



Review article

The Impact of Monetary Poverty Alleviation Programs on Children's and Adolescents' Mental Health: A Systematic Review and Meta-Analysis Across Low-, Middle-, and High-Income Countries

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ABSTRACT

Poverty alleviation programs, such as cash transfers and monetary grants, may not only lift people out of poverty but, some argue, may improve mental health as well. However, to date, the impact of such programs on children and adolescents' mental health is unclear. We carried out a systematic review and meta-analysis of poverty alleviation interventions providing monetary support and reporting mental health outcomes in 0–19 year olds in low-, middle-, and high-income countries. We searched 11 databases for research published between January 1, 1990 and June 1, 2020 and included interventions offering unconditional and/or conditional monetary support and reporting mental health outcomes. After screening 7,733 unique articles, we included 14 papers (16,750 children and adolescents at follow-up) in our narrative summary. We meta-analyzed data on internalizing symptoms from 8 papers (13,538 children and adolescents analyzed). This indicated a small but significant reduction in adolescents' internalizing problems post-intervention compared to control (odds ratio 0.72, 95% confidence interval 0.59–0.88, $p < .01$; $I^2 = 67\%$, $\tau^2 = 0.05$, $p < .01$). Our narrative synthesis provides further support for the overall effectiveness of cash programs but also notes that monetary support alone may not be sufficient in extreme risk settings and that imposing conditions may be actively harmful for the mental health of adolescent girls. We provide causal evidence that monetary interventions reduce internalizing symptoms of adolescents experiencing poverty. We recommend that future programming thoughtfully considers whether to apply conditions as part of their interventions and highlight the importance of providing additional comprehensive support for children and adolescents living in extreme risk settings.

IMPLICATIONS AND CONTRIBUTION

This study provides evidence that monetary interventions reduce the internalizing symptoms of adolescents experiencing poverty. However, conditional interventions may be associated with negative outcomes for girls, and monetary support alone may not be sufficient in extreme risk settings.

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Poverty has devastating consequences on mental health outcomes: it has been consistently associated with increased prevalence of depression and anxiety, as well as increased rates of suicidal behaviors and ideation [1–3]. Worryingly, poor mental health can trap an individual in poverty by preventing them from improving their economic outcomes [1,4,5]. This vicious cycle of poverty and mental ill health is particularly harmful for young people as deprivation experienced early on in life is strongly predictive of later mental health problems throughout the lifespan [6]. Furthermore, adolescence is an important developmental timepoint when many mental health problems emerge [7,8]. Consequently, childhood and adolescence are particularly important periods for potential early intervention that can break the cycle of deprivation and mental ill health.

Previous research in the field of poverty and mental health has largely focused on the adult population with a recent high-quality review [9] suggesting that different antipoverty interventions, including both multifaceted programs and cash transfers, can improve psychological well-being and certain indices of mental health. Past syntheses or systematic reviews for children and adolescents are outdated and have been able to provide largely noncausal, correlational evidence [10] or have been unable to produce conclusive findings due to aggregating very heterogeneous interventions [1] (e.g., targeting housing improvements, education, as well as providing cash transfers). A more recent meta-analysis found no effect of cash transfers on the depressive symptoms of young people [11]. However, this paper only focused on low- and middle-income countries, did not consider other types of monetary support beyond cash transfers, and included a wider age range going beyond adolescence (0–24 year olds).

With this in mind, this review and meta-analysis aims to provide causal evidence regarding the effectiveness of poverty alleviation interventions for improving the mental health of children and adolescents in low-, middle-, and high-income countries. In order to elucidate specific intervention mechanisms, we focus exclusively on monetary interventions, such as cash transfers and grants, that report mental health outcomes (excluding broader nonclinical outcomes like well-being, happiness, or life satisfaction). We excluded nonmonetary interventions such as those that, for instance, provide housing improvements, education interventions, health schemes, and food provisions as these likely impact mental health outcomes through different mechanisms. This evidence is particularly pertinent given the United Nations' Sustainable Goals to end extreme poverty and halve multidimensional poverty by 2030, as well as the recent rise in poverty alleviation efforts across the globe (e.g., in sub-Saharan Africa) [12,13]. Furthermore, there is a need to understand what works in terms of breaking the cycle of poverty and poor mental health for young people not only because of the accelerated efforts to this end but also because the current context of the global COVID-19 pandemic will likely exacerbate existing socioeconomic inequalities, leaving more young people vulnerable to ill mental health [14].

Methods

Search strategy and selection criteria

This systematic review and meta-analysis adheres to PRISMA guidelines [15]. We carried out our main search in 11 databases: (1) Applied Social Sciences Index Abstracts, (2) the International Bibliography of the Social Sciences, (3) PsycINFO, (4) Global Health, (5) EMBASE, (6) Child Development and Adolescent Studies, (7) Family & Society Studies Worldwide, (8) CINAHL, (9) SCOPUS, (10) MEDLINE, and (11) Web of Science. As a secondary search, we carried out backwards and forwards reference tracking, emailed relevant researchers and non-profit organizations, and queried Google Scholar. The specific search terms used are available in [Supplementary Table 1](#). We implemented a hybrid search strategy ([Supplementary Figure 1](#)) which incorporated both terms for specific program types (e.g., “unconditional cash transfer [UCT]”) and a combination of terms for general study design and program aims (e.g., “randomized controlled trial [RCT]” and “poverty”). We accepted work published in peer-reviewed journals, book chapters, reports from non-profit organizations and charities, as well as unpublished literature such as dissertations, theses, pre-prints, and working papers. Studies had to be published from January 1, 1990 to June 1, 2020. Following existing recommendations (such as by Reiss [10]) in assessing the relationship between socioeconomic inequalities and mental health outcomes, we consider there may be poor comparability in studies prior to 1990 due to the use of nonstandardized mental health instruments.

Our inclusion criteria applied the World Health Organization's definition for children and adolescents, limiting our age group of interest to 0–19 years old. We included all studies with samples whose average age fell within this range. If a study's average age fell outside of this range but otherwise met our inclusion criteria, we queried the corresponding author if they could provide a subgroup analysis. We included monetary transfer interventions that aim to alleviate poverty or socioeconomic inequalities. As we are interested in the potential causal effects of monetary transfers on mental health, we excluded interventions that involved in-kind benefits such as vouchers for goods or services. Similarly, we excluded programs that provided skills training, educational opportunities, or housing improvements in the absence of monetary transfers.

Included studies had to provide quantitative measures for mental health in children and adolescents following the intervention. We accepted outcome measures for different facets of mental health such as internalizing and externalizing symptoms, behavioral or emotional problems and functioning, as well as specific mental health conditions and diagnoses, such as depression and anxiety. However, we excluded measures of life satisfaction, general happiness, or well-being. Eligible designs included randomized and pseudo-randomized controlled trials, as well as interrupted time series without a control group but featuring preintervention and postintervention outcome

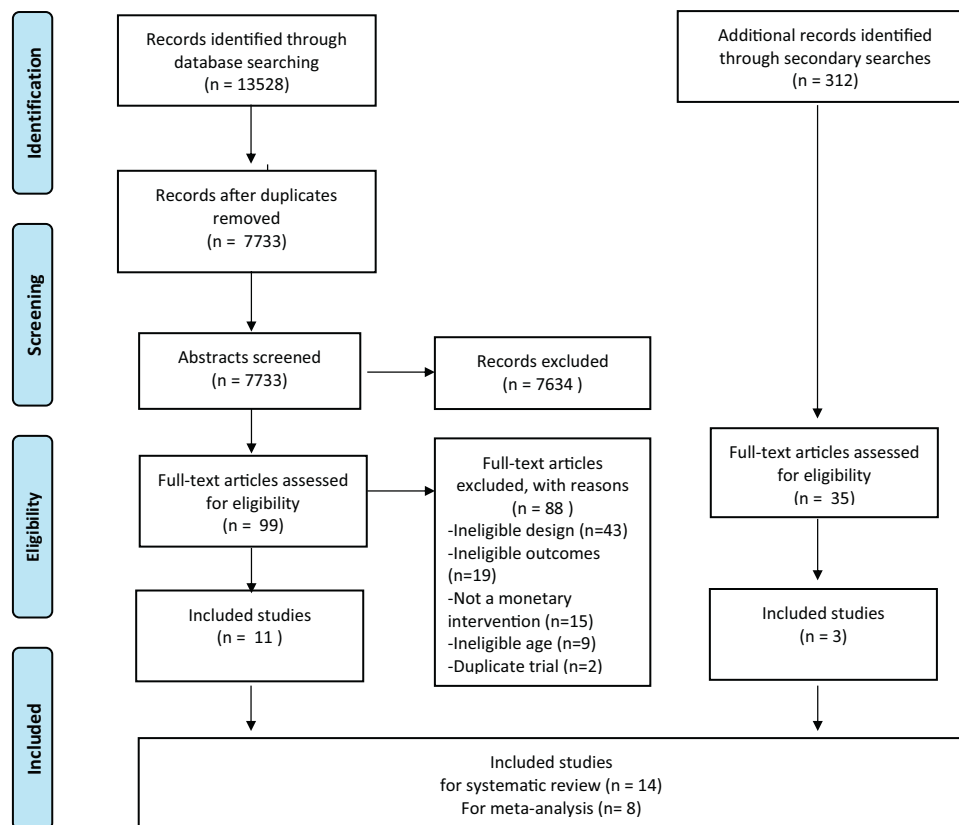


Figure 1. Flowchart. Study selection.

measures. We carried out the search in English but did not use the language of publication as grounds for exclusion.

The search strategy, abstract and full text screening, data extraction, and quality assessment were carried out in full by the first author. The second author independently screened a random sample of 15% of all the abstracts and a random sample of 15% of all the full texts. We obtained very high agreement between the 2 raters for both stages (abstract: Cohen's $\kappa = 0.881$, $p < .001$; full text: $\kappa = 0.842$, $p < .001$). The second author was later involved in full (100%) for data extraction and quality assessment. For all stages of the review, disagreements were resolved through consensus discussions and were required by further arbitration from the remaining authors.

Data analysis

We extracted and double-checked data via a customized spreadsheet recording the characteristics of interest for each study, including design, sample size and profile, intervention and comparison type, and relevant mental health outcomes. When data were missing or unclear, we contacted the study authors for clarification. Findings from all included studies were narratively synthesized. The narrative synthesis aggregated findings from the included interventions. We mapped emerging patterns in the literature with regards to particular subpopulations (e.g., by gender or age), study setting (e.g., income levels, fragile, or other settings), and intervention characteristics (e.g., conditionality, targeting). We planned to carry out an inverse variance method random effects meta-analysis on quantitative data for each

outcome type for which we could extract an effect size estimate and 95% confidence interval (CI) from a minimum of three studies. This was only possible for internalizing symptoms. Our pre-registration originally specified that our preferred effect size would be Cohen's d but we found that the vast majority of papers reported odds ratios (ORs) and so decided to opt for ORs in order to minimize the potential of error due to conversion between effect sizes. Study variability was assessed via the I^2 estimate of heterogeneity. Analyses were carried out in R, version 3.6.1 with the meta package [16]. We assessed the risk of bias of included studies via the Cochrane Collaboration's ROB2 tool [17] and provide full appraisal scores available in [Supplementary Table 2](#).

This study was pre-registered at the Open Science Framework: <https://osf.io/fq9us/>. All associated materials are stored in the same Open Science Framework depository.

Results

After screening 7,733 unique articles we identified 14 eligible studies for inclusion in the systematic review (see flowchart in [Figure 1](#)). Mental health measures were secondary outcomes in all interventions. Two interventions were pseudo-RCTs and the remaining 12 were RCTs (5 randomized on the individual and 7 on the cluster level). We found an evidence gap for high-income countries, externalizing symptoms, and young children. Specifically, only 2 of the 14 studies were conducted in a high-income country (USA) with all remaining studies carried out in low- and middle-income countries in Africa, Latin America, and Asia. All papers included internalizing symptoms as outcomes (most

Table 1
Summary table of included studies

Study	Design	Intervention	n analyzed	Money	Child characteristics	Time to follow-up	Mental health outcome
Abu-Hamad et al., 2014 ^a [24] Palestine: Palestinian National Cash Transfer Programme	Pseudo-RCT	UCT to caregiver	204 (51% girls)	Caregiver: \$195 –\$468 per quarter	11–17 years old	Variable (maximum 3 years)	Calculated odds ratio of abnormal score, SDQ Overall: –0.252
Angeles et al. (2019) ^a [25] Malawi: Malawi Social Cash Transfer Program	cRCT	UCT	1,366 (47% girls)	Caregiver: 17% of median income	13–19 years old	2 years	Reported OLS coefficient for depressive symptoms, CES-D (probability of change) Overall: –0.149*** Girls: –0.152** Boys: –0.145***
Baird et al. (2013) ^a [26] Malawi	RCT	UCT for schoolgirls CCT for schoolgirls CCT for drop-outs Conditional arms: conditional on school attendance All arms provide payments to both girls and caregivers	2,827 (100% girls)	Caregiver: \$4, 6, 8, or 10 per month (randomized at cluster level) Child: \$1, 2, 3, 4 or 5 per month (randomized at individual level)	Schoolgirls and drop-outs (girls only) 13–22 years old	1 year 2 years (after program end)	Reported OLS regression coefficient estimate of psychological distress, GHQ-12 (probability of change) UCT: –0.143*** (1 year), –0.043 (2 years) CCT schoolgirls: –0.063** (1 year), –0.040 (2 years) CCT drop-outs: 0.004 (1 year), 0.021 (2 years) Spillover effects on controls in same area: 0.064** (1 year), 0.007 (2 years)
de Hoop et al. (2018) [27] Lebanon: Min Ila	cRCT	UCT + CCT (base payment + additional payment conditional on school attendance and healthcare visits)	724 (~46% girls)	Caregiver: \$65 per month	10–14 years old	1 year	Reported OLS coefficient for depressive symptoms, CES-D (probability of change) Overall: –0.10
Ismayilova et al. (2018) [21] Burkina Faso: Economic Strengthening and Family Coaching (Trickle Up+)	cRCT	Trickle Up: grant and financial training to female caregiver Trickle Up+: grant and financial training to female caregiver + family coaching	344 (12-month follow-up, ~46% girls) 314 (24-month follow-up)	Caregiver: \$100 lump sum seed grant	10–15 years old	1 year 2 years	Reported Cohen's <i>d</i> for depression symptoms, CES-D Incidence rate ratios for trauma symptoms, CRIES-8 Trickle Up: Depression: –0.14 (12 months), –0.10 (24 months) Trauma: 0.64 (12 months), 0.97 (24 months) Trickle Up+: Depression: –0.41*** (12 months), –0.39** (24 months) Trauma: 0.62** (12 months), 0.69 (24 months)
Kang Dufour (2011) ^a [22] Zimbabwe: Shaping the Health of Adolescents in Zimbabwe (SHAZ!)	RCT	Grant + life skills and vocational training to girls	315 (100% girls)	Girl: \$51–\$87 lump sum grant	16–19 years old	3 months after receipt of grant (2 years after SHAZ! program start)	Reported odds ratio for mental ill health, SSQ Overall: 0.32***

Table 1
Continued

Study	Design	Intervention	n analyzed	Money	Child characteristics	Time to follow-up	Mental health outcome
Kilburn et al. (2016) ^a [28] Kenya: Kenya's CT-OVC Cash Transfer Program for Orphans and Vulnerable Children	Pseudo-cRCT	UCT	1,960 (40% girls)	Caregiver: \$20 per month	Orphans and vulnerable children 11–20 years old	4 years	Reported adjusted odds ratio of depressive symptoms, CES-D Overall: 0.76** Girls: 1.07 Boys: 0.60***
Kilburn et al. (2019) ^a [29] South Africa: HPTN 068	RCT	CCT conditional on school attendance	2,438 (100% girls)	Caregiver: 200 RAND per month Child: 100 RAND per month	Schoolgirls 13–20 years old	3 years	Reported OLS regression coefficient for CES-D z-score Overall: –0.02 Baseline poverty × intervention: –0.14**
Macours et al. (2012) [20] Nicaragua: Atención a Crisis	cRCT	CCT conditional on nonenforced health visits	1,620 (9 months, ~49% girls) 2,863 (33 months)	Caregiver: 15% –26% of income every 2 months	2–6 years old	9 months 33 months (2 years after program end)	Reported OLS regression coefficient for problem behaviors, BPI score Overall: 0.048 (9 months) –0.021 (33 months)
Morris et al. (2017) [30] USA: Opportunity NYC-Family Rewards	RCT	CCT conditional on school attendance, healthcare visits, and other items	511 (54% girls)	Caregiver: \$240 per month	14–15 years old	18 months	Reported OLS coefficients for depression, anxiety (BASC), any delinquent behavior, any aggressive behavior, any substance use Depression: 0.13 Anxiety: –0.38 Delinquent behavior: 6.62 Aggressive behavior: –9.40*** Substance use: –15.16***
Özler et al. (2020) ^a [23] Liberia: Girl Empower	cRCT	Girl Empower (GE): UCT and training program to girl Girl Empower+ (GE+): UCT and training to girl and CCT to parents (conditional on girl's program attendance)	1,159 (100% girls)	Girl Empower: \$2 per month to girl Girl Empower+: \$2 per month to girl, \$5 per month to caregiver	Girls 13–14 years old	1 year	Reported OLS regression coefficient for SMFQ scale and CRIES-8 scale Girl Empower: 0.645 (SMFQ), 1.020* (CRIES-8) Girl Empower+: 0.530 (SMFQ), 0.244 (CRIES-8)
Paxson and Schady (2010) [19] Ecuador: Bono de Desarrollo Humano	cRCT	UCT to caregiver	2,029 (~48% girls)	Caregiver: \$15 per month	2–6 years old	2 years	Reported OLS regression coefficient for problem behaviors, BPI score Overall: –0.069 Bottom income quartile × intervention: –0.265*
Prencipe et al. (2022) ^a [31] Tanzania: Productive Social Safety Net	cRCT	UCT + CCT (base payment + conditional payment on school attendance and healthcare visits)	385 (44% girls)	Caregiver: \$6 per month	14–18 years old	18 months	Reported OLS coefficient for depressive symptoms, CES-D (probability of change) Overall: –0.20 Girls (<18 years): 0.10 Girls with child/pregnant: 1.32* Boys (<18 years): –1.21*

(continued on next page)

Table 1
Continued

Study	Design	Intervention	n analyzed	Money	Child characteristics	Time to follow-up	Mental health outcome
Yoshikawa et al. (2003) [18] USA: Minnesota Family Investment Program (MFIP) New Hope Project (NHP)	RCT	MFIP: Earnings disregard to working welfare recipients NHP: Cash supplement to parent conditional on working 30+ hours a week	MFIP: 401 (~49% girls) NHP: 467 (~49% girls)	MFIP: Dependent on earnings NHP: Increase income to reach poverty threshold	MFIP: 2–9 years old NHP: 1–10 years old	MFIP: 3 years NHP: 2 years	Reported Cohen's <i>d</i> for all outcomes divided per quartile of risk of unemployment of parent (Q1: lowest risk) MFIP: Externalizing behaviors; internalizing behaviors Q1: 0.07; 0.11 Q2: -0.27; -0.23 Q3: -0.41**; -0.25 Q4: -0.03; -0.13 NHP: Aggressive behaviors, hyperactive behaviors, internalizing behaviors Q1: 0.14; 0.25; -0.20 Q2: -0.47*; -0.53*; -0.34 Q3: -0.67***; -0.69***; -0.33 Q4: 0.25; 0.49**; 0.14

An 'a' in the citation of the paper in the "Study" column signifies this paper was included in the meta-analysis. In the "n analyzed" column, the ~ symbol denotes an approximation of the percentage of girls. In these cases, we have reported the percentage girls for the full sample rather than the analyzed sample. The outcomes are reported as in the original texts. In the outcome columns, stars (*) denote statistical significance, as reported in original publications, where *** $p < .001$, ** $p < .01$, * $p < .05$, $p < .1$. The mental health scales reported in the table are: General Health Questionnaire 12 (GHQ-12), Center for Epidemiological Studies Depression Scale (CES-D), Strength and Difficulties Questionnaire (SDQ), Short Mood and Feelings Questionnaire (SMFQ), Children Revised Impact of Events Scale (CRIES-8), Behavioral and Emotional Screening System (BASC), Behavioral Problem Index (BPI), Shona Symptom Questionnaire (SSQ). In Kang Dufour (2012), the control group received Life Skills and Red Cross training; in Yoshikawa et al. (2003), the control group received welfare as usual. In all other publications, the control groups did not receive any intervention.

commonly the Center for Epidemiological Studies Depression Scale measure) but only four included some measure of externalizing symptoms. Most often this was the Behavior Problems Inventory [18–20] with only one paper [20] assessing specific externalizing behaviors. Only three papers provided data for young children: 2–6 years old in Nicaragua [20] and Ecuador [19] as well as 2–9 and 1–10 years old in the United States [18]. The remaining studies reported outcomes for adolescents above 10 years of age. The majority of studies were cash transfer programs with cash typically dispensed to adult caregivers. These were either UCTs or conditional cash transfers (CCT). In CCT programming participants needed to comply with a certain condition such as school attendance or healthcare visits. Two programs [21,22] provided grants in the form of larger lump sums. Three programs were integrated with social care and also provided training or coaching components [21–23]. We provide further study characteristics in Table 1.

Moreover, we assessed methodological quality via the Cochrane RoB2 tool which produces ratings for five methodological domains for RCT trials and six domains for cluster RCT trials. Although quality varied, the most common rating for each domain was "low risk" (see Supplementary Table 2). The most common source of potential bias pertained to outcome measurement with 5 out of 14 publications receiving a rating of "some concerns" or "high risk." Overall, there were not many baseline imbalances and randomization was generally successful, although 5 out of 14 publications were rated as having "some concerns" regarding potential bias in randomization.

Meta-analysis

We were able to include eight of the studies in a meta-analysis for which there was sufficient information to compute an effect size for similar outcomes. These eight studies were all comparable in that they all assessed internalizing symptoms in adolescents (aged 10–19) in low- and middle-income countries. Across the included studies, there were still considerable differences in the way the interventions were designed and their purposes (i.e., primary outcomes), setting, duration, and outcomes measured. Due to the limited sample size, we were not able to evaluate different potential moderators in a meta-regression such as gender or intervention type (e.g., conditional or unconditional). Our random effects meta-analysis revealed that internalizing problems were significantly reduced post-intervention compared to control ($OR = 0.72$, 95% CI 0.59–0.88, $p < .01$; $I^2 = 67\%$, $\tau^2 = 0.05$, $p < .01$; see Figure 2). Our funnel plot (Figure 3) and Egger's test ($p = .13$) do not indicate the presence of asymmetry, although we may lack sufficient power to detect bias in our sample of published studies ($k = 6$ studies). We note that both unpublished studies [22,31] report positive effects.

Narrative synthesis

Although the meta-analysis suggests a small positive effect of the intervention on adolescent mental health on the aggregate, there was considerable variability in the strength and direction of the effect depending on the characteristics of the (sub)sample. Multiple cash intervention programs focus on girls specifically due to their increased vulnerabilities to, for instance, domestic and sexual violence, household and social pressures to stay outside of school, and early pregnancy (e.g., interventions [22,23,29,26]). Two programs [31,28] that include both boys and

girls find differential effects by gender such that the cash transfer programs generally produce greater benefits for boys. Importantly, on the basis of our narrative synthesis, we note a gender interaction effect with the conditionality of the intervention. In Tanzania, Prencipe et al. [31] investigate the impact of an unconditional base transfer paired with an additional transfer, conditional on school attendance. When examining the interaction between gender and condition, they found that boys' mental health improved following the intervention as evidenced by a decrease in 8 percentage points on Center for Epidemiological Studies Depression Scale. For girls, there was no effect in a younger subsample (aged 14–18), but mental health worsened in an older subsample and a subsample of girls who had a child. Similarly, an RCT in Malawi [26] found stronger positive effects for a UCT compared to a CCT program which required girls (aged 13–22) to attend school. With each additional dollar given to the parents, conditional on school attendance, mental health worsened (likelihood of psychological distress increased by 3 percentage points). Some authors [31,25] have argued that CCTs exacerbate the existing additional demands placed on adolescent girls (e.g., household work, family support). Conditional programs that require school attendance (or comparable conditions such as health visits to distant hospitals) may serve as an added burden and source of stress. To address gender disparities in economic autonomy, poverty alleviation interventions such as the SHAZ! Program in Zimbabwe [22], provide monetary as well as social support, mentoring, and opportunities for economic independence to adolescent girls (aged 16–19). Completion of the program resulted in a reduction of an anticipated 14% of participants who would have, otherwise, exhibited symptoms of mental ill health, indicating that economic empowerment can have significant positive impacts on adolescent girls' mental health.

Beyond the differential gender effects, we found heterogeneity in regards to study setting. Some contexts are characterized by extreme deprivations and disproportionate risks faced by children and adolescents including, for example, armed conflict areas, fragile settings, settings with ultra-poverty and chronic malnutrition, hazardous child labor, and high levels of sexual and gender-based violence. For instance, qualitative and quantitative evaluations of The Palestinian National Cash Transfer program [24] which provides UCTs to eligible severely and extremely poor households revealed that children were exposed to various risks, including systemic intrahousehold and macrolevel violence. Although the cash transfers were essential

for families to address their basic needs, they appear insufficient for child protection and safeguarding purposes. Integrated interventions combining cash and social care components aim to address this issue. For instance, the Trickle-Up Intervention in Burkina Faso [21], targeting ultra-poor households that experienced extreme deprivation both in terms of degree and duration including chronic hunger and illiteracy, combined grants with whole family coaching on treating children well and household decision making and communication. The combined intervention had a positive effect on adolescent mental health (aged 10–15) but the economic intervention alone did not, despite evidence that it allowed for more spending on children. However, combined cash and social programming interventions are limited in terms of the extent of risks for children and adolescents that they can address. A recent study in Liberia combining a girl empowerment (aged 13–14) program with cash transfers [23] showed no significant impacts on mental health outcomes. Although the program engaged both girls and their caregivers regarding social norms pertaining to gender and violence, it was not successful in changing caregivers' perceptions. Furthermore, it did not address the holistic community context in which adolescents were situated—at follow-up, 95% of girls across conditions had experienced violence and one third had been raped.

Moreover, there was indication of heterogeneous effects per baseline income. Although some programs specifically targeted the most deprived households, other programs [20,29] did not employ income metrics as an eligibility criterion or utilized lower thresholds. As a result, the samples in these latter programs exhibited higher heterogeneity in baseline income. The observed disparity in baseline income levels was reflected in differential intervention effects on child and adolescent mental health. In particular, Kilburn et al. [29] found that for the poorer half of the sample, for whom baseline consumption fell beneath the South African definition of the poverty line, the intervention effectively reduced the degree of depressive symptoms in adolescent girls (aged 13–20). However, no effect was observed for participants who had been relatively wealthier at baseline. This finding echoes findings by Macours et al. [20] from the Nicaraguan Atención a Crisis intervention, which effectively reduced behavior problems in younger children (aged 2–6) only in the poorest quintile.

Kilburn et al. [29] consider that their the cash transfers represented a larger proportion of the budgets of the neediest

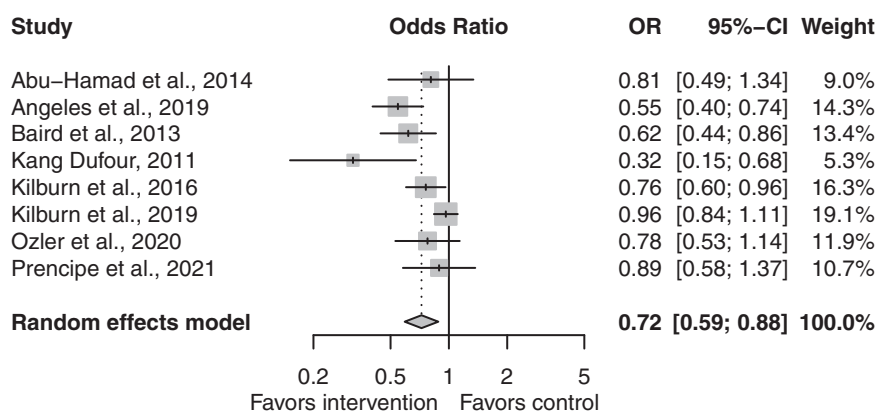


Figure 2. Forest plot. Effect of cash transfer programs on internalizing symptoms.

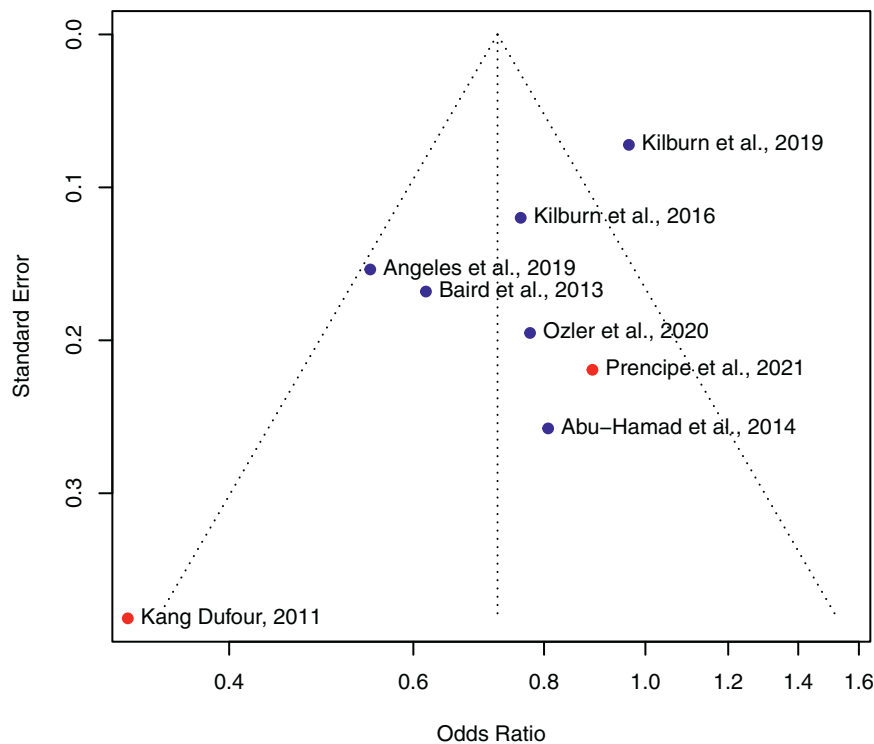


Figure 3. Funnel plot of studies included in the meta-analysis. The two studies marked in red are unpublished works.

households in the sample compared to those better off. As such, the intervention not only decreased the absolute deprivation experienced by those poorest at baseline, but also decreased their relative deprivation, which further contributed to the amelioration of child and adolescent mental health difficulties. Baird et al. [26] provide direct evidence for the impact of relative deprivation. Their multiarm, multicontrol cluster RCT in Malawi was devised to measure the impact of a cash transfer on adolescent girls in intervention areas who did not receive the intervention. Although cash transfer recipients enjoyed better mental health outcomes, nonrecipient girls in intervention areas were worse off in terms of prevalence of psychological distress compared to nonrecipients in control areas (9.9 percentage points). The program indirectly altered their relative income compared to their peers, who received the intervention, which resulted in significant impacts for their mental wellbeing.

Discussion

This systematic review and meta-analysis found evidence that poverty alleviation interventions providing monetary transfers are generally effective in improving the mental health of adolescents. However, an important caveat is that some programs may actually be harmful for adolescent girls. In theory, CCTs aim to supplement the effects of the monetary component of the intervention with an intended positive impact stemming from completion of the condition. In practice, the conditions may have the intended positive effect on adolescent mental health in some cases, as for instance changes in how adolescents spend their time in the Opportunity RCT in New York have been linked with decreased externalizing problems [30]. However, program conditionality can also backfire. School attendance, health visits,

and other time-intensive conditions pose a differential burden for adolescent girls in low- and middle-income countries, and as such may constitute a source of stress and produce worse mental health outcomes [31,26].

Irrespective of conditionality, it is important to consider the differential gender effects of cash transfer interventions in general. One proposed mechanism for this may relate to economic autonomy. Although it is established in adults that women and men in low-income countries have different levels of economic agency and ability to make financial decisions, this is less clear in younger populations. It is possible that boys have more autonomy and are more likely to spend transferred money as they like, while girls may feel pressure to contribute to the family budget. Another potential confounder may be the fact that in some, but not all interventions, the parents or caregivers were given the money. These two modes of administration could lead to different causal mechanisms but unfortunately, as we are limited by a small sample, we are not able to quantitatively test for differences in outcome. This would be an important avenue for future research and more consideration should be given to providing the monetary support directly to the adolescent.

Another important consideration emerging from the present review is that, in the context of high-risk settings, such as armed conflict or extreme deprivation, monetary transfer programs are limited in their effectiveness on their own. Instead, integrated poverty alleviation interventions, combining cash and social care, appear more impactful for improving outcomes for adolescents [21], and have been found effective elsewhere in reducing HIV risk behaviors [32]. The targeting focus of the intervention also emerges as an important factor: antipoverty efforts produce the strongest effects for the worst off, both

financially and mental health-wise [29,33], and may produce adverse mental health outcomes for those who are left out [26].

We acknowledge as an overall limitation that the subgroup effects (e.g., gender, relative income, extreme risk settings) we report are based on a small number of papers and it was not possible to meta-analyze them. More generally, the presently available evidence base is limited and this is perhaps in part due to the fact that mental health is a secondary outcome for monetary poverty alleviation programs. A further limitation is that the available research synthesized here focuses predominantly on the effects of poverty alleviation on the internalizing symptoms of adolescents in low- and middle-income countries. Evidence is severely lacking for high-income countries, externalizing symptoms, and young children.

The focus on adolescents' internalizing difficulties is in line with existing theoretical and empirical work on associations between poverty and mental health. Deprivation is primarily linked with internalizing disorders (e.g., depression, anxiety, suicidal ideation) [1–3,34] that typically emerge during adolescence [7], making this developmental period a particularly important subject of investigation and opportunity for intervention. The paucity of evidence for younger children may also be driven by a methodological difficulty in reliably measuring their mental health (e.g., see “Min Ila” [27]), as poverty alleviation research often reports effects on anthropometric measures such as children's weight and height instead [20]. Worryingly, the current evidence base lacks insight on what works in high-income countries. Antipoverty efforts in high-income settings typically constitute established government-led welfare programs. In most cases, studies examining the impact of welfare programs tend to use cross-sectional or longitudinal data but lack a robust experimental design. We found only two RCTs in a high-income setting which met our eligibility criteria—both from the United States and both inconclusive about the effects on children and adolescents' internalizing outcomes [18,30].

Our findings are in contrast to those of a recent review [11] on the impact of cash transfers on the mental well-being of young people in low- and middle-income countries. There are two key differences in results. First, our meta-analysis indicates an overall positive effect of monetary interventions (including cash transfers as well as grants) for internalizing symptoms. In the current review, internalizing symptoms constitute a broad category encompassing depressive symptoms, symptoms of anxiety, trauma, and mental distress. In comparison, the meta-analysis by Zimmerman et al. only considers depressive symptoms and does not find an effect of cash transfer interventions for these. It is possible that the different types of meta-analyzed outcomes underpin the different results. Second, our narrative synthesis reports a negative effect of interventions on mental health in the context of conditional interventions for girls. In contrast, Zimmerman et al. state they do not find any negative effects. This is likely due to the fact that their narrative synthesis considers only overall effects, whereas we synthesize evidence on heterogeneous group effects. We note that both reviews contain seven papers in common [19,20,23,29,26,28,25], but differ in the remaining papers that are included (five different papers for Zimmerman et al., and seven different papers in the current review). This can likely be explained by the differences in methodology between the two papers. More specifically, the two reviews used different participant age cut-offs (0–24 vs. 0–19 in the current review), different contexts (low and middle income countries vs. low, middle, and high income countries), different

program types (cash transfers vs. cash transfers and grants), and different outcomes considered for inclusion. We purposefully excluded nonclinical mental health measures, such as power in relationships [11], cognitive development scores, or intelligence tests [1], to specifically elucidate effects on well-defined mental health categories. Examining validated clinical measures has direct implications for public health diagnosis and treatment. The discrepant findings between our two reviews bear very important policy implications.

Our study improves on previous existing work on the impact of antipoverty interventions on the mental health of children and adolescents in two important ways. First, we reviewed only programs which provided monetary transfers, and as such homed in on one specific type of poverty alleviation and excluded education or home improvement interventions. Furthermore, we imposed a high cutoff for the methodological rigor of the included research which excluded some cash transfer programs which have been previously featured in literature syntheses (e.g., Oportunidades [35]). On the basis of our quality assessment, we find that baseline imbalances were few and randomization was generally successful. Hence, we are able to provide causal evidence regarding the impact of poverty alleviation on children and adolescents' mental health [36]. Our results paint a rich and nuanced picture of how antipoverty interventions affect child and adolescent mental health. Importantly, some aspects of monetary transfer programs may prove harmful. Intervention design should consider carefully (1) the conditionality of the intervention which may produce differential harms for adolescent girls, (2) the integration of social care components to address systemic risk factors to mental health, and (3) the targeting of the population of interest to maximize impact and avoid worsening mental health outcomes in left out eligible individuals. Although our meta-analysis indicates that cash transfer programs have a significant positive but small effect on the internalizing outcomes of children and adolescents, it is important to recognize this is a population-level effect and that small effects from public health interventions would produce greater net benefit than large changes in small segments of the population [37]. On the whole, monetary poverty alleviation programs improve the mental health of children and adolescents living in poverty and can provide essential support to help break the vicious cycle between poverty and mental ill health.

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Supplementary Data

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