The Journal of Child Psychology and Psychiatry

Journal of Child Psychology and Psychiatry **:* (2022), pp **–** doi:10.1111/jcpp.13746

Improving adolescent mental health and protection in humanitarian settings: longitudinal findings from a multi-arm randomized controlled trial of child-friendly spaces among South Sudanese refugees in Uganda

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Background: The effects of conflict and displacement on adolescent mental health and protection are profound and can have lasting consequences. We aimed to investigate the effectiveness of two group-based psychosocial interventions on mental health and protection of South Sudanese refugee adolescents. **Methods:** A randomized controlled trial was done in four villages within the Omugo extension of Rhino Camp refugee settlement in the West Nile region of Uganda. Male and female adolescents (aged 9–14 years) were randomly assigned to attend 12 weeks of either a *Standard* psychosocial intervention delivered in a child-friendly space (CFS) or a more structured sequential delivery of psychosocial sessions guided by a newly developed *Toolkit for Child-Friendly Spaces in Humanitarian Settings*. The primary outcomes were psychological distress and resilience 12 months after baseline assessment. The trial is registered with ClinicalTrials.gov, NCT03897894. **Results:** Between May 28, 2019, and February 20, 2020, 1,280 eligible adolescents were recruited. With 70.2% retention at follow-up, 214 assigned to the Standard, 211 assigned to the Toolkit, and 370 assigned to the waitlist control were included in the intention-to-treat and as-treated analysis. Both the *Toolkit* and *Standard* approaches were more effective in reducing psychological distress and perceived protection risks reported by adolescents compared to no intervention. Differential intervention impacts are indicated in subgroup analyses. **Conclusions:** The trial found that both psychosocial interventions when implemented in a CFS are well suited as a first-line mental health and violence prevention intervention for adolescent populations exposed to conflict and forced displacement. Where feasible, CFS should be implemented as a primary response strategy soon after displacement to improve psychological health and reduce the risk environment for adolescents. **Keywords:** Humanitarian; refugee; conflict; adolescents; psychosocial; mental health; protection.

Introduction

Conflict and complex emergencies have resulted in increasing forced displacement globally. With global estimates surpassing 100 million people displaced this year, the impacts on children – now exceeding one third of the total – are profound and can have lasting impacts on their mental health and development (UNHCR, 2022; UNICEF, 2021). In northern Uganda, the effects of war on children have been well-documented and in some cases with sustained and severe psychological, physical, and developmental impacts years after the exposure to trauma (Amone-P'Olak, 2005; Kinyanda et al., 2010; McMullen, O'Callaghan, Richards, Eakin, & Rafferty, 2012; Okello, Onen, & Musisi, 2007). These communities are now at the front lines of refugee response supporting large waves of South Sudanese migration. By early 2018, more than a million refugees from South Sudan were in Uganda, and the West Nile region alone accounted for roughly 67% of that number (UNHCR, 2018a). The Omugo refugee settlement, the site for this research, is an extension of Rhino Camp refugee settlement established in 2018 to accommodate the rising numbers of refugees coming into the West Nile region; 71% of these were children (UNHCR, 2018b).

As the conflict endures and more children are displaced as a result, it is critical to ensure evidence-based programming is available to support immediate recovery with lasting positive impacts on their health and development. To address the immediate needs of displaced children, humanitarian aid agencies routinely use case management, family reunification, and Child-Friendly Spaces (CFS) as primary strategies to support, care for, and protect children during initial influxes of displacement. CFS are group-based psychosocial interventions designed for rapid deployment in emergencies that are scalable to meet the demands of displaced populations. These interventions can also be used as a complementary program to further support children already in school and identify and refer children who may be traumatized by war and in need of more specialized psychological treatment for severe mental disorders. After this acute phase of programming, CFS may be used as a key conduit through which to transition children into a more comprehensive approach to

Conflict of interest statement: No conflicts declared.

care and protection both inside of these physical spaces through more integrated services or through external community-led approaches to holistically address the needs of children.

As part of an inter-agency effort to examine the impact of these child-centered interventions, practitioners, and researchers have documented the effectiveness of an early version of CFS that provides a basic set of structured and unstructured activities (MacLeod & Toms, 2008; UNICEF, 2009). These early versions of CFS were effective in modestly improving the psychosocial well-being of children directly after participation in the program (Hermosilla, Metzler, Savage, Musa, & Ager, 2019). However, the short-term effects varied considerably across humanitarian contexts and were largely dependent on the program's contextual fit to these circumstances, the age and sex of participants, and the overall quality of the program (Metzler, Savage, Yamano, & Ager, 2015). To date, there is mixed evidence on the lasting impacts of this early version of CFS and similar psychosocial interventions (Hermosilla, Metzler, Savage, & Ager, 2021; Metzler et al., 2019; Purgato et al., 2018).

Based on this decade of research and compilation of lessons learned from field practitioners, a *Toolkit for Child-Friendly Spaces in Humanitarian Settings* (herein referred to as the Toolkit) was developed as a resource synthesizing existing inter-agency standards for design and high-quality implementation of CFS and expanding these with a package of psychosocial activities that can be tailored to local circumstances by trained facilitators and delivered in a sequential and structured manner (World Vision International & IFRC Reference Centre for Psychosocial Support, 2018a, 2018b, 2018c, 2018d).

The trial reported on here responded to gaps in evidence and calls from practitioners to better understand how this structured psychosocial approach when implemented within CFS impacts children soon after participating in the program, whether any lasting gains are secured through this exposure, and whether this approach is more effective than existing inter-agency standards or no intervention.

Methods

Study design and participants

A three-arm, parallel-group randomized controlled trial was designed to evaluate the effect of a structured psychosocial intervention, the *Toolkit*, on the mental health, developmental progress, and protection of South Sudanese refugee children residing in the West Nile region of Uganda. Two intervention arms (one based on the established inter-agency CFS standards, *Standard*; one based on the new toolkit, *Toolkit*) and a waitlist control arm, *Control*, were formed throughout three CFS locations established in 2018 by World Vision Uganda and serving four villages within the Omugo extension of Rhino Camp in the West Nile Refugee Response. Approvals were obtained from the Columbia University Medical Center Institutional Review Board (Reference No. AAAS1367), Makerere University School of Social Sciences IRB (MAKSS REC 02.19.264), and the Ugandan National Council for Science and Technology (UNCST SS 4966). The trial is registered with ClinicalTrials.gov, number NCT03897894.

The study population was identified through discussion with staff and local community leaders to demarcate catchment areas for the CFSs and developmental stages aligned with treatment approaches. Eligibility was limited to children 6–14 years residing within these program catchment areas. The number of eligible children exceeded the organization's capacity to deliver services; thus, a waitlist control group was randomly assigned in addition to the other two treatment options. Verbal assent was obtained from all participating adolescents. A parallel verbal consent process was used to obtain permission for adolescent participation from their caregivers. The trial results reported and discussed here are the longitudinal results for early adolescents aged 9–14 years. The results of the trial for younger children aged 6–8 years, assessed through their caregivers, and post-intervention short-term findings inclusive of qualitative activities are reported elsewhere.

Randomization and masking

A maximum of one child 9–14 years per household was eligible to take part in an initial interview prior to the start of any programming within their catchment area. For households with multiple children within this age range, a Kish table was used to determine which child participated in the interview. Following the completion of all baseline interviews in each catchment area, households were randomly allocated in a 1:1:1 ratio to the *Toolkit* group, the *Standard* group, or the waitlist control group using computer-based randomization. Participants were blinded to treatment assignment for the duration of the trial. The facilitators and staff who delivered the intervention were not involved in data collection, but the data collection team working to support quality monitoring of the intervention could have inferred treatment status of the children given differences in activities, and implementation of monitoring activities to support measurement of dose received. Additionally, a small group of assessors were involved in community outreach to alert each participant to their respective start date for the program.

Interventions. The *Standard* intervention delivered locally adapted psychosocial programming consisting of sessions of structured and unstructured activities that are in line with established inter-agency standards for design and quality implementation of CFS (MacLeod & Toms, 2008; UNICEF, 2009; WVI, 2018a). Each session lasted around 1.5–3 h with recreational play time integrated within it and was offered daily for 12 weeks. Trained facilitators from the refugee community developed weekly activity plans in consultation with adolescents. Structured activities included functional literacy and numeracy sessions and play-based activities tailored to the local circumstances of the emergency and developmental needs of the adolescent. The use of creative and constructive play was used to support the expression of ideas and feelings as well as the development of fine motor skills through painting, drawing, and other artistic activities. Other communication and drama activities were held to encourage reading, the telling of oral stories, and sharing of traditional dances, songs, and games.

The *Toolkit* intervention also followed established standards for design and quality implementation of CFS, and provided an interactive, 3-hr daily session that included an opening activity, followed by the main activity pre-selected and contextualized by facilitators, and concluded with a closing activity,

typically an indigenous song or dance. The 12-week program featured 40 sequential sessions based on seven psychosocial themes (see Table 1) that were developed in consultation with adolescents. The intervention was adapted and pretested in a neighboring South Sudanese refugee response to ensure activities are contextually relevant and culturally grounded.

The interventions were carried out at dedicated CFS sites, which consisted of a permanent concrete structure with several rooms to host activities, a storeroom for supplies, and a variety of playground equipment adjacent to an open grass field used for mixed sports. Separate latrines were available for girls and boys across a compound demarcated by wooden fencing. Each CFS location was designed to provide services for children aged 6–14 years, 5 days per week for 2–3 hr per day. Both *Standard* and *Toolkit* programming were offered in each physical CFS location at the same time of day with rotated indoor and outdoor activities by treatment assignment.

Procedures

Adolescents were asked to complete a baseline survey before programming started, post-intervention (after 12 weeks), and again at follow-up roughly 9 months after the intervention ended in 2020. Participatory activities to assess protection needs, priorities, and capacities were conducted after the conclusion of survey data collection in all locations at baseline and post-intervention. Due to restrictions on data collection resulting from the COVID-19 pandemic, no participatory sessions were conducted during the follow-up period and several sessions planned during the endline were canceled.

Surveys were translated into South Sudanese Arabic and Kakwa by social workers with prior experience working on mental health projects and screened for idioms and other aspects impeding comprehension through group translation by the assessment team. The items were then back translated into English, and pre-tested to help improve clarity and accuracy of information and mental health constructs as well as acceptability of lines of inquiry and response sets. Participatory sessions with adolescents and caregivers during the study period further examined key dimensions of mental health constructs and the locally significant relevance of items assessed through survey instruments. All surveys were administered by trained assessors from both host and refugee communities unaffiliated with the implementing agency. Face-to-face interviews were conducted with participants outside of their homes using tablets or mobile phones to read survey items and record responses.

Facilitators completed a 5-day training from World Vision Uganda and began delivering both programs to children at the

Table 1 CFS toolkit activity progression over 12-week implementation period

Theme 1 – Building community: "Our Space Together"	
Week 1	
Activity 1.1	"Pass the Ball" Name Game
Activity 1.2	What We Expect from Each Other
Activity 1.4	Our Favorite Things
Week 2	
Activity 1.6	Group Song
Activity 1.7	Our Footprints and Handprints
Activity 1.8	Things We Have in Common
Theme 2 – Emotional learning: "My Feelings"	
Week 3	
Activity 2.1	Building the Emotion Wheel
Activity 2.2	Emotions and Behaviors
Activity 2.3	Different Ways to Response
Activity 2.4	Things To Do When Big Feelings Are In Your Heart
Activity 2.5	Mirror Game
Theme 3 – Well-being and coping: "Feeling Good"	
Week 4	
Activity 3.1	Multi-Tasking
Activity 3.3	Tree in the Wind
Activity 3.8	Mindful Art Walk
Theme 4 – Social support: "My Friends and Family"	
Week 5	
Activity 4.1	Ball of String
Activity 4.2	My Garden with Friends
Activity 4.3	Working Together
Week 6	
Activity 4.4	Who am I?
Activity 4.5	Who Matters in My Life?
Activity 4.6	A Memory of Someone who Matters
Theme 4 – Social support: "My Friends and Family"	
Week 5	
Activity 4.1	Ball of String
Activity 4.2	My Garden with Friends
Activity 4.3	Working Together
Week 6	
Activity 4.4	Who am I?
Activity 4.5	Who Matters in My Life?
Activity 4.6	A Memory of Someone who Matters
Theme 5 – Relating to others: "Being a Good Friend"	
Week 7	
Activity 5.1	Guess an Animal
Activity 5.2	Body Language
Activity 5.3	Silent Movie
Week 8	
Activity 5.4	Listen to Me!
Activity 5.5	Just Listen
Activity 5.7	I am a Good Listener When
Week 9	
Activity 5.8	Using "I" Statements
Activity 5.9	Lean on Me
Activity 5.10	Taxi and Radio Cars
Theme 6 – Protection and Boundaries: "My Safety"	
Week 10	
Activity 6.1	Make an Egg
Activity 6.2	Personal Space
Activity 6.3	Protecting Myself
Week 11	
Activity 6.4	Mirror in a Box
Activity 6.5	Our Community
Activity 6.6	Helping our Community
Theme 7 – Building on Strengths: "All My Supports"	
Week 12	
Activity 7.1	Nobody Knows What I Can Do
Activity 7.2	River of Life
Activity 7.3	If I were

The Activity Catalog and session content was undergoing further refinement at the time of its piloting. Sessions were contextualized by local facilitators at the start of the study. The Toolkit for Child-Friendly Spaces in Humanitarian Settings is an open-access resource developed by IFRC and World Vision.

start of the study. They participated in a one-day refresher training roughly halfway through implementation at which time facilitators were unblinded to treatment allocation. This decision was made to ensure quality of implementation and allow for reference materials to be onsite in communal workspaces. Facilitators attended weekly meetings with World Vision staff coordinators and a monitoring specialist to provide oral accounts of weekly sessions and progress of children for quality assurance. Fidelity was assessed using (a) daily observations of sessions for adherence to each intervention protocol, (b) attendance records to determine level of exposure, (c) an interactive activity measuring each adolescent's level of satisfaction with sessions delivered daily, and (d) monthly administration of the CFS Monitoring Quality Standards Checklist (WVI, 2018a, p. 28). Regular discussions with program staff and analysis of program documents, such as registration records, supported a broader understanding of program reach and current outreach strategies for recruitment of staff and recruitment and retainment of program participants. No adverse events were reported over the duration of the study.

Outcomes

The primary longitudinal outcomes were adolescent resilience and psychological distress overall and in terms of symptom clusters related to post-traumatic stress disorder (PTSD). Resilience of adolescents was measured using the Child and Youth Resilience Measure (CYRM). The CYRM-28 was originally developed to measure three main factors that promote resilience in children – Individual (i.e. problem solving, support systems, assertiveness), Relational (i.e. parental care and social competence), and Contextual (i.e. sense of belonging to a community, cultural practices, beliefs, and traditions) (Liebenberg, Ungar, & de Vijver, 2012). Confirmatory factor analysis confirmed a three-factor structure comprised of 12 items in line with the CYRM-12 (results not included) (Panter-Brick et al., 2018). This version is used for reporting the results and had an internal consistency of 0.69.

Psychological distress in adolescents was measured using the Child Post-traumatic Stress Scale for DSM-V (CPSS-5), which is composed of 20 questions assessing four subscales [Intrusion, Avoidance, Changes in Cognition and Mood (CogMood), and Increased Arousal and Reactivity (ArReact)] and seven questions assessing daily functional impairment related to these (Foa, Asnaani, Zang, Capaldi, & Yeh, 2018). Confirmatory factor analysis indicated a four-factor structure in line with the original developer's intent (Foa et al., 2018). Cronbach's alpha for the full scale was .89 and for each subscale was Intrusion $\alpha = .85$, Avoidance $\alpha = .79$, CogMood $\alpha = .81$, and ArReact $\alpha = .69$.

Secondary outcomes of interest reflected contributing factors to resilient healthy adolescent development. These included a 6-item measure of hopefulness [using the Children's Hope Scale (CHS)], a 13-item measure exploring the acquisition of developmental assets [using the Emergency Developmental Assets Profile (EMDAP)], and an assessment of functional literacy and numeracy skills [using a locally adapted version of the School-based Test About Reading (STAR)] (Scales et al., 2015; Snyder et al., 1997; World Vision International, 2017). STAR was originally designed to measure progress in reading starting around Grade 3 in relation to structured learning programs to provide insight into how best to target additional supports. The locally adapted version used in the study assesses the adolescent's ability to recognize letters (1) and words (2), and read a four-sentence paragraph (3), a short story (4), or a longer story excerpt from a local paper (5) with the ability to answer comprehension questions it (6). The numeracy component assesses skills in identifying small (1) and large numbers (2), and more skills in simple addition (3), subtraction (4), multiplication (5), and division (6). Items from a locally adapted version of the Child Protection Rapid Assessment (CPRA) Toolkit were used to examine positive and negative coping strategies as well as familial and communal resources adolescents identify to further support their health and protection (Global Protection Cluster, Child Protection Working Group, 2012). Perceived protection risks and adolescent reports of daily stressors of their caregivers were assessed to examine the protective environment for adolescent in the settlement.

Statistical analysis

With initial fixed sample size of 400 per group (1,200 in total), assuming the attrition rate is no more than 30% at 12-month follow-up, the standardized detectable effect size with 80% power was 0.24. Data collected from adolescent surveys were used to generate descriptive statistics for sample characteristics. We employed generalized linear model (GLM) with identity link function to compare outcomes of the *Standard* and *Toolkit* intervention to the control following intention-to-treat principle. The statistical model for each outcome was of the form $EY = \alpha 0 + \delta 1 I1 + \delta 2 I2 + \gamma T + \beta 1 TI1 + \beta 2 TI2$, where Y is outcome variable, $I1$ and $I2$ are the *Standard* and *Toolkit* intervention group indicator (vs. waitlist control), respectively, and T is the time indicator for the long-term follow-up (vs. baseline). The coefficient β corresponding to the group-by-time interaction (i.e., β1 and β2) was the key parameter of interest as it is the difference in change over time between the two groups and represents the effect of the intervention at the follow-up. The comparisons between *Standard* and *Toolkit* intervention were also conducted. Generalized estimating equations (GEE) methodology was used to account for within-subject correlation. To correct potential bias due to missingness, multiple imputation methods with 11 imputations were employed Rubin's formula was used to estimate standard errors. The β coefficients and their corresponding *p*-values are reported in Table 4 and supplementary files (Tables S1–S3). *p*-Values ≤ .05 were considered statistically significant. We also conducted several subgroup analyses by gender (girls vs. boys), ethnicity (Bari vs. ethnic minorities), and developmental stage (early vs. middle adolescence), presented in the supplementary Tables S1–S3.

During the intervention period, governmental restrictions closed schools and other programming for children in response to the COVID-19 pandemic. As a result, one CFS included in the study at baseline closed prior to completion of the regular intervention cycle and another previously planned CFS did not become operational during the study period. An *as-treated* (AT) analysis was conducted to respond to these adherence issues, given the extent to which the context influenced the randomization process. Group assignment in this analysis was based on validated attendance records and was a way to reflect the intervention's impacts in a real-world setting. Both ITT and AT estimates are provided in the data tables with outcome means and significance for the AT analysis presented in the results section text to provide a better understanding of program impacts and the challenges of drawing inference due to protocol adherence in this context impacted by the global pandemic. Analyses were conducted using STATA16 (StataCorp LLC, College Station, TX) and SAS©9.4 (SAS Institute Inc, Cary, NC).

Results

Between May 28, 2019, and February 20, 2020, 1,284 eligible participants were identified, of whom 1,280 adolescents aged 9–14 years completed the baseline survey (429 assigned to Toolkit, 435 assigned to Standard, and 420 assigned to waitlist), with 70.2% retention at follow-up (Figure 1). No

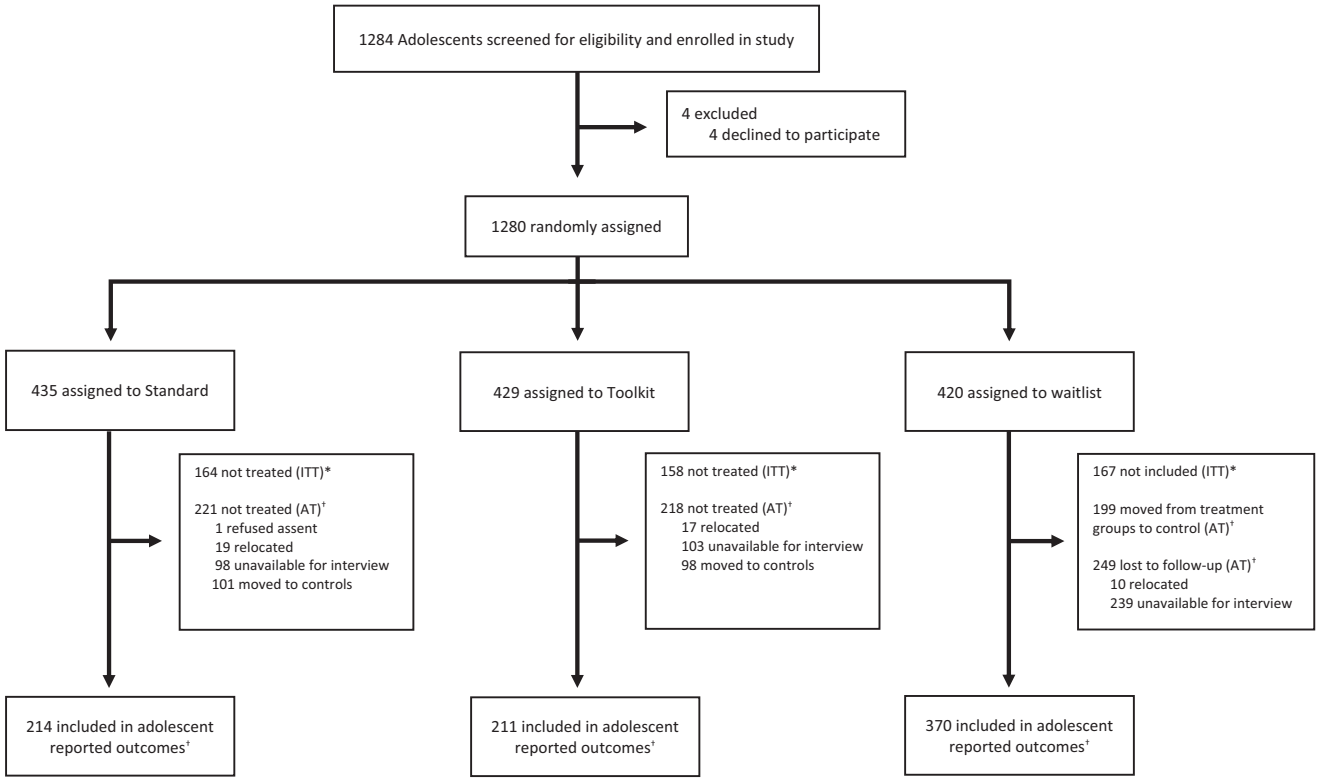

Figure 1 Consort diagram. *Intention-to-treat analysis included, intervention sites closed due to COVID-19 pandemic. †As-treated analysis, attendance registers were used to validate treatment group

statistical differences were found between participants retained and those lost to follow-up on outcomes under study or sample characteristics at baseline (data not shown). Analyses of outcomes were restricted to 795 adolescents (214 assigned to the Standard, 211 assigned to the Toolkit, and 370 assigned to the waitlist) who completed baseline and follow-up surveys.

Intervention participation was low, with 33 (15.7%) of adolescents assigned to take part in the Toolkit and 45 (21.1%) of adolescents assigned to the Standard intervention attending half or more of sessions offered. Baseline characteristics between treatment groups were mostly well-balanced (Table 2). Assessment of quality standards revealed CFSs met standards most of the time. More than three-fourths of all participants were 'very satisfied' with daily sessions. Mean age of adolescents at baseline was 11.3 years (*SD* 1.7) for those assigned to the *Toolkit*, 11.7 years (*SD* 1.6) for those assigned to *Standard*, and 11.5 years (*SD* 1.6) for those in the waitlist. More than three-fourths reported identifying with the settlement's ethnic majority group, Bari, and nearly all reported attending formal school in the settlement. The average number of months the household had been displaced in the settlement was 16.1 months for both the Toolkit (*SD* 8.2) and the Standard (*SD* 7.6) groups. For those in the waitlist control, the average length of displacement was roughly 3 months less.

Descriptive data for the outcomes by treatment group and survey round are shown in Table 3. Scores for primary outcomes related to psychological distress declined and resilience increased between survey rounds in all three groups, suggesting improvements in psychological health and resilience among adolescents in the settlement across the study period (see Table 4).

All groups had improvement over time in the overall resilience summary scores (CYRM-12 mean improvement: Toolkit = 6.14, Standard = 4.26, control = 4.24) as well as Individual, Relational, and Contextual sub-scale scores [mean improvement for (a) Individual: Standard = 2.06, Toolkit = 2.55, control = 1.95; (b) Relational: Standard = 0.62, Toolkit = 1.54, control = 0.85; (c) Contextual: Standard = 1.59, Toolkit = 2.05, control = 1.44]. The Toolkit group had significantly more improvement over time compared to the Standard group on the Relational and overall summary scores ($\beta = 0.927$, $p = .025$; and $\beta = 1.881$, $p = .033$). The Toolkit group also significantly improved more compared to those in the control group on the overall summary score ($\beta = 1.905$, $p = .015$).

Beneficial effects were shown in all groups in the overall CPSS-5 summary score (mean improvement: Standard = 7.86, Toolkit = 8.38, control = 3.45) as well as on each of the 4 sub-scale scores (mean improvement for Intrusion: Standard = 2.86, Toolkit = 2.58, control = 1.17; Avoidance: Standard = 0.64,

Table 2 Baseline characteristics of study population at enrollment

	Control (n = 370)	Standard CFS (n = 214)	CFS toolkit (n = 211)
Age (years)	11.5 (1.6)	11.7 (1.6)	11.3 (1.7)
Sex (female)	198 (53.5%)	107 (50.0%)	103 (48.8%)
Ethnicity			
Bari	310 (83.8%)	169 (79.0%)	178 (84.4%)
Baggara/Zamba	19 (5.1%)	17 (7.9%)	11 (5.2%)
Kakwa	16 (4.3%)	5 (2.3%)	5 (2.4%)
Keliko	10 (2.7%)	6 (2.8%)	3 (1.4%)
Other	15 (4.1%)	17 (7.9%)	14 (6.6%)
Attends school			
Yes	365 (98.6%)	213 (99.5%)	209 (99.1%)
No	5 (1.4%)	1 (0.5%)	2 (0.9%)
Has a disability			
Yes	10 (2.7%)	11 (5.1%)	9 (4.3%)
No	360 (97.3%)	203 (94.9%)	202 (95.7%)
Has a chronic disease			
Yes	27 (7.3%)	8 (3.7%)	12 (5.7%)
No	343 (92.7%)	206 (96.3%)	199 (94.3%)
Average length of displacement (in months)	13.3 (8.7)	16.1 (7.6)	16.1 (8.2)
Household size	7.0 (2.7)	7.5 (3.0)	7.4 (5.3)

Data are mean(*SD*) or *n*(%).

Toolkit = 0.58, control = 0.04; CogMood: Standard = 1.96, Toolkit = 2.78, control = 1.11; ArReact: Standard = 2.39, Toolkit = 2.44, control = 1.14). The Toolkit group showed significantly more improvement over time compared to the control group on the overall summary score (β = −4.932, p = .0002) and on Intrusion, CogMood, and ArReact sub-scales (β = −1.417, p = .0001; β = −167, p = .002; β = −1.30, p = .003, respectively). The Standard group showed significantly more improvement over time compared to the control group on the overall summary score (β = −4.41, p = .001) and on Intrusion, Avoidance, and ArReact sub-scales (β = −1.696, p = .0002; β = −.602, p = .043; β = −1.259, p = .003, respectively). No differences were statistically significant between Standard and Toolkit groups.

All groups found improvement over time in EMDAP scores, CHS scores, functional literacy and numeracy scores, and positive coping strategies (see Table 4). There were no significant group differences on these outcomes, except for the Toolkit group showed significantly greater improvement over the control group (EMDAP: β = 1.908, p = .013) related to increased developmental assets. Scores for secondary outcomes related to protection risks and daily stresses related to caregiving improved in both treatment groups, suggesting beneficial effects of both interventions over the waitlist condition. Specifically, there was an improvement over time for both treatment groups related to protection risks (mean decrease over time: Standard = 1.27, Toolkit = 0.57) while the controls reported greater concerns over time (mean increase = 0.36). Both Toolkit and Standard groups showed significant reductions in reported protection risks compared to controls. There was an improvement over time for both Standard and Toolkit intervention groups in concerns related to daily caregiving (mean decrease over time: Standard = 0.99, Toolkit = 0.76) while the controls reported greater concerns over time (mean increase = 0.10). However, only the Standard group showed significant reductions in reported caregiving concerns compared to controls. Lastly, negative coping strategies increased over time in all groups. Nevertheless, group differences were not statistically significant negative coping strategies.

Additional results for outcomes disaggregated by gender, developmental stage, and ethnicity are provided in the Supporting Information (see Tables S1–S3). Given the low attendance for each intervention, additional analysis was conducted to determine the benefits of attending each intervention greater than or equal to half time vs. less than half of the sessions offered. In the Toolkit group, participants attending greater than or equal to half of the time showed significant improvements in CYRM-12 Contextual sub-scale scores (β = 1.564, p = .036), CPSS-5 Intrusion sub-scale scores (β = −2.669, p = .003), and functional literacy skills (β = .470, p = .040). Those in the Standard group showed significant reductions in CYRM-12 Individual sub-scale scores (β = −1.489, p = .047) when attending 50% of sessions or more.

Discussion

We conducted a randomized controlled trial to explore two intervention packages designed to improve the psychological health and protection of adolescents in a refugee setting. The *Standard* intervention intermixed recreational and play-based activities while the *Toolkit* provided a more

Table 3 Descriptive statistics for primary and secondary study outcomes by treatment group and time period

	Intent-to-treat analysis						As-treated analysis					
	Baseline			Follow-up			Baseline			Follow-up		
	Control (n = 253)	CFS toolkit (n = 271)	Standard CFS (n = 271)	Control (n = 253)	CFS toolkit (n = 271)	Standard CFS (n = 271)	Control (n = 370)	CFS toolkit (n = 211)	Standard CFS (n = 214)	Control (n = 370)	CFS toolkit (n = 211)	Standard CFS (n = 214)
Primary outcomes												
CPSS-5												
Summary score	13.62	14.76	15.26	8.72	8.39	8.76	12.56	16.33	16.30	9.11	7.95	8.44
Intrusion	3.91	4.24	4.93	2.57	2.07	2.50	3.77	4.55	5.24	2.61	1.96	2.38
Avoidance	1.72	2.15	2.16	1.61	1.83	1.56	1.71	2.36	2.22	1.67	1.78	1.57
CogMood	4.11	4.37	4.30	2.45	2.22	2.77	3.73	4.88	4.57	2.62	2.10	2.61
ArReact	3.88	3.99	3.88	2.08	2.28	1.93	3.35	4.54	4.27	2.22	2.10	1.88
CYRM-12												
Summary score	47.26	46.66	47.74	51.51	52.19	52.18	47.50	46.09	47.85	51.74	52.23	52.11
Individual	13.81	13.86	13.99	15.85	16.12	16.10	13.91	13.67	14.06	15.86	16.22	16.12
Relational	17.26	16.89	17.49	18.06	18.23	18.26	17.26	16.74	17.60	18.11	18.28	18.21
Contextual	16.19	15.90	16.26	17.60	17.84	17.82	16.32	15.68	16.19	17.76	17.73	17.78
Secondary outcomes												
CHS	20.18	19.94	20.38	20.79	21.40	21.54	20.07	19.88	20.61	20.61	21.74	21.89
EMDAP	24.31	23.85	24.46	25.78	26.03	26.80	24.51	23.22	24.64	25.76	26.38	26.83
STAR-literacy	1.16	1.07	1.14	1.46	1.50	1.56	1.03	1.16	1.24	1.34	1.61	1.69
STAR-numeracy	2.97	2.99	3.21	3.17	3.03	3.28	2.84	3.18	3.31	2.98	3.24	3.39
CPRA												
Protection Risks	4.37	4.87	5.38	4.29	4.75	4.62	4.26	5.14	5.70	4.62	4.57	4.43
Daily stressors related to caregiving	5.69	6.25	6.46	5.44	6.00	5.70	5.77	6.41	6.54	5.86	5.65	5.55
Positive coping strategies	2.51	2.51	2.61	2.70	2.74	2.77	2.46	2.57	2.67	2.68	2.70	2.86
Negative coping strategies	0.36	0.40	0.36	0.49	0.52	0.57	0.38	0.37	0.36	0.52	0.48	0.58
Knowledge of resource persons and institutions	1.60	1.56	1.58	1.60	1.69	1.81	1.50	1.58	1.72	1.59	1.74	1.85

Data are mean (range; *SD*). All measures are self-reported by adolescents. Table figures rounded to hundredths place; results section based on full calculations. ArReact, arousal and reactivity; CogMood, changes in cognition and mood.

Table 4 GEE regression estimates of intervention effect on study outcomes

	Intent-to-treat						As-treated					
	Toolkit vs. control (ref)		Standard vs. control (ref)		Toolkit – standard (ref)		Toolkit vs. control (ref)		Standard vs. control (ref)		Toolkit – standard (ref)	
	Intervention effect	*p* Value	Intervention effect	*p* Value	Intervention effect	*p* Value	Intervention effect	*p* Value	Intervention effect	*p* Value	Intervention effect	*p* Value
Primary outcomes												
Child PTSD symptom scale												
Summary score	−1.45	.29	−1.59	.25	0.14	.92	−4.93	.00	−4.41	.00	−0.52	.72
Intrusion	−0.83	.06	−1.09	.02	0.25	.57	−1.42	.00	−1.70	.00	0.28	.57
Avoidance	−0.21	.50	−0.49	.11	0.28	.37	−0.54	.08	−0.60	.04	0.06	.87
CogMood	−0.49	.35	0.13	.81	−0.62	.24	−1.67	.00	−0.85	.09	−0.82	.17
ArReact	0.08	.85	−0.14	.74	0.23	.60	−1.30	.00	−1.26	.00	−0.04	.93
Child and youth resilience measure												
Summary score	1.29	.11	0.20	.81	1.09	.17	1.90	.02	0.02	.98	1.88	.03
Individual	0.22	.59	0.08	.85	0.14	.74	0.60	.14	0.11	.80	0.49	.29
Relational	0.54	.15	−0.02	.95	0.56	.13	0.70	.06	−0.23	.53	0.93	.03
Contextual	0.52	.11	0.14	.68	0.38	.23	0.61	.06	0.15	.65	0.46	.21
Secondary outcomes												
Children's hope scale	0.85	.25	0.55	.46	0.31	.68	1.33	.07	0.75	.31	0.59	.49
Emergency developmental assets profile	0.71	.35	0.86	.25	−0.15	.84	1.91	.01	0.95	.20	0.96	.27
STAR-literacy	0.13	.25	0.12	.27	0.01	.92	0.14	.22	0.13	.21	0.01	.96
STAR-numeracy	−0.16	.30	−0.14	.36	−0.02	.88	−0.08	.58	−0.06	.67	−0.02	.89
Child Protection Rapid Assessment (CPRA)												
Protection risks	−0.04	.94	−0.68	.14	0.64	.19	−0.94	.04	−1.63	.00	0.70	.20
Daily stressors related to caregiving	0.00	1.00	−0.51	.35	0.51	.36	−0.86	.12	−1.09	.05	0.23	.71
Positive coping strategies	0.04	.84	−0.03	.86	0.07	.70	−0.09	.61	−0.03	.84	−0.06	.76
Negative coping strategies	−0.01	.87	0.08	.32	−0.09	.25	−0.04	.62	0.07	.37	−0.11	.23
Knowledge of resource persons and institutions	0.12	.38	0.23	.09	−0.11	.42	0.07	.61	0.04	.78	0.03	.85

ArReact, arousal and reactivity; CogMood, changes in cognition and mood; GEE, generalized estimating equations; ITT, intent-to-treat analysis results.

structured approach to the delivery of psychosocial sessions to improve social and emotional learning and developmental skills of adolescents (World Vision International & IFRC Reference Centre for Psychosocial Support, 2018a).

Both the *Toolkit* and *Standard* approaches were more effective in reducing psychological distress and perceived protection risks reported by adolescents compared to no intervention. Both interventions proved critical to improving the psychological health of adolescent girls, those in early adolescence (aged 9–11 years), and those identifying with the Bari ethnic group in the settlement. The more structured approach provided in the *Toolkit* proved more beneficial than the *Standard* approach in reducing symptoms related to Changes in Cognition and Mood among those in early adolescence and in reducing overall symptoms, Changes in Cognition and Mood, and Increased Arousal and Reactivity for those identifying with ethnic minority groups in the settlement. The *Standard* approach was more effective among adolescents aged 12–14 years overall and boys when related to symptoms of Intrusion only.

The differential impacts of these two interventions suggest the promotive and protective aspects of the *Toolkit* in supporting adolescent girls' mental health with additional benefits potentially incurred upon greater attendance to the intervention. Sustained reductions in psychological distress and perceived risk provide an opportunity for strengthening resources adolescents require to sustain their well-being and seek out healthy pathways for development into adulthood. To measure these aspects, our study used the CYRM-12 to explore the individual, relational, and contextual dimensions of resilience as well as several contributing factors, such as hopefulness, developmental assets, coping strategies, stresses related to caregiving, and knowledge of resource persons and institutions that promote positive psychological health and development for adolescents. The *Toolkit* was more successful in improving overall resilience for adolescents compared to the *Standard* approach or no intervention and enhancing relational capacities compared to their counterparts receiving the *Standard* intervention. It was also more effective in strengthening contributing factors which promote healthy child development, including the increased acquisition of developmental assets (vs. no intervention). For girls, this included the buffering of further acquisition of negative coping strategies compared to their counterparts in the Standard program (mean increase: *Standard* = 0.26, *Toolkit* = 0.02). For adolescents aged 12–14 years, this included the strengthening of several promotive factors for resilience, including hopefulness and developmental assets. For those identifying as ethnically Bari, this included the increased acquisition of developmental assets over their control counterparts. Notably, the *Toolkit* was more beneficial than the *Standard* approach in bolstering the overall resilience and relational capacities of those identifying with ethnic minorities; where ethnic minorities receiving the Standard intervention demonstrated notable declines in each of these outcomes compared to those not receiving the intervention. When exploring the effects of greater attendance on these outcomes, the *Toolkit* was beneficial in increasing functional literacy scores and contextual capacities related to resilience.

We note several limitations of the study. First, the *Standard* and *Toolkit* activities were run in the same physical space concurrently. Efforts to minimize cross-contamination were taken by using separate rooms to facilitate activities, independent trainings of facilitators on activities, and staggering outdoor play time to limit interaction of participants assigned to different program models. Second, attendance across the study period in both interventions was low and may be an important factor influencing outcomes for adolescents. Third, due to governmental closures of study intervention sites to limit COVID-19 disease transmission, many participants were unable to receive the intervention according to random assignment calling for a secondary *as-treated* analysis based on validated attendance records. Although we did not identify differences across groups at baseline, it is possible that these new participant groups differ on unmeasured variables. Fourth, low literacy levels combined with poor fluency in one language offered on the survey across the study population necessitated the administration of self-reported instruments through interviews and switching between survey languages during interviews; both of which may interfere with measurement of outcomes. Confirmatory factor analyses were completed on all instruments used in the study prior to this analysis.

Taken together, our findings indicate that both interventions when implemented in a CFS are well suited as a first-line mental health and violence prevention intervention for early adolescent populations exposed to conflict and forced displacement. Where feasible, CFS should be implemented as a primary response strategy soon after displacement to improve psychological health and reduce the risk environment for adolescents. Intervening soon after displacement and early in the adolescent's development using a more structured approach has the potential to provide more opportunities for adolescents to develop foundational assets and adaptive capacities that lead to lasting improvements in their health and well-being. The structured approach laid out in the *Toolkit* proved instrumental in reducing the risk environment, improving the psychological health, and strengthening the resilience of adolescents over the long-term and during a period of extreme adversity brought on by the COVID-19 pandemic. To further build upon this positive trajectory, certain aspects of the Activity Catalog within

the *Toolkit* can be further developed to build useful skills and assets to support resource acquisition, problem-solving, positive risk mitigation strategies, and engagement with caregivers. Consideration should be paid to the inclusion of caregivers and other trusted adults more explicitly to provide more opportunities for caregivers to engage in the development of social and emotional learning skills, enhance communication, and reduce stress and its related impacts on child well-being.

Our findings also indicate that the benefits of the *Toolkit* did not fully extend to those with differing identities, including boys, those in middle adolescence, or ethnic minorities in the settlement. To improve future iterations of CFS using the *Toolkit* approach in this context, more attention should be paid to the contextualization of activities that work to first examine and then address harmful gender and sociocultural norms and expectations that encourage and expect adolescents to have different learning preferences, behaviors, and abilities that are interacting and impeding healing pathways. For example, during play activities, only girls are suggested to play with dolls or during sports selection, boys are strongly encouraged to play football. In-depth contextual analysis and ongoing community engagement would also allow for suggestions of inclusive approaches that may lessen discrimination and stigmatization while still attending to the differing needs of adolescents. The *Toolkit* should also enhance activities to strengthen literacy and numeracy skills and the coping and adaptive capabilities to mitigate adversity that underlie hope and acquisition of resources to support resilience.

To further build on this solid foundation, CFS should transition to offering a more comprehensive package of services that complement existing communal resources for adolescents in the settlement. In this context, these services may include but are not limited to case management and counseling for identified cases screened herein, engaging caregivers, and explicit involvement of key influencers, such as village chairmen, supporting their existing roles as key interlockers of services for mental health and violence prevention and response.

Our findings raise several questions for future research with adolescents. First, the mechanisms of change for the *Toolkit* require further attention. Although efforts to explore user satisfaction in relation to sessions were undertaken as part of regular monitoring, more detailed information is required to support a more robust mediation analysis of outcomes under study. Second, a key programming component proposed for integration into CFS is related to parental support. More information is needed to understand how caregiver stress and stressors on meeting daily household needs are related to or impact the mental health of adolescents. Lastly, more research is needed to examine the effectiveness of this and other types of group-based psychosocial interventions outside of CFS that are community-driven and led prevention approaches.

Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Table S1. GEE regression estimates of intervention effect on study outcomes, disaggregated by gender.
Table S2. GEE regression estimates of intervention effect on study outcomes, disaggregated by developmental stage.
Table S3. GEE regression estimates of intervention effect on study outcomes, disaggregated by ethnicity.

Acknowledgements

The study is funded by Elrha, Research for Health in Humanitarian Crises (R2HC), London, UK. The funding bodies had no role in the design of this protocol. The authors alone are responsible for the views expressed in this article and they do not necessarily represent the views, decisions, or policies of the institutions with which they are affiliated. The authors wish to acknowledge the collaboration with Dr. Tim Cunningham in the adaptation of Circles of Comfort used as a participatory monitoring activity with children. This activity was originally implemented during a Plan International youth leaders training workshop for child-friendly spaces in the typhoon Yolanda-affected regions of the Philippines. The authors have declared that they have no competing or potential conflicts of interest.

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Key points

- Current understanding of the value of group-based psychosocial interventions on resilient pathways of healing and development among crisis-affected adolescents is lacking.
- While the short-term effects of basic CFS implementation demonstrate gains in psychosocial well-being and protection outcomes, there is mixed evidence on the lasting impact of CFS and similar psychosocial interventions in emergencies.

- We found that structured psychosocial sessions tailored to the local context and integrated into a complementary support system for adolescents show great promise for lasting impacts.
- These findings build on existing research and offer new evidence in support of promoting a more structured and higher-quality approach to CFS implementation.

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Accepted for publication: 17 November 2022