

Equality for Girls' Access to Learning (EGAL)

Democratic Republic of Congo, 2020-2023
Research Study



Evaluation Report May 2023



informed
INTERNATIONAL



In partnership with
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EXECUTIVE SUMMARY

Equality for Girls' Access to Learning (EGAL) in the Democratic Republic of Congo (DRC) was implemented by World Vision in partnership with Make Music Matter (MMM) and local, provincial and national education, gender and social service ministries. The program occurred in the two districts of Dibaya and Kananga in the Kasai-Central province from 2020 to 2023.

Within EGAL, MMM implemented the Healing in Harmony (HiH) approach. Healing in Harmony addresses psychosocial trauma as a barrier to learning for vulnerable girls and young women between the ages of 8 and 18 years who were survivors of trauma and gender-based violence and may be in or out of school. Healing in Harmony positions music as an integral part of a community-driven, holistic healing model addressing mental health and psycho-social stress (MHPSS). Working with professional psychologists and music producers, participants participate in therapy while writing, recording and producing songs about their emotions and experiences. Based on cognitive behavioural therapy (CBT), the program helps participants begin the healing process by verbalizing and processing trauma through music.

This research initiative used a step-wedged design and included 438 girls who completed the HiH program and follow-up interviews. Measures of depression, anxiety and self-esteem were examined during the program and after completion of the program. In addition, the research examined how changes in these mental health and well-being measures correlated with access to education. Generalized estimating equations were used to estimate changes in mental health and well-being (MHWB) outcomes over time.

There is little research on MHPSS outcomes in fragile contexts such as the DRC, given the difficulty of data collection in this context. In addition, conducting research on a population that has suffered so greatly is an ongoing challenge to ensure that recounting trauma and hardship does not cause additional struggle. This research study successfully gathered and analyzed program data, school records and child and caregiver interviews to provide insights into the lived experiences of young girls taking part in the HiH program in Central-Kasai province, DRC. The analysis allowed program staff to explore questions about changes over the life of the program and sustained impact after the program closed.

The research study found significant improvements in MHPSS outcomes as measured by depression and anxiety, providing robust evidence that program participants experienced changes in their MHWB outcomes over the course of the program from pre-test to post-test. This decrease in depression continued after completing the program, with significantly fewer participants screening

positive for depression after participation in the program, suggesting a delayed response to the program.

In comparison, the prevalence of anxiety decreased significantly from the pre-test to the post-test. Decreases in anxiety did not persist after the completion of the program. This likely represents an increase in anxiety as a result of the increased food insecurity within the region, thus showing that anxiety levels are sensitive to contextual changes.

Self-esteem increased significantly over the period of the program for Cohort 5 but also significantly increased for Cohorts 1-3 over the same period, even though participants were no longer in the program. After controlling for grade, socio-economic status (SES) and district, participants in Cohort 5 had a significantly greater gain in self-esteem than their Cohort 1-3 peers over the same period, but the gain was quite small (two points on a 30-point scale).

This is an encouraging finding that the program positively influenced participants' self-esteem. Since this measure was only assessed during Informed International's data collection, examining the program's lasting effects is impossible, but this is a suggestion for future research.

The research study also examined the relationship between MHPSS outcomes and access to education. Within the research sample, there were high rates of enrolment (99.8 per cent) and attendance (91.8 per cent, on average) which left little room for improvement over the life of the program and prevented the research team from observing any significant changes in education access because of the program.

There was an observed improvement in school attendance from 90.1 per cent at the pre-test to 94.7 per cent at the post-test, suggesting that participation in the program encouraged school attendance. However, there was no correlation between MHPSS, well-being, self-esteem and education attendance. The research was limited in the relatively high and unvaried attendance rates observed among program participants.

Overall, the findings of this research are positive, suggesting that the MHPSS outcomes increased over the program's life. Further research is needed to understand the relationship between education access and the program. At this time, no significant difference was observed in education access over the life of the program. This is due to a lack of variation in school attendance (participants already had very high school attendance rates) rather than a lack of correlation between the program and rates.

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LIST OF ACRONYMS

CBT	Cognitive Behavioral Therapy
CoH	Channels of Hope
DRC	Democratic Republic of Congo
EGAL	Equality for Girls' Access to Learning
HiH	Healing in Harmony
MHPSS	Mental Health and Psycho-Social Stress
MHWB	Mental Health and Well-Being
MMM	Make Music Matter
PTSD	Post-Traumatic Stress Disorder
SDQ	Strengths and Difficulties Questionnaire
SGBV	Sexual/Gender-Based Violence
UL	Unlock Literacy
WG-SS	Washington Group Short Set on Functioning
WV	World Vision

INTRODUCTION

This evaluation report outlines the research study results for World Vision's Equality for Girls' Access to Learning (EGAL) program in the Democratic Republic of Congo (DRC).

PROJECT DESCRIPTION

Equality for Girls' Access to Learning was implemented by World Vision in partnership with Make Music Matter (MMM) and local, provincial, and national education, gender and social service ministries. The program took place in the districts of Dibaya and Kananga in the Kasai-Central province from 2020 to 2023.

The program aimed to reduce barriers that prevent girls from accessing quality education by enhancing agency, resiliency and independent decision-making. The program invested in coordinated, quality, gender-responsive and conflict-sensitive education systems through:

1. Increased equitable access to quality, inclusive, safe, gender-responsive education and learning for vulnerable children and youth, particularly girls, in primary and secondary education.
2. Improved provision by national, provincial and local authorities for quality, inclusive, safe and gender-responsive education and learning services for vulnerable children and youth, particularly girls.

While the broader project aimed to reach 600,000 people, the research focused on those who participated in MMM's psycho-social Healing in Harmony (HiH) program, which aimed to reach 2,520 girls, 484 boys and at least 100 female caregivers from 22 primary schools and two secondary schools.

Healing in Harmony addresses psychosocial trauma as a barrier to learning for vulnerable girls and young women between the ages of 8 and 18 years who were survivors of trauma and gender-based violence who may be in or out of school. Healing in Harmony positions music as an integral part of a community-driven, holistic healing model addressing mental health and psycho-social stress (MHPSS). Working with professional psychologists and music producers, participants participate in therapy while writing, recording and producing songs about their emotions and experiences. Based on cognitive behavioural therapy (CBT), the program helps participants begin the healing process by verbalizing and processing trauma through music.

The HiH Program has six stages¹, as shown in Table 1.

Table 1 Six Stages of the Healing in Harmony Program

STAGE	FOCUS	DESCRIPTION
1	Introduction/ Familiarization	Stage 1 focuses on building community within the group of participants, connecting people from different backgrounds. The program facilitators (psychologist and music producer) also orient participants to the program model.
2	Relaxation	Through a few sessions, participants are guided through body movement aligned to music such as hand clapping and foot tapping. In doing so, participants become aware of their physiological state, develop more focus, and increase the efficiency of the brain in processing information.

¹ Adapted from Cikuru, J., Bitenga, A., Balegamire, J. B. M., Salama, P. M., Hood, M. M., Mukherjee, B., Mukwege, A., & Harlow, S. D. (2021). Impact of the Healing in Harmony program on women's mental health in a rural area in South Kivu province, Democratic Republic of Congo. *Global mental health* (Cambridge, England), 8, e13. <https://doi.org/10.1017/gmh.2021.11>

STAGE	FOCUS	DESCRIPTION
3	Verbalization	In stage 3, artists talk about their experiences without judgement. The group provides an opportunity for the artist to look at their problems in a different way with people who respect them and their opinions. The psychologist helps them process their traumatic experience with the goal of creating a more optimistic and positive mind with which to face daily life challenges.
4	Song Writing	Artists begin writing songs to tell their stories to the world. Composing lyrics helps the artists to express and process their emotions. Lyric analysis provides them an opportunity to identify song lyrics that may correlate with their experience.
5	Rehearsing/ Recording	Songs are rehearsed and recorded in Stage 5. Using professional recording services, this stage allows participants to see their final creation. This is often a very exciting stage as the final product is a point of pride and improves participants' self-confidence and self-esteem.
6	Dissemination	Program participants perform their songs for public community concerts. In addition, CD recordings are shared with community members through local radio, television, international streaming, and digital storefronts. This stage is important for advocacy and is designed to help promote community reintegration. Listening to their songs on their local radio and performing in community concerts gives the artists social recognition, improves their dignity, and is a critical stage in the healing process.

The six stages of the HiH program are usually implemented in four-month cycles. However, the EGAL project needed to compensate for time lost due to COVID-19 and compressed the cycle into three months. As the fourth month of HiH is traditionally reserved for the post-production of the music and a community concert, the EGAL project formulated group concerts for combined cohorts to make up for lost time.

Five cohorts of students participated in the HiH program within the EGAL project. The timelines for each cohort were as follows:

- Cohort 1: April 2021 to August 2021
- Cohort 2: October 2021 to December 2021
- Cohort 3: April 2022 to June 2022
- Cohort 4: August 2022 to October 2022
- Cohort 5: November 2022 to January 2023

Program participants were identified after a large-scale community sensitization initiative, during which 1,902 community members participated in awareness sessions. Community sensitization activities reached school authorities, parent committees in the target schools, students in the target schools and parents of the students in the schools. World Vision staff identified program participants based on conversations with these community groups². Given the nature of World Vision programming, program participants may have taken part in or been exposed to (through community or family structures) additional World Vision programming. Other World Vision programming that took place at the same time as the HiH program in the study areas include:

- **Channels of Hope (CoH):** The CoH project model recognizes that faith leaders are often among the most influential members of a community. Their benefits and values can inspire entire communities to care for and love one another. Without proper information and insight, the misunderstandings of faith leaders can inadvertently

² There were some statements that children were 'screened' before participating in the program but despite several requests for further details regarding the selection process, the evaluation team was unable to identify a selection process for participation outside of these awareness sessions.

promote stigma and discrimination. World Vision implemented the CoH project model with 110 faith leaders in EGAL through a 'Training of Trainers.' These leaders trained 550 other faith leaders to promote gender and protection using faith texts. Related to the goals of EGAL, this project fought gender discrimination and promoted equal access to education opportunities through the church community.

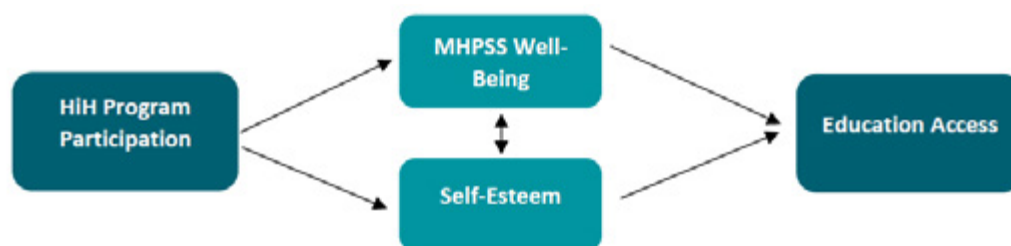
- **MenCare:** World Vision's MenCare project trained 40 men as MenCare champions within the programming communities. These champions completed training modules on gender, sex, power, identity and understanding violence and its impact on the education of young girls. These champions facilitated men's groups to promote gender equality in the home and prevent child marriage.
- **Unlock Literacy:** The Unlock Literacy project model was implemented in 20 of the 22 program target schools. Unlock Literacy is a school-level intervention that ensures children in the early grades of primary school learn to read. Through a multi-pronged approach, the program builds the skills of teachers with child-focused methods to support reading and literacy skills at school, provides parents with tools and tips to foster literacy and learning at home, and provides community support to engage all readers in fun community reading activities outside of school. Similar programming from Save the Children has shown some positive impacts on school attendance in past studies³.

As described, these programs likely complimented the efforts of the EGAL project. Exposure to these program models was measured during the research initiative and is further explored in the analysis.

RESEARCH PURPOSE AND SCOPE

The research aimed to understand better the relationship between HiH programming, MHPSS outcomes and access to education for girls affected by trauma and sexual and gender-based violence (SGBV) in the two programming communities in Kasai-Central province.

While the main objective was to examine the programming's impact on access to education, the research also examined the potential pathways that link HiH programming, mental health and psycho-social stress, well-being, self-esteem and access to education, aligned with World Vision's proposed theory of change underpinning the EGAL program model.



This research builds upon a previous impact assessment of the HiH program on women's mental health, which found that HiH was associated with significant improvement in women's mental health that was sustained up to six months post-completion of the program⁵. As such, this research examines the same relationship between program participation, MHPSS and well-being but among child participants (rather than adult women) and adds the components of self-esteem and education access, aligned to World Vision's EGAL program theory of change.

³ Dowd, A., Friedlander, E., Guajardo, J., Mann, N., and Pisani, L. (2013). Literacy Boost Cross Country Analysis Results. Save the Children.

⁴ The research study did not ask participants about their trauma or experience of SGBV, however, the program participants were selected by World Vision, in partnership with the community, based on exposure to SGBV.

⁵ Cikuru, J., Bitenga, A., Balegamire, J. B. M., Salama, P. M., Hood, M. M., Mukherjee, B., Mukwege, A., & Harlow, S. D. (2021). Impact of the Healing in Harmony program on women's mental health in a rural area in South Kivu province, Democratic Republic of Congo. *Global mental health* (Cambridge, England), 8, e13. <https://doi.org/10.1017/gmh.2021.11>

CONTEXT

Healing in Harmony was implemented in two districts, Dibaya and Kananga, in the Kasai-Central province (highlighted in red on the map in Figure 1) of DRC.

Kasai-Central province is known for its chronic underinvestment and ongoing gender crisis. Women take on agriculture responsibilities, the main form of subsistence, and carry the undue burden of unpaid labour within households.

In 2016, violent conflict broke out in the DRC's Kasai provinces (Kasai and Kasai-Central). The source of conflict was a local dispute over a political nomination between Chief Jean-Prince Pandi, designated as Chief Kamuina Nsapu by the ruling family and the provincial and national governments, who imposed a different candidate.



Figure 1 Map highlighting Kasai Central Province, DRC

In response to JP Pandi's anti-government speeches and his mobilization of local youth to fight the state, he was killed by government security forces on August 12, 2016. His killing led to additional uprisings and attacks targeting state officials and security forces, often referred to as the Kamuena Nsapu conflict. Intense fighting took place throughout Kasai-Central province until June 2017 and amplified inter-ethnic tensions between Luba-speaking groups and ethnic Chokwe, Pende and Tetela. Tensions remained high in the areas with low-grade conflict, which continued until early 2019.

The conflict caused more than 3,300 deaths and, at its peak in 2017, up to 1.4 million internally displaced persons (IDPs)⁶. The insecurity and destruction of more than 400 schools meant that hundreds of thousands of children saw their schooling disrupted for up to two years⁷. Sexual and gender-based violence was common even before the conflict but spiked as rape and SGBV were commonly used as tactics of war. While many IDPs never returned due to ongoing ethnic tensions, those that did face ongoing effects of trauma, food insecurity and instability⁸.

A 2019 assessment of the Kasai conflict carried out by Mercy Corps found that the conflict was a collection of different conflicts at different levels, making for a complex and fragile context. The assessment went on to describe an ongoing sense of insecurity, restriction of movement and extreme impoverishment in the area, stating, "many of the fundamental problems that contributed to the conflict – chronic underdevelopment, political power struggles, the numerous localized conflicts – remain unresolved and will require targeted attention to prevent conflict from recurring."⁹

In 2020, the province, like the rest of the world, struggled with the COVID-19 pandemic. To prevent the spread of the virus, classes were suspended several times. To catch up after the school closures, students were told to attend school during the rainy season (during which school is usually adjourned due to the lack of shelter) and for longer hours.

⁶ UN Human Rights Council (2018). "Situation in Kasai: Report of the United Nations High Commissioner for Human Rights,"

⁷ UNICEF (2017). DR Congo: Children's access to education under threat from ongoing violence in Kasai region. <https://www.unicef.org/press-releases/dr-congo-childrens-access-education-under-threat-ongoing-violence-kasai-region>

⁸ Human Rights Watch (2019). Girls' Lives Shattered by Attacks on Schools in DR Congo during Kasai Conflict.

⁹ Mercy Corps (2019). Kasai Conflict Assessment: Current Dynamics & Potential Interventions. https://www.mercycorps.org/sites/default/files/2020-03/Kasai_conflict_assessment.pdf

The project reported¹⁰ a high number of cases of rape and domestic violence due to the idleness of children during the COVID-19 pandemic. About 624 cases of rape of minors were recorded in the three health zones of Kasai-Central province between 2021 and 2022. Discouragingly, there were not enough magistrates to prosecute the perpetrators of these crimes, as magistrates had left the jurisdiction during the COVID-19 pandemic due to particularly high rates of the disease.¹¹

The confluence of prolonged violent conflict, rampant poverty, gender inequity, teacher strikes and food insecurity, amplified by the COVID-19 pandemic, has made the children in Kasai-Central particularly vulnerable. The 2022 Humanitarian Needs Overview Report indicated that 100,000 children remain in need in Kasai-Central province. It was also reported that SGBV incidents are significantly higher in the province of Kasai-Central than in other areas of the country, with 19,167 cases, estimated at nearly 26 per cent of the total cases across the 26 provinces in the DRC.¹²

RESEARCH QUESTIONS

Aligned to the purpose and scope, the research study sought to answer the following questions and sub-questions:

1. To what extent have program participants experienced changes in their MHWB outcomes during the program?
 - a. Did observed changes in MHWB differ between ages, districts, socio-economic status or disability status?
 - b. To what extent were changes in MHWB sustained after completing the program? Does this change based on the length of time since completing the program?
2. To what extent have program participants experienced changes in their self-esteem over the life of the program?
 - a. Did observed changes in self-esteem differ between ages, districts, socio-economic status or disability status?
 - b. To what extent were changes in self-esteem sustained after completing the program?
3. How has program participants' participation in formal education (as measured by school enrolment and attendance) changed over the life of the program?
 - a. Did observed changes in enrolment or attendance differ between ages, districts, socio-economic status or disability status?
4. Is a participant's MHWB or self-esteem correlated with differences in accessing education?
 - a. Did changes in MHWB, self-esteem or access to education differ based on participation in or exposure to World Vision project models (Channels of Hope, Unlock Literacy or MenCare)?

Note that the disaggregations above were carried out where possible, given the research design described in the following section. For example, the program data provided by HiH did not have information on socio-economic status or disability. Therefore, the team was unable to disaggregate that data on disability status.

¹⁰World Vision Canada, EGAL Year 2 Project Report. 13 May 2022.

¹¹ <https://www.radiookapi.net/2021/11/22/actualite/societe/kasai-central-environ-624-viols-sur-mineures-repertoires-depuis-le>

¹² OCHA (2022). Global Humanitarian Overview Report: DRC.

RESEARCH METHODOLOGY

STUDY DESIGN

The research study occurred from September 2022 to May 2023, with Informed International data collection in October 2022 and January 2023. The study design considered this timeline in relation to the Cohorts. As shown in Figure 1, the five cohorts in the program participated in program activities at varying periods between April 2021 and February 2023. Make Music Matter pre- and post-test data for all program participants was provided to the research team. The time at which this pre- and post-test data was collected at periods is shown by the green bars in Figure 2. In addition to the MMM data, Informed International collected additional data from a sample of participants from all five cohorts. This data collection took place in October 2022 and January 2023.



Figure 2 Timeline of Cohorts and Research Data Collection

Changes in outcomes of interest were measured using the MMM data collected from the pre-test and post-test for cohorts 1-3. Changes in outcomes were measured using MMM's pre-test and Informed's post-test for Cohort 4. Cohort 5 used Informed's pre-test and Informed's post-test data.

Among a subset of participants identified and followed longitudinally by Informed International, learners were re-assessed in October 2022 and January 2023. This allowed for the research to examine how changes observed over the life of the program persisted or dissipated after the end of the program.

DATA SOURCES

This research study utilized existing data to the greatest extent possible, gathering new data only when needed to answer the research questions and complete data collection for Cohorts 4 and 5. Given this, the data sources used for this research are best thought of in two buckets: MMM program data (carried out for all program participants at green points in Figure 1) and Informed International research data (gathered at red points in Figure 1 among a subset of program participants). These two buckets of data are described in more detail as follows:

MAKE MUSIC MATTER PROGRAM DATA

At the start and end of each HiH program, MMM staff assessed all participants (children and adults) using a pre- and post-test. Depending on the age of the program participant, the pre- and post-tests include measures on depression, anxiety and trauma using the following tools:

1. Birlerson Depression Self-Rating Scale for Children (8- 14-year-old)
2. Hopkins Symptoms Checklist - Anxiety (10 questions for 8- 14-year-olds)
3. Behavioural checklist for children
4. Harvard Trauma Questionnaire for Adults
5. Hopkins Symptom Checklist HSCL-25 (Adults)

The raw data from these pre- and post-tests were provided to Informed International. The datasets were cleaned and merged across cohorts for the analysis presented in this report.

INFORMED INTERNATIONAL RESEARCH DATA

Informed International had the opportunity to build upon the survey tools used by the MMM program team and add additional measures, responding to the interest of the program team and the research goals. Given this, Informed International added two survey constructs to the quantitative survey tools used by MMM:

Self-Esteem: Measured by Rosenberg's Self-Esteem Scale¹³, a 10-item scale that measures self-worth by measuring positive and negative feelings about the self.

Strengths and Difficulties Questionnaire (SDQ): A brief emotional and behavioural screening questionnaire for children and young people. The tool can capture the perspectives of children and young people, their parents and teachers.

In addition to the child quantitative survey, Informed International created a quantitative caregiver survey, a secondary data collection tool for school attendance records and qualitative survey tools. For the qualitative work, the team followed 14 individuals from October 2022 to January 2023 to document their experiences and reflections on the program and produce 14 case studies. These case studies included two psychologists, four male participants and eight female participants. Respondents were asked questions regarding their family situation, causes of trauma, school environment, how the HIH program affected them and how the program could potentially be improved.

A summary of the data available for the research is provided in Table 2 and specifies who carried out the data collection. Note that for clarity, the team uses the term 'MMM Tools' to refer to the tools MMM used as part of the programming. The team also uses the term 'Informed Tools' to refer to the set of research survey tools that Informed used during the October and January data collection periods (child quantitative survey, caregiver quantitative survey, secondary data collection and qualitative surveys).

Table 2. Cohort and Data Collection Timelines

Cohort	HiH Pre-Test	HiH Post-Test	Informed Data Collection 1 (Oct 2022)	Informed Data Collection 2 (Jan 2023)
#1	April 2021 <i>MMM Tools</i>	August 2021 <i>MMM Tools</i>	13.5 months post program <i>MMM Tools + Informed tools</i>	17 months post program <i>MMM Tools + Informed tools</i>
#2	Oct 2021 <i>MMM Tools</i>	Dec 2021 <i>MMM Tools</i>	9.5 months post program <i>HiH Tools + Informed tools</i>	13 months post program <i>HiH Tools + Informed tools</i>
#3	April 2022 <i>MMM Tools</i>	June 2022 <i>MMM Tools</i>	3.5 months post program <i>MMM Tools + Informed Tools</i>	7 months post program <i>MMM Tools + Informed Tools</i>
#4	August 2022 <i>MMM Tools</i>	October 2022 <i>MMM Tools</i>	0 months post program <i>Informed Tools</i>	3.5 months post program <i>Informed Tools</i>
#5	Nov 2022 <i>MMM Tools</i>	Jan 2023 <i>MMM Tools</i>	-3 months post program <i>Informed Tools</i>	0 months post program <i>Informed Tools</i>

The survey was developed in English and then translated into French and Tshiluba, equipping the enumerators to conduct the survey in the language most comfortable for the girl. All surveys were collected by enumerators trained by Informed International staff and passed quality checks. Approximately 10 per cent of the interviews were used to test inter-rater reliability, where two enumerators simultaneously recorded responses of one child respondent. Long one-way ANOVA techniques were used to calculate the intra-class correlation within pairs of assessors for a measure of reliability. The results of this analysis are presented in Annex A.

¹³ Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press. Full Survey Tool available here: https://fetzer.org/sites/default/files/images/stories/pdf/selfmeasures/Self_Measures_for_Self-Esteem_ROSENBERG_SELF-ESTEEM.pdf

ANALYSIS

Data was organized and pre-cleaned in Microsoft Excel, with further cleaning and analysis carried out using STATA. Where summary indices were created, steps were taken to ensure that the constituent pieces of each index were placed on a comparable scale before combining.

Summary statistics were used to describe the data. In some cases, the average may not summarize the data well if, for example, outcome variables are not normally distributed, as is often the case for social or emotional measures. This report highlights those cases and presents a histogram to represent the abnormal distribution more accurately.

Statistical inference is used for disaggregations, comparisons and relationships that generalize from a sample to a larger population. To maximize clarity, this report presents disaggregations, comparisons and relationships found to be statistically significant with at least 95 per cent confidence. In most cases, t-tests and regressions were used to evaluate statistical significance and the average relationship between variables. Regression models were fitted using generalized estimating equations, which allowed for within-group correlation structure for panel-level data (repeated measures). A Poisson distribution model was used for dichotomous outcomes, whereas a Gaussian model was used for continuous outcomes.

SAMPLING

PROGRAM POPULATION

The overall program population for HiH had a wide range of participants in terms of age, with variations in the age ranges across the cohorts. A summary of the program population for Cohorts 1-5 is shown in Table 3. Overall, 2,667 participants commenced the HiH program, with 88 per cent being female. Across all the cohorts, 74 per cent of participants completed the program. Noteworthy among those completing the program, 83 per cent of participants below the age of 15 completed it, compared with 59 per cent of participants aged 15 and above.

Table 3. Healing in Harmony Cohort Enrolment and Completion for Cohorts 1-3

		Kananga			Tshimbulu		
		Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
Cohort 1	4 to 9	14	9	64.29%	121	118	97.52%
	10 to 14	93	49	52.69%	146	143	97.95%
	15 to 17	66	17	25.76%	0	0	
	18+	126	40	31.75%	0	0	
	Total	299	115	38.46%	267	261	97.75%

		Kananga			Tshimbulu		
		Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
Cohort 2	4 to 9	2	0	0.00%	0	0	
	10 to 14	58	48	82.76%	23	13	56.52%
	15 to 17	116	81	69.83%	79	52	65.82%
	18+	119	59	49.58%	133	80	60.15%
	Total	295	188	63.73%	267	145	61.70%

		Kananga			Tshimbulu		
		Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
Cohort 3	4 to 9	25	21	84.00%	43	25	58.14%
	10 to 14	196	153	78.06%	146	164	78.10%
	15 to 17	28	22	78.57%	6	6	100.00%
	18+	3	3	100.00%	0	0	
	Total	252	199	78.97%	259	195	75.29%

		Kananga			Tshimbulu		
		Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
Cohort 4	4 to 9	0	0		38	35	92.11%
	10 to 14	43	41	95.35%	199	165	82.91%
	15 to 17	141	102	72.34%	12	9	75.00%
	18+	70	37	52.86%	0	0	
	Total	254	180	70.87%	249	209	83.94%

		Kananga			Tshimbulu		
		Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
Cohort 5	4 to 9	0	0		51	47	92.16%
	10 to 14	208	196	94.23%	212	176	83.02%
	15 to 17	77	66	85.71%	2	2	100.00%
	18+	7	6	85.71%	0	0	
	Total	292	268	91.78%	265	225	84.91%

		Kananga			Tshimbulu		
		Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
Total	4 to 9	41	30	73.17%	253	225	88.93%
	10 to 14	598	487	81.44%	790	661	83.67%
	15 to 17	428	288	67.29%	99	69	69.70%
	18+	325	145	44.62%	133	80	60.15%
	Total	1392	950	68.25%	1275	1035	81.18%

In conversation with World Vision, Informed narrowed the research focus to a subset of the program participants based on alignment with World Vision's Child Well-being Outcomes. These target measures guide the organization's work. The team decided that all research analyses would target female children aged 10 to 14. Related to students in Cohorts 1-3, Informed data collection sampled from those that completed the program (see Table 4 and Annex A for more details). Doing so simplified the number of tools and helped focus enumerator training and analyses, thereby strengthening the quality of data collection and reporting.



Table 4 HiH Cohort Enrolment and Completion (10-14 year old female only)

HiH Cohort Enrolment and Completion (10-14 Yr Old Female Only)						
	Kananga			Tshimbulu		
	Enrolled	Finished	% Finished	Enrolled	Finished	% Finished
COHORT 1	92	49	53.26%	105	103	98.10%
COHORT 2	58	48	82.76%	23	13	56.52%
COHORT 3	182	152	83.52%	158	132	83.54%
COHORT 4	43	41	95.35%	199	165	82.91%
COHORT 5	190	178	93.68%	164	137	83.54%
Total	565	950	68.25%	649	550	84.75%

STUDY POPULATION

The sample size for the study was determined using the [UK Samples' online sample size calculator](#), which allowed design effect to be considered, and a point estimate of +/-5 percentage points with 95 per cent confidence. This calculation assumes an intra-cluster correlation of 0.15. Sample sizes also assumed a 15 per cent attrition rate between the two data collection periods.

Table 5 shows the planned and actual samples of girls aged 10-14 and their caregivers for the Informed data collection periods 1 and 2. Due to logistical challenges¹⁴ during data collection 1, the planned sample was not reached in Kananga, so the data collection team over-sampled in Tshimbulu. During data collection 2, the same girls interviewed in data collection 1 were assessed. The project team observed an attrition rate between data collection 1 and 2 of 6.7 per cent in Kananga and 3.8 per cent in Tshimbulu, well within the expected attrition rate. Most of the observed attrition was due to the research teams' inability to match MMM data to the collected observations due to challenges with the identification numbers. The final sample size is also presented in Figure 3.

Table 5 Study Sample and Attrition by Cohort and District

	Planned Sample		Actual Sample in Data Collection 1		Actual Sample in Data Collection 2	
	Kananga	Tshimbulu	Kananga	Tshimbulu	Kananga	Tshimbulu
COHORT 1	21	44	17	51	12	50
COHORT 2	20	6	19	7	16	7
COHORT 3	64	57	56	62	55	64
COHORT 4	20	95	22	94	19	82
COHORT 5	55	125	52	127	53	125
Total	180	327	166	341	155	328

¹⁴ The enumerators were unable to reach all the children in Kananga during Data Collection 1 because the logistics by World Vision DRC's team on the ground were not made and therefore the girls and caregivers were not made available for interviewing on the first day.

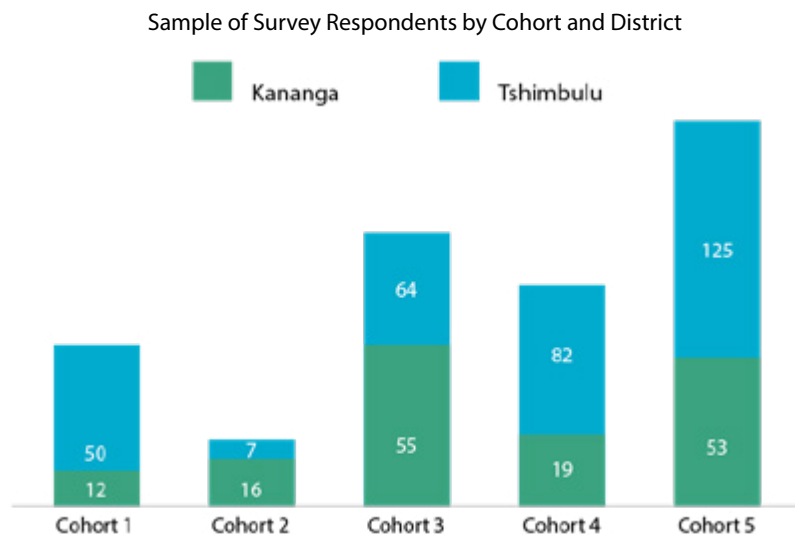


Figure 3 Final Sample Size by Cohort and District

CASE STUDY SAMPLING

Qualitative case studies were developed to gather data at both data collection points. Case Studies were developed with the following individuals:

- Two Cohort 5 female participants aged 10-14 (one in Kananga and one in Tshimbulu)
- Two Cohort 5 female participants aged 15-17 (one in Kananga and one in Tshimbulu)
- Two Cohort 5 male participants aged 10-14 (one in Kananga and one in Tshimbulu)
- Two Cohort 5 male participants aged 15-17 (one in Kananga and one in Tshimbulu)
- Two HiH Facilitators (one in Kananga and one in Tshimbulu)
- One Cohort 1 female participant (10-14 years of age during the program)
- One Cohort 2 female participant (10-14 years of age during the program)
- One Cohort 3 female participant (10-14 years of age during the program)
- One Cohort 4 female participant (10-14 years of age during the program)

Quantitative and qualitative respondents were randomly selected using a random number generator and referencing a database of program participants.



ETHICAL CONSIDERATIONS

Informed International upholds that in all projects, human subject research principles were adhered to throughout the research study. These principles included the three guidelines of beneficence, justice and respect for persons as specified in The Belmont Report of the National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research¹⁵.

Beneficence: (a) maximizing the benefits of research and (b) minimizing any possible risks. Human subjects will be informed of the benefits and risks of data collection. Furthermore, the assessment tools were designed with the participant in mind. As such, student assessments were designed to minimize stress, test fatigue and disturbance during the school day.

Justice: (a) fairness in all aspects of research, including sample selection, analysis, etc.; and (b) sharing findings with key stakeholders and especially beneficiaries (including those who were included in the study).

Respect for persons: (a) respecting the informed choice of human subjects to participate or not freely; and (b) giving additional protection to vulnerable populations such as children.

Considering the above guidelines, Informed International ensured that all human subjects read a consent message about the purpose of the study, the contents of the data collection tool, their voluntary participation and the confidentiality of their data. Adult subjects were asked for their consent, and vulnerable populations, including children (defined as individuals 0 to 17 years old), were asked for their assent in addition to their consent to participate by their guardians.

Privacy and Confidentiality: By default, information that could lead to the identification of individuals was not collected. Case studies used pseudonyms to avoid the identification of any individual. When collecting individual data, all efforts were made to allow individuals to control the extent, timing and circumstances of sharing their personal information with others. This includes consideration of the location in which data was collected and the extent to which other people were present during data collection. When data was collected from individual children with adult consent, the privacy considerations of the child were still applied when sharing their personal information and views. All interviews took place within sight but not within earshot of others.

Child Safeguarding: Informed International worked with World Vision's DRC office to ensure that all persons involved in the evaluation activities received an orientation to World Vision's Child Safeguarding Policy and signed on to their understanding and agreement.

Ethics Approval: Informed International submitted and received approval from the Institutional Review Board (IRB) of South Kivu, DRC on 12 September 2022. See Annex B for certificate.



¹⁵ <https://www.hhs.gov/ohrp/regulations-and-policy/belmont-report/index.html>

LIMITATIONS

The research study identified the following limitations. Each limitation discusses Informed's approach to mitigating the impact of that limitation on the research findings.

Data collection in fragile contexts

Quality data collection is challenging in fragile contexts. Data collection itself has the potential to put enumerators and staff in danger. Poor-quality roads, inadequate cellular networks and hostile environments often complicate data collection efforts. In addition, the study participants were exposed to ongoing challenges. In the case of this research, it was difficult to identify the single challenge, violence or trauma experienced given a continuously challenging environment.

Quality of Make Music Matter Program Data

Data from MMM required significant cleaning. The team found challenges such as differing scales of some assessment tools within and between cohorts and duplicate Child IDs assigned to more than one child. For example, the Birlson Depression Score was recorded with values of 0-3 and 1-4, depending on the data of the pre-test or post-test. Furthermore, program data reported depression cut-off thresholds automatically calculated using Kobo. Still, those differed across tools, sometimes with a 17 or 25 threshold, while 15 is recommended according to the tool guidance.

Food insecurity within the area during the data collection period

Between September and December 2022, the communities participating in the research study experienced high inflation levels. For example, the main food staple, corn flour (maize meal), increased from 1 USD per kilo to 10 USD per kilo. The cause of the increase varies based on respondents: some said it was due to poor crop yield, and others blamed political powers for hoarding the corn flour. No matter the cause, this significant increase in cost led to increasing food insecurity in the area, causing tensions within and between families. The widespread food insecurity led to children complaining of hunger and likely influenced how children presented in terms of MHPSS. In this report, the research team interprets findings considering the increased food insecurity.

Measuring MHPSS well-being among children by enumerators

Data was collected using screening tools administered by trained enumerators, not psychologists. While the team ensured that enumerators were trained in quality data collection and thoroughly understood the tools used, MHPSS well-being remains a complex topic best assessed using child psychologists. Informed International consulted child psychologists where possible to help interpret and better understand the study's results.



BACKGROUND CHARACTERISTICS

This section presents the background characteristics of the 483 girls within the HiH participant sample and their caregivers. It also presents education statistics, some of which were gathered using school records, as noted in that section.

CHILD CHARACTERISTICS

Nearly all respondents (97.2 per cent) preferred for the survey to be administered in Tshiluba, aligned to the distribution of their home language, with 61.9 per cent of respondents speaking the Luba-Lulua dialect of Tshiluba and 34.1 per cent speaking the Luba-Kasai dialect of Tshiluba.

The research study sampled 10-14-year-old participants using the ages provided by the MMM project team to identify project respondents. Upon asking respondents their age, however, the research team found a range of responses from 7 to 19 years, with an average of 11.5 years. The research team lacked confidence in age data as it is estimated that only 25 per cent of children in DRC have birth certificates.¹⁶ The research team elected to analyze the data by grade level, as reported by official school records, instead of age within the sample. The distribution of respondents across the cohorts and grade categories is presented in Figure 4.

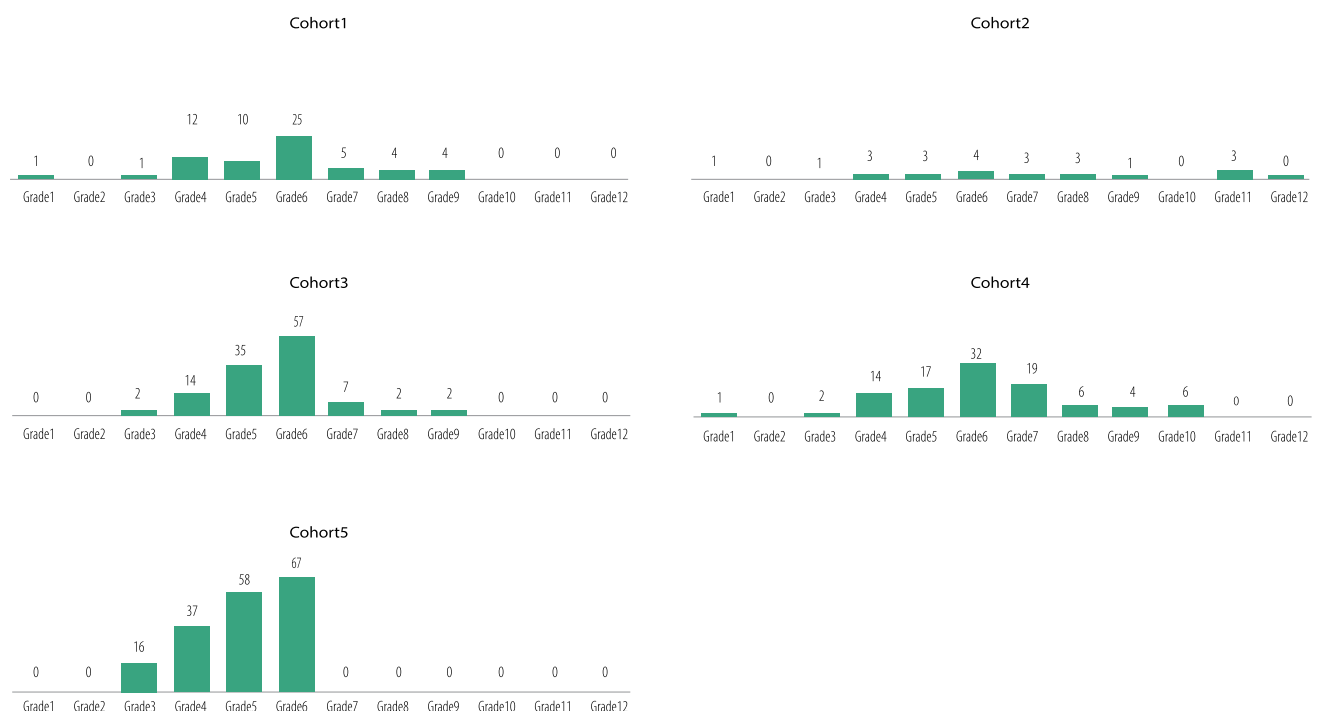


Figure 4 Distribution of Sample across Grades and Cohorts

¹⁶ <https://borgenproject.org/womens-rights-in-the-drc>

Respondents reported an average household size¹⁷ of 8.4 (including the respondent), which is significantly higher than the country-wide average of 5.2 but consistent with other global estimates of household size in the Kasaï provinces.¹⁸ Note that this measure was triangulated between child and caregiver surveys.¹⁹

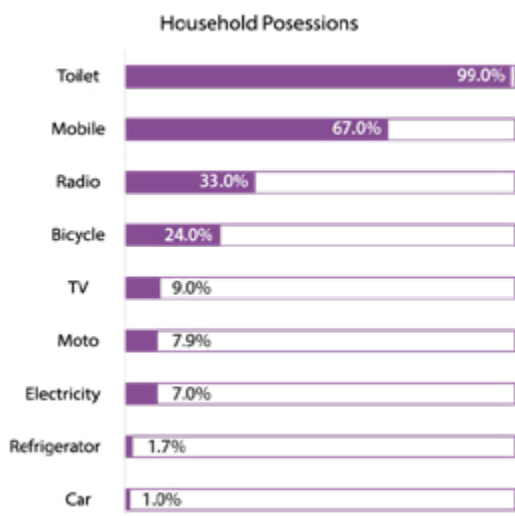


Figure 5 Respondent Reporting of Household Possessions

Children were asked about their household possessions to determine the sample's relative socioeconomic status scale. Ninety-nine per cent of the children stated that they had access to a toilet in their home, 67 per cent reported a mobile phone and 33 per cent and 24 per cent reported the household owning a radio and bicycle, respectively. Televisions, motorcycles, electricity, a refrigerator and a car were owned by a much smaller population within the sample. Weighting these household possessions by cost allowed the research team to create an aggregate measure of socioeconomic status and identify three tiers of wealth within the population. This categorical measure is used in some of the trend analyses that follow.

CAREGIVER CHARACTERISTICS

Caregivers of the sampled HiH participants were also interviewed. Although there was an effort to interview the same caregiver during data collection periods 1 and 2, the research team had to remain flexible and interview whichever caregiver was available for interview on the day of the assessment. Given this, the caregiver's characteristics from only one data collection period (period 1) are presented.

Of the caregiver respondents, 68.4 per cent were female, and the majority (56.2 per cent) identified as the child's parent. Other than parents, 20.7 per cent identified as a sibling of the child, and 12.4 per cent as an aunt or uncle of the child. There is a difference in the caregiver profession between Kananga and Tshimbulu, as shown in Figure 6. The high proportion of caregivers working in agriculture within Tshimbulu is representative of the agricultural focus of that community.

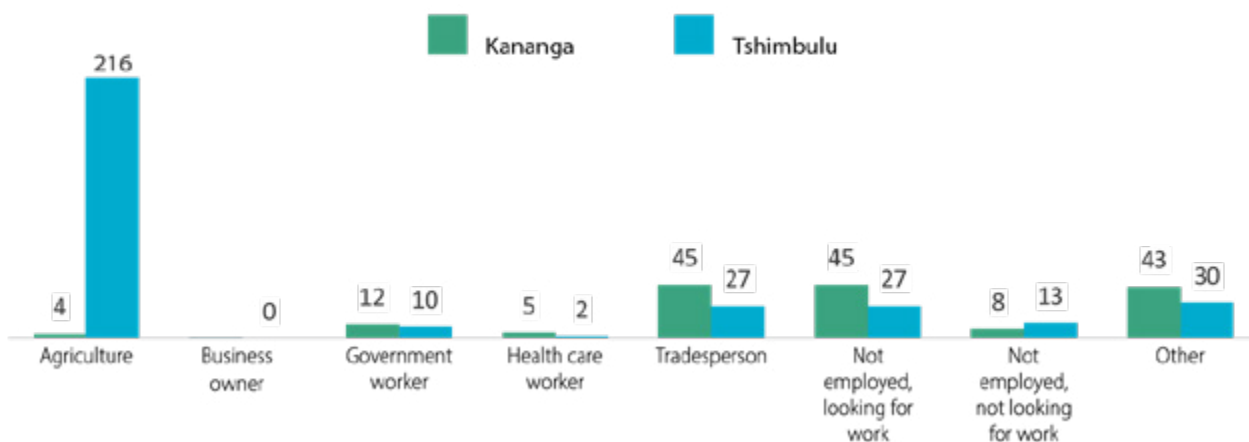


Figure 6 Caregiver Profession by District

¹⁷ As measured by the number of people that slept in the house the night before the survey.

¹⁸ Demographic and Health Survey of DRC, 2014.

¹⁹ Caregivers reported 8.9 household members on average, compared with the 8.4 reported by children respondents.

DISABILITY STATUS

Caregivers were asked the Washington Group Short Set on Functioning (WG-SS) questionnaire to determine the disability status of the child respondent. The WG-SS is a set of six questions on functioning that reflect advances in the conceptualization of disability, and it uses the World Health Organization's International Classification on Functioning, Disability and Health as a framework.

Rather than a dichotomous status state, the WG-SS sees disability as a dynamic, complex process and, therefore, identifies six basic, universal actions that, in an unaccommodating environment, would place an individual at risk of restricted social participation. The tool is used extensively in the developing country context and has been deemed appropriate for representing the majority of, but not all, persons with limitations in basic action.²⁰

Within the study population, only 24 (5.0 per cent) children were presenting challenges aligned with disability. Note that one child could describe challenges with several disability domains. The most identified challenge was cognition, followed by communication, mobility, self-care, hearing and vision, as shown in Figure 7.

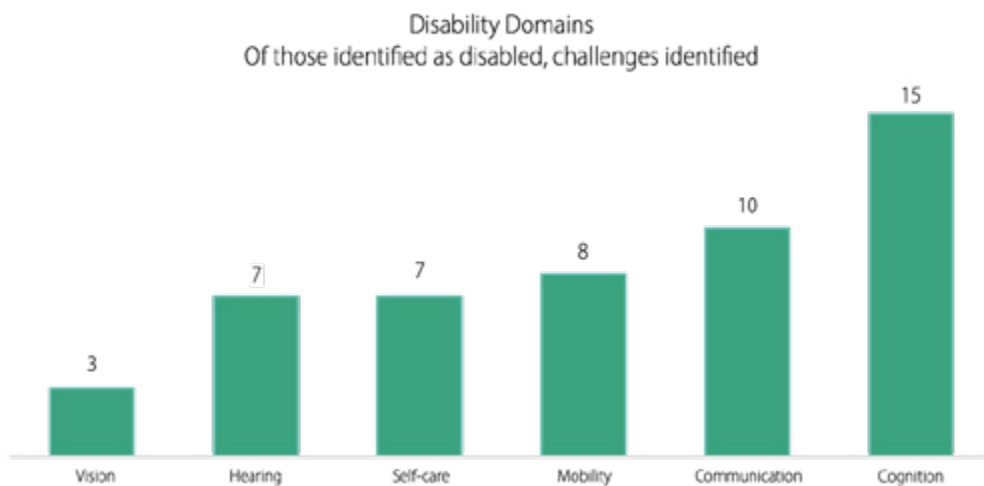


Figure 7 Disability Domains per the Washington Group Short-Set

²⁰ <https://www.washingtongroup-disability.com/question-sets/wg-short-set-on-functioning-wg-ss/>



EDUCATION OUTCOMES

Measurements related to a child's enrolment and attendance at school were gathered from the child respondent and caregiver and from secondary data collected from school records. This section presents those findings, triangulating data across sources wherever possible.

ENROLMENT AND ATTENDANCE

According to school records, 99.8 per cent of the girls in the research study were enrolled in school. During the first data collection period (October 2022), the school attendance rates for Cohorts 1-4 averaged 92.6 per cent. That is, within the last four weeks of school, children attended 92.6 per cent of the days the school was open. Schools were open between 20 and 26 days within this period, depending on the school. This figure did not change significantly between October and January, with the average attendance rate among the same group of children at 93 per cent during the January data collection. As shown in Figure 8, most respondents in Cohorts 1-4 attended school at least 90 per cent of the days the school was open, but there were a few learners with particularly poor attendance records.

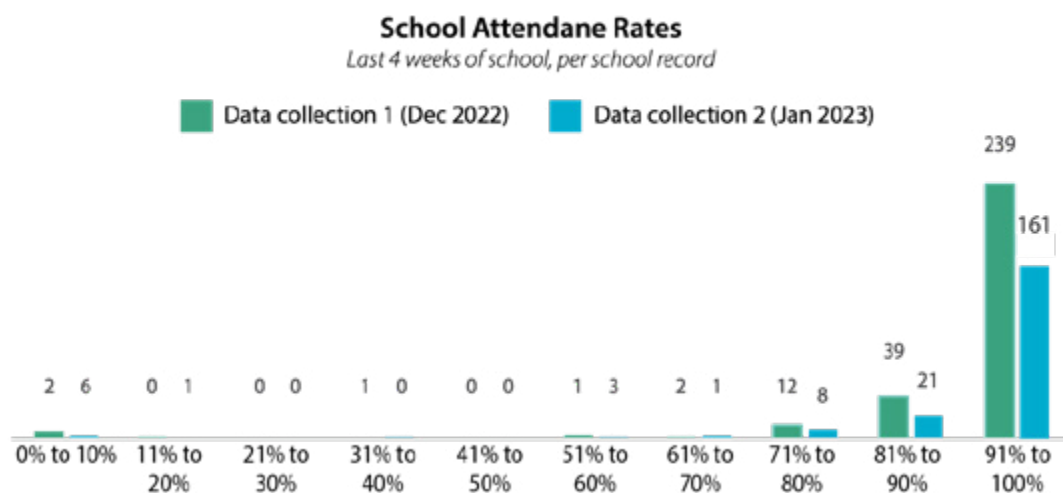


Figure 8 School Attendance Rates, Cohorts 1-4

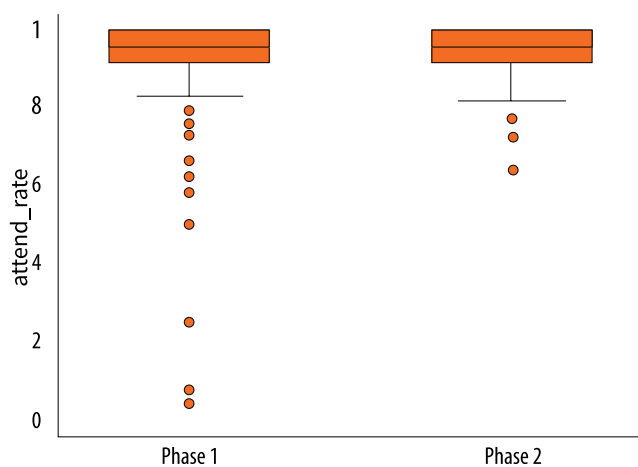


Figure 9 Attendance Rate for Cohort 5 over Life of Program

Among Cohort 5 respondents, whose December 2022 measure aligned with the start of the HiH program and whose January 2023 measure aligned with the end of the HiH program, there was a significant increase in average school attendance rates from 90.1 per cent to 94.7 per cent ($p < 0.001$). As shown in Figure 9, a few children assessed in January during their participation in the program had an attendance rate of less than 60 per cent. This finding is encouraging, suggesting that the program encourages regular school attendance.

Although the research team decided to conduct analyses using the school record data for school enrolment and attendance, the self-reported school attendance rates are worth noting. Given recall bias, each child was asked how many days of the last week she missed school. Most respondents reported missing zero days, as shown in Figure 10. Reasons

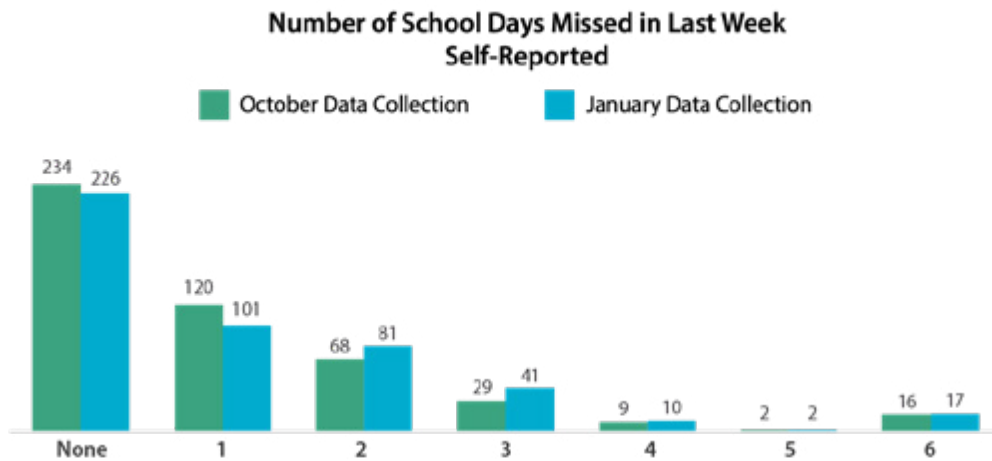


Figure 10 Self-Reported School Attendance by all Cohorts

The most common reason for missing school was illness, followed by chores or a lack of money. As shown in Figure 11, children more often reported challenges travelling to and from school than their parents.

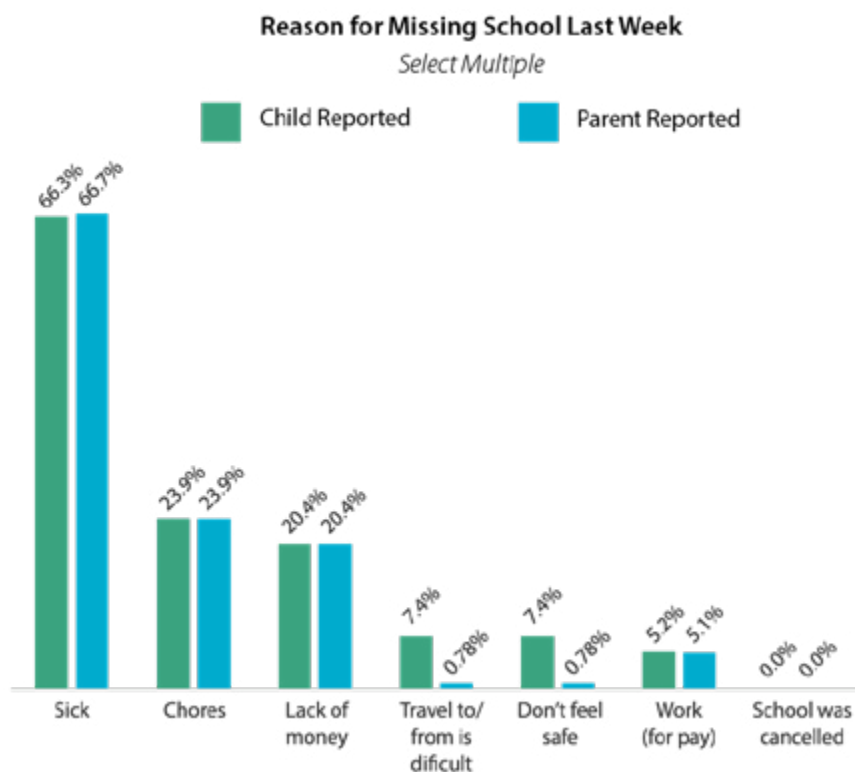


Figure 11 Reported Reasons for Missing School Last Week

Additionally, both children and parents were asked if they often missed school. Interestingly, among those who said they often miss school (20.8 per cent of child respondents and 17.2 per cent of caregiver respondents), the reasons for often missing school had different patterns between child and caregiver respondents. As shown in Figure 12, parents were much more likely to identify the lack of money as a reason for missing school, whereas children more often identified chores. This is an important finding for future education programming in the area, suggesting that parents might lack the money to send their children to school and that those children then do chores.

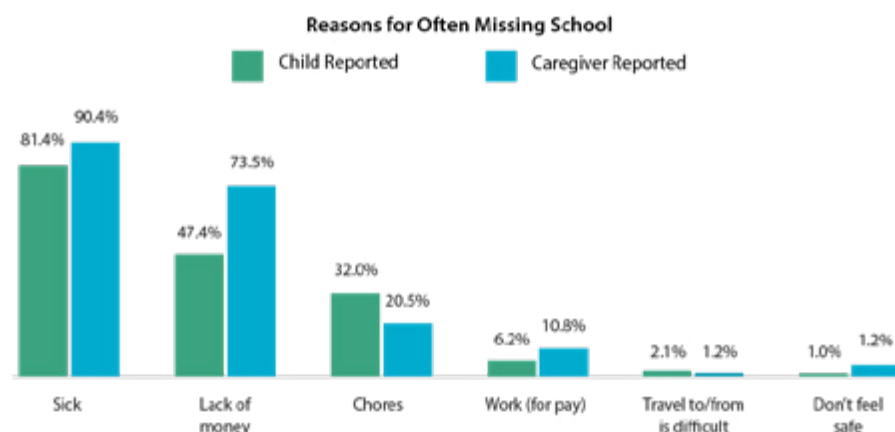


Figure 12 Reasons for Often Missing School, Child and Caregiver Reported

EDUCATION AND GENDER NORMS

During the first data collection period in October, caregivers were asked about their perceptions of gender and education access. There was no difference in answers between the caregivers of the five cohorts, and therefore, the responses to these questions among caregivers of all cohorts are presented in Figure 13.

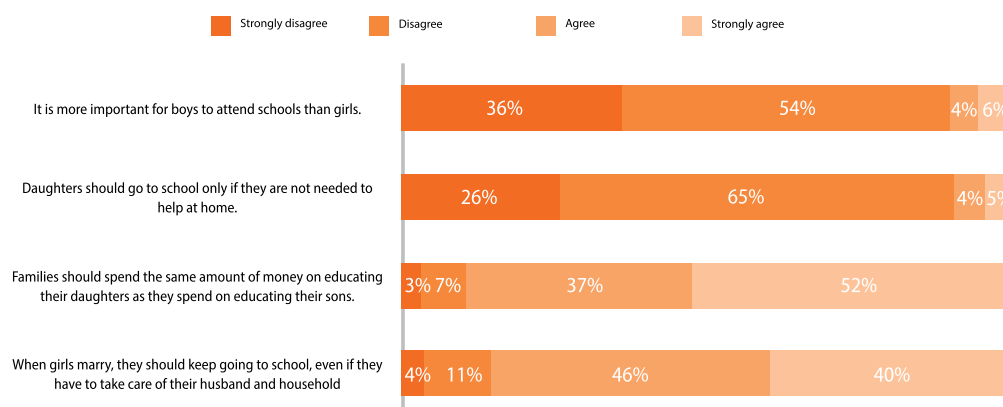


Figure 13 Caregiver Perspective of Gender Norms Regarding Education

There was consistent disagreement with the statements, “It is more important for boys to attend school than girls,” and, “Daughters should go to school only if they are not needed to help at home,” showing general support for girls attending school. Along the same lines, respondents showed high levels of agreement when it came to the statements, “Families should spend the same amount of money on educating their daughters as they spend on educating their sons,” and

"When girls marry, they should keep going to school, even if they have to take care of their husband and household."

Note that male and female caregivers had no significant differences in responses to these questions. This is encouraging, showing general awareness within the communities of the importance of girls' access to quality education.

COVID-19 PANDEMIC

Since the COVID-19 pandemic began at the start of the HiH program, the research team included a few questions about it and school closures within the caregiver survey. These questions were asked once during the first data collection in October 2022.

Activities During COVID-19 School Closures

Activities reported by parents

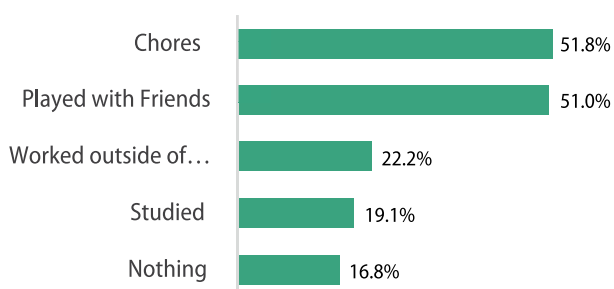


Figure 14 Caregiver Reported Activities Carried out by Child During COVID-19 School Closures

Caregivers were asked what their child did during the COVID-19 pandemic break from school. Most students spent the school closure time doing chores or playing with friends. Some – 22.2 per cent – reported working outside the home for pay. Only 19.1 per cent reported studying. This is an important finding and points to the considerable impact the COVID-19 pandemic had on a child's access to learning activities. In addition, 97.6 per cent of caregivers reported that the child was excited to return to school after the pandemic.

ANALYSIS: DEPRESSION

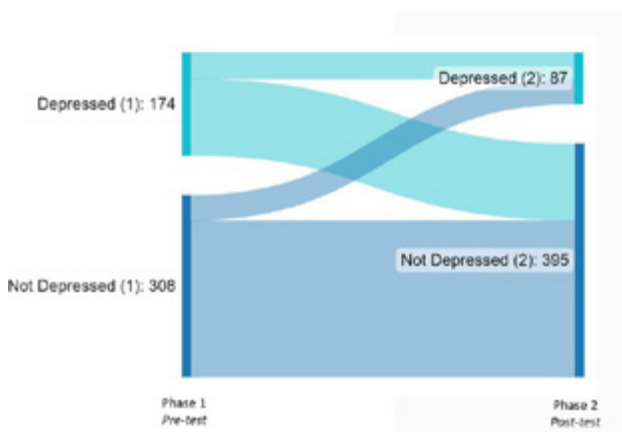


Figure 15 Symptoms of Depression from Pre-Test to Post-Test, All Cohorts

As described in the methodology section, depression was measured using the Birleson Depression Self-Rating Scale for Children (DSRS-C). Each child responded to the 37-item inventory of questions. Each question identifies symptoms associated with major depressive syndromes. For each statement, the child indicates if the statement applies most of the time, sometimes or never. The scores for the scale are 2, 1 or 0 and are scored in the direction of the disturbance. A score over 18 is indicative of screening positive for depression. This assessment tool has been used in a similar context, such as with children in Burundi.²¹

According to the Birleson measure of depression, 36.1 per cent of sampled participants began the program screening positive for depression.²² Among those screening positive for depression at the pre-test, 74.7 per cent of participants were not screening positive for depression at the post-test, as shown in Figure 15. This finding suggests that across the cohorts, program participants were less likely to screen positive for depression at the post-test than they were at the pre-test.

²¹Ventevogel et al.: Validation of the Kirundi versions of brief self-rating scales for common mental disorders among children in Burundi. BMC Psychiatry 2014 14:3

²²This includes all cohorts at the pre-test. For cohorts 1-4, MMM data was used and for cohort 5, the Birleson score was determined from Informed International's data collection.

Among Cohorts 1-3, depression scores were measured at four time points, including the pre-and post-test and again in October 2022 and January 2023. Among this subset of program participants, 26.2 per cent began the program screening positive for depression. Of those, 50.4 per cent were not screening positive for depression at post-test. Of note, 29.9 per cent of participants who did not screen positive at the start were by the end of the program, as shown in Figure 16. This is generally to be expected.

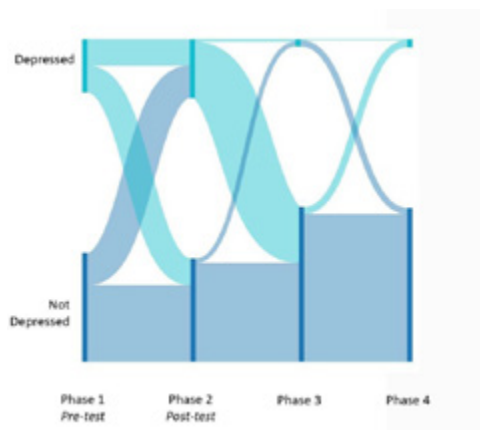


Figure 16 Symptoms of Depression by Phase, Cohorts 1-3

Between the period following the program and the first research data collection in October 2022 (phase 3, in Figure 16), there was a large decrease in the proportion of program participants screening positive for depression. Among those screening positive at the end of the program (phase 2), 95 per cent were not doing so in phase 3. This could indicate a delayed response in the children: it took a period after the program closed for symptoms to subside, or it could speak to the ever-changing context within a child's life.

TRENDS IN DEPRESSION

Generalized estimating equations found that across all five cohorts, there was a significant decrease in the proportion of participants screening positive for depression over time, independent of grade, district and socio-economic status. A small decrease was observed between the pre-and post-test ($\beta = -0.69$, $p < 0.0001$); however, the decrease was even greater between the pre-test and the phase 3 measurement ($\beta = -2.49$, $p < 0.0001$), with a slightly smaller change observed at phase 4 ($\beta = -2.078$, $p < 0.0001$).

The pattern of decline differed by cohort. Among Cohorts 1-3, after controlling for grade, district and socioeconomic status, there was no significant decrease in depressive symptoms between the pre-and post-test assessments. However, there was a significant decrease in the proportion of participants screening positive for depression during the October data collection period ($\beta = -0.693$, $p < 0.0001$) following the program's close.

Among Cohorts 4 and 5, there was a significant decrease in depressive symptoms observed between the start and end of the program ($\beta = -2.109$, $p < 0.0001$). This decrease in symptoms was strengthened three months after completing the program among Cohort 4 such that they were much less likely to display symptoms of depression after the program's close than at the program's end ($\beta = -4.321$, $p < 0.008$).

From this analysis, there is evidence of a decrease in screening positive for depression exhibited over the life of the HiH program. This decrease continued over time and was observed to be greatest several months after completing the program. This suggests that children may be exhibiting delayed benefits of the program. However, it is important to note that this research study did not have a counterfactual and is, therefore, unable to attribute these changes to the program itself as we cannot account for changes in the child's community experience.

These models are presented in Annex C.

ANALYSIS: ANXIETY

Anxiety was measured using the Hopkins Symptoms Checklist (HSCL), which has ten items for anxiety symptoms. The scale for each question includes four categories of response: not at all, a little, quite a bit and extremely, rated 1 to 4, respectively. The responses are summarized across all items, and a mean score measures psychological distress. Informed International used a threshold of 1.85 as a valid cut-off for screening positive for anxiety.²³

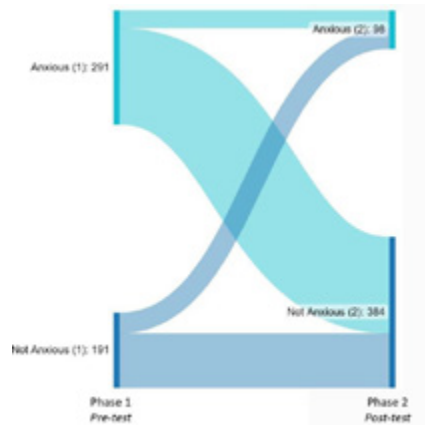


Figure 17 Presenting Symptoms of Anxiety at Pre- and Post- Test, All Cohorts

Using that threshold, the study found that 60.4 per cent of sampled participants screened positive for anxiety when they began the program. Among those screening positive for anxiety at the start of the program, 84.5 per cent of participants were not doing so at the post-test. Of note, 27.8 per cent of those who did not display anxiety at the pre-test were doing so by post-test, as shown in Figure 17.

Examining Cohorts 1-3 across the four phases reveals an interesting pattern, as shown in Figure 18. When isolating this sub-group of program participants, 49.0 per cent of participants began the program displaying symptoms of anxiety. By the end of the follow-up period, 99 per cent of those displaying symptoms of anxiety were no longer doing so at post-test.

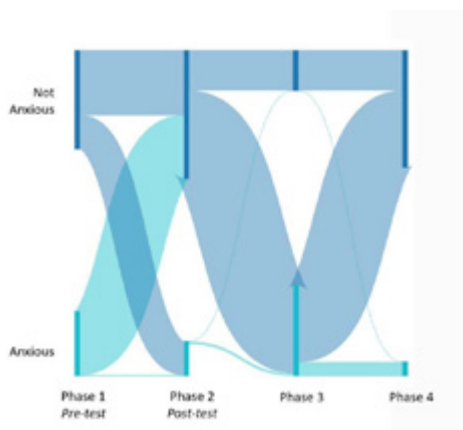


Figure 18 Anxiety Across Phases, Cohorts 1-3

Despite the decrease in anxiety between the pre-and post-test, the proportion of participants displaying symptoms of anxiety by phase 3 spiked significantly. While it is impossible to determine the cause of this spike in anxiety, the timing of phase 3 data collection within these cohorts coincides with the dramatic increase in food costs and food insecurity that struck the region between September and December 2022.

TRENDS IN ANXIETY

Regression models found that the proportion of participants screening positive for anxiety decreased over time across all cohorts, as shown in Annex D. There was an uptick in anxiety observed at phase 3, which aligns with the period of extreme food anxiety, as described above. There were no differences in anxiety by grade level nor socio-economic status tercile. There was a significant difference in anxiety levels observed, with higher proportions of study participants exhibiting anxiety in Tshimbulu compared to Kananga ($\beta = -0.325$, $p < 0.001$). Within Kananga, anxiety levels were significantly lower at each time point after the start of the program when compared to the start of the program. An observed spike in

²³ Annette Løvheim Kleppang, Curt Hagquist, The psychometric properties of the Hopkins Symptom Checklist-10: a Rasch analysis based on adolescent data from Norway, Family Practice, Volume 33, Issue 6, 1 December 2016, Pages 740–745, <https://doi.org/10.1093/fampra/cmw091>

October 2022 was only slightly decreased ($\beta = -0.429$, $p < 0.001$) from the levels observed at the program's start. The same was observed in Tshimbulu, but the decrease in anxiety was much less than in Kananga. Therefore, higher rates of anxiety persisted over time within this district. Tshimbulu is the more rural of the two areas and may feel the stressors of a more impoverished area than Kananga.

These models are presented in Annex D.

ANALYSIS: SELF-ESTEEM

Self-esteem was a construct added to Informed data collection tools due to interest from the program staff and, therefore, was only collected in October 2022 and January 2023. As a result, Cohorts 1-3 do not have pre-and post-test data on self-esteem. Self-esteem was measured using the Rosenberg Self-Esteem Scale²⁴, a 10-item scale that measures global self-worth by assessing positive and negative feelings about the self. All items are answered using a four-point Likert scale ranging from strongly agree to strongly disagree. No threshold is associated with the measure; instead, it is simply the rule

that a higher score indicates higher self-esteem, and results range from 10 to 40.

All cohorts had an average self-esteem score of 28, ranging from 18 to 37. At data collection period 1, in October 2022, there was no significant difference between cohorts, as shown in Figure 19.

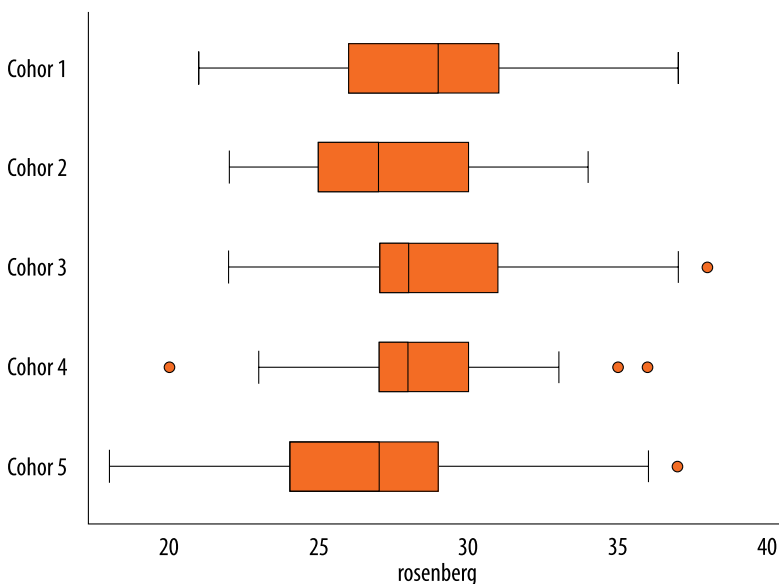


Figure 19 Self-Esteem Measure at Data Collection Period 1

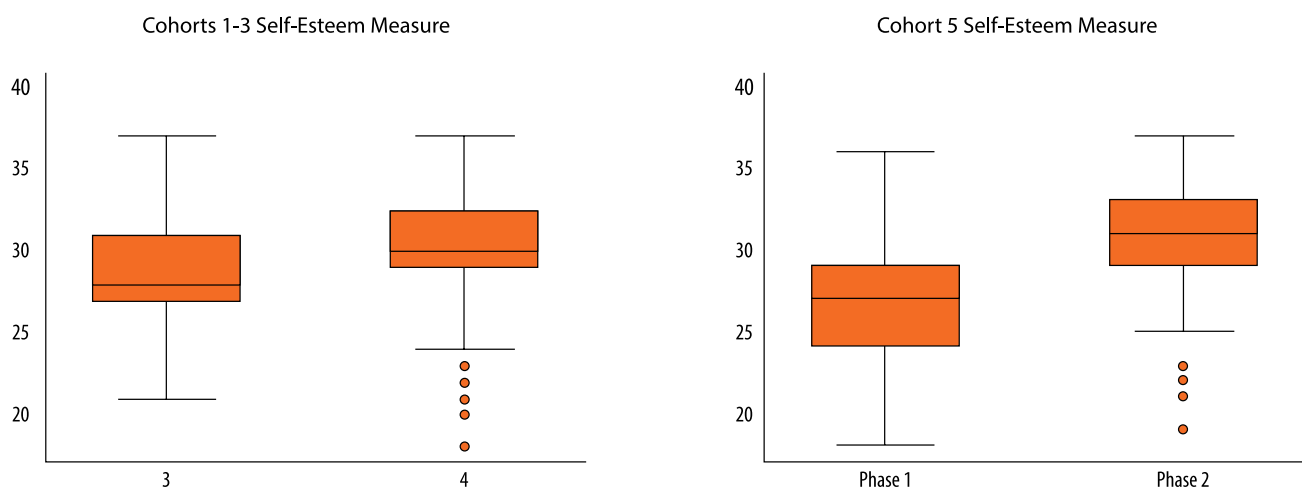


Figure 20 Self-Esteem Measure over Time by Cohort Group

²⁴ Rosenberg, M. (1965). Society and the adolescent self-image. Princeton, NJ: Princeton University Press.

Figure 20 shows the self-esteem measures for Cohorts 1-3 between October and January and Cohort 5 between October and January. Self-esteem increased significantly ($\beta=1.31$, $p<0.001$) for Cohorts 1- 3 between the October and January data collection periods, even though the participants were no longer in the program. Self-esteem also significantly increased ($\beta=3.9$, $p<0.001$) for Cohort 5 as they participated in the program. In the regression models shown in Annex E, Cohort 5 did gain significantly more self-esteem than the Cohort 1-3 group, but that increase is marginal, approximately two points on a 30-point scale.

ANALYSIS: ACCESS TO EDUCATION

Attendance in education was only tracked during the Informed International data collection periods. Therefore, the research study does not have data showing attendance rates over the program's life for Cohorts 1-4. Rather, the research study has attendance rates for all Cohorts in October and January. This allows Cohort 1-3 attendance rates to be compared with Cohort 5. Note that Cohort 4 was omitted from this analysis due to the timing of the intervention and the data collection periods.

Between October 2022 and January 2023, Cohorts 1-3 observed a significant increase in attendance rates from an average of 91.9 per cent to 93.0 per cent ($p<0.05$). Cohort 5 saw a similar increase in attendance rates from an average of 90.1 per cent in October to 94.7 per cent in January ($p<0.01$).

The regression models in Annex G found that increases in attendance rate were concentrated among the wealthiest tercile of students. In addition, the increase in school attendance was not significant after controlling for socio-economic status and district among Cohorts 1-3 but remained significant among Cohort 5. While this is encouraging, the increase is not large enough to identify a trend of the program influencing school attendance rates.

Additional analyses examining the relationship between attendance rates and MHPSS outcomes, including depression, anxiety and self-esteem, were removed. No correlation was found between MHPSS outcomes and education attendance rates.

It is important to note in the analysis of education outcomes that the population had a relatively high attendance rate at the start of the program. Given this, there was little room for improvement to be observed over the life of the program. Future research should incorporate additional education outcomes into the assessment, examining classroom behaviour, attentiveness and performance.

QUALITATIVE INTERVIEWS

In-depth interviews were conducted with 12 children who participated in the HIH program and two psychologists who provided music therapy interventions to the program participants in Kananga and Dibaya districts. Interviews were conducted in two sequences (October 2022 and January 2023). The same respondents interviewed in October 2022 were interviewed again in January 2023 to have a more balanced and nuanced picture of children's mental health before and after treatment. Additionally, a teacher not interviewed in October 2022 was interviewed in January 2023 to provide more background information about children's education and behaviour at school. This section outlines thematic trends with children's experience of trauma, a selection of illustrative case studies and the perceived relevance and impact of the HIH program on the lives of participants.

THEMATIC TRENDS

Data revealed eight main sources of trauma negatively affecting children's mental health, including poverty, armed conflicts, sexual violence, epidemic hunger, parental divorce, death of loved ones, child mistreatment and allegations of witchcraft.

The landlocked Kasai-Central province is among the poorest regions of the DRC. The local subsistence agriculture and farming are far from enough to feed the population. Residents depend on imports from other provinces of the DRC for survival. The province imports food and other commodities from Lubumbashi, Kinshasa and Tshikakapa by railway, plane and road. However, the road and railway are dilapidated, so commodities take several weeks to reach Kasai-Central instead of Central-Kasai, increasing prices. High commodity prices make accessing regular and adequate food hard for many people.

The shortage of food, limited access to income and health care, poor living conditions and limited access to education for girls characterize poverty in Kasai.²⁵ Research has shown that people with the lowest incomes in a community suffer 1.5 to 3 times more frequently from depression, anxiety and other common mental disorders than those with the highest incomes.²⁶ Extreme poverty was seen as a central source of trauma by children, as reflected in these statements from interviewees: "At home, we live in terrible conditions, we usually sleep hungry," and "We sleep on the ground."

Another key issue in the area is the ongoing influence of conflict and insecurity. Although the armed rebellion ended in 2019, its effects continue to be observed in both the communities of Tshimbulu and Kananga. Many women and girls were raped, and some children witnessed their parents being killed during armed clashes or their houses burnt, leaving them with higher levels of stress and trauma. A psychologist in Tshimbulu said of one of the children in the program:

Her uncle was killed by the rebels while she was watching. Since then, she started having flashbacks about the incident. The rebels wore red clothes, and whenever she sees someone with red clothes, she starts fearing.

Sexual violence was used as a weapon of terror by armed forces during the conflict, with significant detrimental effects on the mental health of survivors. Several women and girls were subjected to brutal sexual violence by armed men. A psychologist said:

Some girls fell pregnant as a result of rape by Kamuena Nsapu armed rebels. Therefore rape itself is traumatic, and conceiving a child from rape is another traumatic problem. Female survivors of sexual violence are often stigmatized and excluded from their families and communities post-abuse, which is also traumatic in the broader sense of the concept.

However, sexual violence is not an isolated problem. Different statements from interviews show that children living in poverty are exposed to different forms of abuse, including sexual abuse. A psychologist said: "When she goes out to beg for food or money somewhere, some men take advantage of the situation to demand sexual intercourse with her." Another psychologist added: "Poor girls are exposed to sexual exploitation here in Kasai," suggesting a linkage between children living in poverty and their exposure to situations where sexual abuse can arise.

In Kasai, many families buy corn flour on a daily basis to make fufou. During good times, one kilo costs 1 USD. However, from September to early December 2022, Kasai-Central instead of Central-Kasai province was impacted by food shortages. The cost of corn flour dramatically rose, increasing from 1 USD to 10 USD, forcing many families into hunger and stress. Many families ordinarily struggled to feed their household when the price of corn flour was 1 USD per day, and the increased cost created extreme conditions of food stress.²⁷ A child in Tshimbulu said, "We did not have food for several days

²⁵ Education Links (2022). <https://www.edu-links.org/resources/all-i-have-lost-impact-attacks-education-women-and-girls-drc>

²⁶ Ridley, M., Rao, G., Schilbach, F., & Patel, V. (2020). Poverty, depression, and anxiety: Causal evidence and mechanisms. *Science*, 370(6522)

²⁷ Action Against Hunger (2023). <https://www.actionagainsthunger.org/story/kasai-locals-rebuild-livelihoods-after-years-of-displacement/>

in that period, and by any chance if we did, it was never enough." Additionally, tensions can arise within the household experiencing food shortages. The psychologist in Kananga reflected, "When children ask for food, their parents become aggressive, and children feel sad and unhappy."

Parental divorce and the death of loved ones were also sources of trauma for children. When divorce occurs or when a parent passes away, children feel grieved, shocked and desperate. "Dad left us. That is why we are suffering," said a child in Kananga. According to some children, when a parent chooses another partner after a divorce or the death of a spouse, there is a risk of child mistreatment illustrated by food deprivation, excessive chores, unjustified punishments and insults. These situations cause distress and can be a source of trauma for a child.

Furthermore, women and girls are often accused of witchcraft, especially when something horrific such as an accident, sudden death, a chronic disease, poverty or abortion occurs in a family. Children accused of witchcraft are often exposed to physical violence by their siblings and peers and face discrimination and many forms of deprivation. A psychologist said, "We had a child who was accused of witchcraft. She was excluded and marginalized by the family and by the community." The feeling of exclusion and marginalization can lead to trauma, with children experiencing rejection and condemnation from their peers and community.

Of note, more than four sources of trauma may affect a child simultaneously or sequentially, as depicted in the stories of Francis*, Judith* and Daniela* below. (*All names of qualitative research participants have been changed to protect their identity.)

Francis' father divorced his mother in 2020 and moved far away from his home in Kananga. This 12-year-old boy stated that the separation of his parents and his father moving away and no longer communicating with him caused "...heartache and emotional disturbance." Francis also stated that poverty, characterized by a shortage or lack of food at home, worsened his trauma and brought higher levels of stress within his family: "What is destabilizing our family now is hunger; it brings a lot of sorrow."

As a child from a poor background, he goes to a free accelerated education program in Kananga. Unfortunately, his education at this school is compromised as the government irregularly pays teachers. In this school, all teachers are volunteers and work based on a promise that one day, the government will recognize their work and start paying them. A teacher from this school said that her colleagues are not motivated to teach due to the lack of payment.

Although education is meant to be free in government-run schools, most parents still pay between 5-10 USD a month to cover school fees for their children. Francis studies in this poor school in Kananga, which has no desk and is described by other children as a "school of poor children" because his mother could not afford to take him to a good school. "Although World Vision constructed some classrooms for us, we still sit on the ground, and our teachers are not paid." He continued: "When I am at school, I feel so sad, but I am happy when I get back home because at least Mum takes care of me." Francis also found the school environment difficult as he is compared to other poor children. "If I were like other children with parents, I would not come to this school."

As a boy raised in a patriarchal system, Francis believes in being superior to his sisters and mother, at least in terms of authority: "When there is a problem, my mother and sisters will try to solve it first. If they cannot, I will take the last decision as a man." Francis explained that his mother is looking after twins she recently delivered and thus cannot work. Therefore, his family has insufficient funds to purchase food. "Mum no longer goes to look for food for us as she recently delivered twins. She looks after them now." Although Francis's mother is not married to another man, she has a new partner with whom she had twins.

The way different sources of trauma affect the mental health of a person is also reflected in the story of Judith, a 13-year-old girl in Tshimbulu. Her mother died (first burden of trauma), and then her father married another woman. Judith says that her stepmother mistreats her (second burden of trauma). She said: "She insulted me every day. I felt stressed and wish I could die." The mistreatment by her stepmother caused Judith to leave her home and live with her grandmother. Her grandmother is poor. This manifests in different ways, including struggling to feed the household and having sufficient funds to pay her granddaughter's school fees. Judith said, "We struggle a lot to have food" (third burden of trauma.) Judith feels uncomfortable with her situation, and memories of her late mother constantly come back when she is excluded from classes because she has not paid school fees (fourth burden of trauma). "I am an orphan. How can I get access to a good education?"

Daniela is a 14-year-old girl. Her mother passed away when she was 12 years old (first burden of trauma). She was accused of witchcraft and held responsible for her mother's death when she died during childbirth at a local hospital (second burden of trauma). Daniela experienced discrimination by her peers at school, labelling her as a "witch girl" (third burden of trauma). She is also from a poor family. All these problems, including the allegation of witchcraft, household poverty, discrimination from peers and the loss of her mother, led to high levels of trauma in Daniela's life.

PSYCHOTHERAPIST

Robert* has helped more than 1,000 children, mainly girls, recover from anxiety, depression and other common mental health disorders in the DRC. Robert served as a psychotherapist for HiH to provide mental health support to children through music therapy.

Robert grew up in Kasai-Central, where he studied biochemistry at secondary school, hoping to become a physician after higher education. He applied to the School of Medicine in 2010 in Kinshasa, the capital of the DRC. However, after two years of intensive medical training, he shifted to clinical psychology. Robert came across the concept of 'somatization' while interning at a local hospital. Somatization is a process through which mental health problems affect the physical body through mind-body connections.

Reflecting on this point, Robert said, "I saw some doctors prescribing medicine to cure certain physical conditions such as headache and heartache, but this prescription did not work because the origins of the conditions were psychological." He realized that mental and physical health operate in a complex, interdependent manner, so a problem in one dimension will affect another. This experience and insight led him to pursue clinical psychology to provide mental health support to children in difficult situations.

Children that Robert has treated over the last three years have shown a wide range of mental health symptoms including, but not limited to, lack of sleep, low self-esteem, feelings of worthlessness and suicidal ideation. However, Robert remarked: "Children's emotional state and overall health improved significantly after music therapy." This echoes the impact of music therapy on mental health. He said that music is an effective therapeutic approach for two main reasons. First, music can automatically capture attention and distract people from negative experiences such as pain, anxiety, worries and sadness by modulating activities of brain structures involved in the initiation, generation, maintenance, termination and modulation of emotions. Second, active music therapy can help people understand, accept and normalize the experienced traumatic event by making participants understand that a happy and meaningful life is possible despite what happened to them, considerably reducing or eliminating stress, despair and fear.

One of the hardest cases that Robert has managed as a psychotherapist was related to a child who witnessed the

murder of her uncle, who was executed by a rebel group in 2017 in Tshimbulu. Since that time, symptoms of anxiety and depression have beset her. She regularly cries, emotion brought on by thoughts of expecting something bad to happen again. According to Robert, this child experienced high levels of anxiety and depression after this traumatic event. "She failed classes, used to isolate herself from others and always looked sad." However, Robert reported that she healed after participating in music therapy. "She is now happy and doing well at school and emotionally," he said.

Reflecting on the situation for girls in Kasai, Robert said the mental health needs are enormous in the region. It is common for girls to have experienced traumatic events that cause symptoms of anxiety and depression. Problematically, mental health services are scarce in Central-Kasai province despite the extensive need. He reflected that humanitarian organizations are the most likely to support mental health services, but like with the EGAL project, they are usually short-term support. Junior pleaded to continue the music therapy project for the children as "needs are enormous."

PRIMARY SCHOOL TEACHER

Christine* has five years of experience working in primary education. She works at a school that operates an accelerated education program (AEP) in Kasai-Central province. An AEP is a flexible, age-appropriate school program run in an accelerated time frame to enable access to education for disadvantaged, over-aged and out-of-school children. Accelerated education programs mainly target children whose education was interrupted by poverty, marginalization, conflict or crisis. An AEP aims to provide over-aged or out-of-school children with equivalent, certified competencies for basic education using effective teaching and learning approaches that match their level of cognitive maturity. Accelerated education programs allow over-aged children to graduate from primary school in three years instead of six years and transition to secondary school for normal education. Around 80 children attend this school, including boys and girls.

Christine related a dialectic story expressing feelings of satisfaction and achievement while also experiencing despair and discouragement about her work in school. The AEP was initiated by local leaders in collaboration with the Congolese government's Ministry of Education to respond to an education crisis in Kasai. However, the school has received little to no support from the government since its inception in 2009. Since then, the school has been operating in poorly constructed and dilapidated wooden buildings with no roof. She has found this situation demotivating, impacting her mental health and well-being as a teacher.

Christine also felt desperate because teachers are not paid by the government or by parents in her school. "Children who come to this school are from poor backgrounds, including orphans and disadvantaged over-aged children who expect free access to education," she said. "Some teachers resign because of lack of motivation. We asked the government to start paying teachers, but nothing has been done so far."

However, in early 2023, the construction of three classrooms and some latrines was completed thanks to the support of World Vision through the EGAL project. She said, "Previously, when it rained, classes were stopped because so much water leaked through the roof. Now the school is well constructed and has a good roof." Establishing good classroom conditions has profoundly improved the situation in the school. For this reason, Christine said she feels "...happy and satisfied."

Although the school benefited from World Vision's support for the classroom construction, children continue to sit on the floor due to the lack of desks. She said that children who come to this school are from poor backgrounds, including orphans and over-aged children whose caregivers cannot afford money to cover school fees in normal schools. Christine reported that many children come to school hungry, which makes it hard for them to concentrate. Christine reports that music therapy helped some children find emotional relief from trauma but urged humanitarian organizations to address

ongoing sources of trauma, including poverty, lack of salary for teachers, hunger and poor schooling conditions.

BOUNCING BACK AFTER TRAUMA

Nadine* is a 14-year-old girl in 6th form at primary school. Nadine's mother passed away, and her father married a second wife. She explained that she felt so sad and unhappy when her mother passed away, "My father married the second wife two years later after Mum died." Nadine said hope returned to her family when her father took the second wife. "We thought that we found another mother. Instead, this woman has been a source of trauma for us," echoing child mistreatment perpetrated by her stepmother.

Nadine explained that the death of her mother and mistreatment from her stepmother constituted great sources of trauma for her. She was able to take proactive steps to address the trauma. She went to live with her grandmother and concluded, "There is more peace and stability at grandmother's house." Her internal healing was also supported through attendance in the Healing in Harmony program: "I used to suffer from sadness and headache, but I was healed after music therapy." Before participating in music therapy, Nadine believed that the death of a parent is the worst thing that can happen in life, and it is extremely abnormal and unacceptable. According to Nadine, she composed a song which brought her to understand and accept the death of her mother and then move forward with life. Technically, not accepting and transcending a traumatic experience can worsen symptoms associated with trauma.

HEALING AFTER THE TRAUMA OF LOSING A PARENT

Shadrack* is a 15-year-old boy in 6th grade in primary school. Shadrack believes in strict gender roles for girls versus boys. According to Shadrack, God created boys and girls with different tasks and roles. He said that cooking, cleaning the house, fetching water and babysitting are roles exclusively reserved for women and girls, while building a house, reading, listening to the radio and caring for domestic animals are roles for men. Being a boy spares him from cleaning the house or cooking before and after school, "My sisters do this kind of work."

Shadrack's father passed away and left three pigs as an inheritance for the family. As the firstborn of his family, he has to take care of pigs each morning before going to school: "Before I wake up, I look after pigs, giving them food and mucking out the pigsty." Taking care of domestic animals is usually a task for men and boys in their community. Animals such as pigs are great sources of income as they can be bred and sold in exchange for money.

Shadrack said the death of his father caused sadness and despair in his family, "Before I participated in music therapy, I used to think constantly of my father, who passed away and felt sad." He did not believe that a future was possible without his father: "I did not have any hope and had frequent nightmares causing disrupted sleep. But all these bad things disappeared after completing the music therapy program." Shadrack reported that singing and dancing with other children with similar traumatic experiences during therapeutic sessions helped him understand his situation and overcome trauma.

After completing primary school, Shadrack plans to study auto mechanics and driving. He believes that family pigs are great sources of income, which will allow him to pay tuition fees for the auto mechanics and driving course. He dreams of

becoming a driver for a company. Having plans and hope for the future reflects a good state of mental health.

PERSISTENCE OF DEPRESSION AND ANXIETY

Winifred*, a 13-year-old girl, explained that her unhappiness and misery are due to the divorce of her parents. Her father divorced her mother three years ago and has not talked to her family since, leaving her already poor mother with great responsibility to care for and feed her family. While many children who benefited from music therapy said that they were healed emotionally, Winifred continues to suffer emotionally, as reflected in this statement: "When I see other happy families with Mum and Dad living together, I feel jealous and wonder why God made me be part of my family?" Winifred blames God for having given her 'divorced parents'. At times, she also thinks about suicide, saying, "I feel like I could kill myself because of the situation in which I live."

Three mental problems are visible in this statement, including suicidal ideation, persistent feelings of guilt and dissatisfaction with life. Contributing to her state of mental health is the extreme poverty of her living conditions, where there are insufficient resources to feed the household, to provide needed clothing and to cover the cost of school fees. Trauma continues to manifest in different ways in Winifred's life: she cries whenever she narrates the story of her divorced parents, she seems extremely shy and often prefers to stay alone, avoiding associating with others.

Winifred said that she attended music therapy sessions and enjoyed them despite manifestations of trauma symptoms in her statement. She completed the music therapy program in June 2022. While she found the HiH program to be a positive experience, she still needs more emotional support and isn't sure where to access these services.

PERCEIVED RELEVANCE AND IMPACT UPON MENTAL HEALTH

The sources above of trauma trigger negative feelings such as sadness, feelings of unworthiness, crying and stress, which called for an adequate method of therapy to help them get rid of trauma. A child said: "I was always feeling bad, angry and sad all the time, but I have eliminated these negative feelings within me." Another continued: "The songs that we sing heal the wounds of our spirits!" suggesting that music therapy was unquestionably relevant in children's lives to help them heal from trauma. "Before music therapy, I was a person full of shame, but now I am proud of myself"

Persistent feelings of sadness, worthlessness, despair and loss of meaning in life are among the symptoms of depression.²⁸ A child from cohort 5 who had not yet participated in the HiH program in October 2022 expressed a feeling of worthlessness through these words: "I am a useless person; I am not a child like others." However, in January 2023, the same child stated: "Joy has returned to my life thanks to music therapy." This view is shared with another respondent from cohort 5, who said in October 2022: "Tears flow from my eyes all the time; I do not understand the meaning of this world." This statement suggests hopelessness and loss of meaning in life, which are symptoms of anxiety and depression.²⁹ However, in January 2023, the same respondent changed their view of himself: "Singing and dancing with other persons at the studio have brought back joy and hope in my life," suggesting that the HiH program positively impacted his mental health.

²⁸ Zahn, R., Lythe, K. E., Gethin, J. A., Green, S., Deakin, J. F. W., Young, A. H., & Moll, J. (2015). The role of self-blame and worthlessness in the psychopathology of major depressive disorder. *Journal of affective disorders*, 186, 337-341.

Most children from cohorts 1, 2, 3 and 4 stated that the HIH program was important both in October 2023 and in January 2023. “This program helped us feel relaxed and comfortable in the heart,” said one child in October. The same child stated in January 2023: “I was a sad person and always in conflicts with my siblings, but thanks to the music program, I found my mental perspective changed, and now I have good relationships with everyone.” Another child said: “before coming to the music program, I was a shameful person, shy; I thought I was a useless child, but now I am proud of myself, and I can defend myself.”

A psychologist reported that some children used to be depressed before the program, but these symptoms disappeared after they took the music program. The psychologist reported the case of a girl accused of witchcraft and who faced rejection and discrimination both in the family as well as in the community: “When she started the Healing in Harmony program, she recovered from depression; we went to do some counselling in her family and at school, and now the girl is well emotionally and was among the top three of her class.” The experience of this child reveals how important home/community follow-ups are to facilitate the healing process in addition to music therapy. While home follow-ups were scarce during the program, this child benefited from home follow-up by the psychologist as her situation was considered “serious,” needing immediate attention and multilevel interventions.

While most children liked music therapy, it was apparent that the program may only have short-term effects if root causes of trauma are not addressed in the community: “When I am at the studio, I feel happy, but when I arrive at home, I become traumatized again due to the lack of food,” said a child in January 2023. Respondents pointed out that several sources of trauma, such as child mistreatment, poverty and discrimination, can continue to destabilize their emotional health if not addressed from their root causes. Although all children had already gone through music therapy in January 2023, some levels of trauma were perceptible during the interview process. Some children in cohorts 3-5 still cried during interviews and expressed despair and sadness. A child early in the program reflected: “Since Mum passed away, I have lost hope for the future.”

²⁹ Metalsky, G. I., & Joiner, T. E. (1997). The hopelessness depression symptom questionnaire. *Cognitive Therapy and Research*, 21, 359-384.



DISCUSSION

There is very little research on MHPSS outcomes in fragile contexts such as the DRC, given the extremely difficult context in which data collection is conducted. In addition, researching a population that has suffered so greatly is an ongoing challenge to ensure that recounting trauma and hardship does not cause additional struggle. This research study successfully gathered and analyzed program data, school records and child and caregiver interviews to provide insights into the lived experiences of young girls participating in the HiH program in Kasai-Central province, DRC. The analysis allowed program staff to explore questions about changes in the program's life and sustained impact after the program closed.

The findings of the research initiative are best summarized by research questions as follows:

1. To what extent have program participants experienced changes in their mental health and psycho-social (MHPSS) outcomes over the course of the program?

Significant improvements were observed in MHPSS outcomes as measured by depression and anxiety. Considering these findings, strong evidence exists that the program participants experience changes in their MHPSS outcomes over the course of the program. The research found a consistent positive effect of improved MHWB from pre-test to post-test.

In terms of depression, there was a significant decrease in the prevalence of depressive symptoms among program participants between the pre-test and post-test. However, many program participants did not display symptoms of depression at the pre-test as they did at the post-test. After the program's close, there was a significant decrease in depressive symptoms as measured by the October 2022 data collection. This might be due to a delayed response within the child's psychological measures to an intervention, or the tool may be picking up other contextual factors in the community or school environment that led to a decrease in depression around the October data collection period.

In comparison, the prevalence of anxiety decreased significantly over the life of the program and then increased after the program among cohorts 1-3. This may be because symptoms of anxiety more quickly displayed in the children over the life of the program. Then, the October 2022 measure was taken during the famine, which was likely a very anxious period for the children assessed.

Further investigation is needed to better understand the lasting effects of the MHPSS gains observed in this study. If feasible, a counterfactual can help the program team measure and discern between program effects and contextual effects.

2. To what extent have program participants experienced changes in their self-esteem during the program and after completion of the program

Self-esteem increased significantly over the period of the program for Cohort 5 but also significantly increased for Cohorts 1-3 over the same period, even though participants were no longer in the program. After controlling for grade, SES and district, participants in Cohort 5 had a significantly greater gain in self-esteem than their Cohort 1-3 peers over the same period, but the gain was quite small (2 points on a 30-point scale).

Again, it is impossible to attribute these gains to the program as Cohorts 1-3 also experience the program and may

be experiencing delayed effects. This is an encouraging finding that the program positively influenced participants' self-esteem. Since this measure was only assessed during Informed International's data collection, it is impossible to examine the lasting effects of the program but this is a suggestion for future research.

3. How has program participants' participation in formal education changed over the life of the program?

The research sample had very high enrolment rates (99.8 per cent) and attendance (91.8 per cent, on average). Considering this, there was little room for improvement over the course of the program, which prevented the research team from observing any significant changes in education access because of the program.

Cohorts 1-3 and Cohort 5 both observed significant increases in education attendance between October 2022 to January 2023. Cohort 5, which was actively going through the HiH program at the time of data collection, observed an improvement in school attendance from 90.1 per cent at the pre-test to 94.7 per cent at the post-test. Using Cohorts 1-3 as a comparison group, the increase observed in Cohort 5 no longer looks as impressive, considering that Cohorts 1-3 also observed an increase from October to January of 91.9 per cent to 93.0 per cent.

4. Is a participant's MHPSS well-being correlated with differences in accessing education?

There was no correlation between MHPSS well-being, self-esteem and education attendance. The research was limited in the relatively high and unvaried attendance rates observed among program participants.

Overall, the findings of this research are very positive, suggesting that the MHPSS outcomes increased over the program's life. In terms of depression, children likely exhibited a delayed response to the observation, so the prevalence of depressive symptoms decreased after a child completed the program. While the prevalence of anxiety symptoms decreased over the life of the program, the program did not prevent the increased anxiety observed in October, likely due to the food insecurity in the area.

Further research is needed to better tease the relationship between education access and the program. At this time, no significant difference was observed in education access over the life of the program. This is likely due to a lack of variation in school attendance (participants already had very high school attendance rates) rather than a lack of correlation between the program and rates.



ANNEX A. HEALING IN HARMONY COHORT ENROLMENT AND COMPLETION DATA

Healing in Harmony Cohort Enrolment and Completion (Male & Female)																			
		Kananga						Tshimbulu						Total					
		Start			End			Start			End			Start			End		
		Total	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Female	Male	Total	Female	Male	Total
Cohort 1	4 to 9	14	13	1	9	8	1	121	88	33	118	85	33	101	34	135	93	34	127
	10 to 14	93	92	1	49	49	0	146	105	41	143	103	40	197	42	239	152	40	192
	15 to 17	66	66	0	17	17	0	0	0	0	0	0	0	66	0	66	17	0	17
	18 to 21	48	48	0	19	19	0	0	0	0	0	0	0	48	0	48	19	0	19
	Total	221	219	2	94	93	1	267	193	74	261	188	73	412	76	488	281	74	355
Cohort 2	4 to 9	1	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
	10 to 14	58	58	0	48	48	0	23	23	0	13	13	0	81	0	81	61	0	61
	15 to 17	116	116	0	81	81	0	79	79	0	52	52	0	195	0	195	133	0	133
	18 to 21	104	104	0	51	51	0	120	120	0	74	74	0	224	0	224	125	0	125
	Total	279	279	0	180	180	0	222	222	0	139	139	0	501	0	501	319	0	319
Cohort 3	4 to 9	25	25	0	13	13	0	43	33	10	25	22	3	58	10	68	35	3	38
	10 to 14	195	195	0	152	152	0	210	167	43	164	132	32	362	43	405	284	32	316
	15 to 17	28	28	0	22	22	0	6	5	1	6	5	1	33	1	34	27	1	28
	18 to 21	3	3	0	3	3	0	0	0	0	0	0	0	3	0	3	3	0	3
	Total	251	251	0	190	190	0	259	205	54	195	159	36	456	54	510	349	36	385
Cohort 4	4 to 9	0	0	0				39	29	10				29	10	39			
	10 to 14	36	36	0				197	160	37				196	37	233			
	15 to 17	104	103	1				12	11	1				114	2	116			
	18 to 21	35	35	0				0	0	0				35	0	35			
	Total	175	174	1	0	0	0	248	200	48	0	0	0	374	49	423	0	0	

ANNEX B. INSTITUTIONAL REVIEW BOARD APPROVAL

1



REPUBLIQUE DEMOCRATIQUE DU CONGO
MINISTRE DE LA SANTE PUBLIQUE
COMITE NATIONAL D'ETHIQUE DE LA SANTE- CNES -
Créé par l'Arrêté Ministériel n°1250/CAB/MIN/S/ZKM/043/MC/2006 du 18 Décembre 2006
N° d'enregistrement au U.S. Department of Health and Human Services (HHS): IORG0008558/IRB
Federalwide assurance (FWA): 00026293

DIRECTION PROVINCIALE DU SUD-KIVU



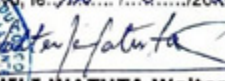
CERTIFICAT D'AVIS ETHIQUE

Personne PHYSIQUE

Thème du projet/Rech. : « Etude sur l'égalité pour l'accès des Filles à l'apprentissage (EGAL)
En République Démocratique du Congo».

Investigatrice principale : **Lisa Zook**
Numéro d'enregistrement : CNES 001/DPSK/192PP/2022
Considération Ethique : Bonne.
Avis : **FAVORABLE**
Durée de validité : **SEPT Mois** (07) non renouvelable, du 1 Octobre 2022 jusqu'au 30 Avril 2023
Sites d'investigation : Kasai Central : Dibaya et Kananga

le 12...1...9.../2022



Me FADHILI WATUTA Walter
CNES
Directeur ai

CNES/DP-SK 0 0 1 / / 4 1 2 5 001 - 12 10 2 2

NB : Sans ratures ni surcharges, aucun duplicata ne sera délivré.

ANNEX C. DEPRESSION MODELS

REGRESSION RESULTS FOR ALL COHORTS

depressed	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Phase 1 (ref)	.	.	.	.	.	.	.
Phase 2	-.693	.107	-6.48	0.000	-.903	-.484	***
Phase 3	-2.493	.342	-7.29	0.000	-3.163	-1.822	***
Phase 4	-2.078	.345	-6.02	0.000	-2.754	-1.402	***
Tshimbulu	.082	.125	0.65	0.512	-.163	.326	.
Less Grade 6 (ref)	.	.	.	.	.	.	.
Grade 6	.142	.121	1.17	0.240	-.095	.378	.
Greater Grade 6	.304	.153	1.98	0.047	.004	.604	**
SES – Tercile 1	.123	.145	0.85	0.397	-.162	.408	.
SES – Tercile 2	.222	.157	1.41	0.157	-.086	.531	.
SES – T3 (ref)	.	.	.	.	.	.	.
Intercept	-1.382	.251	-5.50	0.000	-1.875	-.889	***
Mean dependent var		0.192		SD dependent var		0.394	
Number of obs		1467		Chi-square		122.530	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS FOR COHORTS 1-3

depressed	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Phase 1 (ref)	.	.	.	.	.	.	.
Phase 2	.099	.123	0.81	.42	-.142	.341	.
Phase 3	-2.007	.337	-5.96	0	-2.667	-1.348	***
Phase 4	-1.902	.335	-5.67	0	-2.559	-1.245	***
Tshimbulu	-.21	.145	-1.45	.147	-.495	.074	.
Less Grade 6 (ref)	.	.	.	.	.	.	.
Grade 6	.066	.157	0.42	.674	-.242	.375	.
Greater Grade 6	.032	.193	0.17	.869	-.346	.409	.
SES – Tercile 1	.303	.177	1.71	.087	-.044	.65	*
SES – Tercile 2	.203	.199	1.02	.309	-.188	.593	.
SES – T3 (ref)	.	.	.	.	.	.	.
Constant	-1.017	.261	-3.90	0	-1.528	-.506	***
Mean dependent var		0.198		SD dependent var		0.399	
Number of obs		808		Chi-square		80.998	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS FOR COHORTS 4-5

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
depressed							
Phase 1 (ref)	0	.	.	.	.	.	
Phase 2	-2.109	.266	-7.93	0	-2.63	-1.587	***
Phase 3	-4.321	1.623	-2.66	.008	-7.503	-1.139	***
District	.833	.231	3.61	0	.381	1.285	***
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	.258	.165	1.56	.118	-.065	.581	
Greater Grade 6	.581	.221	2.63	.008	.148	1.013	***
SES – Tercile 1	-.051	.229	-0.22	.824	-.5	.398	
SES – Tercile 2	.293	.242	1.21	.225	-.181	.767	
SES – T3 (ref)		.	.	.	.	.	
Constant	-2.663	.523	-5.09	0	-3.688	-1.638	***
Mean dependent var		0.184		SD dependent var		0.387	
Number of obs		659		Chi-square		91.545	

*** $p < .01$, ** $p < .05$, * $p < .1$

ANNEX D. ANXIETY MODELS

REGRESSION RESULTS, ALL COHORTS

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)		.	.	.	.	.	
Phase 2	-1.099	.103	-10.69	0	-1.3	-.897	***
Phase 3	-.222	.07	-3.19	.001	-.359	-.086	***
Phase 4	-1.862	.24	-7.75	0	-2.333	-1.391	***
District	-.325	.055	-5.87	0	-.434	-.217	***
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	-.104	.059	-1.76	.078	-.219	.012	*
Greater Grade 6	-.011	.079	-0.14	.89	-.165	.143	
SES – Tercile 1	.108	.07	1.55	.12	-.028	.245	
SES – Tercile 2	.08	.073	1.10	.271	-.062	.223	
SES – T3 (ref)		.	.	.	.	.	
Constant	-.005	.1	-0.05	.959	-.201	.19	
Mean dependent var		0.380		SD dependent var		0.486	
Number of obs		1467		Chi-square		192.449	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS, ALL COHORTS

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)		.	.	.	.	.	
Phase 2	-1.099	.103	-10.69	0	-1.3	-.897	***
Phase 3	-.222	.07	-3.19	.001	-.359	-.086	***
Phase 4	-1.862	.24	-7.75	0	-2.333	-1.391	***
District	-.325	.055	-5.87	0	-.434	-.217	***
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	-.104	.059	-1.76	.078	-.219	.012	*
Greater Grade 6	-.011	.079	-0.14	.89	-.165	.143	
SES – Tercile 1	.108	.07	1.55	.12	-.028	.245	
SES – Tercile 2	.08	.073	1.10	.271	-.062	.223	
SES – T3 (ref)		.	.	.	.	.	
Constant	-.005	.1	-0.05	.959	-.201	.19	
Mean dependent var		0.380		SD dependent var		0.486	
Number of obs		1467		Chi-square		192.449	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS FOR KANANGA, ALL COHORTS

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)		.	.	.	.	.	
Phase 2	-1.844	.201	-9.16	0	-2.238	-1.449	***
Phase 3	-.429	.089	-4.81	0	-.605	-.254	***
Phase 4	-3.26	.596	-5.47	0	-4.427	-2.092	***
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	-.099	.072	-1.39	.165	-.24	.041	
Greater Grade 6	-.036	.089	-0.40	.687	-.211	.139	
SES – Tercile 1	-.026	.084	-0.32	.752	-.19	.137	
SES – Tercile 2	-.017	.075	-0.23	.817	-.164	.129	
SES – T3 (ref)		.	.	.	.	.	
Constant	-.031	.066	-0.47	.642	-.161	.099	
Mean dependent var		0.458		SD dependent var		0.499	
Number of obs		487		Chi-square		205.649	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS FOR TSHIMBULU, ALL COHORTS

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)		.	.	.	.	.	
Phase 2	-.706	.124	-5.69	0	-.95	-.463	***
Phase 3	-.069	.104	-0.66	.508	-.274	.136	
Phase 4	-1.23	.261	-4.72	0	-1.741	-.719	***
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	-.139	.085	-1.64	.101	-.305	.027	
Greater Grade 6	.033	.132	0.25	.8	-.225	.292	
SES – Tercile 1	.28	.135	2.07	.038	.015	.545	**
SES – Tercile 2	.244	.149	1.64	.101	-.048	.537	
SES – T3 (ref)		.	.	.	.	.	
Constant	-.967	.135	-7.18	0	-1.231	-.703	***
Mean dependent var		0.342		SD dependent var		0.475	
Number of obs		980		Chi-square		57.693	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS FOR COHORTS 1-3

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)		.	.	.	.	.	
Phase 2	-.726	.105	-6.90	0	-.932	-.52	***
Phase 3	-1.959	.278	-7.05	0	-2.504	-1.414	***
Phase 4	-.067	.082	-0.81	.417	-.228	.094	
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	-.02	.08	-0.25	.803	-.177	.137	
Greater Grade 6	.318	.114	2.79	.005	.095	.541	***
SES – Tercile 1	-.044	.106	-0.41	.68	-.252	.164	
SES – Tercile 2	-.058	.097	-0.60	.55	-.248	.132	
SES – T3 (ref)		.	.	.	.	.	
Constant	-.259	.153	-1.69	.09	-.559	.041	*
Mean dependent var		0.446		SD dependent var		0.497	
Number of obs		659		Chi-square		109.019	

*** $p < .01$, ** $p < .05$, * $p < .1$

ANNEX E. SELF-ESTEEM MODELS

REGRESSION RESULTS, ALL COHORTS

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)		.	.	.	.	.	
Phase 2	3.067	.349	8.78	0	2.382	3.751	***
Phase 3	2.703	.355	7.61	0	2.007	3.4	***
Phase 4	3.269	.383	8.54	0	2.519	4.019	***
District	.081	.246	0.33	.741	-.402	.564	
Less Grade 6 (ref)		.	.	.	.	.	
Grade 6	-.498	.244	-2.04	.041	-.976	-.02	**
Greater Grade 6	-.628	.339	-1.85	.064	-1.292	.036	*
SES – Tercile 1	-.473	.309	-1.53	.126	-1.079	.132	
SES – Tercile 2	-.343	.325	-1.06	.291	-.979	.294	
SES – T3 (ref)	0	.	.	.	.	.	
Constant	27.391	.554	49.40	0	26.304	28.478	***
Mean dependent var		29.322		SD dependent var		3.559	
Number of obs		960		Chi-square		106.476	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS, COHORTS 1-3

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Self-esteem							
Phase	1.311	.321	4.09	0	.682	1.939	***
District	-.135	.356	-0.38	.706	-.833	.564	
Less Garde 6 (ref)		.	.	.	.	.	
Grade 6	-1.082	.36	-3.00	.003	-1.788	-.376	***
Greater Grade 6	-.705	.47	-1.50	.134	-1.626	.217	
SES – Tercile 1	-.705	.429	-1.64	.1	-1.546	.136	
SES – Tercile 2	-.33	.465	-0.71	.478	-1.241	.581	
SES – T3 (ref)		.	.	.	.	.	
Constant	26.125	1.369	19.08	0	23.441	28.809	***
Mean dependent var		29.469		SD dependent var		3.370	
Number of obs		403		Chi-square		35.578	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS, COHORTS 1-3

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Self-esteem							
Phase	3.93	.364	10.80	0	3.216	4.643	***
District	.184	.438	0.42	.674	-.675	1.044	
Less Grade 6 (ref)	.045	.197	0.23	.82	-.34	.43	
Grade 6	.65	.702	0.93	.355	-.726	2.026	
Greater Grade 6	.408	.723	0.56	.573	-1.01	1.825	
SES – Tercile 1	.	.	.	.	.	.	
SES – Tercile 2	21.987	1.794	12.26	0	18.471	25.503	***
SES – T3 (ref)	.	.	.	.	.	.	
Constant	26.125	1.369	19.08	0	23.441	28.809	***
Mean dependent var		28.935				3.969	
SD dependent var							
Number of obs		356				128.720	
Chi-square							

*** $p < .01$, ** $p < .05$, * $p < .1$

ANNEX F. EDUCATION ACCESS MODELS

REGRESSION RESULTS, ALL COHORTS

	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
anxious							
Phase 1 (ref)	.	.	.	.	.	.	
Phase 2	.042	.014	3.03	.002	.015	.07	***
Phase 3	.017	.016	1.08	.281	-.014	.049	
Phase 4	.023	.016	1.45	.146	-.008	.055	
District	.017	.011	1.53	.127	-.005	.038	
Less Grade 6 (ref)	.	.	.	.	.	.	
Grade 6	.036	.009	3.76	0	.017	.054	***
Greater Grade 6	.012	.015	0.82	.413	-.017	.041	
SES – Tercile 1	-.039	.01	-3.82	0	-.06	-.019	***
SES – Tercile 2	-.027	.013	-2.18	.029	-.052	-.003	**
SES – T3 (ref)	.	.	.	.	.	.	
Constant	.891	.021	41.71	0	.849	.932	***
Mean dependent var		0.928				0.138	
SD dependent var							
Number of obs		948				29.423	
Chi-square							

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS, COHORT 5

Attendance Rate	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Phase	.046	.014	3.36	.001	.019	.073	***
District	.005	.016	0.33	.743	-.026	.036	
Less Grade 6 (ref)	.	.	.	.	.	.	
Grade 6	.036	.014	2.55	.011	.008	.064	**
SES – Tercile 1	-.038	.013	-2.93	.003	-.063	-.013	***
SES – Tercile 2	-.042	.02	-2.08	.037	-.082	-.003	**
SES – T3 (ref)	.	.	.	.	.	.	
Constant	.866	.034	25.26	0	.799	.933	***
Mean dependent var		0.924		SD dependent var		0.137	
Number of obs		351		Chi-square		21.410	

*** $p < .01$, ** $p < .05$, * $p < .1$

REGRESSION RESULTS, COHORTS 1-3

Attendance Rate	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Phase	.012	.015	0.78	.437	-.018	.042	
District	.031	.017	1.82	.069	-.002	.064	*
Less Grade 6 (ref)	.	.	.	.	.	.	
Grade 6	.044	.016	2.77	.006	.013	.075	***
Greater Grade 6	.001	.026	0.05	.96	-.05	.053	
SES – Tercile 1	-.062	.017	-3.59	0	-.096	-.028	***
SES – Tercile 2	-.031	.019	-1.67	.094	-.067	.005	*
SES – T3 (ref)	0	.	.	.	.	.	
Constant	.855	.063	13.52	0	.731	.978	***
Mean dependent var		0.924		SD dependent var		0.156	
Number of obs		397		Chi-square		15.823	

*** $p < .01$, ** $p < .05$, * $p < .1$