"From analog to digital": The feasibility, acceptability, and preliminary outcomes of a positive parenting program for street-connected mothers in Kenya

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ABSTRACT

Background: Children of street-connected women in Kenya are at risk of child maltreatment. There have been increasing calls for positive parenting programs for parents experiencing homelessness, however never has one been implemented with this population. We therefore adapted the evidence-based Parenting for Lifelong Health for Young Children program using participatory methods, and piloted the adapted program with street-connected mothers in Kenya. **Objectives:** To (a) determine if the adapted program was feasible and acceptable with street-connected mothers, and (b) assess indicative effects on child maltreatment, positive parenting, and parental stress. **Participants and setting:** Two groups of 15 mothers (ages 19+, and 20−) participated between June-July 2018 in Eldoret, Kenya. Participants were eligible if they (a) were the mother of at least one child and (b) self-identified as street-connected. **Methods:** Feasibility was measured via enrollment, attendance, drop-out rates, and engagement in take-away activities. Focus groups explored program acceptability and program outcomes. Self-report surveys assessed pre-post changes in child maltreatment, parental stress, parental sense of inefficacy, and positive parenting practices. **Results:** 70% of participants attended >3/4 of sessions, 10% dropped out, and >50% of take-away activities were completed. Participants reported high acceptability and requested its continuation for themselves and other parents. There was an increase in supporting good behaviour (t(21) = 8.15, p < .000) and setting limits (t(18) = 10.03, p < .000); a reduction in physical abuse (t(23) = −2.15, p = .042) and parental stress (t(22) = −7.08, p < .000); results for parental inefficacy were not statistically significant (t(22) = 0.15, p = .882). **Conclusions:** The adapted program is feasible and acceptable to street-connected mothers, and may reduce child maltreatment and parental stress, and increase positive parenting. Further research should test program effectiveness.

1. Introduction

Street-connected young women and girls in Kenya are a particularly vulnerable population who experience numerous gender inequities (Aptekar & Ciano-Federoff, 1999; Embleton et al., 2016, 2015; Wachira et al., 2016a, 2015; Winston et al., 2015). The term "street-connected" refers to the role the streets play in their everyday lives and social identities, most often including living and/or working on the streets (Office of the United Nations High Commissioner for Human Rights, 2012, 2017). Although there are no national estimates of the number of

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street-connected young people (SCY) in Kenya, approximately 25% are females under the age of 29 (Braitstein et al., 2019; Republic of Kenya Department of Children Services Mombasa, 2018; Save the Children, 2012). Street-connected young women frequently endure sexual and gender-based violence and exploitation, have limited sexual agency and rely on transactional and survival sex, and play a subservient role to boys and young men in the street subculture (Aptekar & Ciano-Federoff, 1999; Embleton et al., 2015; Suda, 1997; Wachira et al., 2015). In addition to sexual activity as a means of subsistence on the street, pregnancy is often a survival mechanism (Wachira et al., 2016b). Tremendous pressure is placed on street-connected young women and girls to become pregnant, in order to avoid being stigmatized by the street community and to satisfy what is a source of pride and social status for their male partners (Wachira et al., 2016b). As a result, a significant number of street-connected young women in Kenya have children while continuing to live and work on the streets (Suda, 1997; Wachira et al., 2016b).

Street-connected young mothers in Kenya may experience significant challenges similar to homeless parents in high-income countries who frequently experience mental health morbidity and have limited access to resources and social support (Bradley, McGowan, & Michelson, 2018). Children who experience homelessness often encounter adverse childhood experiences, such as maltreatment, neglect, and abuse (Atwoli et al., 2014; Ayaya et al., 2021; Radcliff, Crouch, Strompolis, & Srivastav, 2019; Braitstein et al., 2017; Care and for Homeless Council and National Network to End Family Homelessness, 2019), and tend to be at increased risk for traumatic stress (Atwoli et al., 2014; Braitstein et al., 2017), as well as socioemotional and behavioral issues (Herbers et al., 2014; Lee et al., 2010). While there is limited literature on the prevalence of child abuse by street-connected parents in Kenya, there are corresponding high rates of child maltreatment in Kenya at large. A 2010 national survey, for instance, revealed that 66% of young females and 73% of young males experience physical violence (UNICEF Kenya Country Office et al., 2012). The acceptability of corporal punishment of children in sub-Saharan Africa and Kenya is also widespread and is indeed considered necessary by many community leaders (Steffen, 2012; UNICEF, 2014). Risks of violence against children may be even more acute in Kenyan street subcultures given the high prevalence of abuse experienced by SCY (Ayaya et al., 2021), with children of street-connected parents likely experiencing physical, sexual, and emotional maltreatment.

To improve outcomes of children born to homeless families, scholars have been calling for an increase in research on evidence-based parenting programs (Gewirtz, Burkhart, Loehman, & Haukebo, 2014; Haskett, Loehman, & Burkhart, 2016; Holtrop & Holcomb, 2018; Perlman, Cowan, Gewirtz, Haskett, & Stokes, 2012). Yet while there is a growing body of literature regarding the effectiveness of parenting interventions to reduce child maltreatment in low- and middle-income countries (LMICs) (Knerr, Gardner, & Cluver, 2013; McCoy, Melendez-Torres, & Gardner, 2021; Pedersen et al., 2019), little is known about the effectiveness of parenting programs with street-connected families in these contexts. Recent evidence, however, suggests that parenting programs may be effective when transported from one setting to another (Gardner, Montgomery, & Knerr, 2015), and that imported and homegrown parenting programs may be equally effective as long as they are grounded in similar evidence-based principles and practices (Leijten, Melendez-Torres, Knerr, & Gardner, 2016). One such program – Parenting for Lifelong Health (PLH) for Young Children – was developed in collaboration with UNICEF and the World Health Organization as a low-cost, open source intervention for parents of children ages two to nine years (World Health Organization, 2020). This group-based program delivered by community facilitators has demonstrated effectiveness for reducing violence against children in multiple randomized controlled trials (RCTs) in South Africa, the Philippines, and Thailand (Mamauag et al., 2021; McCoy et al., 2020; Ward et al., 2020; Lachman et al., 2017).

Although the positive effects of PLH for Young Children across multiple contexts is encouraging, the program has not been tested with a highly vulnerable population such as street-connected young mothers. Nonetheless, given the high prevalence of abuse experienced by SCY in Kenya and the issues facing street-connected young women with respect to pregnancy, childbearing, and parenting, positive parenting interventions to reduce child maltreatment among street parents may be valuable in reducing adverse childhood experiences among children born into street families. As such, we adapted the PLH for Young Children program with and for street-connected mothers using community-based and participatory methods, and piloted the adapted program, '*Malezi Bora na Maisha Mazuri*' (Good Parenting for a Good Life) with street-connected young women in Eldoret, Kenya. Through this initiative, we sought to (a) determine if the adapted program was feasible and acceptable to use with street-connected mothers and (b) to assess whether the program may reduce childhood maltreatment (specifically, mothers' use of corporal punishment) and parental stress, while increasing positive parenting practices in this context.

2. Methods

2.1. Study design

This pilot study was conducted from January 31 to July 13, 2018 using community-based and participatory methods over two distinct phases: 1) program adaptation and 2) a feasibility pilot. Mixed methods were used to understand program feasibility and changes in parenting practices from pre- to post-intervention. Qualitative and quantitative data were collected on the same phenomena of interest and within a similar timeframe. Results were then integrated in a process of merging during analysis and interpretation in order to confirm, expand on, or uncover discordant findings (Fetters, Curry, & Creswell, 2013; Zhang & Creswell, 2013).

2.2. Phase 1: Program adaptation

2.2.1. PLH for young children

PLH for Young Children was derived from evidence-based content grounded in social learning theory and the Hanf two-stage model of supporting positive parent–child relationships prior to offering nonviolent child behavior management strategies (Kaehler, Jacobs, & Jones, 2016; Lachman et al., 2016). The program utilizes a combination of collaborative and interactive learning approaches, including group discussions, illustrated and non-illustrated stories, role plays, physical exercises, and songs. The program also involves individual consultations before the group sessions to learn more about parents' individual circumstances; home-based activities in which participants practice new skills with their children; and structured phone-based consultations in between program sessions to check in with parents and assist them with any challenges encountered. The original program tested in South Africa was delivered over 12 weekly sessions by two trained community facilitators to groups ranging from 10 to 15 participants per group. It also included weekly supervision sessions for the facilitators in order to assist with challenges encountered during each session.

2.2.2. Adaptation process

Our adaptation process was guided by the Planned Adaptation Approach to ensure we were adequately adapting the program content and delivery to local needs while maintaining the core components of the PLH program (Lee, Altschul, & Mowbray, 2008). To do so, we (1) examined the PLH program's theory of change, (2) identified population differences between the street-community and prior iterations of the program, (3) adapted the program content to be suitable to the local context, and (4) adapted the evaluation strategy (Lee et al., 2008). In order to provide both high-level and front-line expertise to guide the adaptation process, a Steering Committee was established, consisting of

local researchers, health care workers, social workers, leaders of community-based organizations, community volunteers, and former street youth. A Working Group of 17 current and former street-connected mothers was also formed to ensure that the adaptation was driven by the diverse needs and preferences of street-connected parents. This group met over the course of four community-based meetings to a) verify the use of the PLH program and establish a name that was meaningful to them, b) review existing program activities, suggest new program content, and c) consider logistical issues to further modify program components and modes of delivery. The Steering Committee also met intermittently to ensure the suggestions of the Working Group were adequately captured in the adapted program manual while maintaining program fidelity to the core evidence-based components of PLH for Young Children.

Program adaptations for ensuring cultural sensitivity can be conceptualized as both surface-level and deep-structural changes. Surface-level adaptations are those changes to the program materials that respond to the "observable social and behavioral characteristics of a target population" (Resnicow, Soler, Braithwaite, Ahulwalia, & Butler, 2000, p. 273), and deep-structural adaptations reflect the social, cultural, environmental, and historical determinants of behaviour (Resnicow et al., 2000). Based on recommendations of the Steering Committee and Working Group, surface-level adaptations included omitting activities that involved writing or drawing, and changing words and songs to those more applicable to the context of the population. Phone consultations were replaced by individual in-person meetings to reflect the limited access to mobile phones of street-connected families. Sessions with similar content were also combined; for instance, the session on child-directed speech was combined with one on relationship-building and child-directed play for ease of understanding. Deep-structural adaptations included adding new lessons on child and parental rights and responsibilities, child and parental health and safety, and resolving intimate partner conflicts. All new content was delivered with a similar collaborative parent-led approach using illustrated stories, role plays, and discussions, to ensure the content was in line with the original program. We also invited healthcare professionals and a legal advocate to relevant program sessions who provided support for any questions the participants had regarding their health and rights, and to link them to

health, social, and legal services where necessary. All adaptations were reviewed and approved by the original program developers (See Table 1 for program adaptations, and Table 2 for all program sessions).

2.3. Phase 2: Feasibility pilot

2.3.1. Pilot study setting

This study occurred in Eldoret, Kenya at the Moi Teaching and Referral Hospital (MTRH)-Rafiki Centre for Excellence in Adolescent Health. Eldoret is home to Moi University, and the Academic Model Providing Access to Healthcare (AMPATH), a long-standing partnership between Moi University, MTRH, and a consortium of universities from North America (Einterz et al., 2007).

Table 2
Socio-demographics of participants in the Malezi Bora na Maisha Mazuri Program, and program attendance stratified by age group.

	Combined	Ages 19−	Ages 20+
Parent characteristics			
Parent age: M (SD)	24.04 (5.54)	18.6 (0.70)	27.93 (3.85)
Number of children in household: M (SD)	2.74 (2.39)	1.53 (0.72)	4.21 (2.89)
Employed: n (%)	0 (0)	0 (0)	0 (0)
Literacy levels			
Can read easily: n (%)	3 (12.5)	1 (10)	2 (14.3)
Can read with a little difficulty: n (%)	10 (41.7)	5 (50)	5 (35.7)
Can read but with lots of difficulty: n (%)	5 (20.8)	1 (10)	4 (28.6)
Cannot read at all: n (%)	6 (25)	3 (30)	3 (21.4)
Child characteristics			
Sex, female: n (%)	38 (50)	10 (58.8)	28 (47.5)
Child age, years: M (SD)	7.46 (4.83)	2.62 (1.86)	8.85 (4.52)

*Note: The demographic characteristics represent the 24 participants who completed both pre- and post- surveys. The table of program attendance stratified by age group represents all 30 participants who registered for the program at baseline, including the three who dropped out and the three who completed the program but who were lost to follow-up.

Table 1
Integration of content from evidence-based parenting interventions and locally adapted or additional content for street-connected mothers in Eldoret, Kenya.

Core component of PLH	Evidence-based content	Specific content adapted for street-connected mothers in Eldoret, Kenya	Specific content added for street-connected mothers in Eldoret, Kenya
Building positive parent–child relationships	- Child-led play - Descriptive commenting - Socio-emotional communication - Praise and rewards - Positive instruction-giving - Establishing household rules	- Child-directed speech integrated into child-led play - Establishing consistent rules and routines for keeping parents and children safe and healthy - Sleeping routines instead of bedtime routines	- Child and parental rights and responsibilities - Establishing rules to keep parents safe - Keeping track of time for health routines (e.g. clinic visits, medication adherence) - Access to health services
Effective limit-setting and discipline	- Redirecting negative behaviors - Ignoring negative attention-seeking behavior - Cool Down (Time-Out) - Consequences - Resolving Conflicts		- Talking about challenging issues with your partner (e.g. family planning, STIs, education, finances) - Access to social, and legal services
Parental stress management	- Parental emotional self-regulation	- Re-ordering of stress-management activities	- Promoting existing coping strategies (e.g., prayer)
Delivery and structure	- Group or individual sessions - Collaborative facilitation - Group discussions and problem-solving - Modeling with Illustrated Stories - Practicing skills - Parent support groups - Transportation and refreshments	- Group sessions with individual consultations	- New group practice on parent and child rights and responsibilities - New Illustrated scenarios depicting complex family scenarios - Childcare during program sessions - Service linkage within and after program sessions, with the presence of health, social work, and legal professionals

Table 3
Program attendance stratified by age group.

	50% of sessions attended (6 Sessions)	75% of sessions attended (9 Sessions)	100% of sessions attended (12 Sessions)	Drop-out rate
Mothers ≤ 19 years of age: n(%)	14 (86.7%)	10 (66.7%)	4 (26.7%)	2 (13.3%)
Mothers ≥ 20 years of age: n(%)	15 (100%)	11 (73.3%)	4 (26.7%)	1 (6.7%)
Total: n(%)	28 (93%)	21 (70%)	8 (26.7%)	3 (10%)

2.3.2. Study participants

Street-connected mothers were eligible to participate in the pilot program if they: (1) were the mother of at least one child, and (2) self-identified as being connected to the streets (i.e. spend a portion or majority of their time on the streets). There was no restriction based on minimum or maximum age. Mothers who arrived intoxicated on registration day were excluded from participating. Thirty street-connected mothers participated in the pilot program due to the maximum recommended group size by PLH program developers (i.e., 15 per group) and human and financial limitations. The mothers were divided into two groups of 15 based on age – one consisting of women ages 19 and younger, and the other consisting of women ages 20 and above – due to recommendations from the Working Group who suggested that there would be greater cohesion within the groups of similar ages. As this was a pilot and feasibility study, it was not powered to detect significant changes in any outcomes.

2.3.3. Recruitment

Participants were recruited via snowball sampling, a particularly useful sampling method when the target participants are difficult to find (Naderifar, Goli, & Ghaljaie, 2017). Two weeks prior to the program's initiation, the street community was informed of the upcoming start date through an information session held at the MTRH Rafiki Centre of Excellence in Adolescent Health, and mobilization commenced the following week. A group of social workers and community volunteers who had an existing relationship with targeted mothers visited sites where street-connected families primarily reside to deliver further information about the program and registration details. We then relied upon word of mouth among the street-population to generate interest in participation. On registration day for each of the two age groups, the first 15 mothers to arrive to each group were invited to participate in the program after meeting the inclusion criteria.

2.3.4. Program delivery

The *Malezi Bora na Maisha Mazuri* program was delivered twice a week to each age group at the MTRH-Rafiki Centre of Excellence in Adolescent Health by two facilitators: a community volunteer and social worker who had previously worked with the street-connected mothers. Facilitators completed five full days of training on program content, methods of delivery, and facilitation skills (approximately 40 h from May 28 to June 1, 2018). Training was based on the original PLH for Young Children facilitator training curriculum which was modified to align with the adapted *Malezi Bora na Maisha Mazuri* program manual. Reimbursements for roundtrip travel was provided to mothers to reduce barriers to participation (100 KES or $0.99 USD). Food and refreshments, as well as complimentary childcare, was provided on-site given that most mothers were accompanied by their children.

2.3.5. Ethics procedures

Ethics approval was received by the Moi University College of Health Sciences and the MTRH Institutional Research Ethics Committee [approval #0003328]. Written informed consent was obtained from each program participant before engaging in any data collection activities. Consent was obtained for each mother under 18 years of age through the County Children's Officer, the *de facto* guardian of children who spend a majority of their time in the streets of Eldoret, and assent was then obtained from those mothers who were under the age of 18. Fingerprints were used for participants who were unable to sign or write their name.

2.3.6. Measures

2.3.6.1. Socio-demographics. The baseline socio-demographic characteristics of participants assessed the following: age, gender, literacy (i.e. ability to read), employment (i.e. whether participants have a part- or full-time job or are self-employed), and number of children per participant.

2.3.6.2. Program feasibility and acceptability. Feasibility was based on participant involvement and program acceptability. Participant involvement was measured via enrollment, daily attendance reports, and drop-out rates, as well as participant's engagement in take-away activities (Andrews & Dowden, 2005; Nix, Bierman, & McMahon, 2009). A participant was considered to have dropped out of the program if they missed more than 3 consecutive sessions and did not return before its completion. Program acceptability is considered the extent to which the target population perceives a program as culturally and contextually relevant (Kazdin, 2000). Acceptability was assessed in post-intervention focus group discussions using the following question prompts: "how did you feel about the program," "what did you like about it," "what didn't you like," "how did your family feel about you participating in the program," "what would you like to see done differently," and "would you recommend this program to someone else?"

2.3.6.3. Changes in parenting knowledge and practices. Quantitative outcomes of interest included parent use of corporal punishment, parental stress, and positive parenting practices using self-report pre-post surveys. Frequency of corporal punishment in the past week was measured using three items from the ISPCAN Child Abuse Screening Tool for use in intervention studies (ICAST-TRIAL; e.g., "In the past week, how often did you discipline your child with an object like a stick or a belt?") (Meinck et al., 2018). While not pertaining to physical discipline specifically, two items were also added to understand parental inefficacy (e.g. "In the past week, how often did you not know what to do when your child misbehaved?"). Frequency of positive parenting behaviors in the past month were measured using eight items from an adapted version of the Parenting of Young Children Scale (PARYC; McEachern et al., 2012). Four of these items were regarding supporting good behavior (e.g. "how often do you play with your child?", "how often do you notice and praise your child's good behavior?"), and four asked about setting limits (e.g. "How often did you set rules on your child's behavior that you were able to enforce?"). Parental stress was assessed using 5-items from the Parental Stress Scale (PSS) (Berry & Jones, 1995). Parents reported whether they agreed or disagreed with a series of statements regarding the demands and opportunity costs of parenting (e.g. "Your children are a major source of stress in your life"), as well as the rewards of parenting (e.g. "You find your children enjoyable"). As per guidance by the Steering Committee, the original scales were reduced so as not to overburden participants with lengthy surveys, while still asking questions that are most relevant to their unique situations.

Qualitative data were also collected during the post-intervention focus group discussions. The focus group guide asked participants questions pertaining to (a) the ways in which the program has impacted them and their family (i.e. changes in parenting styles, child behavior, and family life), (b) changes that they have experienced that they did not

expect, and (c) what learnings from the program they will carry forward in their lives.

2.3.7. Data collection

Pre-test surveys were administered to participating mothers at the beginning of the first program session, and post-test surveys on the last day of the program, or within the week following for those participants who were unable to attend the final session. If participants did not return to complete a post-intervention survey within the week following the final program session, they were considered lost to follow-up. Survey questions were read to participants by volunteer social workers who were trained in survey administration by the researchers, to account for participants' low literacy levels. All surveys were completed in a private office, or in a secluded area at the MTRH-Rafiki Centre for Excellence in Adolescent Health. Post-intervention, immediately following the final program session, participants were invited to participate in focus group discussions in the same location as program delivery. Focus groups were conducted in Kiswahili and Sheng (dialect used on the streets) by a social worker who has extensive experience in facilitating focus groups with the street-connected population of Eldoret. In the 19 and under group, seven mothers participated in the focus group discussion, each of whom had attended between 11 and 12 of the 12 program sessions. Ten mothers participated in the 20 and above group, with participants attending between 6 and 12 program sessions. Focus group discussions were audio-recorded and lasted one hour.

2.3.8. Analysis

2.3.8.1. Quantitative analysis.
Quantitative data collected on paper surveys were checked for errors and missing data, and manually entered into Microsoft Excel before exported into SPSS (IBM Corporation, n.d.) for analysis. Categorical variables were summarized using frequencies and percentages. Internal consistency of each outcome measure was assessed using Cronbach's alpha coefficient (see Table 4). Continuous variables were analyzed using a paired *t*-test to compare baseline and post-test scores. Due to the exploratory nature of the pilot study, analyses only included complete data from participants that had a pre- and post-intervention survey available (n = 24).

2.3.8.2. Qualitative analysis.
Focus group discussion audio recordings were transcribed and translated into English, and transcripts were analyzed thematically based on a code book that was collaboratively developed by two members of the research team to identify themes of analytic interest (Braun & Clarke, 2006). Themes created *a priori* aligned with the quantitative measures of positive parenting practices and child maltreatment, both of which were coded under "changes in parenting knowledge and practice", as well as parental stress. Inter-rater reliability between the two coders was greater than 90% for final themes.

2.3.8.3. Merging qualitative and quantitative analysis.
Qualitative and quantitative data were compared and interpreted together to confirm, expand on, or uncover discordant findings (Fetters et al., 2013; Zhang &

Creswell, 2013). Results of the quantitative and qualitative data have been integrated using a weaving approach, whereby qualitative and quantitative data are presented together thematically, and 'weave' back and forth between the two around each theme discussed below (Fetters et al., 2013).

3. Results

3.1. Socio-demographics

Participants were aged 16–37 years with a mean age of 24.04 years (SD 5.54) (Table 2). The average age for those in the 19 and under group was 18.60 (SD 0.70), and 27.93 (SD 3.85) for those in the 20 years of age and above intervention group. Only 12.5% of participants reported they could read easily, with the majority reporting they could read with some degree of difficulty, and 25.0% unable to read. None of the participants were employed or reported having a reliable income-generating activity. Participating mothers from the under 19 group had children ages < 1–3 years with an average age of 2.62 (SD 1.86), and those in the 20 and above group had children between the ages of 1–18, with an average age of 8.85 (SD 4.52). The number of children each mother had ranged between 1 and 12, with a median of 2.74 children (SD 2.39), 50% of whom were female.

3.2. Program feasibility and acceptability

Of the 30 mothers who enrolled in the program at baseline, three participants dropped out of the intervention during the pilot due to substance use, re-location, and employment. Three additional participants were lost to follow-up. Ninety-three percent (n = 28) attended at least 50% of the sessions, 70% (n = 21) completed 75% of sessions, and 26.7% (n = 8; 4 from each age group) completed all sessions (Table 3). Reasons reported for not attending sessions included participants or their children falling ill, acquiring a job with a schedule that was incompatible with the program, and experiencing a death in their family.

Participants in the 20 and above age group completed an average of 6.53 (SD: 2.36) of the 11 assigned take-away activities, and those in the 19 and below group completed an average of 7 (SD: 2.14). Based on reports from the parent profiles, the most common challenges faced by women when implementing their take-away activities were their health and well-being, being awake all night with their children, working throughout the evenings, or suffering an injury from intimate partner violence.

Data from focus group discussions suggested that participants across both age groups broadly perceived the program as acceptable. As stated by one young woman:

> "I am very happy about this program because I didn't know how to parent but after attending the session, I guide them, and they understand me. We sit together and agree. We are now so close that their father is happy. He says this program is good because we now teach our children and they understand and agree to everything." - P4, Age 20+

Table 4
Program outcomes using paired *t*-test of baseline and post-assessment scores, including scale reliability analyses.

Outcome Measure	Cronbach's Alpha*	Baseline		Post-test		t	p-value
		n	M (SD)	n	M (SD)		
PARYC							
Supporting good behavior	0.56	22	13.95 (3.37)	24	22.27 (2.86)	t(21) = 8.15	p < .000
Setting limits	0.30	24	12.25 (3.15)	19	21.89 (2.94)	t(18) = 10.03	p < .000
Parental inefficacy	0.68	24	2.58 (2.08)	23	2.78(4.52)	t(22) = 0.15	p = .882
ICAST-TRIAL							
Physical abuse	0.81	24	4.88 (2.08)	24	2.00 (4.30)	t(23) = −2.15	p = .042
Parental Stress (PSS)	0.80	24	8.83 (0.70)	23	5.52 (2.09)	t(22) = −7.08	p < .000

*This column shows the internal consistency, or reliability, of the listed scales.

One aspect that contributed to program acceptability was the quality of the facilitators and their respect for the street-connected young women. As explained by a participant:

"The facilitators were good, and they loved us all like they loved their children. They didn't discriminate because we came from the streets. They really loved us, and we are happy because we've learnt a lot of new things. We are grateful." - P4, Age 20+

A further factor was that participants were seeing tangible changes in their family life, such as improved relationships with their partners since attending the program, particularly as a result of using non-violent discipline with their children.

"This program has changed my home. There was always commotion in my home from all of us - father, mother and children. If my husband comes and finds that I've beaten the child, he must complain. But because we have been taught to be kind to the child, when my child came today they said, "Today mummy hasn't beaten me." There is now a lot of love in my home. My family has changed. – P6, Age 20+

The high acceptability of program content was reflected in comments about needing to carry the learnings from the program forward into their lives, and to continue applying new parenting skills for the sake of their families. As one participant noted:

"These teachings have gotten us away from a lot and is taking us far so let's continue. Even if we are seen in the streets, they'll say that we've changed. Let's not go back to how we were. Let's follow what we were taught." P7, Age 20+

There was also a coherent and collective expression that the program must continue. In some cases, participants requested the program's continuation to deepen their own learning:

"My feelings about this Positive Parenting, Good Life program are good. I am happy and I want this program to continue so that I can know more about how to take care of my children and be a very good mother/woman. I really loved this program." – P2, Age 19-

In other cases, participants expressed the importance of continuing the program for the sake of others, so that more street families can learn from facilitators about positive parenting:

"I would recommend this Positive Parenting, Good Life program to others because there are other girls that are still in the street who we wish this program could include so that they could come to class like us and learn through this program. I therefore ask that you include them and continue this program so that those girls that are still in the streets and haven't gone through this program can get to learn what we've learnt." - P3, Age 19-

Respondents also voiced the potential benefits of the program for male caregivers, with the expressed desire to include partners in future iterations of the program. As one woman stated:

"I'd like this program to include men because we raise these children with them. Even the men should be taught how to live with their families in peace. Not just us." P10 20+

3.3. Changes in parenting knowledge and practice

Participating mothers reported improvements on each measure of positive parenting assessed in the pre- and post- intervention surveys. Qualitatively, participating mothers discussed utilizing a number of the positive parenting skills taught during the program, the most common of which was spending one-on-one time with their children. As stated by one woman:

"My family is happy because now I have time to have one-on-one time with my child. In the past, my child was afraid of me and couldn't ask me anything but now they are free and can ask. We can discuss and life goes on peacefully." - P2, Age 20+

Participants also discussed at length the use of praise and reward, which they utilized more following the program than prior to. This improved their relationships with their children, as explained by one participant:

"My 5-year-old daughter now says, "Mum, thank you!" but before she didn't do that because I didn't praise her when she did something good. Also, I now play with my children. I have one-on-one time with them and they are happy because I am a good mother and I have changed thanks to this program." - P, Age 19-

This is consistent also with the quantitative data, which indicated an improvement in supporting good behavior (inclusive of praise and reward, and spending one-on-one time through play) between the pre-test (M = 13.95, SD 3.37) and post-test (M = 22.27, SD 2.86) (t(21) = 8.15, p < .000).

The most frequently mentioned changes in parenting practices were with regard to violence and communication. Participating mothers described some of their previous disciplinary measures as involving caning, beating their children with objects like bottles and stones, slapping them, and one reporting breaking their child's arm. However, upon participating in this program, the mothers explained that instead of resorting to physical punishments, they more frequently used words; listened to their children and talked through challenging situations; and set rules to prevent unwanted behavior. Indeed, survey data pointed to an increase in setting limits by mothers, which includes speaking calmly to their children, communicating realistic expectations, and setting enforceable rules (pre-test: M = 12.25, SD 3.15; post-test: M = 21.89, SD 2.94, t(18) = 10.03, p < .000). This was illustrated also in the qualitative data:

"I am happy because I have learnt a lot from this program. I was analog and now I am digital because I can't cane my child now. I speak to them and correct them, and they change their behavior. I have also tried to come up with rules in my family for my kids and it has really helped." – P, Age 20+

However, there were no significant changes in parental inefficacy (i. e. whether mothers knew what do when their child misbehaved, or whether they felt like physical discipline was the only option for stopping bad behavior; pre-test: M = 2.58, SD 2.08; post-test: M = 2.78, SD 4.52; t(22) = 0.15, p = .882).

Rather than shouting at their children, or ignoring them, mothers shared stories of spending more time listening to their children and explaining to them what they did wrong as opposed to yelling. Several mothers also mentioned that these changes have made them feel happy; that their children have in fact been rewarding *them* for their changes in behavior:

"It has changed my child because I wasn't a good mother before. I'd shout at them when they came to tell me something. I wouldn't listen to them but now I do and they see that so they have become free with me. They don't fear me like they used to. They have also changed their behavior. If I give them something now, they say, "Mum, thank you!" and that makes me very happy." - P2, Age 19-

This was supported by the quantitative data, which demonstrated a decrease in corporal punishment between the pre-test (M = 4.88, SD 2.08) and the post-test (M = 2.00, SD 4.3) (t(22) = −2.15, p = .042), including reductions in the number of times mothers used physical violence as a disciplinary measure, as well as specific acts of physical abuse such as spanking, slapping, or hitting with their hand, and using an object like a stick or a belt.

3.4. Parental stress

Mothers reported that they were able to use strategies from the program to control their stress. Of particular mention was the use of "taking a pause" as a calming strategy, which entails taking a few moments to reconnect with the present moment through breathing:

"I had a bad temper, but I started learning about breathing as a way of controlling my temper. I had a very heated argument with my husband, but I just breathed through it until I was calm and let it go. I ask that this program continues with the lessons on breathing." - P4, Age 19-

This was supported quantitatively with a reduction in parental stress between pre-test (M = 8.83, SD 0.70) and post-test (M = 5.52, SD 2.09) scores (t(22) = −7.08, p < .000), indicating that mothers felt less overwhelmed by the responsibility of being a parent, and found more enjoyment in their children following the completion of the program.

4. Discussion

As the first known study of a parenting program with street-connected mothers, we sought to see if the adapted PLH for Young Children program was (a) feasible and acceptable with this population in Kenya, and (b) if it could reduce childhood corporal punishment and parental stress and increase positive parenting practices among them. The attendance, engagement, and take-away activity completion rates indicate that *Malezi Bora na Maisha Mazuri* is indeed feasible with this population, and focus group data revealed that the program was highly acceptable to participating mothers both with regard to program content and delivery. Furthermore, outcome data suggests that the adapted program may improve positive parenting practices, reduce parental stress, and reduce child maltreatment within street-connected families, pending further testing in a controlled trial.

The rates of attendance and participant involvement are particularly notable for this population, especially given that other variations of the PLH program, as well as other parenting programs with homeless families and in low-resource contexts, have had difficulty retaining participants (Beharie et al., 2010; Haskett et al., 2017; Holtrop & Holcomb, 2018; Wessels, Ward, & Lester, 2016). Where participants in a PLH for Youth Children program in South Africa, for instance, attended an average of 8.58 sessions (71.5%) and 82.5% attended six or more sessions (Lachman et al., 2016), participants in the Malezi Bora program attended an average of 9.4 sessions (78.3%), and 93% participated in six or more sessions. This was also greater than what was observed in a PLH Teens program in South Africa (the Sinovuyo Teen program), where caregivers attended an average of 7.1 sessions (50%) of a 14-week program (Shenderovich et al., 2018). Drop-out rates, however, while lower for Malezi Bora (10%) than for the PLH for Young Children program in South Africa (14%; Lachman et al., 2016), were higher than the Sinovuyo Teen program which had none (Shenderovich et al., 2018).

Documented barriers to participation and engagement from these other programs include participants gaining employment, experiencing physical or mental illness or having to care for a loved one, and substance abuse by participants, among others (Shenderovich et al., 2018; Wessels et al., 2016). These barriers align with participant's reasoning for not attending program sessions, or not being able to complete their take-away activities, with the difference being that participating mothers also noted not being able to complete their take-away activities because of experiences with intimate partner violence. When compared to the PLH for Young Children Program delivered in South Africa where intimate partner violence was not explicitly reported as a barrier to engagement, parents had completed an average of 87.9% of the take-home activities (Lachman et al., 2016) relative to an average of 59.3% in the Malezi Bora program. Despite these barriers, however, there was still a relevantly high level of attendance and engagement in the program by participants. This may be at least in part a product of the participatory adaptation process, whereby street-connected mothers provided both content and logistical guidance to help ensure the program's successful delivery, and to increase their sense of ownership over the program.

The acceptability of the program was also promising, with a consensus among participating mothers that they enjoyed the program, wanted it to continue for themselves and others, and wanted to carry their learnings into the future. One noted area for improvement was the inclusion of male caregivers in the program. The presence of fathers in parenting practice can serve as a protective factor against child maltreatment (including abuse and neglect) and can improve child developmental outcomes (Rosenberg & Wilcox, 2006). Furthermore, promoting parenting as a partnership, as opposed to the predominant responsibility of the mother, may also work to combat the harmful patriarchal subculture of the street community. Indeed, the evaluation of a program for low-income fathers by Anderson, Kohler, and Letiecq (2002) led to improved relationships with the mothers of participants' children, thus strengthening the co-parental relationship. Our results similarly pointed to improved intimate partner relations, which has been shown elsewhere to improve parental engagement, and consequently, child development for at-risk children (Baker et al., 2018). However, the involvement of fathers in this program should be approached cautiously. While not expressed by participants in the focus groups, violence against women is entrenched in street culture (Wachira et al., 2015), and so future iterations of the program should consider how to incorporate parenting partners while also protecting the safety and security of participating women. Additionally, as the sessions on intimate partner relations, rights and responsibilities, and child and parental health and safety was new content added for this specific population, future research should consider how this new material influences program outcomes.

With regard to program outcomes, quantitative and qualitative data suggest that participation in the program may decrease the use of corporal punishment by participating mothers. This is consistent with findings of RCTs and pre- and post- tests from other variations of the PLH programs, which have shown trends toward a reduction in physical and psychological discipline (Ward et al., 2020; Alampay, 2018; Lachman et al., 2017). The qualitative accounts of participants indicate that their use of non-violent discipline strategies were a result of employing positive parenting practices learned from the program (e.g. using rules and routines, praising good behavior, spending one-on-one time with their children, etc.), a finding which aligns with the broader field of child development. Positive parent–child relationships, for instance (one of the core components of the PLH program), have been associated with better outcomes among at-risk children, including those experiencing homelessness and at risk of child abuse (Masten & Coatsworth, 1998). These practices may have also contributed to the reduction in parental stress that was evident from the survey data, as did the use of specific strategies such as 'taking a pause' when mothers were feeling upset. Despite these promising findings, however, there were no significant changes in parental sense of inefficacy. This is in contrast to Gewirtz, DeGarmo, Lee, Morrell, and August (2015) who found parental efficacy to increase following a family-based prevention program for homeless families in supportive housing. However, Gewirtz et al. (2015) found parental efficacy to increase over a two-year period, suggesting that our post-test survey did not allow for sufficient time for mothers to feel confident in their new practices and build their parenting self-efficacy, and that follow-ups ought to be conducted in future studies.

There are several limitations to this study. Firstly, the quantitative results are based on a small sample of 24 individuals who completed both the pre- and post-surveys. This pilot study therefore was not designed to draw definitive conclusions about the causality of this program, nor was it a sufficiently representative sample size. Findings must also be interpreted cautiously given that not all of the data was normally distributed, and we did not have continuous data, both of which are assumptions underlying the paired *t*-test (Williams, Williams,

& Monuteaux, 2018). We also reduced the length of outcome measures, which may have compromised their psychometric properties. However, given the pilot nature of this study, and the exploratory goal of this analysis, our quantitative results nevertheless suggest that the program's intended outcomes may be achieved with this population, and these findings are confirmed by the qualitative data. Our approach is also consistent with best practices for evaluating pilot studies, which state that analyses should be mainly exploratory (Lancaster, Dodd, & Williamson, 2004). Furthermore, given the low literacy rates of participating mothers, volunteer social workers documented the verbal answers provided by participants to both the pre-and post- surveys, and the Parent Profiles. Given this, there is a possibility that both the quantitative and qualitative data (including focus group data) are subject to social desirability bias (Green & Thorogood, 2004). The surveys in particular were written in Swahili as there is no direct translation for Sheng, the language most commonly spoken by the street community, and so there also exists the possibility of certain questions being misinterpreted by participating mothers. To reduce the impact of social desirability bias on outcome measures, future research should consider triangulating survey and focus group data with researcher observations of participants' parenting practices, both within and outside the program. Finally, it was unfortunately not feasible to do follow-up surveys or interviews to determine if participating mothers continued employing their new parenting practices, however that will be a critical question to answer in a future study.

Despite the limitations, a major strength of this study is that it was delivered in a community setting by non-professional staff with a hard-to-reach population, and it thus exemplifies the pragmatic implementation of *Malezi Bora na Maisha Mazuri* in real-world conditions, which enhances the generalizability of the findings and increases the likelihood of scalability (Cluver et al., 2018; Cluver et al., 2016; Janowski et al., 2020). Furthermore, the program was adapted and delivered at a cost of less than $5,000 CAD, which significantly reduces financial barriers to its ongoing delivery. Indeed, the program has continued to be implemented on a volunteer basis to three groups of 30 women by one of the trained program facilitators, and there are plans to engage in further testing of the program.

5. Conclusions

This is the first known study of a positive parenting intervention for street-connected parents in Africa. Results demonstrated that the *Malezi Bora na Maisha Mazuri* program is feasible and acceptable to use with street-connected mothers in Eldoret. Preliminary outcome data suggest that the program has the potential for reducing the use of corporal punishment among participants and increasing positive parenting practices within this population. Additional adaptation is recommended prior to further testing so that the program can recruit and involve male caregivers. Future research should test the Malezi Bora na Maisha Mazuri program with a more rigorous study design to test the program's effectiveness, and its ability to be scaled-up among street-connected parents in Kenya and elsewhere in Sub-Saharan Africa.

CRediT authorship contribution statement

Kathleen Murphy: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Visualization, Funding acquisition, Writing - original draft, Writing - review & editing, Project administration. **Lonnie Embleton:** Formal analysis, Visualization, Writing - original draft, Writing - review & editing. **Jamie M. Lachman:** Conceptualization, Writing - review & editing, Methodology, Formal analysis. **Eucabeth Owino:** Investigation, Writing - review & editing. **Sheila Kirwa:** Investigation, Writing - review & editing. **Dominic Makori:** Investigation, Project administration, Writing - review & editing. **Paula Braitstein:** Conceptualization, Methodology, Validation, Visualization, Supervision, Project administration, Funding acquisition, Writing - review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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