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Audio-Only, Phone-Based Reach Up and Learn Cost-Effectiveness Report

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Abstract

The global refugee crisis is one of the defining humanitarian issues of our time. This project aims to address the needs of young children in humanitarian contexts and during the COVID pandemic through the evaluation of a “low-cost” approach that can be scaled quickly to reach many children and families.

In a partnership between Sesame Workshop and the International Rescue Committee (IRC), with support from the MacArthur Foundation, Ahlan Simsim initiative provided early education and nurturing care to millions of children impacted by conflict and displacement in Iraq, Jordan, Lebanon, and Syria.

Reach Up and Learn (RUL) was adapted by the International Rescue Committee to be delivered in a humanitarian context in Jordan, and then was further adapted to be delivered by phone due to the COVID-19 pandemic. The effectiveness component of the evaluation used a cluster-randomized trial where community health volunteers (CHVs) were randomized to deliver either a) health and nutritional content; or b) health, nutritional, and added child development and caregiver psychosocial support content. The added child development and caregiver psychosocial support content is what we refer to as *Audio-only, Phone-based Reach Up and Learn*. We observed two completed calls per month on average over a six-month period.

The effectiveness study found that Audio-only, Phone-based RUL reduced caregivers’ depressive symptoms. The results also indicate that this reduction was mediated by CHVs non-judgmental rapport (Rafla et al., 2022).

This report describes the cost-effectiveness component of the evaluation of Audio-only, Phone-based RUL. We estimate the costs of Audio-only, Phone-based RUL relative to the control condition who received health and nutrition messages only. Per household, the intervention was estimated to cost $110 on average. This estimate includes the costs to IRC to deliver the program and the costs to caregivers to participate.

Acknowledgments

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Contents

1. Introduction

The global refugee crisis is one of the defining humanitarian issues of our time, with more than 33 million children forcibly displaced due to conflict and war across the Middle East and around the world (UNICEF, 2021). All children need nurturing care, a comforting routine, and opportunities to learn through play in the critical first years of life (Black et al., 2021; Richter et al., 2017), and with exceptional levels of trauma and vulnerability, refugee children need targeted and effective social support. Yet, only about 3% of humanitarian assistance goes to education with a small portion of those funds directed to early childhood development services (Moving Minds Alliance, 2020).

The Ahlan Simsim initiative of Sesame Workshop and the International Rescue Committee brings early childhood development and playful learning to children affected by conflict and crisis in the Middle East. During the COVID pandemic, the initiative adapted programming for remote delivery. In this report we provide evidence on the cost-effectiveness component of an adaptation of a version of RUL.

Reach Up and Learn (RUL) is a home-visiting program that was introduced in Jamaica in the 1970s (Grantham-McGregor & Desai, 1975). The program has been delivered around the world and is often hailed as a model parenting program due to its adaptability and effectiveness (Heckman, 2023). In 2019, RUL was adapted to serve Syrian refugees in the Syrian response region and implemented by the International Rescue Committee (IRC) in Jordan. The approach was further adapted to be delivered by phone due to the COVID pandemic. The program served children from 6–42 months of age among Syrian, Jordanian, and other households in Ajloun, Jarash, Mafraq,

Amman, Irbid and Ramtha in Jordan. To the best of our knowledge, this is the first audio-only, parenting-and-caregiver-intervention program delivered in a humanitarian context.

The Global TIES for Children Research Center at New York University conducted an evaluation of the Audio-only, Phone-based RUL in Jordan using a sample from Irbid and Ramtha governorates. The evaluation followed a randomized design where community-health volunteers (CHVs) and their caseloads of families were randomly assigned to the treatment or control groups. The study was designed for CHVs to call caregivers in the treatment group three times a month for six months to (1) check on the caregivers' well-being (caregiver content), (2) inform parents on the importance of child development and provide parents with specific activities to promote early child development (ECD content), (3) deliver health and nutrition messages (health and nutrition content). The ECD activities were designed to be stimulating for young children and accessible for caregivers to complete with their children. For example, some activities included creative toy play with basic household items such as plastic bottles and blankets.

All programming was provided via phone, and both treatment and control groups received calls that included IRC's health and nutrition messages (Vachon & Wilton, 2020). The treatment group received what we refer to as *Audio-only, Phone-based RUL*, which included both caregiver psychosocial support content and RUL's core content on early childhood-development activities. The control group received the health and nutrition messages only.

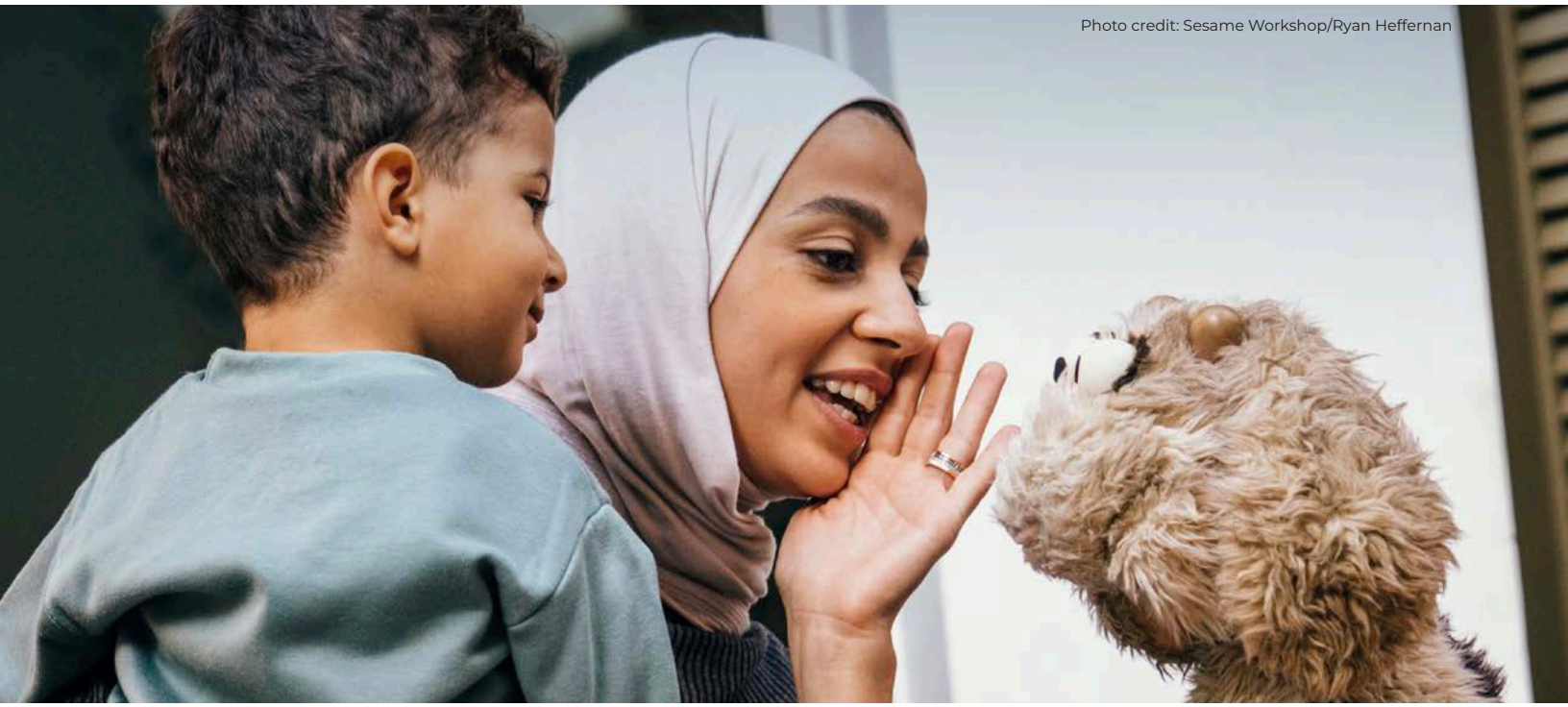
This report provides an economic evaluation that complements the impact evaluation report of Audio-only, Phone-based RUL (Rafla et al., 2022). The impact evaluation report provides a history of RUL and the development of the intervention for this context, population, and study. This report focuses on the cost-effectiveness component of the evaluation with an economic perspective and research on costs and resources. Our research questions are:

1. What is the cost of Audio-only, Phone-based RUL relative to receiving health- and nutrition-based calls?
2. What costs are borne by the delivering organization and what costs are borne by caregivers?

2. Prior Evaluations of RUL

RUL began as a home-visiting program in Jamaica in the 1970s where trained home visitors taught caregivers to interact with their young children using psychosocial stimulation activities conducted with accessible materials. The intervention was later evaluated via a randomized trial where the treatment group received visits from trained home visitors for three years, while the control group received no home visits (Grantham-McGregor et al., 1991). Children in the treatment condition were found to have higher IQs and fewer behavioral problems in childhood, and children followed into adulthood had higher earnings (Gertler et al., 2014; Gertler et al., 2021; Walker et al., 2010).

The success of RUL in Jamaica led to replication efforts in several other low-and-middle-income countries, which have included several rigorous evaluations of RUL around the world. The significance of Reach Up and Learn was recently acknowledged in *Pediatrics*, which devoted an entire special issue to the program's global impact (Black & Walker, 2023). The issue included a meta-analysis of RUL which demonstrated consistent and significant effects on cognition, language, motor development, home stimulation, and less consistent, smaller, and/or nonsignificant effects on maternal depressive symptoms (Jervis et al., 2023).



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Our own descriptive tabulation of cost estimates suggests that only some evaluations of RUL include cost estimates; of the prior 24 RUL randomized trials in 10 countries, 11 trials (44%) have included some type of cost reporting (see Table 1). In these studies (conducted in Antigua, Brazil, China, Colombia, India, Jamaica, Peru, and St. Lucia), costs per child varied, ranging from $8 to $752 ($10 to $963 in 2023 USD).

Table 1. Prior RUL Trials

Country	Base Year	Delivery	Setting	Control group	Includes Economic Evaluation, Type	Cost Findings
Bangladesh	2000	Individual/ group combination	Home & Community Nutrition Centers	Nutrition program	N	*N/A*
	2014	Pairs	Clinic	Control, although all children with IDA received 30 mg iron daily for 6 mo.	N	*N/A*
	2015	Group	Clinic	Control	N	*N/A*
	2015	Group	Clinic	Control	N	*N/A*
	2017	Group, Individual/ group combination	Community, Home & Community	Control	N	*N/A*
	(est.) 2009	Individual	Home	Control	N	*N/A*
	Not specified	Individual	Clinic	Control (routine care at hospital or clinic)	N	*N/A*
Brazil	2015	Individual	Home	Control	Y, CEA framework	$393/child per year-$241/child per year
China	2014	Individual	Home	Control	N	*N/A*
	2014	Center	Community	Control	N	*N/A*
	2015	Individual	Home	Control	Y, CEA framework	$528/child in 2015 USD
Colombia	2010	Individual	Home	Control	Y, In-text cost estimate	$500/child per year
	2014	Individual and Group; Individual and Group	Home & Community; Home & Community	FAMI running as usual	Y, CEA framework	$322/child; compares it to other ECD programs in Colombia
India	2013	Individual	Home	No intervention	Y, Cost Analysis	$251/child at 18 months; $168/ child per year at 12 months in 2014 USD
	2015	Individual, Group	Home, Community	No intervention	Y, CEA framework	Group sessions cost $38/child per year; HV cost $135/ child per year

Table continued on following page

Table 1 (cont.). Prior RUL Trials

Jamaica	1986	Individual	Home	Control	Y, CEA framework; BCA framework	JHV was $752/child in 2015 USD; Intervention increased earnings by 25% 20 years later
	2019	Individual	Remote (phone call, text, manual)	Control (routine care at clinic)	N	*N/A*
	(est.) 1981	Individual	Home	Control (randomization of subsample from prior nonrandomized RUL study)	Y, In-text cost estimate	$172/child per year
	(est.) 1999	Individual	Home	Control	N	*N/A*
	Not specified	Individual	Home	Control (routine care at clinic)	N	*N/A*
	Not specified	Individual	Home	Control (routine care at clinic)	N	*N/A*
Jamaica, Antigua, St. Lucia (pooled)	2012	Individual; Group; Individual-group combined	Home; Clinic; Home & Clinic	Control	Y, BCA	Cost of one year of home visit intervention is US$245.10/child. The Benefit-Cost ratio is 3.8. Authors outline assumptions.
Madagascar	2014	Individual	Home	Control (routine care at clinic)	N	*N/A*
Peru	2013	Individual	Home	Control	Y, BCA	U.S. $300. Benefit-cost ratio is 5.4 in Peru and 4.6 in Colombia. Authors outline assumptions on benefits but not costs.

Note. This table reports randomized trials of Reach Up and Learn (RUL) and adaptations of RUL. Appendix A provides corresponding references. Base Year refers to the year that the intervention began. One study made no reference to a base year. Three studies did not explicitly state a base year but are given "estimate" base years based on other clues provided by the authors. A study that refers to its economic evaluation as a "CEA framework" refers to comparing its total costs with a standardized effect measure but does not provide a cost-effectiveness ratio (e.g., Zhou et al., 2023). Similarly, a study that uses a "BCA framework" refers to long-term economic and public benefits of a program but does not conduct a standard benefit-cost analysis (e.g., Gertler et al., 2014). A study that provides an "in-text cost estimate" provides a basic currency amount (usually in U.S. dollars) of the program cost in the body of the manuscript but provides little or no information on how the authors calculated the cost estimate. RUL= Reach Up and Learn; JHV= Jamaica Home Visiting Program. CEA= Cost-Effectiveness Analysis; BCA=Benefit-Cost Analysis. This table was informed by Jeong et al. (2021), which provides a similar table of parenting interventions with cognitive stimulation components including interventions not adapted from RUL.

The need for comprehensive and consistent cost estimates is essential in bringing early childhood interventions to scale (Grantham-McGregor & Walker, 2023). Additionally, comparing the cost-effectiveness of alternative versions of *RUL* could inform practitioners, researchers, and policymakers on how to allocate scarce resources and further improve adaptations of *RUL*. However, comparing costs between existing RUL evaluations is difficult for several reasons:

- Cost estimates are inconsistently calculated and reported. For example, few existing RUL studies report costs with comprehensive descriptions of the resources included in the cost estimates.
- Cost estimates have not included the opportunity cost of caregivers' time to participate in the program. For parenting-intervention programs, valuing caregivers' time is critical in understanding the true costs of the programs to produce the program effects. In the case of RUL, caregivers are necessary to the program's theory of change. Instead, cost estimates are reported as direct costs, such as salaries of staff members, supplies, training, and materials associated with implementing the program. Direct costs are a component of economic evaluation but are not considered comprehensive because they do not incorporate aspects of economic evaluation such as opportunity cost.
- It is often unclear whether costs outlined in the existing RUL studies are incremental costs relative to the control group. This makes it difficult to understand whether costs relate to the effect size(s).

This lack of consistent cost methodology makes it difficult to compare across RUL studies or between RUL and other early childhood interventions. Therefore, there is ample opportunity to standardize the way in which costs are reported.

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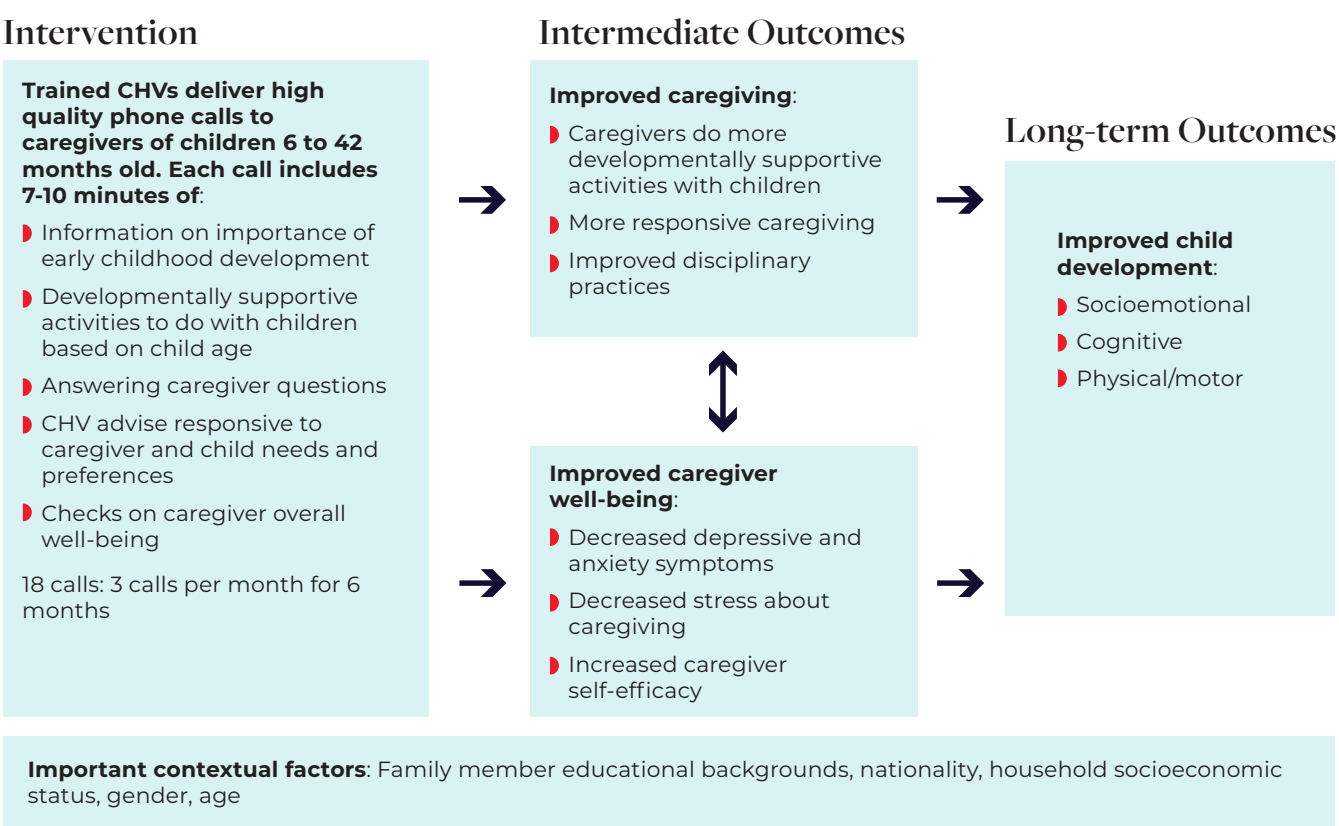
3. Audio-only, Phone-based RUL in Jordan

Since the start of the Syrian war in 2011, more than half of the Syrian population has been forcibly displaced, with over 6.8 million refugees in Jordan, Lebanon, Turkey, and other neighboring countries (Karasapan, 2021). As of December 2020, official reports suggest that Jordan has hosted more than 672,000 registered Syrian refugees, although the actual total is estimated to be around 1.3 million when considering those not officially registered as refugees (3RP, 2020). According to the Jordan Labor Market Panel Survey of 2016, almost half of the Syrian refugee population is under the age of 15 (Krafft et al., 2018).

The pandemic has worsened already-difficult living situations for Syrian refugees. It is reported that around 80% of Jordan's Syrian refugees live in poverty and families struggle to cover basic needs such as rent, food, heating, and healthcare (3RP, 2022). In addition, many Syrians are heavily indebted to cover basic needs and rely mainly on humanitarian assistance (Krafft et al, 2018).

In 2016, the IRC began delivering RUL to Syrian refugee families in Jordan, Syria, and Lebanon (Wilton et al., 2021). The program was delivered in homes to caregivers of children aged

Figure 1. Components of Audio-Only, Phone-Based RUL and Hypothesized Outcomes



Note. Information on the Audio-only, Phone-based RUL components and theory of change was provided to CBCSE from Global TIES for Children at NYU. This theory of change is summarized in Walker et al. (2018).

6–42 months receiving weekly or bi-weekly home visits over a 6-month or 1-year period, depending on the context. Ahlan Simsim (SW and IRC) and NYU-TIES intended to launch an evaluation of the in-home RUL program in Jordan in early 2020, but this was not possible due to COVID-19.

In response to the pandemic and as part of the Ahlan Simsim initiative in partnership with Sesame Workshop, the IRC adapted the home-based program to be delivered via phone once the COVID-19 pandemic made it impossible to serve families in person. The program duration was adjusted to be delivered over 6 months with three calls per caregiver per month, for a total of 18 calls offered to each caregiver, and other programmatic adaptations were made to account for the delivery mode. IRC added a caregiver well-being component, where the community-health volunteers (CHVs) were prompted to ask caregivers about their psychosocial well-being.

Although adapting RUL into an audio-only, phone-based version required a change in the delivery and duration of the program, the overall theory of change remained the same. The CHVs, who are considered trusted messengers, share information with caregivers about the importance of child development and provide specific strategies for stimulating play activities for young children. The goal was to strengthen early childhood development so that young children achieve cognitive and socioemotional learning skills for future academic success and well-being. Figure 1 provides an overview of these components and the theory of change.

One notable change is that the services provided to children shifted from RUL staff to the caregivers of the children. Similar to in person delivery, caregivers were expected to spend time participating in the RUL, but through phone calls with the CHV rather than in person. Then, because the CHV could not observe the child-caregiver interactions in person and they could not engage with the children directly, the caregivers were asked to deliver to their children the activities the CHV described on the call

In this study, we examine the costs of delivering the Audio-only, Phone-based RUL as a component of the larger evaluation of the program's effects conducted by NYU-TIES. In the following section we summarize the effectiveness findings.

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4. Effectiveness of Audio-only, Phone-Based RUL

The effects of Audio-only, Phone-based RUL were evaluated through a cluster-randomized trial where participating families received the intervention or they received the programming provided to the control condition. Random assignment was based on CHV and their associated caseloads such that CHVs were randomly assigned to deliver a) the control programming: health and nutritional content or b) the treatment programming: health, nutritional plus child development and caregiver psychosocial support content (RUL). In this section, we briefly review the NYU-TIES effectiveness study (Rafla et al., 2022) to provide the context for the cost study.

Photo credit: Sesame Workshop/Ryan Heffernan

The effectiveness study is guided by five primary research questions:

1. What is the impact of six months of the audio-only, phone-based adaptation of Reach up and Learn program plus health and nutritional messages on caregiver-reported responsive parenting, harsh disciplinary practices, parent-child activities, parental well-being, and parenting self-efficacy, relative to audio-only, phone-based health and nutrition messages only?
2. What is the impact of the program on caregiver-reported child-developmental milestones and socioemotional behaviors?
3. What is the impact of the program on parental co-viewing with their children of the *Ahlan Simsim* TV program (part of the Ahlan Simsim initiative that also included the current program)?
4. What is the impact of the program on implementation factors (recorded phone call quality; caregiver-reported receipt of messages related to health, nutrition, and parent-child activities; caregiver-reported engagement in the activities specifically suggested by callers)? Do impacts on implementation factors explain (mediate) any impacts on the primary outcomes?
5. Are effects of the program on hypothesized outcomes moderated by household nationality, child gender, or child age?

The impact evaluation found that the intervention had no detected impacts on many outcome measures, including parenting measures (e.g., parenting stress, parenting

self-efficacy, parent-child learning activities, caregiver responsiveness, and positive child discipline), and child developmental and behavioral outcomes. The intervention was found to reduce caregiver depressive symptoms by 0.11 of a standard deviation, although it had no detectable impact on caregiver anxiety. Caregivers in the treatment group also reported watching *Ahlan Simsim* more with their children.

A random sample of call recordings (*n* = 311 calls) were screened and assessed by NYU-TIES-trained coders for call quality on indicators of responsiveness and non-judgmental rapport. CHVs on the Audio-only, Phone-based RUL calls were rated as substantially more responsive and more likely to show non-judgmental rapport on the phone. In addition, higher scores on the non-judgmental rapport scale predicted lower caregiver depressive symptoms and mediated the relationship between the treatment and depressive symptoms (Rafla et al., 2022). Lastly, the authors explored whether treatment impacts varied by household nationality, child gender, child age, baseline social support, and found no robust evidence of treatment heterogeneity by these characteristics.

5. Methods

The primary goal of this cost-effectiveness evaluation is to deepen understanding of the estimated effects of the Audio-only, Phone-based RUL intervention and to inform future replication efforts. To estimate the costs to produce effects, we applied the ingredients method (Levin et al., 2018) to examine the resources provided to children and families through the intervention, as well as how the intervention compared to the control condition.

More specifically, we address the following research questions:

1. What resources are delivered through the Audio-only, Phone-based RUL intervention?
2. What is the cost of Audio-only, Phone-based RUL relative to receiving health- and nutrition-based calls?
3. What costs are borne by the delivering organization and what costs are borne by caregivers?

The ingredients method (Levin et al., 2018) was developed based on the economic principle of opportunity cost to reflect the value of all resources required to achieve an effect, regardless of who provides them. In this study, the principle of opportunity cost necessitates including the costs to caregivers for their time, as well as any other resources that would not appear in the delivering organization's expenditure records. We include these resources because they were required to deliver the intervention and thus could not be used for any other purpose. For additional support, these resources that were not financed by the delivering organization are also important to include in a cost-effectiveness study because they are key aspects of the intervention's theory of change and necessary to inform replication efforts.

The ingredients method also follows cost-accounting procedures to support replication and program improvement by describing the resources ("ingredients") used so that the qualities, quantities, and prices are identified separately. This method is widely recognized as a rigorous approach to estimating costs, and the method meets standards of quality for economic evaluation (Cost Analysis Standards Project, 2021). In this study, ingredients, or resources, include all the inputs for Audio-only, Phone-based RUL related to personnel, materials, training, facilities, and other inputs. Below, we describe the methods used to collect ingredients data, quantify the resources used, price the value of ingredients, estimate costs, and calculate the costs-effectiveness ratio.

This evaluation is a collaborative effort with teams from IRC, Sesame Workshop, NYU-TIES, and in addition to the team at the Center for Benefit-Cost Studies in Education (CBCSE) at the University of Pennsylvania. IRC adapted Audio-only, Phone-based RUL and delivered and monitored the implementation of the intervention. As a major service provider and evaluator of interventions to support refugee children, IRC monitors resources and costs related to their programming.

While the costs borne by IRC reflect most of the resources delivered to children and families (costs from "the provider perspective"), in a cost-effectiveness evaluation it is important to also consider other, external sources of inputs or ingredients to successfully deliver services with the aim of improving outcomes. The reasoning for this is to support a complete analysis of the resources used, as well as any variation

of those resources, to better understand effectiveness and to improve information for improvement and replication. Thus, the costs to deliver Audio-only, Phone-based RUL borne by IRC are reported below and supplemented with caregiver costs to participate in and deliver the intervention to children.

Ingredients Data Collection

IRC initially identified the ingredients for the study based on planning to deliver the Audio-only, Phone-based RUL intervention and data on the resourced IRC delivered were collected throughout implementation. Additional information on how resources were used across program activities was collected throughout implementation via monthly calls with the Jordan-based IRC program delivery team. These ingredients fell into several categories, including IRC staff, non-staff personnel (CHVs, CHV supervisors, monitoring and research assistant), travel, training, facilities, materials, and IRC operational support costs.

In addition to the costs IRC incurred to deliver the program, we also collected survey data on the time spent by caregiver to participate in and deliver the Audio-only, Phone-based RUL intervention. The survey included questions about time spent receiving phone calls, as well as the content of the calls to identify the contrast in resources between the Audio-only, Phone-based RUL and the health and nutrition content provided to the control condition. We also asked caregivers to report the frequency and duration of time spent on the program's educational activities, such as reading, playing games, or singing songs, which were encouraged by CHVs in the phone calls. We administered caregiver surveys at baseline and endline, and we surveyed caregivers in both treatment and control conditions. The caregiver survey is available in Appendix B.

Participant data were also collected by NYU and IRC on household participation and attrition in the treatment and control groups. These data provide valuable information related to dosage and actual resources received to estimate the cost of the observed effect.

Estimating Price Values of Ingredients

As described above, RUL was delivered by IRC and examined following their internal research and monitoring processes. IRC's cost data reflect actual prices (expenditures) incurred by the organization based on the local markets in the implementation context at the time of program delivery. As a U.S.-based organization, IRC expenditures are tracked and reported here in US Dollars. Where program resources were purchased in Jordanian dinars, IRC used an exchange rate of 1.41 USD for every 1 JOD.

To estimate the costs of caregiver time, we considered the context for the population served to identify the appropriate wage rate for the caregiver or to hire someone to provide similar services to the children. To understand the potential forgone wages experienced by caregivers to participate, we collected data on the origins or citizenship of the caregivers. The sample was a mix of Syrian refugees (55%) and Jordanian citizens (45%).

Employment opportunities for Syrian refugees in Jordan are limited. Starting in 2016, Syrian refugees were able to acquire work permits with the support of sponsors in certain sectors, such as agriculture, construction, and manufacturing (Krafft et al., 2018). Most of this work was informal, irregular wage work, which provided very little economic security and

stability. Employment opportunities worsened with the pandemic, where almost 60 percent of those living in Jordan reported losing income or work due to COVID-19 (3RP, 2022).

Despite having a significant proportion of female-headed households, only 6 percent of work permits went to women (UNHCR, 2021). A lack of transportation, culturally appropriate employment opportunities, and concerns for childcare arrangements were barriers for Syrian refugee women from applying for work permits.

When Syrian caregivers can work, we assume that they would be paid the average minimum monthly wage rate for foreign workers, 230 Jordanian Dinars (Krafft & Hannafi, 2022). Following the exchange rate discussed above, this is equivalent to $324 US Dollars in our analyses.

For Jordanian caregivers, we apply a similar minimum monthly wage rate of 260 Jordanian Diners in 2021(Krafft & Hannafi, 2022). Following the exchange rate, our analyses reflect $367 US dollars for the monthly wage for Jordanian caregivers.

To calculate hourly rates, we assume 160 hours per month (40 hours/week for 4 weeks) as full-time equivalent. Using this assumption, the minimum hourly rate for foreign workers in Jordan is $2.03 US dollars. The hourly rate for Jordanian caregivers is $2.29 US Dollars. As the caregivers' sample in the evaluation study was 45% Jordanian and 55% Syrian, we weight the overall hourly wage by 0.55 foreign worker's minimum wage and by 0.45 domestic worker's minimum wage.

We include a sensitivity test that values caregiver time using the CHV rate. This sensitivity test is important because the minimum wage rates may not capture the true opportunity cost for caregivers to participate in Audio-only, Phone-based RUL. The minimum wage rates may also not apply if CHVs are needed to deliver more of the intervention in the future. The hourly CHV rate is $4.11/hour. Given that this is likely an overestimate of the value of caregiver time, we consider this an upper bound test.

IRC materials for program implementation included cell phones and tablets for CHVs. Computer monitors and tablets were also purchased for activities outside of direct program implementation and are included under capital expenses.

Limitations

We report our cost estimates in U.S. dollars following guidelines from the USAID (Walls et al., 2020). This allows us to compare across programs and contexts with a standardized metric for costs, which is a necessary component to interpret cost-effectiveness ratios and inform greater learning about how to best serve children in humanitarian and global contexts.

There are also limitations in using U.S. dollars based on market exchange rates between the Jordanian dinar and the U.S. dollar, which does not consider the purchasing power of the Jordanian dinar. USAID recommends against using the purchasing-power-parity (PPP) exchange rates given that a PPP-adjusted cost would likely overstate the actual delivery cost. This is because a PPP-adjusted cost estimate would represent the costs as if Audio-only, Phone-based RUL was delivered in the U.S. For example, if RUL was delivered in the U.S., salaries for equivalent personnel would be higher than they are in Jordan, and thus the total cost of the program would be higher. It would be misleading to represent Audio-only, Phone-based RUL costs in PPP-adjusted U.S. dollars because the program would appear to cost far more than in the actual delivery context (Dhaliwal et al., 2013; Walls et al., 2020).

6. Observed Audio-Only, Phone-Based RUL Ingredients

Audio-only, Phone-based RUL was delivered in each CHV phone call along with health and nutrition content. The intervention was designed to be delivered via three 25-to-30-minute phone calls per month. Those calls were intended to include about seven to ten minutes on the RUL content. During implementation, CHVs completed about two phone calls per household per month (1,157 households with 13,185 total completed phone calls over six months). Phone calls were observed to be about 28 minutes on average with 8.5 minutes devoted to the RUL content. Table 2 below reports the differences between the design of the program versus the actual delivery of the program.

Given that the RUL content was delivered alongside health and nutrition content, we describe ingredients required for both components of program provided to the households in the treatment group. Appendix C lists the ingredients that were allocated in total with descriptions of each resource. This information goes beyond the ingredients used to estimate the cost of the treatment group program because the control condition also received CHV phone calls with the health and nutrition content. We provide this information to allow readers to observe the resources involved in the audio-only, phone-based home visiting intervention in total, as all the resources would be relevant to replicate what the treatment households received.

For the cost-effectiveness study, the cost estimate includes just the ingredients that were provided to the treatment households that were not provided to the control households. In other words, the costs relative to (or incremental to) the control. The ingredients of the treatment and control conditions are listed in Table 3. Descriptions for all ingredients (personnel, training for CHVs, facilities, and materials) are available in Appendix C.

We also provide additional information on CHVs and caregivers, both of whom are a) personnel, which are typically represent a significant share of a program's cost, and b) a required component and critical to the theory of change.

Table 2. Program Implementation, As-Designed versus As-Delivered

	Control		Treatment	
	As-designed	*As-delivered*	*As-designed*	*As-delivered*
Duration	6 months	6 months	6 months	6 months
Calls per month	3 calls	2 calls	3 calls	2 calls
Total calls over program duration	18 calls	13.2 calls	18 calls	11.4 calls
Minutes spent on RUL messages	N/A	N/A	7-10 minutes	8.5 minutes
Minutes spent on health and nutrition messages	10-15 minutes	16.5 minutes	10-15 minutes	16.5 minutes
Minutes spent on greetings and call summary	8 minutes	2.6 minutes	8 minutes	4 minutes
Total call length in minutes	18-23 minutes	20.6 minutes	32-43 minutes	26 minutes

Note. As delivered estimates are averages gathered from a random subsample of 311 recorded calls.

Table 3. Ingredients of Audio-Only, Phone-Based RUL Including Health and Nutrition Messages Across Study Arms

Treatment Ingredients	Control Ingredients
Personnel	
Caregiver time spent on health & nutrition messages and RUL messages	Caregiver time spent on health & nutrition messages
Contractual Staff (No benefits)	
Community Health Volunteer (CHV)	Community Health Volunteer (CHV)
Supervisors	Supervisors
National Staff (Full benefits)	
Personnel listed in Appendix C	Personnel listed in Appendix C
Training	
CHV training on health & nutrition messages	CHV training for health & nutrition messages
CHV training on RUL messages	
Facilities	
IRC office in Mafraq	IRC office in Mafraq
Materials	
Phones (Caregivers)	Phones (Caregivers)
Tablet with SIM card (CHVs)	Tablet with SIM card (CHVs)
Activity materials	
Other	
Capital Assets	Capital Assets

Note. This table reflects the total ingredients for the treatment and control groups. See the ingredients table in the appendix for descriptions.

Caregivers

In the treatment group, caregivers received phone calls from CHVs on RUL content and were encouraged to engage in RUL activities with their child. RUL activities include age-appropriate developmental activities that caregivers can engage with their children using basic household items such as plastic bottles, bottle caps, cups, etc. In addition, CHV treatment calls included a question asking about the caregiver's well-being and there was a focus on building positive and collaborative relationships through being attentive to caregivers' ideas and questions.

Audio-only, Phone-based RUL was designed for the CHV to deliver 3 calls per month for 6 months for a total of 18 calls. In practice, we observed CHVs providing about 2 calls per month on average over the course of the intervention. During these calls, 7-10 minutes was allocated for RUL topics on early child development and 3 minutes for a well-being check-in.

Community-Health Volunteers (CHVs)

Community-health volunteers were the means of program delivery. CHVs were responsible for recruiting families from their own communities to participate in the program. All CHVs completed an initial five-day online training, and CHVs in the treatment group received an additional five days of training on the RUL content. This additional RUL training included educating CHVs on the content of the calls, on building rapport with families over the phone, and on tablet and mobile device use. CHVs were of Syrian and Jordanian backgrounds and were responsible for recruiting families from their own communities to participate in the program.

CHVs held an average caseload of 31 families. When families dropped out of the program, CHVs would recruit new families, although only families enrolled during the baseline (November 2020 to February 2021) were included in the effectiveness analysis.

7. Exploring Treatment Contrast, RUL Implementation, and Caregivers' Time

As described above, Audio-only, Phone-based RUL was designed to provide content on early childhood development to caregivers with the goal of changing parenting practices and interactions with children. In the in-person RUL model, the trained RUL staff would demonstrate how to engage in early childhood development activities directly with the caregivers and their children, ask the caregivers to try activities during the visits, give them feedback on their interactions with children, and encourage caregivers to continue doing activities with children between home visits. The audio-only, phone-based model, however, required the CHVs to relay the information to caregivers, and relied on caregivers enacting the activities without CHV demonstration. Given that the audio-only, phone-based model required caregivers to spend time on phone calls with CHVs and enacting the activities between phone calls, in the caregiver survey we expected to see a strong contrast between families in the treatment and control conditions in length of time devoted to CHV calls and in time caregivers spent enacting RUL activities.

Our analysis captures caregivers' time as time spent on receiving phone calls and time spent doing early childhood development activities with children outside of the phone calls. IRC examined recorded calls and estimated that 8.5 minutes were devoted to the RUL content. Thus, we include this time to reflect the average amount of time caregivers spent on the phone relative to what they would have received in the absence of the RUL content. Table 4 shows the time allocation of the calls between the treatment and control groups.

The endline caregiver survey results showed no differences in time spent enacting early childhood development activities with children between the treatment and control families. More specifically, in response to a question asking whether CHVs encouraged caregivers to do educational activities with their children, nearly all respondents in both treatment and control groups responded yes (T: 97.7%,

Table 4. Time Allocation During Phone Calls

Call Section	Control – average duration	Treatment – average duration
Consent	12 seconds	13 seconds
Greeting	56 seconds	1 minute
Health messages	16.5 minutes	16.5 minutes
WHO messages	N/A	N/A
RUL messages	N/A	8 minutes 30 seconds
Closing	56 seconds	51 seconds
Other	34 seconds	1 minute 40 seconds
Total	**19 minutes 8 seconds**	**28 minutes 44 seconds**

Note. This table reports the time allocations of the treatment and control phone calls. The time allocations are taken from a random sample of 311 calls that were recorded and analyzed. See Rafla et al. (2022) for a detailed description of this procedure.

C: 96.7%). In addition, both groups reported similar time spent in educational or play tasks with their children (T: 33 minutes/day, C: 36 minutes/day).

There are several possible reasons why caregivers would respond similarly across treatment conditions. One option is that the control group received similar messaging, making the contrast between conditions very minimal. However, this potential reason does not reflect the random assignment design where CHVs were assigned to provide RUL content or not to provide RUL content. A second option could be other messaging that was provided to families in response to COVID quarantine requirements. Service organizations were also asked to deliver World Health Organization (WHO) messages with suggestions to keep children engaged during quarantine. Families could have remembered the WHO messages that preceded the RCT baseline in their survey responses. Third, caregiver survey respondents may have had poor recall because the endline survey was delivered two to four months after the intervention ended.

To explore these reasons, IRC examined call recordings and coded the content provided through 1) the treatment condition with RUL content and health/nutrition content, 2) the control condition with only health/nutrition content, and 3) WHO messages throughout both. IRC coded 130 CHV phone call recordings using a structured observation tool to record time spent on early childhood development content and health/nutrition content, and whether early childhood development was mentioned in any of the control calls or in treatment calls outside of the RUL content. The calls were randomly selected with 65 treatment calls and 65 control calls from the total sample of 311 recorded calls. Random selection was stratified by CHV to reflect variation among CHV calls.

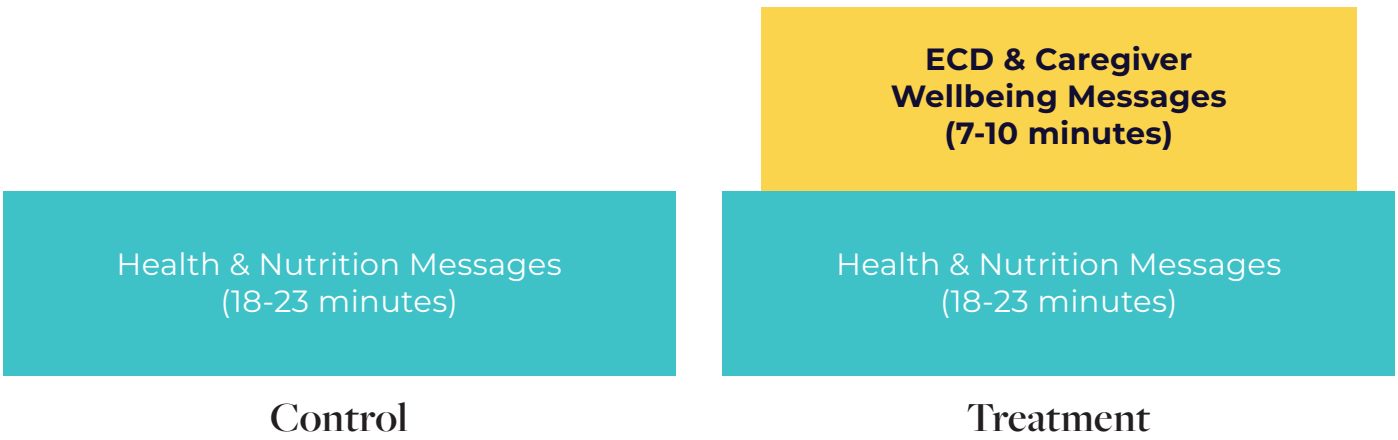
IRC found that the intervention was delivered as intended, with the control group only receiving health/nutrition content and the treatment group receiving health/nutrition and RUL content. In 2 of the 65 control calls coded in the content analysis, the CHVs and caregivers did discuss caregivers playing or doing educational activities with their children. In these two calls, it seemed that these topics came up when CHVs discussed immunization or nutrition for children. The CHVs framed these health topics as part of children's overall

growth and development and mentioned that caregivers could also play or do activities with children to support their development. This was a small percentage of calls (3.1%) and showed no indication of contamination. Rather, it seems likely that the respondents from the control group may not have understood or inaccurately responded to the endline survey question due to confusion or poor recall.

Given the finding that caregiver time spent on early childhood development activities was not different across treatment and control groups, the estimated cost to caregivers includes only time for the RUL component of the phone calls (8.5 minutes). Because the call length varied, as well as the time spent on RUL messaging, we also test the sensitivity of the results if the RUL content was slightly longer or shorter and find no difference in the results. Figure 2 below illustrates the observed contrast in resources between households in the treatment and control groups. The contrast is additive to other aspects of the intervention and can be classified as a supplemental service program (Bowden, 2022).

In the Results section below, we include a sensitivity analysis to explore how the costs borne by caregivers may change if caregivers respond to the treatment by increasing early childhood development activities in the home in future implementations. To test this assumption, we use the reported time treatment caregivers spent (33.3 minutes per day) on early childhood development activities as proxy for how RUL could change caregiver time in the future.

Figure 2. Observed treatment contrast between treatment and control groups



8. Provider Perspective Cost Estimation and Results

Methods

Following the ingredients method, IRC measured costs concurrently with implementation and the impact evaluation. All direct program resources used in the delivery of Audio-only, Phone-based RUL were tracked on a bi-monthly basis by IRC. The costs of these resources were allocated across four activities:

- **Operations Support and Management:** All fixed country- and regional-level costs, such as office rentals, HR, and procurement staff.
- **Remote Reach Up & Learn:** All time and effort on coordination, implementation, and training, on Audio-only, Phone-based RUL.
- **Shared Health costs:** Time and effort for resources that were shared between RUL and Health teams, such as CHV stipends. Note that allocating time to health and nutrition calls was to remove the health and nutrition content call costs from the RUL costs, not to calculate the discrete cost of the health and nutrition calls.
- **Research and all other programming:** All costs that were included to run a research program and all time and effort on programs that were not Audio-only, Phone-based RUL or health and nutrition content calls. Research costs are not included as ingredients.

Total IRC Spending

From March to September 2021, IRC allocated resources worth $126,110 to deliver Audio-only, Phone-based RUL during the 6-month implementation period. The costs to IRC are outlined in Table 5. IRC costs were divided among direct program costs (70%) and operations support (30%). This is standard for IRC programming, which averages ¼ - ⅓ of total project spending on operational support costs. Operational support costs include all resources required to support program implementation, such as country leadership, finance teams, and office rent and supplies.

The largest cost came from salaries from IRC's national staff. CHVs and their supervisors were also a substantial cost. CHV time amounted to around 24% of total IRC costs, which is expected for a remotely delivered program. Additionally, low oversight and remote delivery allowed for a lean program management structure and limited use of material resources compared to in-person programming. CHVs are considered incentive workers rather than non-staff personnel, and only receive life insurance benefits. If this role was delivered by salaried staff who received full benefits, we would expect to see total program costs rise significantly.

As a phone-based program, the cost of supplies and materials were quite low in comparison to other educational programs. Caregivers were encouraged to use resources already in their homes to facilitate child development. National-program-staff structures were also light; however, it is important to note that the RUL program leveraged existing health infrastructure and staff. If the program switched to in-person delivery or did not leverage existing health infrastructure, the size of the management team would likely need to expand, which would add to the direct costs.

Table 5. Detailed Costs to IRC: Operation Support and Direct Program Costs

Cost Type	Operation Support	Program	TOTAL
National Staff	$19,770	$48,240	$68,010
International Staff	$1,990	-	$1,990
Non-Staff Personnel & Contractual	$100	$35,070	$35,170
Capital Assets	-	$1,160	$1,160
Travel & Transportation	-	-	-
Office Rent & Expenses	$3,670	-	$3,680
Supplies & Materials		$3,490	$3,490
Overhead	$12,610		$12,610
TOTAL	**$38,150**	**$87,960**	**$126,110**

Note. Costs reflected in 2021 constant U.S. Dollars, rounded to the nearest ten. Estimates reflect IRC costs to deliver the program.

IRC Average Cost Results

The average cost per household was $110, including IRC's operational-support costs. The cost per RUL phone call per household was $10 on average. These costs are reflected in Table 6. It is important to note that the cost *per call* is highly dependent on the cost of CHV time and the number of calls CHVs can make to households per month. In future iterations of Audio-only, Phone-based RUL, if CHVs can make more calls per day each month to the same households, then the cost per call would decrease. Similarly, if CHVs can make more calls to more households in the same period, the cost per household would decrease.

Table 6. IRC Cost Per Household to Deliver Audio-only, Phone-Based RUL

Unit Information	Quantities	
Number of CHVs	55	
Number of Households	1,157	
Number of Months of HH Calls	6	
Total Household Calls on ECD	13,185	
Cost Drivers	CHV stipends, support/ICR, national staff	
	Program Delivery	TOTAL
Cost per Household	**$110**	**$80**
Cost per Call	**$10**	**$10**

Note. Costs reflected in 2021 constant U.S. Dollars, rounded to the nearest ten. Estimates reflect IRC costs to deliver the program. ICR = Indirect cost recovery.

9. Cost-Effectiveness of Audio-only, Phone-Based RUL

Our goal was to estimate the costs of Audio-only, Phone-based RUL corresponding to all the inputs that were used to serve families and to produce effects. Thus, we built on the costs identified by IRC described in Section 8 to also include the time caregivers spent on the calls with CHVs and implementing the RUL content.

As described above, the caregiver survey results showed a small difference in the time spent on calls (8.5 minutes) and no difference in time spent doing the RUL activities with children. Due to the low monetary value of parent time in this context, the estimated cost of this difference is <$10 per caregiver or household. Thus, the average cost per household is unchanged by the inclusion of caregiver time. When examined in total, we observed about 2 additional hours of caregiver time across the sample over the 6-month implementation period relative to the caregivers in the control condition, which equates about four additional dollars to the total cost estimate.

For replication or scale up purposes, it would be the case that decisionmakers should consider the full time required by caregivers rather than only the contrast that resulted in effects. To predict this time, we assume that caregivers in the treatment group spent the full 33 minutes per call as designed on the intervention. Over the course of 6 months, this time equates to around 6.6 hours, which would be valued at $140 per household.

We also examined the distribution of Audio-only, Phone-based RUL costs as they were borne by IRC and caregivers. Table 7 presents the distribution of weighted average costs per household borne by IRC (99%) and by caregivers (1%). Again, given the low value of caregiver time, this result is expected.

Photo credit: Sesame Workshop/Ryan Heffernan

We examine the sensitivity of the cost estimate due to the valuation of caregivers' time based on average wages among domestic and foreign workers in Jordan with minimum skill levels. In this analysis, we value caregivers' time using the hourly rate of pay provided to CHVs. The rationale behind this assumption is to understand how much the program would have cost if CHVs were to do the ECD activities with children instead of the caregivers. In addition, the CHVs were people from the Jordanian and Syrian community who may reflect similar levels of skill and background experiences as the caregivers. Thus, their wage may reflect the market value of caregivers' time.

Table 7. Distribution of Audio-Only, Phone-Based RUL Costs per Household

	Cost to IRC	Cost to Caregivers	Total Cost
Staff & Non-Staff Personnel	$70	< $10	$70
Materials & Equipment	< $10	$0	< $10
Other	< $10	$0	< $10
IRC Operation Support	$30	$0	$30
Total	**$110**	**< $10**	**$110**
Percentage of cost	**99%**	**1%**	

Note. Cost estimates are rounded to the nearest ten constant 2021 U.S. dollars to avoid false precision. Cost per household is weighted by the total number of households served. Due to rounding calculations may not add up exactly.

Table 8. Cost of Audio-Only, Phone-Based RUL – Sensitivity Analysis of Valuing Caregivers' Time at CHV Rate

Estimate Type	Cost
Audio-only, Phone-based RUL Total Program Cost	$134,190
Audio-only, Phone-based RUL Program Cost Per Household	$120

Note. Cost estimates are rounded to the nearest ten to avoid false precision and in constant 2021 U.S. dollars. Cost per household is weighted by the total number of households served.

CHVs were paid $21 US dollars per day and were expected to have 15 working days per month. CHVs worked 6 hours per day for five months and 4 hours per day during the Ramadan month. This translates to approximately 5.67 hours per day across 6 months. There were $2.30 benefits included to CHVs' daily rate. Using this assumption, CHV's hourly rate is calculated as $4.11 US dollars.

As shown in Table 8, after applying the CHV hourly rate to caregivers' time (change from $2.15/hour to $4.11/hour), the total costs increased to $134,190 and the average cost per household is $120 after rounding. These changes are small, and we interpret this as indication that the results are not very sensitive to valuing caregivers' time based on foregone wages or CHV pricing. However, if the program is replicated in other humanitarian settings, the value of caregivers' time may be quite different, which could result in larger changes in the costs of Audio-only, Phone-based RUL and the portion of costs borne by families.

Table 9. Cost-Effectiveness of Audio-Only, Phone-Based RUL Program on Parental Depressive Symptoms

Measure	
Effectiveness (SD) on parental depressive symptoms	0.11
Cost per household	$110
Cost-effectiveness ratio	$1,000

Note. Cost estimates are rounded to the nearest ten to avoid false precision and in constant 2021 U.S. dollars. Cost per household is weighted by the total number of households served.

As stated above, the randomized trial reports an average effect of 0.11 SD reduction in parental depressive symptoms (Rafla et al., 2022). Given that there were no other effects found in the study, we report cost-effectiveness using this effect. Table 9 shows cost and effectiveness of the Audio-only, Phone-based RUL program in reducing parental depressive symptoms. The average effect of RUL is 0.11 SD and the average cost per household is $110. The per-household cost of obtaining a one standard deviation gain in reducing parental depressive symptoms from the Audio-only, Phone-based RUL program is $1,000.

10. Conclusion

This report presents the cost-effectiveness component of the Audio-only, Phone-based RUL evaluation with an economic perspective and research on costs. We examined the resources required in delivering the Audio-only, Phone-based RUL program in a humanitarian context in Jordan during the COVID pandemic year of 2021. This work contributes to the evaluation literature on RUL programs as one of the few rigorous cost analyses conducted alongside a causal impact evaluation.

Based on finance management data and on survey responses regarding implementation, we observed about 8.5 minutes on average were spent discussing RUL components during each call. This was about 30% of the total time spent on the calls. Relative to the control, which includes about 20-minute phone calls focused on health and wellness, the resources caregivers received through Audio-only, Phone-based RUL are valued at $110 per household.

Importantly, these finding appear to be robust to sensitivity tests regarding the wage rate applied to caregiver time and the time parents and CHVs spent on RUL content on the calls. When these results are combined with the effectiveness study, the program appears to have had a potentially efficient effect on parent well-being. Future work would benefit the field with additional examination of the program's required resources and the mechanisms underlying the effects.

It is important to recognize caregivers' time beyond its monetary value. The evaluation's findings, indicating no impact on parenting measures and child developmental and behavioral outcomes, may be associated with the minimal time caregivers spent receiving RUL components over the phone. Additionally, the lack of treatment contrast in caregivers' time allocated to engaging in child developmental activities with their children, as observed from the caregiver survey, may contribute to these results. This underscores the significance of considering all resources in delivering the program. These resources, which may not be captured in the program budget sheet or expenditure record, provide a comprehensive understanding of the program's effectiveness in influencing child developmental outcomes.

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Appendix A. RUL Study by Baseline Year with References

Trial	Country	Author(s), Publication Year	Baseline Year
1	Bangladesh	Hamadani et al., 2006	2000
2		Hamadani et al., 2019	2014
3		Mehrin et al., 2022	2015
4		Tofail et al., 2023	2015
5		Pitchik et al., 2021	2017
6		Hossain et al., 2023; Tofail et al., 2013	(est.) 2009
7		Nahar et al., 2012a; Nahar et al., 2012b; Nahar et al., 2014	Not specified
8	Brazil	Brentani et al., 2021	2015
9	China	Sylvia et al., 2018	2014
10		Sylvia et al., 2022	2014
11		Heckman & Zhou, 2021; Zhou et al., 2021; Zhou et al., 2022a; Zhou et al., 2022b; Zhou et al., 2023	2015
12	Colombia	Andrew et al., 2018; Attanasio et al., 2014	2010
13		Attanasio et al., 2022; Bernal et al., 2023	2014
14	India	Andrew et al., 2020	2013
15		Grantham-McGregor et al., 2020; Megir et al., 2023	2015
16	Jamaica	Gertler et al., 2014; Gertler et al., 2021; Grantham-McGregor et al., 1991; Grantham-McGregor et al., 1997; Walker et al., 2000; Walker et al., 2011; Walker et al., 2022; Zhou et al., 2023	1986
17		Smith et al., 2023	2019
18		Powell & Grantham-McGregor, 1989	(est.) 1981
19		Walker et al., 2004; Walker et al., 2010	(est.) 1999
20		Baker-Henningham et al., 2005; Powell et al., 2004	Not specified
21		Gardner et al., 2005	Not specified
22	Jamaica, Antigua, St. Lucia (pooled)	Chang et al., 2015; Walker et al., 2019	2012
23	Madagascar	Galasso et al., 2019	2014
24	Peru	Araujo et al., 2021	2013

Note. This table reports the authors and publication years for studies referenced in Table 1 in the text.

Appendix B. Caregiver Survey Questionnaire

1. A few times per month, did you receive a call from the CHV or someone from the International Rescue Committee? **Y/N**
2. On those calls, did the CHV encourage you to do the following health activities, such as healthy eating, exercising, breastfeeding, visiting doctors, family planning or getting vaccines for children? **Y/N**
3. If yes, after the call, can you tell U.S. how many days you spent on those health activities tasks on average per week? **[ ] days**
4. How many hours did you spend on those health and nutrition activity tasks on average per day?

    a) No time
    b) 10-20 minutes
    c) 21-40 minutes
    d) 41-60 minutes
    e) Between 1-2 hours
    f) Other (specify)

5. On those calls, did the CHV encourage you to do educational activities, such as read, play games, or sing songs with your child?
6. If yes, after the call, can you tell U.S. how many days you spent on those educational or play tasks on average per week? **[ ] days**
7. How many hours did you spend on those educational or play tasks on average per day?

    a) No time
    b) 10-20 minutes
    c) 21-40 minutes
    d) 41-60 minutes
    e) Between 1-2 hours
    f) Other (specify)

Appendix C. Ingredients of Audio-Only, Phone-Based RUL Including Health and Nutrition Messages

Ingredients	Description
Personnel	
Caregivers	Receive the phone calls from the CHVs and conduct the activities with their children
Contractual Staff (No benefits)	
Community Health Volunteer (CHV)	Recruit families and caregivers from their social networks. They place phone calls (2x/month) with caregivers, instructing them on activities
Supervisors	Manage CHVs
Referral Staff	
National Staff (Full benefits)	
Senior RMEL (Research, Monitoring, Evaluation and Learning) Manager	Contributes to designing and building the methodology and tools design with NYU research team, and sensitizes the methods to culture, gender and children age group; Oversees the implementation of selected research methods and data collection tools (surveys); Ensures adherence to the general research design, sample selection, data management and analysis; Manages the meetings with stakeholders and partners who are part of the research process, and ensure that the research scope is in sync with the vision and strategies; Ensures all data protocols are followed in order to ensure high quality data; Manages data collection from the household or individual level to final, clean dataset delivered to NYU; Manages the research budget and spending plans; Communicates regularly with the NYU and education technical unit
Community Health Manager	Develops and reviews the health content and curriculum; Supervises the CH officers and the workflow; Supports in the communication between ECD and community health team
Community Health Officer	Trains the CHVs on the health content; Supervises the CHVs and ensure the targets are reached; Conducts calls observations with the CHVs and caregivers on health content
Monitoring and Research Assistant	Supervise IRC enumerators and supervisors; Ensure they reach target on daily basis; Review the data collection tools, and translate it to Arabic, in addition to ensure that its amended and uploaded on KoBo; Train the enumerators on different data collections tools; Conduct data quality check; Follow-up on the uploaded data and assign the sample of families to the enumerators; Assist with data analysis; Ensure the data are organized and uploaded to the server

ECD Coordinator	
ECD Senior Operations Assistant	
ECD Technical Manager	
ECD Drivers	
ECD Driver-Monitoring-Mafraq	
ECD Driver-Monitoring – Irbid	
ECD Technical Lead	
Research Officer	
Senior Health Officer	
Content Coordinator	
MEAL and research team and Senior Officer	
National Staff Benefits 39%-ECCD National Staff	
National Staff Benefits 39%-Health National Staff	
Training	
CHV training	5-day RUL-specific training held via phone and online. CHV turnover is approximately 1 per week; training costs are higher than planned. All training materials were remotely delivered and uploaded onto tablets.
Facilities	
IRC office in Mafraq	Used to store tablets when not in use. Not used for CHV phone calls.
Materials	
Activity materials	Program activities are designed to be conducted by caregivers at home with readily accessible materials such as a blanket, water bottle, cloth ball, necklace, plastic bottle caps, rattle bottle, blocks, stacking objects, doll, an "object to pull", drawing material (i.e., pen & paper)
Phones (Caregivers)	Phone is required to receive calls from CHVs. Parents are not provided a phone from RUL.
Tablet with SIM card (CHVs)	IRC provides tablets and SIM cards for CHVs. IRC pays data and phone bill cost per tablet.
Other	
Capital Assets	Screen monitors and tablets. Each CHV had a tablet, no special operating system required.

Note. This table reflects the total ingredients for the treatment group who received both RUL content and health and wellness messages. These data were collected during the delivery of Phone-based RUL in Jordan.

GENEROUS SUPPORT FROM