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The development and implementation of a theory-informed, integrated mother-child intervention in rural Uganda

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ABSTRACT

Rationale: A randomised cluster effectiveness trial of a parenting intervention in rural Uganda found benefits to child development among children 12–36 months, relevant parenting practices related to stimulation, hygiene and diet, and prevented the worsening of mothers' depressive symptoms. An examination of underlying implementation processes allows researchers and program developers to determine whether the program was implemented as intended and highlight barriers and facilitators that may influence replication and scale-up.
Objectives: The objectives of this study were to describe and critically examine a) perceived barriers and facilitators related to implementation processes of intervention content, training and supervision and delivery from the perspectives of delivery agents and supervisors; b) perceived barriers and facilitators related to enactment of practices from the perspective of intervention mothers participating in the parenting program; and c) whether the program was implemented as intended.
Methods: Semi-structured interviews were conducted at midline with peer delivery agents ($n = 12$) and intervention mothers ($n = 31$) and at endline with supervisors ($n = 4$). Content analysis was used to analyze qualitative data in terms of barriers and facilitators of intervention content, training and supervision, delivery and enactment. Additionally, mothers' recall and enactment of practices were coded and analyzed statistically. Monitoring of group sessions and home visits were examined to reveal whether the program was implemented as intended.
Results: Among the program's five key messages, 'love and respect' targeting maternal psychological well-being was the most practiced by mothers, easiest to implement by delivery agents, and mothers reported the most internal facilitators for this message. A detailed manual and structured monitoring forms were perceived to facilitate training, intervention delivery, and supervision. Interactive and active strategies based on social-cognitive learning theory were reported as facilitators to intervention delivery. Only program attendance, but not barriers, facilitators or message recall, was significantly positively related to message enactment. Monitoring of group sessions and home visits showed that the program was largely implemented as intended.
Conclusions: This implementation assessment revealed a number of important barriers and facilitators from the perspectives of delivery agents, supervisors and program participants. The methods and results are useful to examining and informing the content, delivery, and scaling up of the current program as well as future mother-child interventions in LMIC settings.

1. Introduction

In the last decade, parenting programs have been effectively implemented in low- and middle-income countries (LMIC) to improve child nutrition and stimulation, two primary contributors to poor child development (Walker et al., 2007). Given the reliable relationship identified between parenting difficulties and maternal depression (Murray et al., 2014), existing strategies promoting relevant parenting ultimately depend on the mother's psychological well-being. An examination of underlying *implementation processes*—activities used in a given program or intervention—allows researchers and program developers to assess

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how the program was implemented (outputs) compared to how it was intended (inputs) and can provide a clearer understanding of the program's barriers and facilitators that may influence replication and scale-up, particularly if the intervention has many components (Saunders et al., 2005). The current study examined implementation processes of one integrated parenting intervention (Singla et al., 2015) that was shown to be effective in addressing child development, maternal depressive symptoms and relevant parenting practices in rural Uganda.

1.1. The logic model and Bellg's framework

The logic model is one organizational framework often used to help conceptualize, monitor, and evaluate implementation processes (Kaplan and Garrett, 2005). Specifically, it outlines a program's intended inputs as well as its actual outputs and outcomes. Elaborating further on inputs and outputs, Bellg et al. (2004) highlighted five key implementation processes that are intended to change health behaviours. These include: treatment design, training and supervision of delivery agents, treatment delivery, receipt of treatment and enactment of targeted practices. Relatedly, we define *inputs* in terms of the treatment design of the program, as provided in a manual along with visual aids, and a training schedule for supervisors and delivery agents. We define *outputs* in terms of the delivery agents' and supervisors' commentary on intervention content, training, supervision and delivery, as well as how the program was received and enacted by program recipients (parents). Given the benefits of qualitative methods to assess intervention processes and contextual factors (Lewin et al., 2009), data were collected using focus group discussions as well as individual in-depth interviews and observations. *Outcomes* of the program evaluation are described elsewhere (Singla et al., 2015).

1.2. Theoretical constructs for facilitating behaviour change

One major limitation of the logic model, but emphasized by Bellg et al. (2004) as an important feature of treatment design, is a specific theory to explain how the activities of a given intervention change behaviour (Glanz and Bishop, 2010; Michie et al., 2013). Bandura's (1986) social-cognitive learning theory outlines several sources of behaviour change including receiving verbal instructions on how to perform the behaviour, but more importantly direct experiences (practicing the targeted behaviour yourself), vicarious experiences (observing models perform the action), and receiving feedback on one's performance. We call these four strategies *active and interactive learning strategies*, which are different from the more commonly-used passive strategies derived from adult education theory (Holford, 1995).

The use of these specific active and interactive learning techniques has been empirically supported by an analysis of behaviour change techniques in LMIC parenting interventions (Aboud and Yousafzai, 2015), including visual aids, demonstrating and practicing parenting skills with the child, and problem solving. Effective maternal mental health interventions in LMIC that are based on cognitive, behavioural and interpersonal therapeutic techniques likewise encourage shaping knowledge, problem solving, practicing new behaviours, and eliciting social support from family members (Chowdhary et al., 2014; Zafar et al., 2014). Furthermore, interactive group sessions are thought to enhance social support between peers to reduce maternal depressive symptoms (Bolton et al., 2007; Gao et al., 2010; Rojas et al., 2007) and facilitate peer learning (Aboud and Yousafzai, 2015). Despite similar strategies, few programs have explicitly targeted both child development and maternal mental health with success.

In the current intervention, however, active-interactive strategies that were shared by both child stimulation and maternal depression interventions provided a consistent method to integrate mother- and child-care messages. They were adopted here to train both delivery agents and caregivers of children. For example, both mothers and fathers were demonstrated and requested to practice new behaviours related to feeding (diet), washing (hygiene), talking with their child and providing play materials (stimulation), and showing love and respect for your child, spouse and oneself (maternal well-being). Vicarious experience occurred when mothers observed the delivery agent and their peers during group sessions. Direct experiences entailed mothers engaging in role-plays or direct interaction with a child or spouse followed by feedback from the delivery agent in the form of praise and coaching. Similarly, delivery agents received instructions on how to implement the manual, observed their peers, practiced delivering sessions during training, and received feedback from supervisors.

Social-cognitive learning theory also emphasizes barriers and facilitators to behaviour change (Bandura, 1986; McAlister et al., 2008; Michie et al., 2013). In this theory, barriers are defined as individual, interpersonal or structural obstacles to enacting desired behaviours, whereas facilitators are defined as internal qualities or external events or people that enable them. Others have explored barriers and facilitators after program implementation including sexual health practices among youth (Larke et al., 2010) and a handwashing intervention in rural India (Rajaraman et al., 2014). To identify and resolve problems associated with these barriers, the current parenting program had problem-solving question-and-answer discussions in each group session and resolved family-specific barriers during home visits. During training and supervision of delivery agents, the same process was used to resolve barriers and facilitators related to delivering the sessions.

1.3. Framework for implementation assessment

This study examines the multiple perspectives of peer delivery agents, supervisors and program recipients (mothers) who participated in an effective, integrated, community-based, parenting intervention in rural Uganda (Singla et al., 2015). Using Bellg's (2004) framework, the objectives of this study were to describe and critically examine (a) perceived barriers and facilitators related to implementation processes of intervention content, training and supervision and delivery from the perspectives of delivery agents and supervisors; (b) perceived barriers and facilitators related to enactment of practices from the perspective of mothers participating in a parenting program; and (c) observations of some group sessions and home visits in order to examine whether the program was implemented as intended.

2. Methods

2.1. Setting

The program was implemented in rural Ugandan communities in a district named Lira, located 352 km north of Kampala. The majority of the population resides in rural villages and relies mainly on subsistence farming and manual labour (Uganda Bureau of Statistics (2010)). The current study took place within the context of a community-based effectiveness trial (Singla et al., 2015) that evaluated the effects of a 12-session integrated intervention on child development among children 12–36 months and their mothers' psychological well-being. In collaboration with a local non-governmental organization (NGO), Plan Uganda, the program was delivered to groups of 25–35 mothers and fathers within their communities by local peers who were supervised by NGO staff. All