention arms	Comparison	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Woman experienced illness or discomfort during pregnancy or lactation period						
Yes	21%	37%	32%	28%	35%	30%
No	79%	63%	68%	72%	65%	70%
Where the woman received treatment						
Public health facility	53%	75%	46%	72%	5%	53%
Private health facility	27%	43%	56%	37%	4%	27%
Traditional Birth Attendant	19%	4%	4%	3%	57%	19%
Mobile clinics	13%	7%	6%	5%	32%	13%
Community Health Worker (CHW)	5%	9%	6%	6%	1%	5%
Others	4%	4%	0%	2%	9%	4%
Faith-based facility	1%	0%	0%	0%	4%	1%

Care to Babies

Overall, two out of three (66%) of currently lactating or caregiver mothers affirmed to have been breastfeeding their new-born babies. The proportion of women breastfeeding their new-born babies was considerably higher across all respondent categories, except for those in Nutrition intervention arm. The implication of this finding is that, going forward, the JRP should devote resources to women sampled from the Nutrition intervention arm, including, for instance, provision of extra food and fluids for them to rebuild their own nutrient stores, and secondly, educating them on the importance of breastfeeding their babies.

When currently lactating or caregiver mothers were asked about practices carried out when taking care of new born-baby, 61% said they provided clean clothes, 51% become were more careful with the food/medicine they were taking and 47% provided independent bed spacing. These are forward looking baby care behaviors; however, efforts need to be directed towards this particular area to increase the proportions adopting and reporting these positive care outcomes.

Table 12: Baby breast-fed and care during breastfeeding

	Intervention arms			Combined intervention arms	Comparison	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Mother has been breastfeeding the newborn baby						
Yes	59%	73%	76%	67%	64%	66%
No	41%	27%	24%	33%	36%	34%
Practices carried out when taking care of the newborn baby						
Provide clean clothes	53%	60%	70%	59%	68%	61%
Be more careful with the food or medicine I was/am taking	55%	54%	45%	52%	49%	51%
Provide independent bed spacing	52%	50%	38%	48%	44%	47%
Pay more attention to the health and hygiene of self	39%	35%	25%	35%	32%	34%
Other Specify	1%	1%	1%	1%	1%	1%

Initiation of breastfeeding

When currently lactating or caregivers were asked about the first thing they fed their youngest child after birth, nearly all (94%) mentioned breast milk. Other milk (cow, goat, camel), sugar water solution and water, were each mentioned by only 2% of the mothers.

Overall, a greater majority (61%) of the mothers breastfed their babies within 1 hour after birth, followed distantly by 19% and 16% who breastfed within 2 hours or within the first day after birth, respectively. 3% either did not know or remembered how long after birth they breastfed their newborn baby. This result is consistent with the 2020 SHDS survey, which found that 60% of children were breastfed within the first hour of their birth. WHO recommends initiation of breastfeeding within the first hour of birth.²² The first breast milk contains colostrum which has higher concentration of antibodies and nutrients that helps protects babies from onset of diseases and reduces newborn mortality.²³ The benefits of early breastfeeding are not limited to the health and survival of children. Studies have shown that breastfeeding also promotes mother's health and wellbeing, creates a bond between mother and child,²⁴ reduces the risk of breast and ovarian cancers and postpartum depression. Initiation of breastfeeding after childbirth helps in reducing the risk for postpartum blood loss by increasing the rate of uterine contraction.²⁵ Given the benefits associated with early initiation of breastfeeding, JRP can initiate interventions, including awareness-raising to increase the proportion of mothers breastfeeding their babies within the recommended 1 hour after birth.

²²The Somalia Health and Demographic Survey 2020 (page 155). <https://reliefweb.int/report/somalia/somali-health-and-demographic-survey-2020>

²³ WHO. Early initiation of breastfeeding (%). <https://www.who.int/data/gho/indicator-metadata-registry/indicator-337#:~:text=Early%20initiation%20of%20breastfeeding%2C%20within,on%20duration%20of%20exclusive%20breastfeeding.> [Accessed on 31 December 2022].

²⁴Ibid

²⁵Labbok, M. H. (2001). Effects of breastfeeding on the mother. *Pediatric Clinics of North America*, 48(1), 143-158.

Table 13: Initiation of breastfeeding

	Intervention arms			Combined intervention arms	Comparison	Overall	Significance tests
	Nutrition	Education & WASH	Education & Nutrition				
First item youngest child was fed immediately after Fed							
Breast milk	96%	95%	94%	95%	91%	94%	Pearson X ² (9, 864) =11.29; p=0.256
Other milk (cow, goat, camel)	3%	1%	1%	2%	3%	2%	
Sugar water solution	1%	3%	2%	2%	3%	2%	
Water	1%	2%	2%	2%	3%	2%	
Time after birth the child was breastfed							
Within 1 hr after birth	64%	69%	50%	62%	57%	61%	Pearson X ² (12, 864) =41.18; p=0.000***
Within 2 hrs after birth	12%	18%	26%	17%	26%	19%	
Within first day	20%	10%	21%	17%	14%	16%	
Don't remember/don't know	3%	3%	3%	3%	3%	3%	
Within 1-3 days	2%	0%	1%	1%	0%	1%	

Complementary feeding

The WHO recommends that mothers should initiate early breastfeeding within 1 hour of birth and should exclusively breastfeed for the first 6 months of childbirth and then succeed by adequate nutritional feeding continually for 6 to 24 months to ensure best nutrition outcomes for the child.²⁶ The WHO notes that exclusive breastfeeding for 6 months is important because, over 820, 000 children's lives could be saved every year among children under 5 years, if all children 0–23 months were optimally breastfed.²⁷

At baseline, data showed that, overall, 71% of all mothers initiated complementary feeding after six months. Across respondent categories, no significant difference was observed on the timing of initiating complementary feeding. However, it is worth noting that, contrary to the recommendation that, children below 6 months should exclusively be breastfed, 1 out of 4 mothers in Education & Nutrition and Education & WASH intervention arms, introduced their babies to complementary feeding before 6 months. Going forward, the JRP project can initiate interventions and mechanism that would help mothers in the project areas to adhere with the WHO recommendation of introducing complementary feeding to children upon attaining 6 months.

On seeking to examine whether mothers and caregivers were aware of the appropriate time for the introduction of complementary feeding, nearly three quarters (72%) mentioned 'after 6 months', which is the recommended timing. Among the beneficiary households, a greater majority (81%) of mothers in the Education & WASH intervention arm knew the proper timing of introducing complementary feeding, followed by those in education & nutrition arm (72%) and lastly those in Nutrition only intervention arm (67%). Overall, nearly fifth (18%) said complementary feeding needed to be introduced between 4 – 6 months, 5% mentioned within first 3 months and another 5% either could not remember or did not know. Given this finding, JRP should leverage and strengthen the SBC/SBCC component of JRP to double efforts around complementary feeding practices.

Table 14: Complementary feeding timelines was introduced

	Intervention arms			Combined intervention arms	Comparison	Overall	Significance test
	Nutrition	Education & WASH	Education & Nutrition				
Time complementary feeding timelines was introduced							
After 6 months	76%	70%	68%	72%	68%	71%	Pearson X ² (9, 864) =32.93; p=0.000***
Between 4-6 months	12%	21%	25%	18%	27%	20%	
Don't remember/don't know	7%	5%	4%	6%	1%	5%	
Within first 3 months	5%	4%	3%	4%	4%	4%	
Age when complementary feeding should be introduced							
After 6 months	67%	81%	72%	72%	73%	72%	Pearson X ² (9, 864) =37.13; p=0.000***
Between 4-6 months	17%	11%	22%	17%	21%	18%	
Within first 3 months	7%	4%	4%	5%	6%	5%	
Don't remember/don't know	9%	4%	2%	6%	1%	5%	

²⁶ WHO. (2021). Infant and young child feeding. <https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding> [Accessed on 30 December 2022].

²⁷ Ibid

Infant and Young Child Feeding (IYCF)

Optimal IYCF practices are critical for proper child growth and development particularly during the first 1000 days of life. The benefits of breastfeeding for both mothers and babies cannot be understated. WHO recommends exclusive breastfeeding for the first six months of life as it ensures adequate food security for infants.

Ever breastfed

This was defined as the percentage of children born within the last 24 months who were ever breastfed. The overall 'ever-breastfed' rate was reasonably high across the combined (84.6%), beneficiary (86.2%) and comparison groups (80%). But this rate is generally lower than the national estimate of 98%²⁸. According to WHO, this indicator is useful for the general acceptance of breastfeeding and also for advocacy efforts²⁹. The baseline finding therefore, showed a need to target advocacy and social behavior change on breast-feeding among JRP participating mothers.

Micronutrient Supplementation

Overall, one out of three (34%) mothers received micronutrient supplementation within 'the last 12 months' pre-survey. Out of this, a considerable proportion was from beneficiary households – Education & WASH (55%), Education & Nutrition (42%) and Nutrition (37%). Only 6% of mothers in the comparison group said they got multiple micronutrient supplementation (see annex 4).

Among those who received micronutrient supplementation, a greater proportion (82%) obtained it from a public health facility, followed by 23% who received from private health facility and lastly 7% from community health workers (CHWs). This further underscores the need to collaborate with public health facilities to ensure success in reaching women with micronutrient supplementation

Regarding health benefits of micronutrient supplementation, overall, 46% of mothers identified reduction in the risk of low-birth-weight infants, followed by 45% who mentioned prevention of anemia. Expectedly, knowledge on the health benefits of micronutrient supplementation was varied by respondent category with a greater majority of beneficiaries being knowledgeable as compared to the comparison group. However, it is worth noting that across respondents, close to one quarter of mothers did not know the benefits of micronutrient supplementation.

Anthropometric results (based on WHO standards 2006)

The survey involved a total of 1955 children aged between 6–59 months whose anthropometric measurements for weight, height and MUAC were taken. Given the challenges in age estimation in the country, 95% of the children's age was determined using the 'Events Calendar'. The sex ratio for children 6 to 59 months was 1000 (51.2%) boys to 955(48.7%). Boys and girls were equally represented with an overall sex ratio of 1.0. This is in line with SMART methodology recommendation³⁰ for proportionate gender ratios. The age group 30-41 months had the highest number of children representing slightly above one quarter (26%) followed by 18-29 months age group. The mean age of the children was 34 months.

Table 15: Distribution of age and sex of combined sample

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	152	48.6	161	51.4	313	16.0	0.9
18-29	247	52.4	224	47.6	471	24.1	1.1
30-41	254	50.0	254	50.0	508	26.0	1.0
42-53	244	52.9	217	47.1	461	23.6	1.1
54-59	103	51.0	99	49.0	202	10.3	1.0
Total	1000	51.2	955	48.8	1955	100.0	1.0

In the beneficiary sample, the total number of children aged 6–59 months was 1478. The number of boys surveyed (51.6%) was slightly higher than that of girls (48.4%). However, the overall sex ratio retained at 1.1 highlighting an almost identical representativeness. Further analysis by age group highlights that the highest number of children surveyed in the beneficiary sample was in the age bracket of 30–41months at 26.5%. This is almost similar to the combined sample.

²⁸FSANU: 2016 Somali IYCN assessment report (page 2)- <https://reliefweb.int/report/somalia/2016-somali-infant-and-young-child-nutrition-assessment-infant-and-young-child>

²⁹ WHO: Indicators for assessing infant and young child feeding practices 2021 (page 5)

³⁰The SMART Plausibility Check for Anthropometry, Oct 2015 (pages 11-12) <https://smartmethodology.org/survey-planning-tools/smart-methodology/plausibility-check/>

Table 16: Distribution of age and sex of beneficiary sample

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boys: girls
6-17	116	50.9	112	49.1	228	15.4	1.0
18-29	195	55.2	158	44.8	353	23.9	1.2
30-41	198	50.5	194	49.5	392	26.5	1.0
42-53	177	50.0	177	50.0	354	24.0	1.0
54-59	76	50.3	75	49.7	151	10.2	1.0
Total	762	51.6	716	48.4	1478	100.0	1.1

A total of 477 children age 6–59 months were surveyed in the comparison sample representing about a quarter (24.3%) of the combined sample. The number of boys and girls in the comparison sample were equally representative with an overall sex ratio of 1.0. On age group distribution, the age groups 18–29 and 30–41 months had the highest number of children at 24.7% and 24.3% respectively.

Table 17: Distribution of age and sex of comparison sample

AGE (mo)	Boys		Girls		Total		Ratio
	no.	%	no.	%	no.	%	Boy: girl
6-17	36	42.4	49	57.6	85	17.8	0.7
18-29	52	44.1	66	55.9	118	24.7	0.8
30-41	56	48.3	60	51.7	116	24.3	0.9
42-53	67	62.6	40	37.4	107	22.4	1.7
54-59	27	52.9	24	47.1	51	10.7	1.1
Total	238	49.9	239	50.1	477	100.0	1.0

Global Acute Malnutrition based on weight-for-height z-scores (and/or oedema)

The Global acute malnutrition (GAM) is used to measure the level of wasting of children aged 6–59 months in a given population. GAM is determined by the proportion of children either with severe acute malnutrition (SAM) or moderate acute malnutrition (MAM). GAM by z-score was defined as Weight-for-height Z scores less than -2SD and/or presence of oedema $WHZ < -2SD$ and/or oedema. Analysis was based on SMART flags $\pm 3SD$ ³¹ from the mean.

Table 18: SMART flags $\pm 3SD$

	Acceptable (<5%)
	Alert (5-9.9%)
	Serious (10-14.9%)
	Critical (15-29.9%)
	Very critical (>30%)

The overall GAM prevalence by WHZ in this baseline study indicates a critical situation (17.5%). The prevalence of GAM was higher in the comparison sample (21.1%) than in the beneficiary (16.1%). What makes this disparity more prominent is the relatively smaller sample size in the comparison arm (n=459) than in the beneficiary (n=1431). Across the three samples (combined, beneficiary and comparison), the prevalence appears higher among boys (19.8%; 17.8%; 25.1% respectively) than in girls (15.2%; 14.7%; 17.2%). The high prevalence of malnutrition across the three samples was similar to the findings from FSNAU's Post Gu 2022 Assessment where critical GAM levels were recorded in North Gedo and its environs³². On the other hand, the prevalence of SAM in the combined sample was found to be 3.9% whereas the prevalence within the beneficiary group was 3.1%. The burden of severe acute malnutrition was significantly higher in the comparison sample at a prevalence rate of 5.0%. SAM children have a higher risk of mortality.

³¹ SMART Methodology Manual 2.0 (2017)-Measuring Mortality, Nutritional Status, and Food Security in Crisis Situations: SMART Methodology (page 67)- <https://smartmethodology.org/survey-planning-tools/smart-methodology/smart-methodology-manual/>

³² FSNAU Nutrition update October 2022 (page 4)- <https://fsnau.org/downloads/FSNAU-Nutrition-Update-October-2022.pdf>

Table 19: Prevalence of acute malnutrition by sex for combined, beneficiary and comparison

	Combined (ALL)			Beneficiary			Comparison		
	All n = 1892	Boys n = 968	Girls n = 924	All n = 1431	Boys n = 737	Girls n = 694	All n = 459	Boys n = 227	Girls n = 232
Prevalence of global malnutrition (<-2 z-score and/or oedema)	17.5 %	19.8 %	15.2 %	16.3 %	17.8 %	14.7 %	21.1 %	25.1 %	17.2 %
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	13.6 %	14.9 %	12.3 %	13.1 %	13.7 %	12.5 %	15.3 %	18.9 %	11.6 %
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	3.9 %	5.0 %	2.8 %	3.1 %	4.1 %	2.2 %	5.9 %	6.2 %	5.6 %

The survey distribution (red) closely follows WHO's Gaussian distribution curve (green) with a mean standard deviation (SD) of 1.1. This indicates that the data for Weight for Height z-score is of good quality since the SD falls between 0.8 and 1.2.

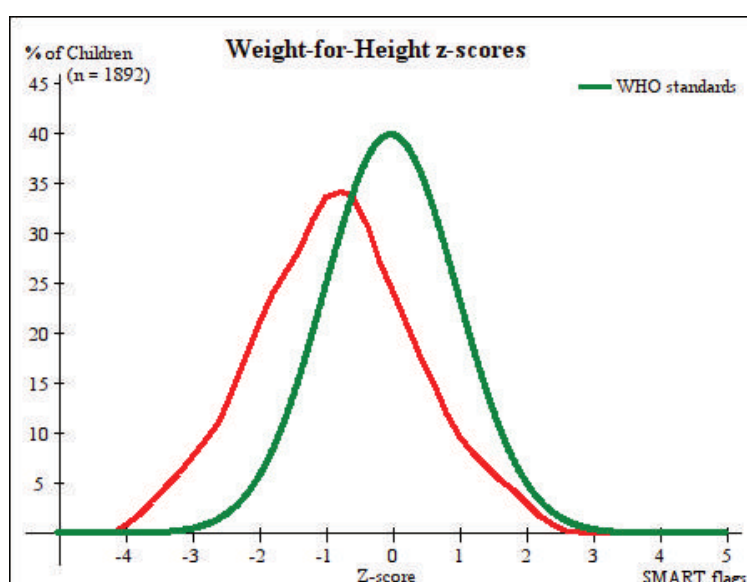


Figure 3: Weight for Height z-scores

The prevalence of global acute malnutrition was critical across the education (19.3%) and nutrition arms (15.2%). The prevalence in combined nutrition and education arm was found to be 13.9% which is considered serious as per WHO and IPC classification. Except in the combined nutrition and education arm, the prevalence of GAM was higher among boys in both nutrition (17.6%) and education arms (21.3%). Several studies have shown that boys are more susceptible to malnutrition than girls. In particular, A meta-analysis of 44 studies by London School of Hygiene and Tropical Medicine, London, UK found that boys are more likely to be undernourished than girls (Thurstans et al, 2020).

Table 20: Prevalence of acute malnutrition by sex for treatment groups

	Nutrition			Education			Both Nutrition & Education		
	All n = 627	Boys n = 307	Girls n = 320	All n = 462	Boys n = 249	Girls n = 213	All n = 389	Boys n = 206	Girls n = 183
Prevalence of GAM (<-2 z-score and/or oedema)	15.2%	17.6%	12.8%	19.3%	21.3%	16.9%	13.9%	13.6%	14.2%
Prevalence of SAM (<-3 z-score and/or oedema)	3.4%	4.9%	1.9%	4.1%	5.6%	2.4%	3.1%	2.9%	3.3%

³³Thurstans et al 2020: Boys are more likely to be undernourished than girls: a systematic review and meta-analysis of sex differences in undernutrition- <https://gh.bmj.com/content/5/12/e004030.abstract>

Further Analysis by age group showed that the 18 – 29 month age group had the highest burden of malnutrition accounting for 26% of the GAM prevalence in the comparison group and 25% in both the combined and beneficiary samples as shown in annex 7. This age group falls under the first 1000 days of life which is a critical window of opportunity/susceptibility in a child’s development and survival. Nutritional deficiencies during this critical “window of opportunity” are often long term and irreversible. High rates of malnutrition during this age bracket highlights sub optimal infant and young child feeding (IYCF) practices.

Global Acute Malnutrition (GAM) based on MUAC cut off's (and/or oedema)

GAM based on MUAC was defined as the proportion of children with a MUAC of less than 125 mm and/or presence of oedema while SAM was defined as the proportion of children with a MUAC of less than 115 mm and/or presence of edema. Classification of GAM by MUAC is based on thresholds set by IPC Acute Malnutrition in November 2018 (table 21).

Table 21: Classification of GAM by MUAC- IPC acute malnutrition

	Acceptable (<5%)
	Alert (<5%)
	Serious (5-9.9%)
	Critical (10-14.9%)
	Extremely critical (>15%)

MUAC is recommended by WHO as an independent indicator of wasting. Despite its relative ease of use, MUAC has its fair share of shortcomings. First, it is known to seriously underestimate the prevalence of GAM in certain populations. Secondly, MUAC also has an open bias towards girls and younger children. In this regard, prevalence of GAM by MUAC is considered “proxy” GAM as it is not a true representative indicator of malnutrition in the population.

Table 22: Prevalence of acute malnutrition based on MUAC cut off's (and/or oedema) by sex for combined, beneficiary and comparison

	Combined (ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
	n = 1892	n = 968	n = 924	n = 1431	n = 737	n = 694	n = 459	n = 227	n = 232
Prevalence of global malnutrition (<-2 z-score and/or oedema)	14.5 %	13.5 %	15.5 %	13.1 %	12.7 %	13.4 %	18.9 %	16.0 %	21.8 %
	n=283								
Prevalence of moderate malnutrition (<-2 z-score and >=-3 z-score, no oedema)	11.4 %	11.3 %	11.5 %	10.6 %	11.0 %	10.2 %	13.8 %	12.2 %	15.5 %
Prevalence of severe malnutrition (<-3 z-score and/or oedema)	3.1 %	2.2 %	4.0 %	2.4 %	1.7 %	3.2 %	5.0 %	3.8 %	6.3 %
	n=60								

The prevalence of GAM by MUAC was extremely critical in the comparison sample (18.9%) and critical in both combined (14.5%) and the beneficiary samples (13.1%). The prevalence appears relatively higher among girls than in boys with the disparity particularly apparent in the comparison sample (16.0% for boys and 21.8% for girls). Moreover, the prevalence of SAM was higher in the comparison sample (5.0%) than in the combined (3.1%) or the beneficiary sample (2.4%). Just like in Weight-for-Height z-score, the burden of acute malnutrition appears significantly higher in the comparison sample ($p=0.008$).

Pastoral livelihood zone had the highest prevalence of GAM across the combined (31.4%), beneficiary (36.9%) and comparison sample (28.3%) exceeding the extremely critical thresholds ($>15\%$). The rest of the livelihood zones fell within the critical phase (10.0-14.9%) as captured in annex 8.

Underweight

Underweight is a composite form of under nutrition and has elements of both acute under nutrition (wasting) as well as chronic under nutrition (stunting). Underweight is defined as weight-for-age Z scores (WAZ) <-2 in children 6-59 months old.

Table 23: Prevalence of underweight based on weight-for-age z-scores by sex for combined, beneficiary and comparison

	Combined (ALL)			Beneficiary			Comparison		
	All n = 1908	Boys n= 975	Girls n= 933	All n = 1446	Boys n= 744	Girls n= 702	All n= 463	Boys n= 233	Girls n= 230
Prevalence of underweight (<-2 z-score)	21.2 %	24.2 %	18.0 %	20.3 %	23.1 %	17.2 %	24.2 %	27.9 %	20.4 %
Prevalence of moderate underweight (<-2 z-score and ≥-3 z-score)	15.9 %	17.5 %	14.1 %	15.3 %	16.9 %	13.5 %	17.7 %	19.3 %	16.1 %
Prevalence of severe underweight (<-3 z-score)	5.3 %	6.7 %	3.9 %	5.0 %	6.2 %	3.7 %	6.5 %	8.6 %	4.3 %

Analysis of underweight in the combined sample indicates a prevalence of 21.2% -classified as high according to WHO classification. The prevalence in both the beneficiary (20.3%) and the comparison sample (24.2%) also fell within the high prevalence category. Moreover, the prevalence of severe underweight was 5.3% in the combined sample, 5.0% in the beneficiary and 6.5% in the comparison sample. Overall, the prevalence appears higher among boys than girls. Further Analysis of underweight (particularly in the comparison sample) by district highlights showed highest prevalence in Belet Hawa (44.8%) and Dollow district (34.3%) and was considered very high ($\geq 30\%$) as per WHO classification. On the contrary, the prevalence was lowest in Burdhuubo (0%) for comparison and 5.3% for the combined sample. Overall, the prevalence in the combined sample was highest in Dollow (30.0%) as indicated in annex 9.

Stunting

Stunting is an indicator for chronic malnutrition and is defined as Height-for-age Z scores (HAZ) <-2 in children 6-59 months. it is the impaired growth and development that children experience from poor nutrition, repeated infection, and inadequate psychosocial stimulation. Stunting can lead to impaired growth particularly in first 1000 days of life.

Analysis of stunting in the combined sample indicated a prevalence of 21.1% which is classified as medium according to WHO classification. The prevalence in both the beneficiary (21.4%) and the comparison samples (20.6%) were within the same range as the prevalence between boys and girls. Further, the prevalence of severe stunting was 7.4%, 7.3% and 7.9% in the combined, beneficiary and comparison samples respectively. The overall prevalence was similar to stunting levels recorded in North Gedo (FSNAU, 2022). However, this is still higher than the national average of 10% (FSNAU, 2016³⁴). While stunting is not considered a public health concern in Somalia, the prevalence is of particular concern in the in the agro-pastoral livelihood zones of Bay and Bakool. One underlying factor in the high stunting trends recorded in select parts of the country is the issue of age determination. Since age is a factor in the determination of stunting, and given that 95% of the children's age estimation was through an age/events calendar, propensity for recall bias is therefore high. Nonetheless, collection of accurate data on stunting has been a challenge and reporting stunting prevalence in the country was halted by the nutrition cluster-AIMWG due to inconsistencies in stunting rates from one assessment to the other.

³⁴FSNAU: Somalia Food Security and Nutrition Analysis Post Gu 2016 (page 20)- <https://fsnau.org/downloads/Food-Security-and-Nutrition-Technical-Report-Post-Gu-2016.pdf>

Table 24: Prevalence of stunting based on height-for-age z-scores and by sex for combined, beneficiary and comparison samples

	Combined (ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
	n= 1749	n= 884	n= 865	n= 1316	n= 668	n= 648	n= 433	n= 216	n=217
Prevalence of stunting (<-2 z-score)	21.1 %	21.9 %	20.2 %	21.4 %	21.7 %	21.0 %	20.6 %	22.7 %	18.4 %
Prevalence of moderate stunting (<-2 z-score and >=-3 z-score)	13.7 %	14.6 %	12.8 %	14.1 %	14.8 %	13.3 %	12.7 %	13.9 %	11.5 %
Prevalence of severe stunting (<-3 z-score)	7.4 %	7.4 %	7.4 %	7.3 %	6.9 %	7.7 %	7.9 %	8.8 %	6.9 %

Within the sample, IDPs (40.9%) in the comparison group recorded the highest prevalence of stunting which is considered 'very high' ($\geq 30\%$). IDPs in Somalia have consistently recorded very high stunting rates. One underlying factor can be that significant populations of the IDPs camps appear to originate from Southwest state³⁵—a region where prevalence of stunting is very high as captured in an analysis of National Micronutrient survey 2019³⁶ and other SMART survey assessments³⁷. In this regard, an in-depth investigation and analysis on the causes of stunting may be necessary if interventions are to be tailored to community needs.

Further, the prevalence of stunting was also very high in the pastoral livelihood across the combined (31.9%), beneficiary (32.3%) and comparison samples (31.7%)

Table 25: Prevalence of stunting based on height-for-age z-scores and by livelihood for combined, beneficiary and comparison samples

	Combined(ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Riverine	25.2%	30.9%	20.0%	24.6%	30.8%	18.5%	27.6%	31.2%	23.6%
Pastoral	31.9%	39.4%	23.3%	32.3%	34.3%	30.0%	31.7%	42.2%	19.6%
Agro-pastoral	23.8%	23.5%	24.05	31.7%	32.9%	30.3%	17.9%	15.7%	19.8%
IDP	25.2%	23.7%	26.6%	24.2%	23.3%	25.1%	40.9%	30.0%	50%
Urban	23.4%	23.8%	23.1%	23.3%	23.5%	23.1%			
Peri-Urban	31.5%	28.8%	35.2%	31.5%	28.8%	35.2%			

Mothers/caregivers were asked to recall whether their children had fallen sick two weeks prior to the assessment. Retrospective morbidity was found to be 8.4%, 8.5% and 8.8% in the combined, beneficiary and comparison samples respectively (figure 4).

Malaria/Fever (78.3%) in the beneficiary and ARI cough (30.9%) in the combined sample were the most observed illnesses in under5 children. Morbidity levels appear to have decreased. According to FSNAU Post Gu 2022, the prevalence of morbidity was high (>20%) in Dollow IDPs as well as entire North Gedo livelihood zones. Morbidity has been significantly correlated with child undernutrition as it is one of the immediate causes of malnutrition³⁸.

Morbidity

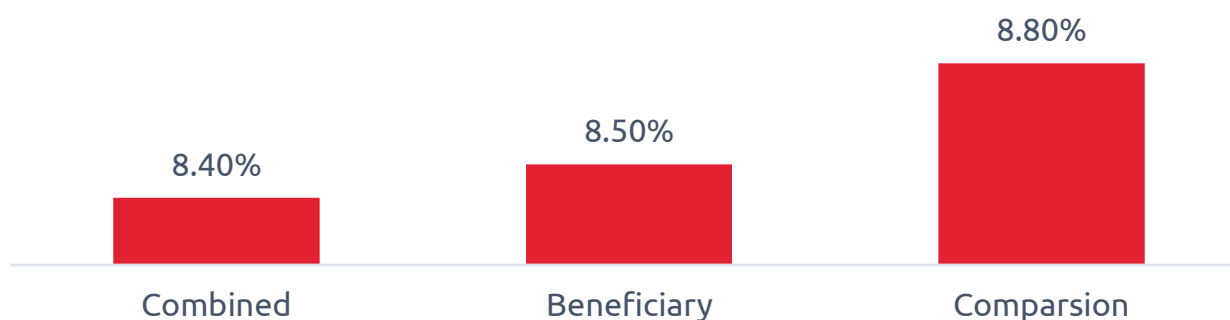


Figure 4: Child morbidity two weeks pre survey

³⁵ Internal Displacement Profiling in Mogadishu Report, April 2016 (page 24)

³⁶ Donkor et al, 2022: Risk factors of stunting and wasting in Somali pre-school age children: results from the 2019 Somalia micronutrient survey (page 5)

³⁷ SCI. (2019). SMART Survey assessment in Baidoa District; SCI. (2019). SMART Survey assessment in Dharkenley IDPs, Mogadishu

³⁸ UNICEF Conceptual Framework of malnutrition

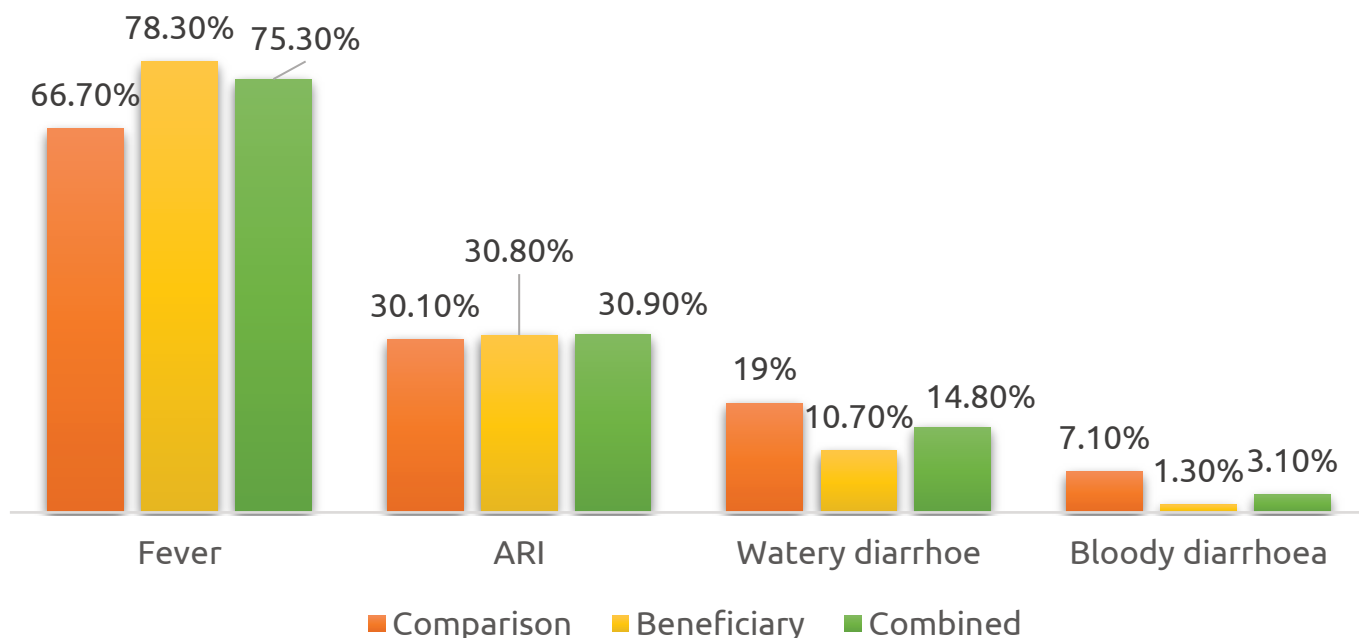


Figure 5: Self-reported symptoms in children

Vitamin A Supplementation

Vitamin A is critical to child health, development and survival. WHO recommends universal Vitamin A supplementation (VAS) for children aged between 6 months to 5 years in areas where Vitamin A deficiency is prevalent. Analysis of whether the child had received Vitamin A in the previous 6 months showed that only 3.8% in the comparison sample received supplementation as opposed to 21.4% in the beneficiary sample. 52.2% of the children in the beneficiary sample did not receive any supplementation in the last 1 year while 28.6% received supplementation just once. Overall, Vitamin A supplementations fell below the recommended coverage of >80%. Further analysis shows that 85.2% of the children received their Vitamin A supplementation from a public health facility. While distance was the biggest barrier to accessing service among the comparison group (80.8%), caregivers' lack of knowledge on vitamin A supplementation was cited as the reason why child did not receive any dose, among beneficiaries. For more details, kindly check annex 12.

Table 26: Vitamin A supplementation in last 6 months

Has child received Vit A last 6 months	N=1478		
Yes	317(21.4%)	3.8%	17.1%
No	1161(78.6%)	96.2%	82.9%

De worming – 'last 12 months reference period pre assessment'

Majority (80.3%), of the children surveyed in the comparison and just over half (54.3%) within the beneficiary group had not received deworming tablets within the last 1-year pre assessment. 28.4% and 17.2% in the beneficiary and comparison received deworming once. The low uptake of deworming can be attributed to the caregivers' lack of knowledge on whether child should receive appropriate deworming (albendazole) doses, poverty and inability to afford drugs as well as general unavailability of deworming doses. An opportunity presents for combining nutrition efforts with deworming to optimize intervention gains.

Table 27: Frequency of deworming among children

Variable	Beneficiary	Comparison	Combined
Has child received deworming last 1 year	N=1478	N=477	N=1955
0	54.3%	80.1%	60.6%
1	28.4%	17.2%	25.6%
2	14.3%	2.3%	11.4%
3	2.2%	0.2%	1.7%
4	0.6	0.2%	0.5
5	0.2		0.2

OUTCOME 3: Livelihoods and Food Security

Households maintain and improve food security and livelihood status through improved and diversified agricultural production and income generation

Livelihood Coping Strategy Index (LCSI)

Livelihood Coping Strategies Index (LCSI) measures household's reliance on livelihood-based coping mechanisms to handle lack of or food insufficiency. Overall, results indicate that both beneficiary (households in the three intervention arms – Nutrition, Education & WASH, and Education & Nutrition) and comparison groups were likely to apply similar livelihood coping strategies.

Table 28: Livelihood coping strategy index (LCSI) by intervention arms.

	Intervention arms			Combined intervention arms	Comparison	Total	Significance test
	Nutrition	Education & WASH	Education & Nutrition				
No coping strategies	33%	23%	28%	28%	33%	30%	Pearson X ² (9, 1868) =58.55; p=0.000***
Stress coping strategies	42%	57%	59%	52%	47%	50%	
Crisis coping strategies	6%	9%	3%	7%	6%	7%	
Emergency coping strategies	19%	11%	9%	13%	14%	13%	

Food Consumption Score (FCS)

Baseline survey showed that, on average, food consumption scores (FCS) was 46.3. By respondent category, average FCS was relatively higher among beneficiary households – Education & nutrition (52.5), Education & WASH (48.4) and Nutrition (47.4) – as compared to households in the comparison group (40.1). In a similar trend, proportions of households within the “acceptable FCS” were comparatively higher for beneficiary households as compared to those in the comparison group.

Table 29: FCS by intervention arms

	Intervention arms			Combined intervention arms	Comparison	Total	Significance test
	Nutrition	Education & WASH	Education & Nutrition				
Poor	19.5%	18.8%	18.6%	19%	30.6%	22.6%	Pearson X ² (6, 1868) =62.43 p=0.000***
Borderline	22.4%	18.8%	20.1%	20%	27.7%	22.7%	
Acceptable	58.2%	62.5%	61.3%	61%	41.7%	54.7%	
Average FCS	47.4	48.4	52.5	49.3	40.1	46.3	F (3, 1864) =25.62; P=0.000***

As mentioned earlier, a one-way analysis of variance (ANOVA) test was conducted to determine if FCS was different between treatment and comparison groups. Results indicated that there was a statistically significant difference between groups (F (3, 1864) =25.62, p = .000).

Table 30: Analysis of variance for FCS – ANOVA results

Source	SS	df	MS	F	Prob>F
Between groups	39300.3513	3	13100.12	25.62	0.000
Within groups	953040.609	1864	511.2879		
Total	992340.96	1867	531.5163		
Bartlett's equal variances test: chi2(3) = 38.0136 Prob>chi2 = 0.000					

Post-hoc analysis using Sidak criterion for significance revealed that mean FCS was significantly higher in the education and nutrition intervention compared to nutrition only intervention arm (5.097 +/- 1.651, p=0.011). Conversely, mean FCS was statistically significantly lower between comparison group and all treatment groups – nutrition -7.342****, education & WASH intervention -8.794*** and both education and nutrition -12.4385*** These differences at baseline can be attributed to program structure of beneficiary inclusion (transitioning support from phase I and II).

Table 31: Comparison of FCS by Household JRP referral arm/assistance – Sidak post-hoc analysis

Row mean- Col mean	Nutrition	Education	Both education & nutrition
Education	1.45224		
Both education and nutrition	5.09655***	3.6443	
Control	-7.34194***	-8.79194***	-12.4385***

Household Dietary Diversity Scores (HDDS)

Household dietary diversity score (HDDS) measures the total number of different food groups consumed by a member of a household. The indicator measures the quality of a variety of food consumed by household members. Overall, results indicated that the optimal concentration of the number of food groups consumed by households was around 5 food types out of a possible 12 food groups. Beneficiary households had a better HDDS – education & nutrition averaged 5.7, education & WASH 5.6, while nutrition group averaged 5.5. The average HDDS for the comparison group was 4.8. From this result, beneficiary households, on average had somewhat higher HDDS comparatively. This result is similar to the one obtained in assessing food consumption score.

Table 32: Household dietary diversity by intervention arms

	Intervention arms			Combined intervention arms	Comparison	Total	Significance test
	Nutrition	Education & WASH	Education & Nutrition				
Poor	37%	27%	27%	30%	36%	32%	Pearson X2 (6, 1868) =65.75 p=0.000***
Medium	25%	35%	30%	30%	41%	33%	
High	38%	38%	44%	40%	23%	34%	
Average HDDS	5.5	5.6	5.7	5.6	4.8	5.3	F(3, 1864)=12.71; p=0.000*

Similar to FCS, ANOVA test was conducted to examine HDDS was different between treatment and comparison groups. Results indicated that there was a statistically significant difference between groups (F (3, 1864) =12.71, p = 0.000).

Table 33: Analysis of variance for HDDS – ANOVA results

Source	SS	df	MS	F	Prob>F
Between groups	241.726248	3	80.5754161	12.71	0.000
Within groups	11813.179	1864	6.33754238		
Total	12054.9052	1867	6.45683195		

Bartlett's equal variances test: chi2(3) = 26.0019 Prob>chi2 = 0.000

In the Sidak post-hoc table below, all intervention groups are statistically significant different from the control group at all levels of significance i.e 1%. Specifically, the difference between mean HDDS for the nutrition group, education group and both education and nutrition group from the comparison group is significantly lower -.647666*** - .757852*** and -.896473*** respectively. Again, the difference in HDDS between the interventions groups and comparison group could be attributed to the design of the JRP project since all households in the intervention arms were supported in the previous project phases – phase I & II.

Table 34: Comparison of HDDS by Household JRP referral arm/assistance – Sidak post-hoc analysis

Row mean- Col mean	Nutrition	Education	Both education & nutrition
Education	.110186		
Both education and nutrition	.248807	.138621	
Control	-.647666***	-.757852***	-.896473***

Reduced Coping Strategies Index (r-CSI)

The household reduced coping strategies index score (r-CSI) measures the range of strategies that households adopt to absorb shocks, adapt to their evolving conditions, and acquire food. r-CSI considers both the frequency and severity of five pre-selected coping strategies that the household used in the seven days prior to the survey when they did not have enough food or money to purchase food. Overall, r-CSI for the surveyed households was 14.5. Among beneficiary households, those in the Education & WASH intervention arm adopted the most severe coping strategies (an average of 18.7), followed by those in Education & Nutrition intervention arm (12.1) and lastly Nutrition only beneficiaries – an average of 11.4.

Table 35: Reduced Coping Strategies Index by Intervention Arms

	Intervention arms			Combined intervention arms	Comparison	Total	Significance test
	Nutrition	Education & WASH	Education & Nutrition				
Average r-CSI	11.4	18.7	12.1	14.5	14.6	14.5	F (3, 1864) =25.59; P=0.000

Adoption of New Income Generating Activities (IGAs)

At baseline, only 3% (n=64) of households reported to have taken up new income generating activities (IGAs). There were no notable variations in the adoption of new IGAs across respondent categories – nutrition (4%); education & WASH (3%); education & Nutrition (6%) and comparison (2%).

Livestock Ownership and Tropical Livestock Unit

Overall, 37% of the surveyed households owned livestock, with the main types being: goats (83%); sheep (48%); donkey (34%); cattle (33%); camel (12%); poultry (6%). By livelihood zones, 74% and 72% of agro-pastoral and pastoral households reported owning livestock respectively, followed by 36% and 20% of households in the Riverine and Peri-Urban livelihood zones in the same order. Among urban and IDP households, 17% and 12% owned livestock respectively. Across all livestock type and expectedly, pastoral, and agro-pastoral households owned the highest average number of livestock save for chicken. As regards TLU, the overall average TLU was 1.67 units, with households in the pastoral and agro-pastoral livelihood zones having the highest average TLU at 4.41 and 3.64 units respectively (TLU by intervention arms is as in annex 14).

Table 36: Livestock owned by livelihood zones

	Riverine	Pastoral	Agro-pastoral	IDP	Urban	Peri-urban	Total
Household owns livestock							
Yes	36%	72%	74%	12%	17%	20%	37%
No	64%	28%	26%	88%	83%	80%	63%
Average number of livestock owned							
Cattle	5.7	8.1	6.7	3.8	4.9	4.4	6.4
Sheep	7.5	12.3	10.4	3.8	4.8	2.7	9.6
Goats	13.5	19.7	15.9	7.5	11.4	7.5	15.1
Chicken	3.9	4	5.7	5.1	6.8	3.7	5.1
Camel	5	10.8	7.3	6.5	6.7	6.5	8.2
Donkey	1.5	1.5	1.7	1.2	1.5	1.3	1.6
Average TLU	1.40	4.41	3.65	0.20	0.42	0.52	1.64

3.5.7. Milk production

As regards ownership of a milking animal, overall, nearly half (47%) of the households owned camels, followed distantly by cattle (23%) and goats (19%). Only 2% owned sheep for milking. The average milk produced by camel per day was 1.7 litres, followed by cattle 1.1 litres, goats 0.6 and lastly sheep 0.3. Overall, the average milk produced per day from the four milking animals was 1.1 litres.

Table 37: Average milk produced in a day in litres by intervention arms

		Riverine	Pastoral	Agro-pastoral	IDP	Urban	Peri-urban	Total
Household owns a milking animal								
Cattle	Yes	28%	14%	20%	60%	26%	20%	23%
	No	72%	86%	80%	40%	74%	80%	77%
Sheep	Yes	4%	0%	1%	0%	7%	0%	2%
	No	96%	100%	99%	100%	93%	100%	98%
Goats	Yes	23%	27%	11%	18%	21%	29%	19%
	No	77%	73%	89%	82%	79%	71%	81%
Camel	Yes	78%	67%	31%	50%	0%	50%	47%
	No	22%	33%	69%	50%	100%	50%	53%
Average milk produced per day (liters)								
Average milk produced		1.2	1.6	1.1	0.7	0.9	1.2	1.1

Asked whether milk produced has increased, remained the same or decreased, nearly all (95%) of those with milking animals reported a reduction in milk production due to drought related pasture scarcity; the rest said it had remained the same. A greater majority (83%) of those with milking animal noted that scarcity of pasture was one of the main reasons for reduced milk production, followed by 56% and 30% who reported scarcity of water and livestock health conditions respectively.

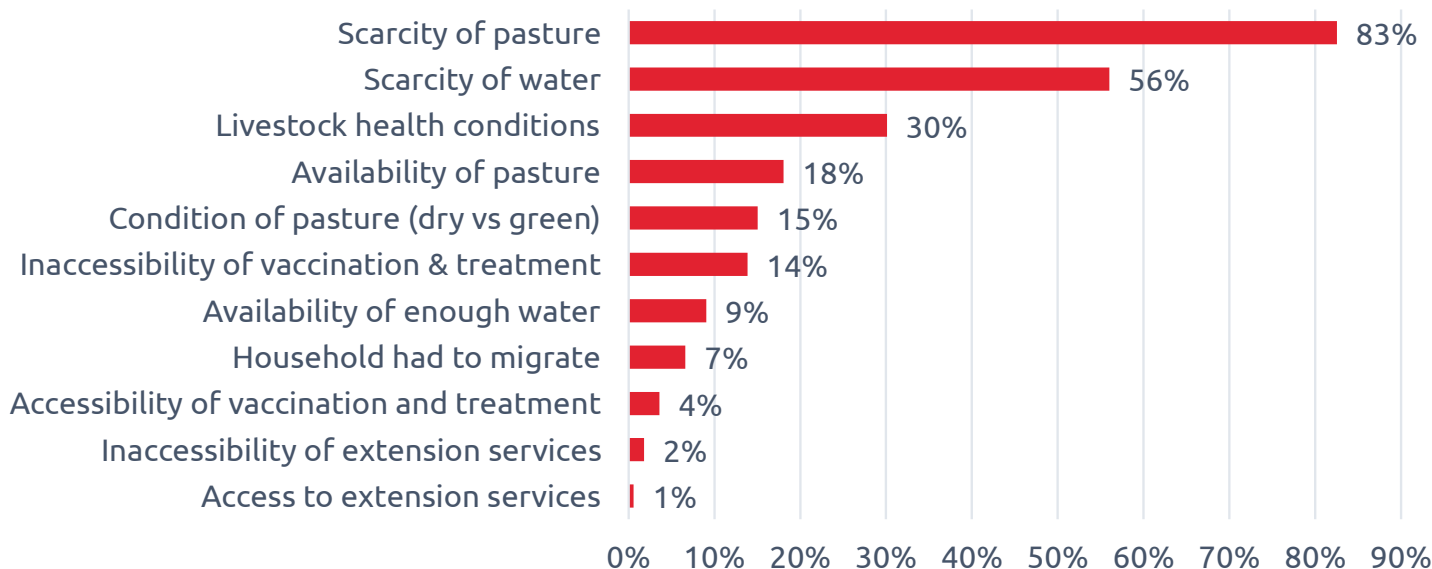


Figure 6: Factors influencing current milk production

Crop Production and Yield

Overall, only 12% of the surveyed households cultivated crops. About a fifth (22%) of beneficiaries in the Nutrition intervention arm engaged in crop production. However, there were no notable variations on crop cultivation among other respondent categories. By livelihood zones, 27% of households in Riverine areas engaged in crop production, followed by 17% of the agro-pastoral households.

Maize was the main cultivated crop at 71%, followed by Sorghum and Tomatoes at 31% and 29% respectively. Beans and onion were respectively cultivated by 19% and 8% of the respondents who engaged in crop production.

For those engaged in crop production (the 12%), 60% practiced irrigated farming using pump from river, and 24% engaged in rainfed farming only. Irrigation using pump from well, from dam/water pan and private borehole were each undertaken by 1% of those who engaged in irrigation. While persistent drought can explain the low levels of irrigation, these proportion also highlight the need to support production efforts by enhancing access to water (irrigation hours, capacity building etc).

Since maize and sorghum were the most cultivated crops among the few households that engaged in crop production, acreage and productivity for both maize and sorghum were calculated. Data indicated that maize was cultivated on an average of 0.987 Hectares (Ha) and sorghum on a mean land area of 1.245 Ha. We assess that owing to the prevailing drought (drought was reported as a main constraint to production by 93% of the households- see section 3.4.9), planted acreages were below normal average cultivated land during normal cropping seasons. Baseline data further showed that household maize production averaged 0.201 tons while Sorghum averaged 0.325 tons (maize and sorghum yields by intervention arms are as in annex 14). Consequently, productivity for maize and sorghum averaged 0.203 tons/Ha and 0.261 tons/Ha respectively. Slightly higher productivity for sorghum as compared to maize, can be attributed to sorghum's relative resilience to high temperatures and ability to produce under below average rainfall conditions. The clear insight here is perhaps the need to build farmer and households' capacity to understand farming enterprises that fit environments of climate change. In this case, preference for sorghum should be encouraged.

Table 38: Crop productivity

	Maize	Sorghum
Area cultivated (Ha)	0.987	1.245
Quantity harvested (tons)	0.201	0.325
Productivity	0.203	0.261

Constraints in Farming

Nearly all (93%) of farmers identified drought/lack of sufficient water as the main challenge that affect their farming, followed by 42% who complained about lack of farming tools, 36% decried pests/diseases and 33% complained of poor-quality seeds. It is worth noting that, challenges facing farmers was cross-cutting across all respondent categories.

Table 39: Constraints that affects farming

	Riverine	Pastoral	Agro-pastoral	IDP	Urban	Peri-urban	Overall
Drought/Lack of sufficient water	90%	100%	93%	86%	95%	100%	93%
Lack of tools	29%	33%	44%	64%	26%	69%	42%
Pests/Diseases	35%	0%	25%	71%	58%	36%	36%
Poor quality seeds	33%	0%	36%	36%	26%	36%	33%
Lack / insufficient financial resources	19%	0%	18%	0%	32%	13%	17%
Lack of manpower/labor	11%	67%	25%	0%	26%	5%	15%
Limited Market access	12%	33%	15%	14%	0%	13%	12%
Lack of Market information	3%	0%	11%	0%	11%	13%	7%
Limited access of varieties of seeds	10%	0%	3%	0%	5%	8%	7%
Crop damage by strong winds	8%	0%	7%	0%	0%	0%	5%
Storage losses	7%	33%	0%	7%	0%	3%	4%
Erratic rains	3%	33%	2%	0%	0%	0%	2%
Insecurity	3%	0%	2%	7%	0%	0%	2%
Excessive floods	4%	0%	0%	0%	0%	0%	2%
Unavailability of extension services	1%	0%	2%	0%	5%	3%	2%

Crop Production and Utilization

Marketing and Value addition

Overall, two out three (66%) of farmers sale their produce at the market to small traders, 29% sale at farm gate and 26% to a broker/middleman. Only 17% sale at the market to large scale traders, and 9% to processors. Broadly, same channels are used by pastorals for selling their products. 53% of pastorals sale their products at market to small-scale traders, 24% to brokers/middlemen, and 18% at farm gate.

Based on our experience working with farmers in the project areas, traditionally, farmers tend to sell their produce to small-scale traders at the local markets or at the farm gate because of familiarity, and one-to-one interactions during the entire cropping season. However, this arrangement does not always guarantee better prices to the farmers. The JRP could therefore build the capacities of the farmers, by for example, helping to organize them into farmer groups/associations with the aim of increasing their bargaining power to fetch better prices, either by selling to large scale buyers in the region and beyond, processors or even export to international markets. In addition to the creation of platforms for collective marketing, farmer associations could also benefit farmers in other multiple ways such as: getting market information, better farming inputs and even training.

Table 40: Ways of marketing crop and livestock produce

	Riverine	Pastoral	Agro-pastoral	IDP	Urban	Peri-urban	Overall
Crop produce							
Sell at the market to small traders	74%	67%	61%	43%	68%	64%	66%
Sell at farm gate	27%	0%	18%	29%	16%	56%	29%
Sell to a broker/middleman	20%	33%	26%	14%	21%	46%	26%
Sell at the market to large scale traders	19%	0%	13%	21%	5%	23%	17%
Sell to processors	11%	0%	2%	7%	5%	21%	9%
Other (specify)	3%	0%	3%	29%	11%	28%	10%
Sell to grain aggregators	2%	0%	0%	0%	0%	10%	3%
Livestock products							
Sell at the market to small traders	51%	52%	44%	59%	27%	48%	53%
Sell to a broker/middleman	26%	13%	41%	24%	20%	27%	24%
Sell at farm gate	15%	24%	11%	10%	47%	6%	18%
Sell at the market to large scale traders	4%	5%	0%	5%	9%	2%	6%
Other	10%	10%	11%	6%	9%	22%	6%
Sell to processors	1%	2%	0%	0%	4%	4%	0%

Overall, very few (10%) of households engaged in value addition for their crops. The value addition situation was dismal among livestock keepers with only 1% reporting to engage. This result implies that in the project implementation region of Gedo, value addition practices remain limited and narrow-based. This was inferred from the fact that the few reporting to engage in value addition, only undertook drying, sorting, cleaning and packaging. There were no reports of commercial facing value addition such as grading, processing, branding etc

Table 41: Household engages in value addition

	Riverine	Pastoral	Agro-pastoral	IDP	Urban	Peri-urban	Overall
HH engages in value addition for crop							
Yes	14%	33%	5%	0%	21%	3%	10%
No	86%	67%	95%	100%	79%	97%	90%
HH engages in value addition for livestock products							
Yes	5%	1%	0%	0%	2%	0%	1%
No	95%	99%	100%	100%	98%	100%	99%

Challenges Experienced in Accessing Markets

Poor infrastructure, particularly poor road network, was identified by 46% of the study respondents as a leading challenge in accessing markets. This was followed by low prices (43%), and high cost of transportation (41%). Even though, overall high taxes were a concern to only 16% study respondents, 25% of peri-urban households reported high taxes as a key challenge they faced in accessing markets. Based on our experience working in Somalia, and particularly in project implementation districts, high transportation costs experienced was mainly attributed to the high energy costs (fuel prices), and many transportation restrictions in the area, especially road closures and roadblocks (created by state and non-state actors) which significantly impact movements by market actors and traders. Furthermore, for those engaged on cross-border transportation, some of the roadblocks are said to be extortion points where road users are asked to pay some amount ranging from USD 4 to USD 6. Ultimately, money paid along the transportation corridor is passed on to the consumers in form of higher commodity prices.

Table 42: Challenges experienced in accessing markets

	Riverine	Pastoral	Agro-pastoral	IDP	Urban	Peri-urban	Overall
Poor infrastructure (roads)	62%	42%	34%	56%	36%	56%	46%
Low prices	43%	49%	60%	29%	39%	51%	43%
High costs of transportation	47%	36%	41%	47%	31%	65%	41%
High taxes	16%	12%	15%	16%	19%	25%	16%
Poor sanitation and hygiene	16%	2%	8%	15%	9%	11%	10%
Other (specify)	2%	7%	2%	8%	19%	8%	9%
Roadblocks	9%	5%	6%	6%	9%	25%	8%
Exploitation by brokers/middlemen	13%	8%	6%	5%	4%	29%	8%

Household With Formal and Informal Employment Opportunities

At baseline, close to half (44%) of the households drew their livelihoods from casual labor, followed a distant second by 13% who rely on farming, 10% on pastoral and 8% on agro-pastoralism.

Table 43: Main source of livelihood

	Intervention arms			Combined intervention arms	Comparison	Total
	Nutrition	Education & WASH	Education & Nutrition			
Casual labor	44.7%	63.0%	49.5%	53.2%	24.0%	44.0%
Farming	24.8%	4.2%	7.4%	12.2%	16.1%	13.4%
Pastoral / Livestock	1.8%	5.5%	3.4%	3.7%	22.6%	9.7%
Agro-pastoralism	2.7%	3.8%	2.5%	3.1%	18.8%	8.0%
Family Business	8.3%	6.3%	10.5%	8.1%	1.9%	6.1%
On farm labor	4.9%	5.5%	4.3%	5.0%	8.1%	6.0%
Private sector wage	3.6%	2.6%	7.7%	4.2%	0.7%	3.1%
Other	2.7%	4.9%	2.2%	3.5%	1.7%	2.9%
Charcoal and firewood	2.2%	1.2%	6.5%	2.9%	1.2%	2.4%
Informal transfers	0.7%	1.4%	3.1%	1.6%	3.9%	2.3%
Employment	2.0%	1.0%	2.8%	1.8%	0.0%	1.2%
Formal transfers	1.3%	0.6%	0.0%	0.7%	1.2%	0.9%
Fishing	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%

Household Saving and Borrowing Behavior

Owing to low incomes, majorly from informal economic activities, this report found very low saving rates. Overall, only 2% of the households interviewed had a member who saved money six months to baseline survey date. Conversely, 40% of the households borrowed money over a 6-month reference period. Of those who borrowed money, the largest proportion were beneficiaries - 51% in the education & WASH intervention arm, 39% in the education & nutrition and 38% in nutrition intervention arm. Only 33% of the households in Comparison group borrowed money. Finding from literature and other surveys conducted in Somalia indicate that most of those who borrow access credit from informal sources which includes shopkeepers, family members and relatives.

Table 44: HH saving and borrowing behavior

	Intervention arms			Combined intervention arms	Comparison	Total
	Nutrition	Education & WASH	Education & Nutrition			
Household saved money in the past 6 months						
Yes	3%	2%	3%	2%	0%	2%
No	97%	98%	97%	98%	100%	98%
Household borrowed money in the past 6 months						
Yes	38%	51%	39%	43%	33%	40%
No	62%	49%	61%	57%	67%	60%

Village Saving and Loan Associations

Overall, only 2% (n=31) of the surveyed households belonged to a Village Savings and Loans Association (VSLA). Low membership in VSLA was evident across all the respondent categories. Given very low membership in VSLA, only 1% (n=11) of the study respondents affirmed that they had made savings in a VSLA within the last 12 months pre survey. With this finding, there is the need for the JRP project to institute interventions to promote both the formation of, and membership in VSLA as well as build their capacities on critical aspects such as bookkeeping, problem-solving and conflict resolution. For long, VSLAs have been found to be important social institutions that supports vulnerable community members, especially women, to increase their participation and influence in decision making at both household and community levels, as well as gain ability to access and control over resources and use collective power to overcome social and financial barriers. VSLAs also provide members with the opportunity to save and borrow on flexible terms and access diversified livelihood activities and even emergency coping strategies.

OUTCOME 4: Strengthened government systems to promote and sustain quality integrated health, nutrition, education and WASH services in schools and health/nutrition facilities.

Outcome 4 is concerned with strengthening government systems to promote JRP related activities by way of, among other things, improving inter-ministerial coordination, supporting the creation of an enabling policy environment, quality assurance (through training, school supervision and monitoring) and capacity building for technical support to community based public private partnerships. Given these, the study engaged representatives of various line ministries in an effort to understand levels of collaboration with government and the extent to which the objective of strengthening government systems had reached at baseline. Key Informant and in-depth interviews were conducted with ministry representatives of the ministries of Agriculture, Health, Planning, Livestock, Education and Environment and water resources. Baseline assessment found that most engagement with government were still at the initial or nascent stages and that plans were underway to effect government systems strengthening strategies in JRP phase III. Notwithstanding, key informants reported trainings for education officers, CECs, ministries of agriculture and livestock personnel as well as quality assurance activities by the ministry of education. Specific outcomes of KIs are discussed next.

Inter-ministerial coordination and supporting the creation of an enabling policy environment

Representatives from the ministry of planning confirmed communication and early onset of mobilization for the establishment of platforms for inter-ministerial coordination for the implementation of phase III activities. From ministry representatives and project documents, the study found existence of coordination platforms including; - a project steering committee (PSC) and a technical working group at the federal level as well as a project implementation committee at the state/field level. The project steering committee meets bi-annually while both technical working group and project implementation committee were said to hold quarterly meetings. Overall, participating line ministries reported holding monthly coordination meetings. Line ministries and UN agencies were allocated specific responsibilities within these coordination platforms as follows⁴⁰.

⁴⁰<https://acrobat.adobe.com/link/review?uri=urn:aaid:scds:US:ec48a946-b2d6-3583-bb55-2e6c3217f9df>

- The PSC provides strategic oversight on the project and ensures overall compliance with project goals. It mainly supports the Technical Working Group and Project Implementation Committee by creating an enabling governance environment for project implementation and achievement of results. It is chaired by the Director General in Federal Ministry of Planning, Investment and Economic Development with delegation to the Director, PME and/or the Resilience Coordinator in MoPIED, and Cochaired by Heads of Programs (Deputy Reps) of UNICEF, WFP and FAO alternatively.
- The technical working (TWG) is charged with delivering the results of the program based on the program design. It is made up of the government at both federal and state levels and the UN agencies focusing on achieving stated project results and addressing any obstacles to achieving these results as a team. It is mainly expected to provide an enabling coordination environment with line ministries to work together to achieve the project outcomes and outputs. The TWG is chaired by the Director Monitoring and evaluation in the Federal MoPIED and co-chaired by JRP Project Leads from UN agency (FAO, UNICEF or WFP) in a rotating fashion.
- The project implementation committee (PIC) is a state-based group involving technical staff from implementing line Ministries to oversee the planning and implementation of the project activities. This group is responsible for ensuring that project implementation plans are in place for all activities and are being delivered by the line ministries, the UN and partners including CSOs. The group play a key role in ensuring support and ownership by state and district government of project plans, activities and resolution of any implementation obstacles/bottlenecks and challenges in the field. PIC is mainly bound to create an enabling environment for project implementation by resolving state, regional or district level issues and challenges that may disrupt or delay project implementation. It is chaired by the Jubaland MoPIED focal point for the JRP, and co-chaired by a rotating UN agency (FAO, UNICEF or WFP) at field office levels.

Strengthened capacity of MOECHE to ensure quality of implementation and monitoring of basic services is improved.

This output is assessed using two main indicators, that is, the number of monitoring visits by the School Feeding Unit to WFP Supported schools during the project period and two, the number of schools whose CEC members participate in the training program. It was therefore assessed via ministry of education representatives as well as CECs and school heads. Data indicated that the ministry identified certain JRP related activities and their representatives were able to enumerate the following:

- Education officers – have enhanced capacity to conduct school supervision and monitoring
- CECs – trained on their roles and responsibilities for school administration
- Quality assurance activities conducted at school level by Ministry of education

Noteworthy however, was that there seemed to be a sense in which proper data tracking was lacking and so the ministry did not have any records on, for instance, number of monitoring visits to schools. In addition, ministry officials reported being engaged by various agencies at a time, hence, a challenge in tracking program or agency specific data/activities.

“Many departments have benefited specially on education. There are quality assurance officers trained by World Bank project” Ministry representative Belet Hawa

Given that data for tracking progress on this output will come from government monitoring reports, there need to ensure the JRP provides sufficient support to a dedicated ministry liaison or contact to curb any confusion with other players. It may also be useful to understand other similar engagements to see if there are opportunities for layering or leveraging efforts from other quarters.

For CEC focus group discussions, the study sampled at least a school per district and organized a FGD with the schools’ CEC members.

Table 44: HH saving and borrowing behavior

CEC FGDS				
FGD	District	School	Number of meetings	Members by Gender
1	Belet Hawa	Belet Amiin Primary	Weekly meetings (Wednesdays)	5 Males, 2 Females
2	Belet Hawa	Daawo Primary School	Monthly – unless emergency	5 Males, 2 Females,
3	Burdhubo	Iftiin Primary School	Monthly	8 Males, 2 Females
4	Dollow	Kabasa Primary	Once a week	4 Males, 3 Females
5	Dollow	Surgudud Primary	Twice a week, Wed and Sat	4 Males, 2 Females,
6	Burdhubo	Jaale Siyaad Primary School	Once a week on Thursdays	7 Males, 1 Females
7	Luuq	Al-Furqan Primary	Once a week	5 Males, 2 Females
8	Luuq	Horseed Primary	Twice a month	4 Males, 3 Females
9	Garbaharey	Garbaharey Primary School	Once a month on Saturdays	4 Males, 3 Females
10	Bardhere	Jale Siyad Primary School	Once a week	6 Males, 1 Females

Data showed that CECs in all the sampled schools had participated in training on their roles and responsibilities in school administration. Asked how the trainings had improved their school management roles, doing their job better, improvement in decision making, developing detailed school time tables with teachers and participation in the management of school expenditure were some of the responses provided.

” The training has been very educative, every time we go to training, we learn new things that help us do our job better.”.... (FGD 1)

“After the training the CEC committee together with school teacher developed detailed school timetable “... (FGD5)

“The training improved the CEC members' decision-making abilities, and it clearly helped the committee understand their roles and responsibilities, as well as their importance in society, including conflict resolution.” (FGD9)

“All school expenses and profit are put into a book and every weekend the CECs will have a look at it and where one doesn't understand we demand for answers” (FGD 2)

“The head teacher alone does not have the approval power, always the chairperson of CEC has to accompany him.... The school has only suggestions and CEC has the final decision.... The head teacher attends the weekly meeting and give a briefing on the school to CECs.” (FGD5)

Kills with head teachers also confirmed trainings offered to CECs and affirmed collaboration between them and the committee members. At baseline, data corroborates the results framework's numbers that indicate that all participating 46 schools had CECs trained. Tracking progress on CEC training should hence focus more on the 5 new schools introduced at Phase III. Over and above tracking actual numbers, there were other program contributions highlighted, which may be useful to keep track of on a case-by-case basis (case studies). For example,

- School renovation including toilets, kitchen (3 new toilets for Surgudud Primary School)
- Incentives e.g., \$5 to vulnerable students (Surgudud Primary School received \$5 incentives for 62 vulnerable students)
- School capitation grants (Belet Amiin Primary have developed income generating activities e.g., filling station and land assets. Al-Furqan Primary bought a TUKTUK and uses it as an income generating activity which is used for school maintenance)
- School meals provided for students and encourage their retention in schools
- Capitation grants, 3 rounds of instalments (for example, Surgudud Primary School received \$956, \$1,210 and \$3,600 adding up to \$5,766) Helping the school manage especially influxes from migrating households
- Extremely vulnerable orphan children received \$15 per month to buy uniform and other necessary equipment (FGD5)
- Al Furqan Primary teachers receive \$100 from JRP which motivated them to remain in school and reduce teacher turnovers
- Horseed Primary received solar power, water tanks from UNICEF, toilets and washrooms separated by gender, “The school received capitation grants in 2021/2022 in three phases in the sum of USD 700, 1050 and 1400 respectively”, “The school bought fridge and started incoming generating activities where cold water, drinks and ice cream are sold”

RESILIENCE INDEX MEASUREMENT AND ANALYSIS (RIMA-II)



Overall Resilience

The method for measuring resilience in this baseline evaluation follows the FAO's Resilience Index Measurement and Analysis (RIMA-II) model.⁴¹ RIMA-II provides a single composite indicator – Resilience Capacity Index (RCI) for measuring the household resilience based on a combination of observed multidimensional aspects of household livelihood capacities. These multidimensional factors or variables are grouped into key four pillars of RIMA which are: Access to Basic Services (ABS), Assets (AST), Social Safety Nets (SSN) and Adaptive Capacity (AC). The definitions of the four pillar of resilience and their related variables that have been used in this study to show the resilience capacity of the households is shown in table 46.

Table 46: Resilience pillars and food security indicators

Pillar of resilience	Definition	Variables
Access to Basic Services (ABS)	The ability of the households to meet basic needs by accessing and effectively using basic services, for example, accessing water, hospital/health facilities, markets.	Access to safe water Access to improved toilet facility Access to safe lighting Distance (in minutes) to main services: Water, Primary school, Hospital, Livestock market, Crop market, Transport/roads
Assets (AST)	Assets comprise both productive and non-productive assets, for example, livestock, agricultural equipment/tools	Productive assets (agricultural and livestock assets) Non-productive assets (wealth index)
Social Safety Nets (SSN)	The ability of the households to access assistance, - formal and informal assistance – as well as relatives, friends and families	Formal transfers Informal transfers Participation in associations, VSLA Number of relatives/friends rely on for support
Adaptive Capacity (AC)	Ability of the household to adapt to a new situation and develop new livelihood strategies. Proxy for this pillar include education level, of household head, and household members	Education of the household head Highest education for a household member Participation in income generating activities (IGAs) Number of crops cultivated
Food security indicators		
Household dietary diversity scores (HDDS)	The number of unique food groups consumed by household members	HDDS
Food consumption scores (FCS)	FCS reflects the diversity and frequency (number of days per week) of the food items consumed by households.	FCS
Household expenditure on food	Per capita food expenditure in a 7-day recall period	Food expenditure/household size

⁴¹ Food and Agricultural Organization of the United Nations. 2016. Resilience Index Measurement and Analysis – II: Analysing Resilience for better Targeting and Action. <https://www.fao.org/3/i5665e/i5665e.pdf> [Accessed on 01 January 2023]

Overall, average baseline RCI for the study households was 49.4 as shown in the frequency density distribution. An average RCI of 49.4 indicates concentration of households slightly below the average resilience based on a scale of 0 to 100, where 0 and 100 is the least and most resilient households respectively. By respondent category, average RCI for beneficiaries' households was somewhat higher than those in the comparison group. Among the beneficiary households, the analysis showed that RCI for households in the Education & WASH, Nutrition only and Education & Nutrition intervention arms was 50.47, 49.82 and 49.65 respectively. RCI for the comparison group was 48 – the lowest resilient households. By gender of the household head, RCI for male-headed households (MHH) was somewhat higher at 49.62 as compared to female-headed households FHHs at 49.04.

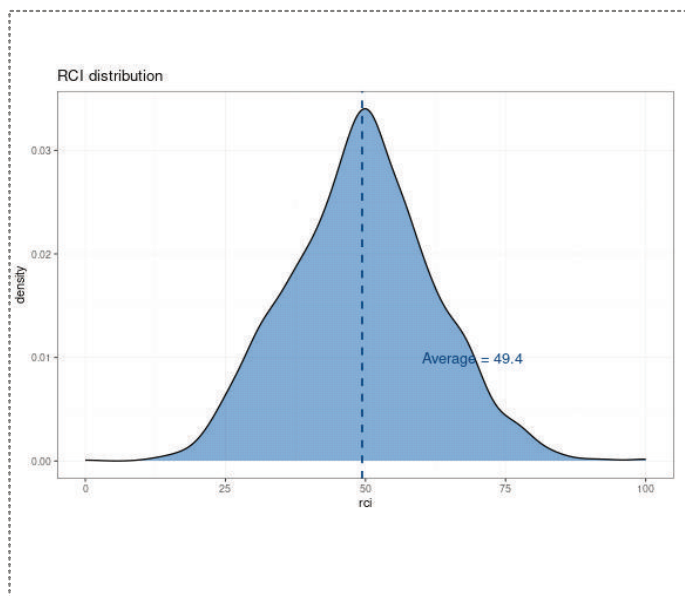


Figure 7: Overall average RCI

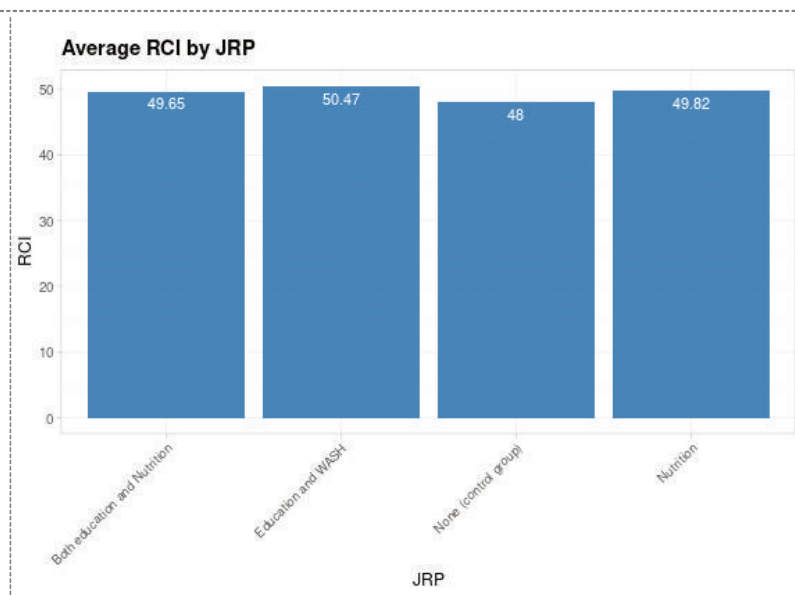


Figure 8: RCI by intervention arm

The relationship between RCI and four pillars contribution to resilience is demonstrated in figure 9. The pillar contributing the most to RCI is AC and SSN, followed by ABS. AST has the lowest relevance to the RCI. This finding implies, for immediate impact on household resilience, JRP should direct more resource and time to contributing factors/variables of adaptive capacity such as education of household members and participation in income generating activities and social safety nets such as participation in associations and VSLAs.

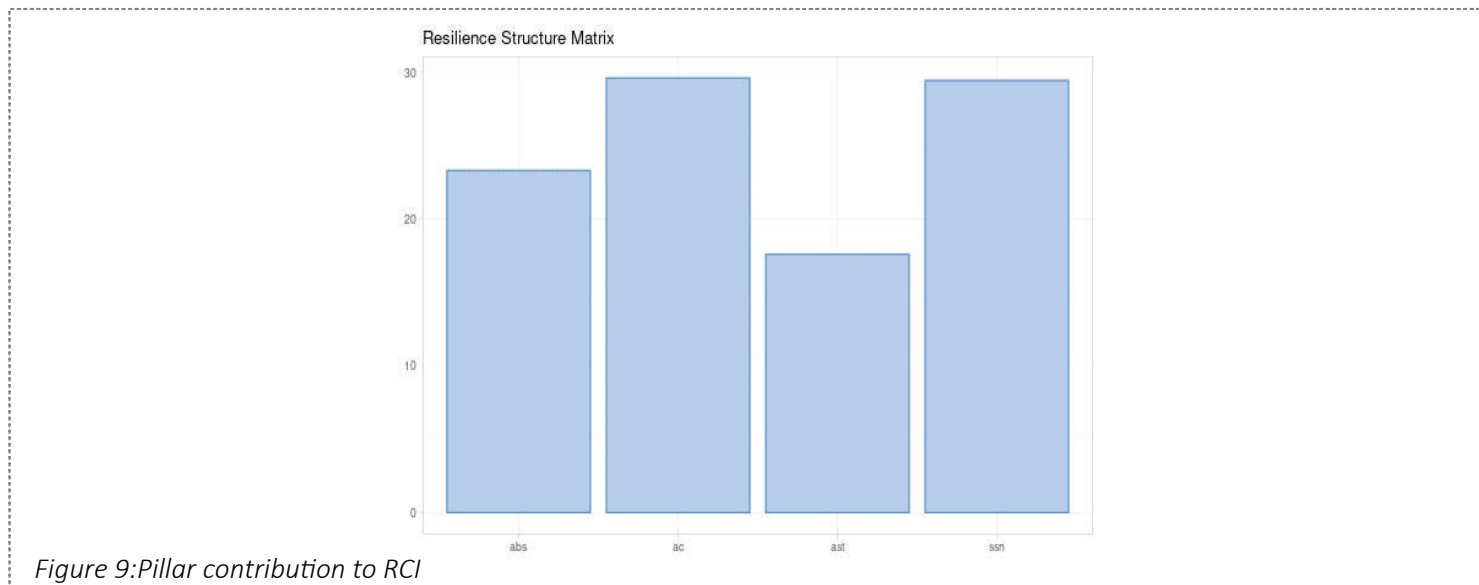
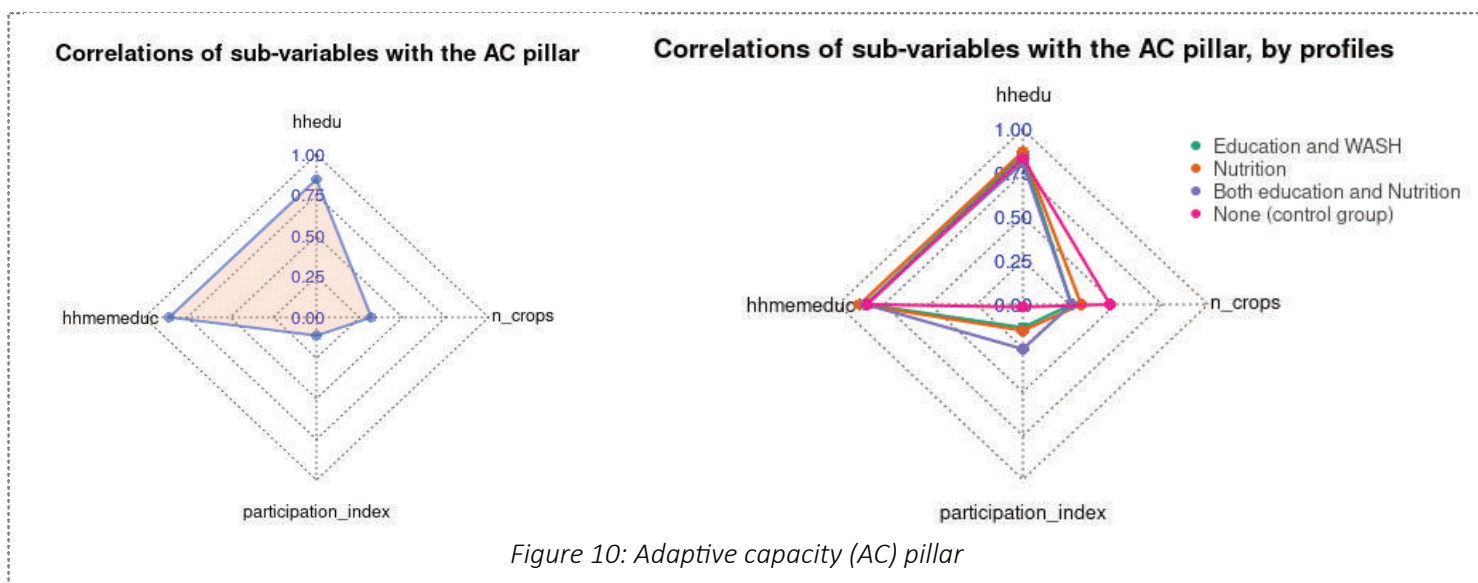


Figure 9: Pillar contribution to RCI

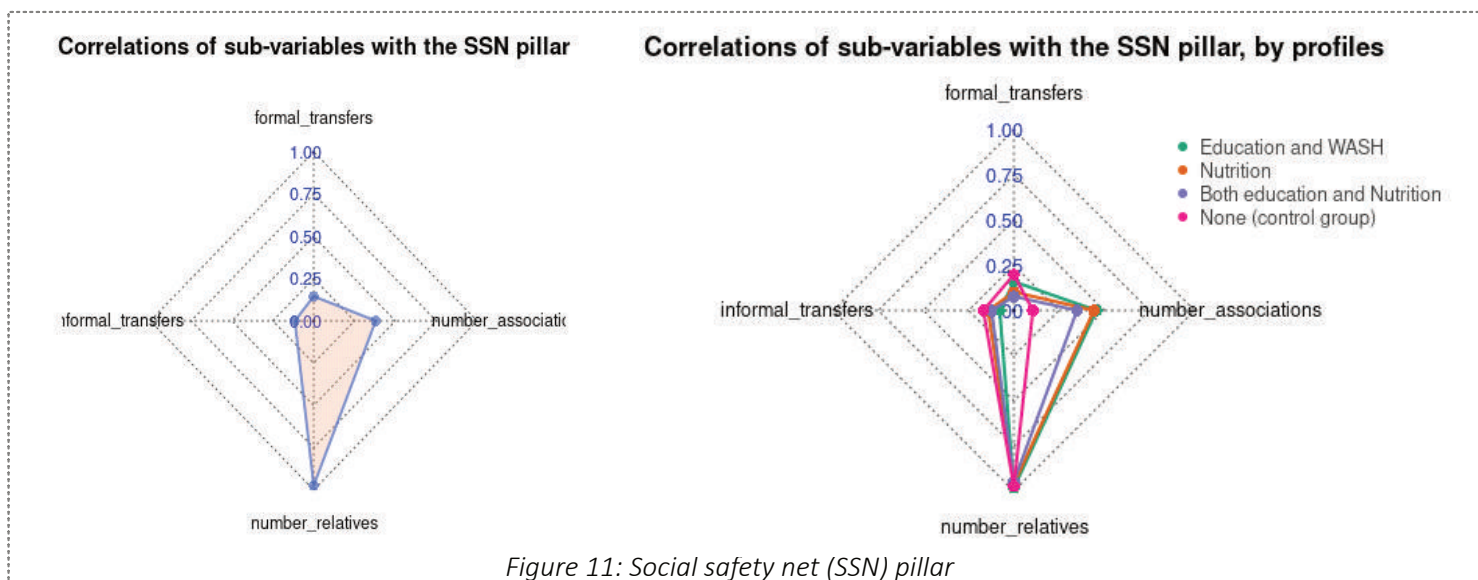
For both beneficiary and non-beneficiary households, the relevance of adaptive capacity (AC) pillar is almost completely determined by variables related to education of the household members (both the education of the household head and the highest education level of the household member) as shown in figure 11. The implication of this finding is that one of the key drivers of resilience for the households in the project region of Gedo is primarily education. We assess that the centrality of education in building is consistent with several studies that indicate education is strongly linked to better food security outcomes.⁴² With this evidence, JRP's intention of continuing increasing access to schools for school age children and educational services for women is a good step towards promoting food security and livelihood of the vulnerable Somali households.

⁴²See for example, Mutisya, M., Ngware, M. W., Kabiru, C. W., & Kandala, N. B. (2016). The effect of education on household food security in two informal urban settlements in Kenya: a longitudinal analysis. *Food Security*, 8(4), 743-756.

Conversely, participation index, which is measured by the number of incomes generating activities a member of household is engaged in, contributes the least to the AC pillar for the beneficiary and non-beneficiary households. This finding is explained by the fact that years of prolonged drought has nearly decimated the primarily livelihood systems (livestock and crop production) for most of the households in the project areas forcing communities to rely on narrow income generating activities such as casual labor, petty trading/shops. Livestock trading and crop sales have virtually diminished.



For the SSN pillar, the leading critical driver of resilience is the number of relative/family a household member relies on in time of need, followed by number of associations a household member belongs in, formal transfers and lastly informal transfers. Role of associations in building resilience was quite prominent for the beneficiary households as compared to those in the comparison group. The role of relative/family in building resilience capacities for Somali households is not surprising, especially in times of need. For example, Koshen (2008) in an article “Strengths in Somali Families” notes that “[in Somalia] the clans and the extended family provide protection, emotional, and economic support, and identity [...] the clan also demands loyalty in both allegiance and in material support. This is illustrated by the fact that rural and pastoral families seek help and sustenance from their urban brethren during periods of drought”⁴³.



Among the indicators for ABS, access to safe water, safe lighting, distance to water facility and distance to agricultural (crop) market contributes the most to this pillar. By respondent category, access to safe water, safe toilet, safe lighting is the key driver for the ABS pillar. This result is expected because, beneficiary households considered in the current phase of JRP were previously supported with nutrition and WASH related interventions. For the households in the comparison group, access to markets – both agricultural (crop) and livestock are seen to contribute the most to the ABS pillar.

⁴³ Koshen, H. I. A. (2007). Strengths in Somali families. Marriage & Family Review, 41(1-2), 71-99. [page 74].

Correlations of sub-variables with the ABS pillar

Correlations of sub-variables with the ABS pillar, by profiles

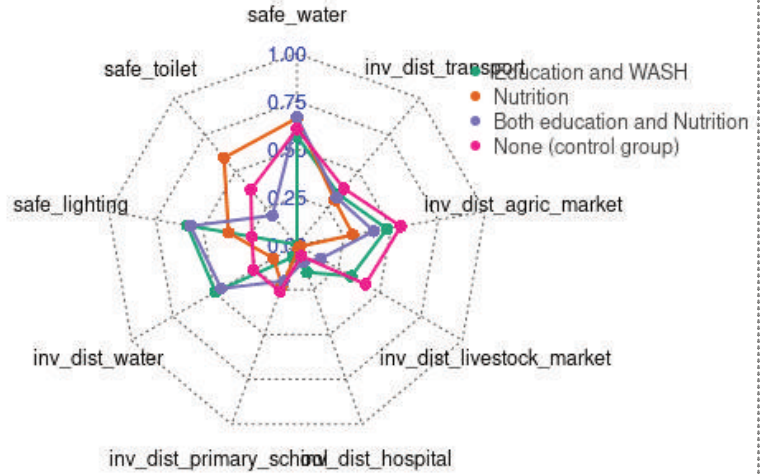
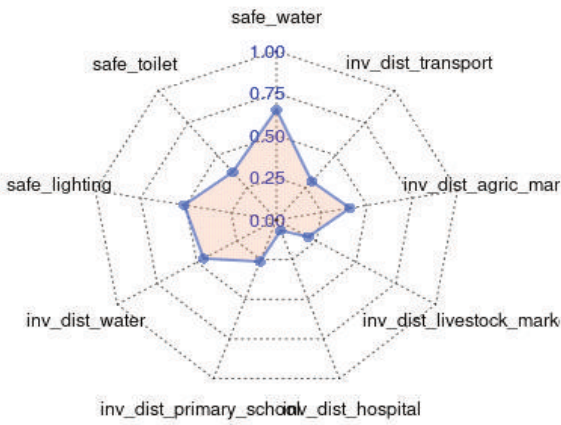


Figure 12: Access to basic services (ABS) pillar

In terms of AST, tropical livestock unit (TLU) is the critical driver, followed by wealth index and lastly agricultural assets index. access to safe water. By respondent category, while TLU was the most prominent driver for AST pillar among households in the comparison group (majority of the comparison households were either pastoral or agro-pastoralist), wealth index (constructed from number of household items owned by households) was the main driver for AST pillar for the beneficiary households.

Correlations of sub-variables with the AST pillar

Correlations of sub-variables with the AST pillar, by profiles

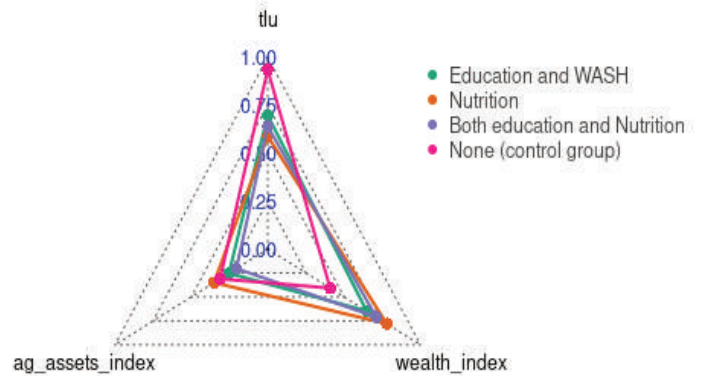
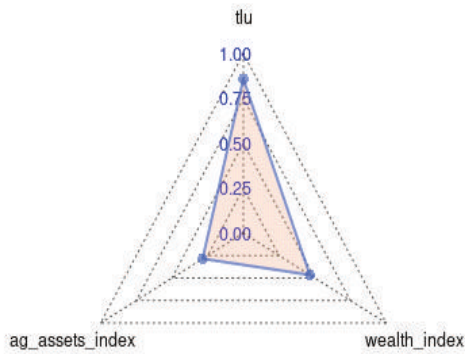


Figure 13: Assets (AST) pillar

Subjective resilience

Subjective household resilience relates to an individual's cognitive and affective self-evaluation of their household's capabilities and capacities in dealing with times of hardship and disaster when they hit the community. Subjective well-being (SWB) operates from the point of view of the individual, arguing that people are 'the best judges of the overall quality of their lives, and it is a straightforward strategy to ask them about their well-being' (Frey and Sutzter, 2002, 405).⁴⁴ SWB can be thought of as people's multidimensional evaluation of their own lives, including cognitive judgments of life satisfaction as well as affective evaluations of moods and emotions (McGillivray & Clarke, 2006).⁴⁵

In this baseline survey, respondents were asked several questions to assess their subjective resilience (annex 5). The statements that recorded high affirmation incidence compared to others were; "My household can rely on the support of clan, neighbors, family and friends when we need help" at 34% (1% strongly agree and 33% agree), followed by "My household can rely on support from humanitarian agencies / international NGO's when we need help" at 27% (1% strongly agree and 26% agree). Generally, these results indicated that resilience levels for the surveyed household were low as they largely depended on external support for coping and recovery – either from family/relatives/clan, or humanitarian assistance. While the role of kinship networks and relationships in boosting resilience for Somali households is well-documented (see previous section), dependence on humanitarian agencies for assistance has increased over the recent years because of cumulative effect of drought that has brought about underperformance of primary production sectors (crop and livestock). However, when respondents were asked about "during times of hardship, my household can change its primary source of income or livelihood if needed", 17% of households were optimistic that that they do have the ability and opportunities to diversify their income sources even with prolonged shocks and stressors.

When the respondents were asked about the ability of their household to respond to a severe drought and floods if they were affected in the immediate term – 'ie tomorrow' – only 5% of the households agreed that their households would be well prepared in advance, 6% affirmed that their household could recover fully within six months, and 12% were optimistic that their household would still find a way to navigate if severe droughts and floods were to become more frequent and intense. This is the case because 15% of the households affirmed that "my household has learned important lessons from past hardships that will help us to better prepare for the future" (2% strongly agree and 13% agree). Overall, 1 out of 7 (14%) households agreed that "my household can bounce back from any challenge that life throws at us" – 1% strongly agreed and 13% agreed.





INSIGHTS AND CONCLUSIONS

Adjustment of results framework, plans and targeting

While the finding agree/support most set indicator levels provided in the result framework, data presented in this report will be useful in adjusting target levels and providing directors for some indicators. For example, there was very low, almost negligible VSLA participation. This can contribute to designing ways to enhance households' ability to develop saving for financing livelihood opportunities and as a buffer for shocks and stressors (saving group activities- output 4 of outcome 3). Additionally, results here in provide directors into possible first targets going into phase III. Some examples include, inter alia, the following: -

- Overall, only 2% (n=31) of the surveyed households belonged to a Village Savings and Loans Association (VSLA). Low membership in VSLA was evident across all the respondent categories.
- The proportion of women breastfeeding their new-born babies being considerably higher across all respondent categories, except for those in Nutrition intervention arm (perhaps because the women from the nutrition arm actually had malnourished children that needed RUTF or RUSF supplementary feeding). The implication of this finding is that, going forward, the JRP may consider devoting resources to women referred from the Nutrition intervention arm if gains from nutrition intervention are to be maximized
- The prevalence of global acute malnutrition in Dollow, Belet Hawa and Garbahaarey was critical across the combined, beneficiary and comparison groups. These could form the basis for directing efforts and resources
- Underweights (particularly in the comparison sample) by district showed highest prevalence in Belet Hawa (44.8%) and Dollow district (34.3%) and was considered very high ($\geq 30\%$) as per WHO classification. Again, concerted or additional effort could be redirected to these areas as a starting point for greater impact
- very low saving rates. Overall, only 2% of the households interviewed had a member who saved money six months to baseline survey date. Conversely, 40% of the households borrowed money over a 6-month reference period.
- One way of improving school enrollments among 4–5-year-olds, is integration of formal schooling with Koranic education that is initiated early (within the age bracket of interest) and which has been successful across the country. However, early learning and integration must be thought through within the context of security and its related restrictions, child to child issues (e.g instances when an older child takes care of the younger ones) and the overall attitude surrounding the importance of education, especially for girls.

Collaboration and intervention bundling to boost outcomes

- There are opportunities for collaboration for instance with government through various line ministries for distribution of such support as micronutrient supplementation, training on standards for baby care and expectation for health of children etc.
- A quarter of mothers in Education & Nutrition and Education & WASH intervention arms, introduced their babies to complementary feeding before 6 months, there is therefore need to initiate interventions and mechanism that would help mothers in the project areas to adhere to the WHO recommendation of introducing complementary feeding to children upon attaining 6 months.

- Low uptake of deworming has been associated with caregivers' lack of knowledge on whether the child should receive appropriate deworming (albendazole) doses, poverty, and inability to afford drugs as well as general unavailability of deworming doses. Combining nutrition efforts with deworming campaigns has the potential to optimize intervention gains.

Value addition and Access to market

Various bottle necks to accessing markets were highlighted including poor roads and infrastructure, high tariffs and sometimes illegal taxation, unnecessary barriers and roadblocks etc. Whereas these remain legitimate concerns, data also showed limited engagement in value addition for crops or dairy. Value addition if well implemented can unlock the potential for better pricing and open up earning from primary production, boosting incomes through enhanced participation at the marketplace.

- Very few (10%) of households engaged in value addition for their crops. The value addition situation was even more dismal among livestock keepers with only 1% reporting to engage. This result implies that in the project implementation region of Gedo, value addition practices remain limited and narrow-based. But there is an opportunity to inject value addition into the production systems and consequently boost participation at the marketplace.

Contributing factors to resilience

In working out the resilience capacity index, data showed that at baseline, the pillar contributing the most to RCI was Adaptive Capacity and Social Safety Nets, followed by Access to Basic Services. Assets had the lowest relevance to the RCI. This finding implies that for immediate impact on household resilience, JRP may need to direct more resource and time to Adaptive Capacity and Social Safety Net pillars.

- For both beneficiary and non-beneficiary households, the relevance of adaptive capacity (AC) pillar is almost completely determined by variables related to education of the household members (both the education of the household head and the highest education level of the household member). The implication of this finding is that one of the key drivers of resilience for the households in the project region of Gedo is primarily education.

Limited capacity of government to monitor and share program progress data

Representatives from the ministry of planning confirmed early onset of mobilization for the establishment of a platform for inter-ministerial coordination for the implementation of phase III activities. However, Ministry representatives did not provide any government monitoring or progress reports on school visits, quality assurance or monitoring visits. For the indicators that depend on government reports to show progress/change (particularly outcome 4) it may be useful to keep side notes from trainings, monthly meetings and progress trackers as opposed to depending entirely on only government reports. Constant and sustained communication on roles and performance expectations of all coordination members, needs to be considered to ensure all members are doing their part in making the program a success.

- At baseline, data corroborates the results framework's numbers that indicate that all participating 46 schools had CECs trained. However, there was no clarity on for example, number of quality assurance visits, or number of monitoring visits etc. by the ministry of education.

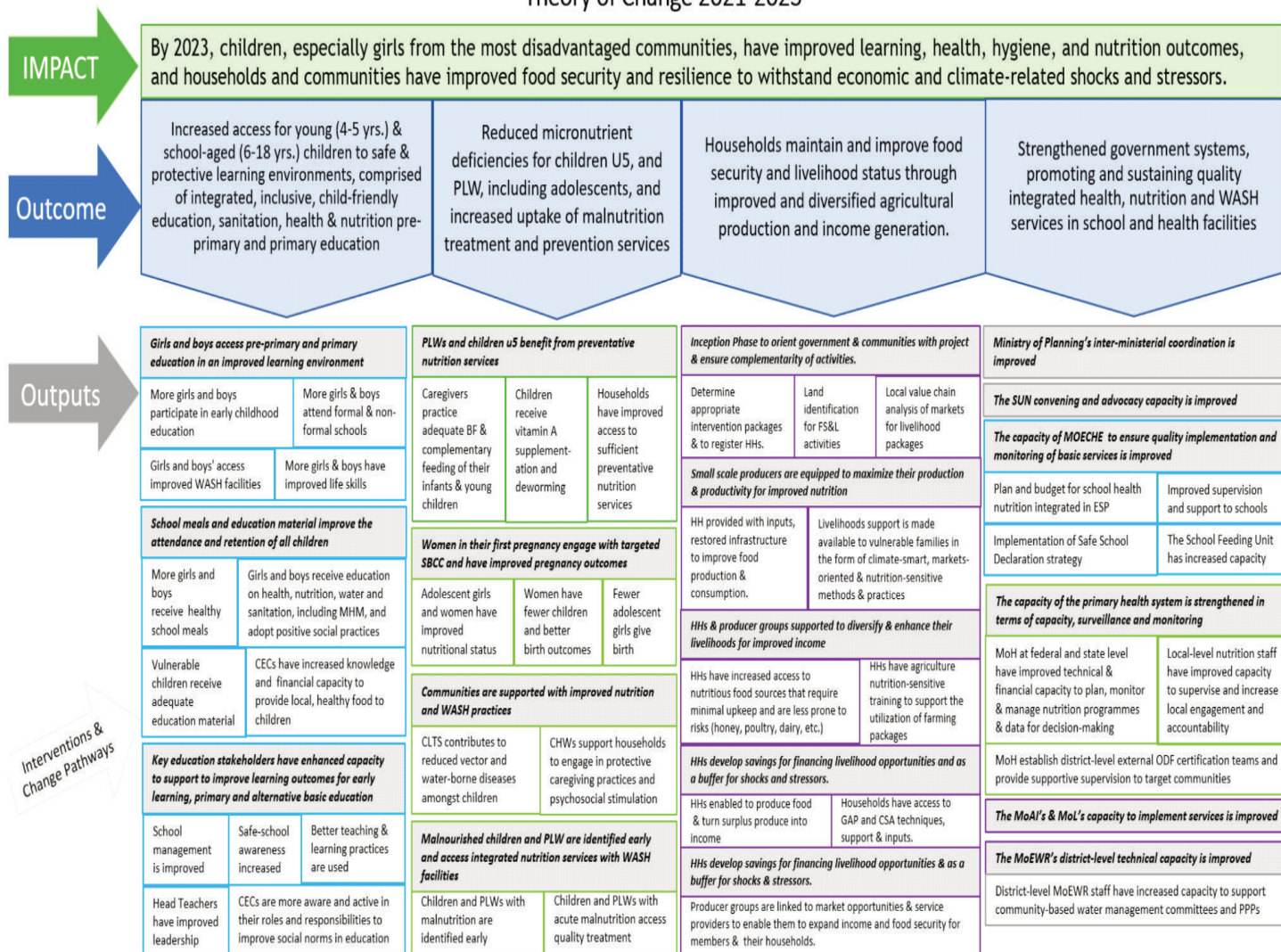
Social behavior change communication especially among breastfeeding and care giving mothers. Such barriers to exclusive breastfeeding as influence from elderly mothers, breast milk insufficiency, cultural believes and women engaging in competing activities shows that good knowledge on IYCF does not necessary translate into improved practices. Continued efforts for SBCC (as has been planned for in phase III) is therefore key to drive certain desired changes.



ANNEX

Annex 1: Theory of Change

Theory of Change 2021-2023



Annex 2: Newly enrolled by intervention arms (enrolled within current academic year)

	Intervention arms			Combined intervention arms	Comparison groups	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Young children (4-5 yrs) enrolled in current academic year						
Yes	86% (n=6)	67% (n=8)	0% (n=0)	64% (n=14)	0% (n=0)	64% (n=14)
No	14% (n=1)	33% (n=4)	100% (n=3)	36% (n=8)	0% (n=0)	36% (n=8)
Children (6- 18 yrs) enrolled in current academic year						
Yes	48% (n=297)	20% (n=192)	33% (n=230)	31% (n=719)	38% (n=73)	32% (n=792)
No	52% (n=327)	81% (n=791)	67% (n=473)	69% (n=1591)	62% (n=121)	68% (n=1712)
All children currently enrolled in school (total 418)						
Yes	48% (n=303)	20% (n=200)	33% (n=230)	31% (n=733)	38% (n=73)	32% (n=806)
No	52% (n=328)	80% (n=795)	67% (n=476)	69% (n=1,599)	62% (n=121)	68% (n=1720)

Annex 3: Counselling and antenatal care

	Intervention arms			Combined intervention arms	Comparison groups	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Where women receive counselling or advice from						
Elderly women in the HH or community	57%	51%	45%	52%	76%	58%
Midwife	45%	39%	58%	48%	23%	41%
Health providers/workers in the clinic	33%	26%	33%	31%	3%	24%
Peer women in the community	25%	19%	10%	20%	10%	17%
Other, Specify ...	5%	3%	1%	3%	5%	4%
SMS counselling provided by NGOs	3%	2%	4%	3%	0%	2%
Male family members	1%	2%	4%	2%	0%	2%
Antenatal or postpartum care received by currently pregnant or lactating mothers						
Taken care of at home by elderly women in the HH or community	63%	65%	40%	57%	86%	65%
Taken care of at home by male family members	16%	20%	40%	24%	21%	23%
Given advice by health providers/workers	34%	26%	9%	24%	0%	17%
Provided special meals/food	10%	5%	13%	9%	9%	9%
Given advice by NGOs	12%	9%	6%	9%	0%	7%
Given advised by other women enrolled in a nutrition program	4%	3%	10%	6%	0%	4%
Other, Specify ...	7%	0%	3%	3%	3%	3%

Annex 4: Micronutrient supplementation

	Intervention arms			Combined intervention arms	Comparison	Overall
	Nutrition	Education & WASH	Education & Nutrition			
Woman received multiple micronutrient supplementation within the last 12 months						
Yes	37%	55%	42%	44%	6%	34%
No	63%	45%	58%	56%	94%	66%
Micronutrient Source						
Public health facility	91%	86%	67%	83%	62%	82%
Private health facility	10%	31%	36%	24%	8%	23%
Community Health Worker (CHW)	7%	8%	6%	7%	8%	7%
Mobile facility/clinic	0%	0%	0%	0%	15%	1%
Faith-based facility	0%	1%	0%	0%	0%	0%
Traditional Birth Attendant	1%	0%	0%	0%	0%	0%
Number of times received micronutrient supplementation						
None	60%	44%	42%	51%	93%	61%
One	18%	24%	36%	24%	4%	19%
Two	16%	21%	19%	18%	2%	14%
Three	5%	11%	4%	6%	0%	5%
Health benefits of micronutrient supplementation						
Reduces the risk of low-birth-weight infant	62%	49%	43%	53%	23%	46%
Prevention of anemia	38%	53%	66%	49%	33%	45%
Don't Know	22%	25%	17%	22%	43%	27%
Reduces the risk of infant mortality	24%	25%	23%	24%	13%	21%
Improves appetite	22%	12%	31%	21%	8%	18%
Reduces the risk of preterm babies	22%	10%	10%	16%	2%	13%
Other	0%	4%	4%	2%	15%	5%

Annex 5: Subjective Resilience

	Intervention arms			Combined intervention arms	Comparison	Overall
	Nutrition	Education & WASH	Education & Nutrition			
My household can bounce back from any challenge that life throws at us						
Don't know/No answer	3%	2%	3%	3%	2%	3%
Strongly Disagree	15%	16%	7%	13%	23%	16%
Disagree	40%	52%	52%	48%	48%	48%
Neither Agree nor Disagree	21%	18%	26%	21%	15%	19%
Agree	20%	10%	9%	13%	12%	13%
Strongly Agree	1%	0%	3%	2%	0%	1%
My household is better able to deal with hardship compared with others in our community						
Don't know/No answer	2%	2%	4%	3%	3%	3%
Strongly Disagree	8%	16%	7%	11%	22%	14%
Disagree	53%	61%	64%	59%	59%	59%
Neither Agree nor Disagree	25%	16%	15%	19%	8%	15%
Agree	13%	5%	9%	9%	8%	8%
If threats to my household become more frequent and intense, we would still find a way to get by						
Don't know/No answer	3%	3%	5%	3%	2%	3%
Strongly Disagree	10%	16%	5%	11%	23%	15%
Disagree	52%	62%	61%	58%	57%	58%
Neither Agree nor Disagree	21%	11%	18%	16%	8%	14%
Agree	13%	8%	10%	10%	9%	10%
Strongly Agree	1%	0%	1%	1%	0%	1%
During times of hardship, my household can change its primary source of income or livelihood if needed						
Don't know/No answer	4%	3%	7%	4%	3%	4%
Strongly Disagree	9%	14%	5%	10%	16%	12%
Disagree	49%	47%	54%	50%	49%	49%
Neither Agree nor Disagree	23%	18%	20%	20%	11%	17%
Agree	15%	17%	11%	15%	20%	16%
Strongly Agree	1%	1%	3%	2%	1%	1%
My household can afford all of the things that it needs to survive and thrive						
Don't know/No answer	4%	3%	7%	5%	3%	4%
Strongly Disagree	19%	25%	14%	20%	31%	24%
Disagree	49%	59%	58%	55%	51%	54%
Neither Agree nor Disagree	17%	10%	13%	13%	8%	12%
Agree	10%	3%	8%	7%	6%	7%
My household can rely on the support of clan, neighbours, family and friends when we need help						
Don't know/No answer	4%	3%	6%	4%	3%	4%
Strongly Disagree	10%	15%	5%	11%	20%	14%
Disagree	36%	34%	34%	35%	32%	34%
Neither Agree nor Disagree	21%	12%	19%	17%	11%	15%
Agree	28%	35%	35%	32%	34%	33%
Strongly Agree	1%	1%	1%	1%	1%	1%
My household can rely on support from humanitarian agencies / international NGO's when we need help						
Don't know/No answer	4%	3%	6%	5%	4%	4%
Strongly Disagree	6%	14%	3%	9%	18%	11%
Disagree	23%	34%	30%	29%	43%	33%
Neither Agree nor Disagree	33%	16%	33%	26%	18%	24%
Agree	32%	31%	26%	31%	16%	26%
Strongly Agree	2%	1%	1%	1%	1%	1%
My household can rely on the support from politicians and government when we need help						
Don't know/No answer	5%	3%	7%	5%	3%	4%
Strongly Disagree	28%	32%	43%	33%	38%	35%
Disagree	34%	49%	30%	39%	46%	41%
Neither Agree nor Disagree	21%	11%	15%	16%	9%	14%
Agree	12%	5%	4%	7%	3%	6%
My household has learned important lessons from past hardships that will help us to better prepare for the future						
Don't know/No answer	4%	4%	7%	4%	4%	4%
Strongly Disagree	9%	11%	3%	8%	14%	10%
Disagree	49%	60%	54%	55%	56%	55%
Neither Agree nor Disagree	20%	15%	21%	18%	11%	16%
Agree	16%	9%	14%	13%	13%	13%
Strongly Agree	2%	1%	2%	1%	2%	2%

Annex 5: Subjective Resilience (Continued)

	Intervention arms			Combined intervention arms	Comparison	Overall
	Nutrition	Education & WASH	Education & Nutrition			
My household is fully prepared for any future threats and challenges that life throws at us						
Don't know/No answer	5%	3%	6%	4%	4%	4%
Strongly Disagree	19%	26%	12%	20%	29%	23%
Disagree	50%	59%	59%	56%	52%	55%
Neither Agree nor Disagree	17%	8%	15%	13%	9%	12%
Agree	9%	3%	6%	6%	6%	6%
My household frequently receives information warning us about future extreme weather events in advance						
Don't know/No answer	5%	4%	7%	5%	4%	5%
Strongly Disagree	21%	14%	7%	15%	18%	16%
Disagree	48%	66%	58%	58%	63%	59%
Neither Agree nor Disagree	17%	13%	23%	17%	11%	15%
Agree	9%	2%	6%	5%	3%	5%
If a severe [drought or flood] occurred tomorrow, my household would be well prepared in advance						
Don't know/No answer	4%	3%	5%	4%	4%	4%
Strongly Disagree	17%	23%	10%	17%	27%	20%
Disagree	53%	64%	66%	61%	57%	60%
Neither Agree nor Disagree	15%	8%	14%	12%	9%	11%
Agree	11%	3%	5%	6%	3%	5%
If a severe [drought or flood] occurred tomorrow, my household could recover fully within six months						
Don't know/No answer	5%	3%	9%	5%	6%	6%
Strongly Disagree	17%	24%	9%	15%	24%	20%
Disagree	44%	58%	58%	58%	55%	53%
Neither Agree nor Disagree	21%	12%	18%	17%	12%	15%
Agree	12%	4%	6%	5%	4%	6%
If severe shocks [e.g. droughts and floods] were to become more frequent and intense, my household would still find a way get by						
Don't know/No answer	5%	3%	4%	4%	2%	3%
Strongly Disagree	9%	14%	5%	10%	17%	12%
Disagree	48%	62%	50%	54%	56%	55%
Neither Agree nor Disagree	18%	15%	26%	19%	15%	18%
Agree	18%	7%	13%	12%	9%	11%
Strongly Agree	1%	0%	2%	1%	0%	1%

Annex 6: Prevalence of GAM by Livelihood

	Combined (ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Riverine	15.6%	19.1%	12.1%	15.3%	18.80%	11.90%	16.40%	19.70%	12.70%
Pastoral	23.8%	27.3%	19.8%	21.5%	25.70%	16.70%	25.00%	28.10%	21.40%
Agro-pastoral	20.1 %	21.9%	5.0%	22.4%	20.00%	25.00%	19.30%	23.50%	15.50%
IDP	19.2%	21.5%	10.1%	17.6%	19.90%	15.50%	45.50%	50%	41.70%
Urban	13.9%	14.9%	14.8%	13.8%	14.60%	12.80%			
Peri-Urban	11.8%	15.1%	4.4%	11.8%	15.10%	7.40%			

Annex 7: Prevalence of GAM by age group

Age (mo)	Combined (ALL)			Beneficiary			Comparison		
	SAM (<-3 zscore) %	MAM (>=-3 and <-2 z-score) %	Normal (> = -2 z score) %	SAM (<-3 z-score) %	MAM (>=-3 and <-2 z-score) %	Normal (> = -2 z score) %	SAM (<-3 z-score) %	MAM (>=-3 and <-2 z-score) %	Normal (> = -2 z score) %
6-17	5.1	15.2	79.8	5.1	14.9	80.0	3.8	16.3	80.0
18-29	4.5	14.8	80.8	2.4	15.2	82.4	9.1	13.6	77.3
30-41	3.2	12.3	84.4	2.1	12.3	85.6	8.0	12.5	79.5
42-53	3.3	13.0	83.7	3.4	11.4	85.1	2.8	17.9	79.2
54-59	4.0	13.6	82.4	4.1	12.2	83.8	3.9	17.6	78.4
Total	3.9	13.6	82.5	3.1	13.1	83.7	5.9	15.3	78.9

Annex 8: Prevalence of GAM_MUAC by livelihood

	Combined(ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Riverine	10.9%	12.9%	8.9%	9.3%	12.0%	6.7%	14.7%	14.8%	14.6%
Pastoral	31.4%	30.3%	32.6%	36.9%	37.1%	36.7%	28.3%	26.6%	30.4%
Agro-pastoral	14.8%	11.2%	18.2%	15.5%	14.1%	17.1%	14.2 %	8.8%	18.9%
IDP	11.7%	9.7%	13.6%	10.5%	9.1%	11.8%	31.8%	20.0%	41.7%
Urban	13.3%	11.7%	15.0%	13.2%	11.5%	15.0%			
Peri-Urban	11.6%	13.7%	11.1%	12.6%	13.7%	11.1%			

Annex 9: Prevalence of Underweight by district

	Combined(ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Dollow	30.0%	31.6%	26.2%	26.6%	28.4%	24.7%	34.3%	38.7%	29.6%
Belet Hawa	26.0%	30.8%	20.5%	22.3%	28.7%	14.8%	44.8%	42.0%	47.8%
Luuq	14.7%	18.8%	10.9%	16.1%	19.4%	12.9%	12.3%	17.5%	7.2%
Bardhere	18.1%	14.7%	21.8%	18.1%	14.7%	21.8%			
Garbahaarey	22.8%	23.3%	22.2%	18.5%	23.1%	14.3%	26.7%	23.5%	30.8%
Burdhuubo	5.3%	6.5%	4.4%	11.8%	13.3%	10.5%	0.0%	0.0%	0.0%

Annex 10: Stunting prevalence by district

	Combined(ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Dollow	26.0%	25.8%	26.2%	24.5%	23.1%	26.0%	29.5%	32.0%	26.8%
Belet Hawa	25.1%	29.6%	20.1%	24.1%	28.7%	18.8%	30.2%	34.0%	26.1%
Luuq	23.4%	25.0%	21.9%	27.4%	29.2%	25.8%	16.0%	17.5%	14.5%
Bardhere	26.1%	24.5%	27.9%	26.3%	24.5%	27.9%			
Garbahaarey	35.1%	36.7%	33.3%	29.6%	23.1%	35.7%	40.0%	47.1%	30.8%
Burdhuubo	30.3%	29.0%	31.1%	41.2%	40.0%	42.1%	21.4%	18.8%	23.1%

Annex 10: Stunting prevalence by district

	Combined(ALL)			Beneficiary			Comparison		
	All	Boys	Girls	All	Boys	Girls	All	Boys	Girls
Riverine	25.2%	30.9%	20.0%	24.6%	30.8%	18.5%	27.6%	31.2%	23.6%
Pastoral	31.9%	39.4%	23.3%	32.3%	34.3%	30.0%	31.7%	42.2%	19.6%
Agro-pastoral	23.8%	23.5%	24.05	31.7%	32.9%	30.3%	17.9%	15.7%	19.8%
IDP	25.2%	23.7%	26.6%	24.2%	23.3%	25.1%	40.9%	30.0%	50%
Urban	23.4%	23.8%	23.1%	23.3%	23.5%	23.1%			
Peri-Urban	31.5%	28.8%	35.2%	31.5%	28.8%	35.2%			

Annex 12: Vitamin A supplementation

Variable	Beneficiary	Comparison	Combined
No of times child received Vit A in last 1 year	N=119		
0	62(52.1%)		52.2%
1	34(28.6%)		28.6%
2	19(16.0%)		16.0%
3	2(1.7%)		1.7%
4	2(1.7%)		1.7%
Has child received Vit A last 6 months	N=1478		
Yes	317(21.4%)	3.8%	17.1%
No	1161(78.6%)	96.2%	82.9%
No of times child received Vit A from a health facility or program			
0	7(2.2%)	5.6%	2.4%
1	172(54.3%)	66.7%	54.9%
2	100(31.6%)	27.7%	31.3%
3	27(8.5%)		8.1%
4	8(2.5%)		2.4%
5	3(1%)		0.9%
Place of receiving vitamin A	N=353		
Health facility (Public)	85.2%	72.2%	84.5%
Health Facility (private)	15.8%	16.7%	15.5%
Outreach post	7.9%	11.1%	8.4%
ECD/school	1.9%	0%	1.8%
Other	0.63%	0%	0.6%
Reason for not receiving	N=1278		
Do not know they should be given dose	38.16%	16.3%	32.0%
Distance	21.8%	80.8%	38.5%
I forgot to take child	20.7%	2.8%	15.6%
Stopped attending clinic after 9 months	15.9%	0.0%	11.4%
Others	8.6%	2.6%	6.9%
Stock outs	4.9%	5.0%	4.9%

Annex 13: Analysis of key livelihood indicators by districts

Table 47: Livelihood coping strategies by districts

	Dollow	Belet Hawo	Luuq	Bardhere	Garbaharey	Burdhubo	Overall
No coping strategies	31%	32%	18%	29%	75%	20%	30%
Stress coping strategies	52%	63%	56%	39%	14%	40%	50%
Crisis coping strategies	6%	2%	10%	7%	2%	12%	7%
Emergency coping strategies	11%	3%	16%	25%	9%	28%	13%

Table 48: FCS by districts

	Dollow	Belet Hawo	Luuq	Bardhere	Garbahare	Burdhubo	Total
Poor	33%	31%	7%	3%	57%	21%	23%
Borderline	40%	7%	17%	19%	19%	34%	23%
Acceptable	27%	63%	76%	77%	24%	45%	55%
Average FCS	33.59	55.57	53.13	56.89	28.01	43.46	46.34

Table 49: Reduced coping strategies by districts

	Dollow	Belet Hawo	Luuq	Bardhere	Garbahare	Burdhubo	Total
Average RCI	7.49	11.52	24.15	12.62	6.72	20.01	14.5

Table 50: Tropical livestock unit by districts

	Dollow	Belet Hawo	Luuq	Bardhere	Garbahare	Burdhubo	Total
Average tlu	1.66	1.14	1.49	0.08	4.76	2.9	1.63

Table 51: Tropical livestock unit by intervention arms

	Intervention arms			Combined intervention arms	Comparison	Total
	Nutrition	Education & WASH	Education & Nutrition			
Average TLU	0.43	0.83	0.95	0.72	3.61	1.63

Annex 14: Analysis of Yields and Average TLU by intervention arms

Table 52: Crop yield

	Intervention arms			Combined intervention arms	Comparison	Total
	Nutrition	Education & WASH	Education & Nutrition			
Average yield maize	0.06	0.1	0.3	0.11	0.34	0.201
Average yield sorghum	0.02	0.37	0.6	0.12	0.88	0.325

Table 53: TLU by intervention arms

	Intervention arms			Combined intervention arms	Comparison	Total
	Nutrition	Education & WASH	Education & Nutrition			
Average TLU	0.49	0.83	1.03	0.76	3.6	1.64



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