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Original article

## Cost-Effectiveness of a Savings-Led Economic Empowerment Intervention for AIDS-Affected Adolescents in Uganda: Implications for Scale-up in Low-Resource Communities



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### A B S T R A C T

**Purpose:** Nearly 12 million children and adolescents in sub-Saharan Africa have lost one or both parents to AIDS. Within sub-Saharan Africa, Uganda has been greatly impacted, with an estimated 1.2 million orphaned children, nearly half of which have experienced parental loss due to the epidemic. Cost-effective and scalable interventions are needed to improve developmental outcomes for these children, most of whom are growing up in poverty. This article examines the direct impacts and cost-effectiveness of a savings-led family economic empowerment intervention, Bridges to the Future, that employed varying matched savings incentives to encourage investment in Ugandan children orphaned by AIDS.

**Methods:** Using data from 48 primary schools in southwestern Uganda, we calculate per-person costs in each of the two treatment arms—Bridges (1:1 match savings) versus Bridges PLUS (1:2 match savings); estimate program effectiveness across outcomes of interest; and provide the ratios of per-person costs to their corresponding effectiveness.

**Results:** At the 24-month postintervention initiation, children in the two treatment arms showed better results in health, mental health, and education when compared to the usual care condition; however, no statistically significant differences were found between treatment arms with the exception of school attendance rates which were higher for those in Bridges PLUS. Owing to the minimal cost difference between the Bridges and Bridges PLUS arms, we did not find substantial cost-effectiveness differences across the two treatment arms.

**Conclusion:** After 24 months, an economic intervention that incorporated matched savings yielded positive results on critical development outcomes for adolescents orphaned by AIDS in Uganda. The 1:1 and 1:2 match rates did not demonstrate variable levels of cost-effectiveness at

### IMPLICATIONS AND CONTRIBUTIONS

A matched savings intervention for AIDS-affected adolescents in Uganda improved health, mental health, and education outcomes at 24 months. Different levels of savings incentives (1:1 vs 1:2) did not lead to large differences in cost-effectiveness highlighting the potential of 1:1 matched savings programs to improve adolescent wellbeing in low-resource settings.

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24-month follow-up, suggesting that governments intending to incorporate savings-led interventions within their social protection frameworks may not need to select a higher match rate to see positive developmental outcomes in the short term. Further research is required to understand intervention impacts and cost-effectiveness after a longer follow-up period.

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Adolescence is a period of development characterized by rapid physical, social, and emotional maturation. It requires sufficient family and community support to successfully navigate these transitions. Financial stress experienced by economically insecure families compromises the family and community support available to adolescents as they transition to adulthood, putting them at increased risk of experimenting with unhealthy behaviors [1–3]. Adolescents facing adversity, particularly poverty, exhibit high rates of early and risky sexual behavior, poor health, and mental health functioning [1–4] along with poor educational outcomes [5]. The rates are even more pronounced for adolescents affected by AIDS [6–8].

Sub-Saharan Africa (SSA) remains the world's most affected region in the HIV epidemic, home to 71% of people living with HIV worldwide [9]. Nearly 12 million children in the region have lost one or both parents to HIV/AIDS [10]—hence categorized as AIDS orphans (also known as orphans made vulnerable by AIDS). Within SSA, Uganda is one of the hardest hit countries, with an estimated 1.2 million orphans, 45% of whom are AIDS orphans [11].

Parental death due to AIDS affects children in multiple ways. Financially, AIDS orphans are vulnerable due to long episodes of parental illness which often precede the death of parents. Financial instability can, in turn, negatively affect family cohesion and psychosocial well-being [12–14]. In addition, there are negative effects of parental death on children's overall health functioning and psychosocial development [13–16].

Growing up as an orphan poses psychosocial and economic challenges to children and the households in which they live. As orphans enter early adolescence, they are beginning to be exposed to sexual and other risk behaviors [17], making this period in their lives very precarious. Moreover, the high prevalence of poverty, compounded by a lack of government safety nets (as in most SSA countries) and a lack of hope for the future can influence adolescents' decisions on sexual risk taking resulting in increased HIV risk and negatively impacting adolescents' prospects to succeed in life. Yet most interventions for children and families in AIDS-impacted communities in SSA have primarily focused on psychosocial services for children [6,7,18], giving less attention to the economic needs of adolescents and their families.

Effective interventions are needed to improve the developmental outcomes of adolescents. Given scarce economic resources, the SSA region needs interventions that are cost-effective, and scalable, with multidimensional benefits. Emerging evidence, from a series of randomized controlled trials (RCTs) in Uganda, indicates that an innovative savings-led economic empowerment intervention using incentivized financial savings focused on adolescents (hereafter, child savings accounts [CSAs]) and directed toward specific purposes such as education and family microenterprise development, may be a

viable approach to improving multidimensional well-being among orphaned and vulnerable adolescents [6,7,18–20].

Results from these matched CSA programs demonstrate a reduction in levels of depression and hopelessness [18]; improved HIV preventive attitudes and behaviors [19,21]; improved self-concept and educational achievement [22]; and increased financial resources [23] (JS-H Wang et al., submitted for publication). These findings are in line with prior research of conditional cash transfers (CCT) which have shown positive effects on adolescents [24]. It is important, however, to note that although akin to CCT interventions—which primarily focus on enabling families to meet basic needs while incentivizing prosocial behaviors [24–26], CSA interventions go beyond incentivizing behavior. They emphasize long-term investment and promote lifelong financial inclusion by forming savings habits and establishing partnerships between the participating family and local financial institutions—hence laying the groundwork for potential long-term sustainable interactions and scale-up.

In order to advocate for policy that promotes savings-led economic empowerment interventions as a potential for impacting adolescents' health and overall developmental outcomes, economic analysis needs to be employed to compare and assess intervention alternatives for an approach that is less costly to achieve similar effects. Indeed, if economic empowerment interventions are to be taken to scale, and if governments are to include them among possible policy priorities, they would need to be cost-effective.

Within this frame, the Bridges intervention study (hereafter, Bridges), a National Institute of Child Health and Development-funded randomized control trial (grant # 1 R01 HD070727-01), on which this article is based, aimed to evaluate the efficacy and cost-effectiveness of an innovative savings-led family-based economic empowerment intervention for AIDS-orphaned children. Specifically for this article, we use data from the Bridges study to investigate how the varying matched savings incentives applied in the Bridges study, and the intervention costs, translate into measurable effects. We specifically examine the direct impacts of the Bridges intervention on key health and educational outcomes for AIDS-orphaned adolescents—including sexual risk-taking behaviors and physical and mental health functioning. This is done by comparing: (1) Bridges intervention condition receiving a 1:1 savings match rate (each equivalent of US\$1 deposited into a participant's savings account was matched by US\$1) to the usual care control group; (2) A Bridges Plus intervention condition receiving a 1:2 savings match rate (each equivalent of US\$1 deposited into a participant's savings account was matched by US\$2) to the usual care control group; and (3) The Bridges intervention condition to the Bridges Plus intervention. In addition, we evaluate the cost-effectiveness of the alternative savings match rates: the 1:1 (Bridges) versus 1:2 (Bridges PLUS).

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