The Impact of Microcredit Loans on Child Outcomes: A Review of the Literature

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EXECUTIVE SUMMARY

Developed as a revolutionary poverty alleviation strategy in the 1970s, microcredit currently reaches over 200 million clients each year, half of whom are considered the "ultra poor" living on less than USD $1.25 per day. A kind of microfinance strategy employed across the globe, microcredit loans are small amounts of money loaned out to poor borrowers without requirements of collateral to address the needs of those excluded from traditional finance systems. Borrowers are expected to use funds to support enterprises that eventually earn income, therefore breaking the cycle of poverty (Sengupta & Aubuchon, 2008; Microcredit Summit Campaign, 2014).

The subject of this literature review was to evaluate the existing literature regarding these microcredit loans and their potential impacts on children of loan beneficiaries. A total of 754 abstracts were reviewed for inclusion; eventually 53 studies were included in analysis based on established criteria. The results of these studies primarily fell into three categories—education and cognitive development, health and nutrition, and child labor.

Findings related to children's education and cognitive development, were overall mixed, depending on the category of impact measured. As a systematic review on the topic and a few studies included hypothesized, households may spend loan money directly on education-related expenses, improving short-term outcomes, but fail to improve the household's overall financial standing. Other measures of education and cognitive development, including school attendance and enrollment, education gap for age, quality of schooling, and knowledge improvement, found mostly mixed results and no impact with a few studies able to demonstrate limited positive improvements for these indicators.

Health and nutrition findings on the other hand demonstrated mostly positive results. Measures of health care expenditures, health-care-seeking behaviors, food expenditures, consumption behaviors, and other measures of nutrition and food security as well as health status indicators overall showed that participation in microfinance initiatives leads to improvements in the health of children. Similarly to education, these outcomes may be the result of households' tendency to spend loan money directly on immediate health needs such as medical expenses and food as opposed to income-generating activities. Some evidence of this is seen in slightly less positive results among biological markers of health, which give insight into longer-term impacts without threat of response bias, as compared to other measures of health.

As for child labor, overall results were mixed; the vast majority of studies found no impact on child labor or mixed impacts, depending on the sub group analyzed. A number of studies found that with microcredit use comes an increase in the amount of household chores for children, a disproportionate number of which may be placed on girls within the household. This does have limited negative outcomes in schooling for girls in some studies with male-headed households or loan beneficiaries. However, overall this increase in chores was not directly related to a decrease in schooling among all children in the included studies.

With this inconsistency of findings among the three impact domains, those invested in microcredit's future must consider the intended purpose of microcredit and the actual use of the money loaned to beneficiaries. Future interventions would be well served by integrating microcredit with other supports for the needs poor individuals have beyond financial concerns.

INTRODUCTION

With what began in the 1970s in Bangladesh as one man's personal loan to 42 women bamboo stool makers, the microcredit industry has expanded by 3,700 microfinance institutions to reach over 200 million clients across the globe each year (Sengupta & Aubuchon, 2008; Microcredit Summit Campaign, 2014). Microcredit is one aspect of the larger microfinance movement which includes the provision of loans, and other financial services such as insurance or savings to poor individuals or those who are otherwise unable to access these services in traditional market settings (Sengupta & Aubuchon 2008). Although individual programs vary, in general, microcredit loans are defined as small amounts of money distributed to either individuals or groups of individuals who lack the collateral needed to obtain loans from traditional banks (Sengupta & Aubuchon 2008). Often run by NGOs or Microfinance Institutions, many organizations who facilitate this process also seek social change through the provision of services (Sengupta & Aubuchon, 2008). Supporters of microfinance tout microcredit as a proven method of poverty alleviation by giving individuals, particularly women, the opportunity to break the cycle of poverty through enterprise development (Sengupta & Aubuchon, 2008).

METHODS

To arrive at the 53 studies included in this review of the literature, a total of 754 abstracts were reviewed from the following databases: EBSCO, Eric, A IBSS, PubMed, Scopus, Web of Science, as well as nine additional articles discovered during the review process. From this, 237 articles were reviewed for inclusion; of those, 53 studies are included in this review based on the criteria of a microcredit program delivered in a developing country and that measured child-level impacts. Included studies use experimental, quasi-experimental, and qualitative methodologies to arrive at their results, and often combined a variety of comparison methods to reduce bias and improve representativeness in the results. A more detailed description of the types of methods used to derive impacts of microcredit on children from comparison groups is as follows:

Randomized Control Trial (RCT)/Randomization – Individuals (or in some study cases, villages) are randomly assigned to receive microcredit programming, while the other does not receive program or receives program at later date. This method attempts to minimize bias so that results can be attributed to program impact.

Matched controls – Because microcredit participants often self-select into programs based on certain

characteristics or interest in obtaining a loan, using control participants matched on certain established eligibility characteristics provides an equal comparison between those who have certain characteristics and participate in microcredit, and those with similar characteristics but do not participate in a microcredit scheme. This method also includes propensity score matching.

Newly selected clients versus existing clients – A similar approach to matched controls, this method evaluates outcomes of microfinance by conducting a cross-sectional study of established microfinance clients and newly selected clients who have not benefitted from microloans at the time of the evaluation. Because new and established clients are expected to be similar, this method may control for potential differences and biases between groups.

Difference in difference – This method compares both participants and non-participants in treatment villages as compared to the same groups in control villages where program is introduced later. By evaluating both participants and non-participants in treatment and control villages, a difference-in-difference approach accounts for any potential biases that may exist beyond individual characteristics.

DOMAINS

As extreme poverty drastically impacts the physical, mental, and social development of children, it is logical that evaluations of microfinance initiatives show not only impact on the adults who receive the loans, but also on the children within the beneficiary households in order to truly break the cycle of poverty (UNICEF). According to UNICEF, the primary areas to target to break the cycle of poverty for children are education, health care, nutrition, water and sanitation, and protective environments. With the exception of water and sanitation, which often require improvements in infrastructure, the primary areas of impact evaluated in the studies reflect these areas for improvement: children's education (37 studies), children's health and nutrition (28 studies), and impact on child labor (11 studies). In addition to these three primary domains, other outcomes found in the included studies but not described here were child clothing (three studies) and one study in which the project provided microcredit to adolescents and evaluated a host of impacts including savings, income, and HIV/AIDS knowledge, attitudes, skills, and intentions (Calderon et al., 2008; Carothers et al., 2010; Dunbar et al., 2010; Alam 2012).

IMPACT ON CHILDREN'S EDUCATION AND COGNITIVE DEVELOPMENT

The results of the impact of microcredit on children's education and cognitive development were overall mixed, depending on the category of impact measured. Within the microcredit literature measuring

impacts on children's education and cognitive development, the indicators primarily reflected changes in education-related expenditures, school attendance, education gap for age, quality of schooling, and improvement in knowledge. Although the most directly related indicator, education expenditures, had generally positive outcomes that resulted from receiving a microcredit loan, school attendance outcomes were mixed overall. Though education gaps for age, quality of schooling, and knowledge improvement demonstrated overall positive-to-mixed results, very few studies measured these impacts and used widely varying indicators that limited comparison. Interestingly, although the quantitative data on the impact of microcredit on schooling and education expenditures is mixed, women's ability to pay for their children's schooling was mentioned as a positive outcome of microfinance by all eight exclusively qualitative studies that explored education expenditures (Brett, 2006; Hietalahti & Linden, 2006; Carothers et al., 2010; Chhay, 2011; Holland & Wang, 2011; Rao et al., 2011; Wagner et al., 2012; Krenz et al., 2014). In addition to this review, a systematic review of various microcredit interventions throughout sub-Saharan Africa found overall positive impacts on education in four studies, no impacts or mixed impact in two studies, and negative impacts in the four studies evaluated (Pitt & Khandker, 1998; Barnes et al., 2001; Rabemananjara et al., 2005; Calderon et al., 2008; Nanor, 2008; Adjei et al., 2009; Brannen 2010; Shimamura & Lastarria-Cornhiel, 2010; Ssewamala et al., 2010; Korth et al., 2012).

EDUCATION EXPENDITURES

The most proximal education-focused outcome related to microcredit loans and children is change in ability to pay for education-related expenditures. Depending on the study, the indicators measured ability to pay tuition, other school fees, or related expenditures such as books and school uniforms. Out of the 37 studies that evaluated the impact of microcredit on education, nine studies found positive impacts on expenditures, four found no impacts, and no studies found negative impacts as a result of the parent receiving a microcredit loan (Brett, 2006; Coleman, 2006; Hietalahti & Linden, 2006, Calderon et al., 2008; Adjein et al., 2009; Saad, 2010; Takahashi et al., 2010; Holland & Wang, 2011; Rao et al., 2011; Wagner et al., 2012; Mukherjee & Kundu, 2013; Angelucci et al., 2014).

SCHOOL ATTENDANCE AND SCHOOL ENROLLMENT

School attendance and school enrollment were the most commonly reported education related outcomes in the studies reviewed, with variation in measurement based on gender, age, and indicators for measuring attendance. Out of 37 total studies, nine studies found positive impacts, 10 studies found mixed impacts/no impact, and three found negative impacts (Hietalahti & Linden, 2006; Calderon et al., 2008; Nader, 2008; Hazarika & Sarangi, 2008; Shimamura & Lastarria-Cornhiel, 2010; Chowdhury & Chowdhury, 2011; Holland & Wang, 2011; Montgomery & Weiss, 2011; Augsburg et al., 2013, Augsburg et al., 2012; Banerjee et al., 2013; Islam & Choe, 2013; Tarozzi et al., 2013; Ali et al., 2014; Becchetti & Conzo, 2014; Crépon et al., 2014; Diro & Vadde, 2014; Doan et al., 2014; Fofana et al., 2014; Khandker & Samad, 2014; Krenz et al., 2014; Tarozzi et al., 2015).

EDUCATION GAP FOR AGE

The education gap for age refers to the expected years of schooling compared to actual years of schooling for a child based on age. For instance, if a child was expected to have completed five years of school based on their age, but has currently only completed three, the education gap would be two years (Doan et al., 2014). The theory behind including this measurement in evaluating the impact of microcredit is twofold: if parents earn money from the resulting enterprises, they are 1) better able to afford school expenditures to keep children in school and 2) do not need to have children drop out or take time off from school to earn money and support the family (Schultz et al., 1992; Wydick, 1999; Maldonado & González Vega, 2005; Doan et al., 2014). Four studies evaluated the impact of microcredit on schooling gaps; one study found a positive impact of between .5 and .25 years fewer year gap in schooling, while the other three found no impact on education gaps based on parent participation in microcredit (Maldonado & González Vega, 2005; Holland & Wang, 2011; You, 2013; Doan et al., 2014; You & Annim, 2014). Two of these studies with no impact hypothesized that the study design may be at fault for the inability to measure change, while the third study found most children were already in school and at the appropriate grade for age, limiting the impact participation in microfinance could have had on this indicator. Schooling gaps reflect long term educational investments by parents, while the more proximal education expenditures and school attendance are immediate short-term indicators of income. As a result, schooling gaps may be more influenced by broader family characteristics and overall economic situations as opposed to shorter term informal microcredit, and may not be the best measure for the impact of microcredit on children's education (Doan et al., 2014).

QUALITY OF SCHOOLING

Beyond ability to pay for children's education and actual school attendance, studies reviewed also included indicators related to the quality of schooling. This primarily was measured in the ability to pay for higher quality private schooling for children, but also included indicators such as the ability to pay for additional support classes. Two studies found a positive impact on the quality of schooling, while one randomized control trial found no statistically significant impact (Saad, 2010; Chhay, 2011; Augsburg et al., 2013; Augsburg et al., 2012).

COGNITIVE DEVELOPMENT

Two of the studies reviewed included measures specifically related to cognitive development of children that resulted from participation in microcredit. A 2010 study in Egypt found a microcredit intervention combined with a child worker rights intervention with incentives for parents improved math and computer skills as well as child awareness of gender equality (Carothers et al., 2010). A second study that measured the impact of microcredit on average test scores found mixed results; test scores were significantly higher among microcredit participants' children at midline data collection, but at endline results were either positive or negative, depending on the semi-parametric test used to test for significance (You & Annim, 2014).

The following table provides an overview of all studies included in this review with at least one education and cognitive development-related outcome. Studies are presented by lead author last name and year, the program(s) evaluated in the study, the country of the program, methods for comparing microcredit recipients to non-recipients (see Methods for a description of these strategies), estimated impact, and any important notes for consideration with the results. Please note (+) indicates a positive impact on the indicator, while (-) indicates a negative impact, and (/) indicates overall no impact on children for the given indicator.

TABLE 1: IMPACT OF MICROCREDIT LOANS ON CHILDREN'S EDUCATION AND COGNITIVE DEVELOPMENT

Source	Program/MFI, Country	Method	Impact	Notes
Adejei 2009	Sinapi Aba Trust (SAT), Ghana	Established clients vs. new clients	(+) education expenditures	Women who were traders were more likely to self-select into microfinance program, as compared to farmers, artisans, small scale manufacturing.
Ali 2014	Grameen Bank, Bangladesh	Randomly selected sample	(+) school enrollment	
Angelucci 2014	Credito Mujer, Mexico	Randomized clusters by neighborhoods	(/) school expenses	Although drop in labor and increase in spent on schooling, results were not statistically significant.
Augsburg 2013, Augsburg 2012	Bosnia MFI (not named), Bosnia and Herzegovina	RCT	(-) school attendance children ages 16–19, (/) school attendance children ages 7–15	Reduced schooling did not hold with multiple hypothesis testing in 2013 study.
Banerjee 2013	Spandana, India	RCT	(/) private school fees, (/) education enrollment, (/) private school vs. public school enrollment	Insignificant at endline survey 1 in 2008 and endline survey 2 in 2010.
Becchetti 2014	Protagonizar (SHG model), Argentina	Matched controls	(+) school attendance	Conditional based on distance and standard of living.
Brett 2006	Promujer/Crecer, Bolivia	Qualitative – in-depth interview (IDI)	(/) children's education expenses	Qualitative results.

Source	Program/MFI, Country	Method	Impact	Notes
Calderon 2008	Red Cross Spain/Red Cross Rwanda, Rwanda	Matched controls	(+) school enrollment, (/) percent of parents paying all school fees for children, (/) percent of households with one child in high school	
Carothers 2010	Promoting and Protecting the Interests of Children who Work Project, Egypt	Qualitative – IDI and focus group discussion (FGD)	(+) math and computer skills, (+) gender equality awareness	Qualitative results.
Chhay 2011	Lutheran World Federation, Cambodia	Qualitative – semi-structured interviews	(+) Perceived improved quality of education for children	Qualitative results.
Chowdhury 2011	multiple MFIs, Bangladesh	Difference in difference	(+) school enrollment	Positive impact among eligible participants at different time points, but no statistically significant impact between eligible participants and eligible non-participants. History effect is suggested for this result. Women spent more on food, but overall expenditures went up on non-food goods as opposed to food as a result of participation in microfinance.
Coleman 2006	Rural Friends Association (RFA)/ Foundation for Integrated Agricultural Management (FIAM), Thailand	Stratified random sample	(/) education expenses	
Crépon 2014	Al Amana, Morocco	Matched controls	(/) school enrollment	
Diro 2014	DECSI, Ethiopia	Matched controls	(+) children's education expenditures	Results are not statistically significant.

Source	Program/MFI, Country	Method	Impact	Notes
Doan 2014	Not specified, Vietnam	Convenience sample	(/) current enrollment, (/) Education gap (expected years of schooling - actual years of schooling), (+) girls enrollment compared to boys (ages 6-18 and 6-14)	Sample represents 26% of all wards within the district.
Fofana 2014	The Belgian Project and one unnamed MFI, Côte d'Ivoire	Difference-in-difference	(/) education enrollment	Hypothesis for results is that in Côte d'Ivoire primary school is supported by state so education is not dependent on socio-economic status of parents.
Hazarika 2005	Malawi Rural Finance Company [MRFC], Promotion of Micro-Enterprises for Rural Women [PMERW], the Malawi Mudzi Fund [MMF], and the Malawi Union of Savings and Credit Cooperatives [MUSCCO], Malawi	Matched controls	(/) school attendance in previous two days, (/) school attendance in last year	Improved access to microcredit increases children's propensity to do household chores, doesn't impact school attendance. Children take up household work while parents do labor outside the home. Children were significantly less likely to work in female-headed households. Girls were significantly more likely to work compared to boys.
Hietalahti 2006	Micro Credit Programme (MCP) and the Tshomisano Credit Programme (TCP), South Africa	Qualitative – semi structured interviews	(+) ability to pay school fees	Qualitative results
Holland 2011	Association for Women's Development ADIM, Nicaragua	Semi-structured interviews with 23 clients	(+) current school attendance, (/) education gap, (+) purchase of school materials	Qualitative results. Most children were in school and in appropriate grade for age. Found that children helped out around house, but only in a way that did not impact school attendance, although not allowed to use loan money for anything besides enterprises. Women often mentioned using loan funds for education for children.

Source	Program/MFI, Country	Method	Impact	Notes
Islam 2013	13 different MFIs, Bangladesh	Matched controls	(-) school enrollment for girls, (/) school enrollment for boys	Microcredit beneficiaries who are less poor or more highly educated increases likelihood of school enrollment and reduces likelihood of child labor. Children from microcredit households were more likely to help out with household enterprises. Impact of microcredit on school enrollment was negative for both boys and girls, but statistically significant for girls only.
Korth 2012	Various, Sub-Saharan Africa	Systematic review of 15 studies	(+) three studies, on education expenditures, enrollment, and attendance (/) two studies, on education expenditures, enrollment, and attendance (-) four studies on education expenditures, enrollment, and attendance	"The absence of evidence for significant improvements in financial wealth would suggest that sustainable improvements in terms of health and education outcomes would be out of reach for any household member—be it women or men. Instead, we believe that we are seeing improvements in health and education because—and possibly only because—clients are investing their loans and savings directly in these areas; in other words, they do not employ loans to generate further income that is then used for health or education expenses."
Krenz 2014	Annapurna Pariwar, India	Qualitative – IDI	(+) children's education	Qualitative results. Paying for education was mentioned as a priority among the women and one of the biggest benefits as a result of participation in MFI. Loans did not pay for private education, but instead for uniforms, books, and supplies.
Maldonado 2005	SARTAWI and CRECER, Bolivia	Established clients vs. new clients	(+) schooling gap	Older client students have between .5 and .25 smaller schooling gap compared to new clients.
Montgomery 2011	Khushhali, Pakistan	Established clients vs. new clients; Stratified random sample	(/)school enrollment	"Although children in Khushhali Bank member households are more likely to be enrolled in school than children in non-member households, children in households already participating by taking out loans are no more likely to be enrolled in school and have the same rates of absenteeism as children in households that are members of the bank but have not yet taken out loans."

Source	Program/MFI, Country	Method	Impact	Notes
Mukherjee 2013	Swarnajayanti Gram Swarojgar Yojana (SGSY), India	Difference-in-difference with propensity score matching	(+) expenditures on education and health care expenses for children	Increases across all programs, but statistically significant only for castes of the ones evaluated in the study. Education of head of household had significant positive impact on spending, same with non-agricultural occupation for head of household.
Nader 2008	El Tadamun, Egypt	Convenience sample	(+) schooling of children (both boys and girls)	
Rao 2011	Sampark, India	Qualitative - FGD	(+) school fees	Qualitative results.
Saad 2010	AIM, Malaysia	Randomly selected sample	(+) pay for extra academic classes for children, (+) ability to send children to higher education	
Shimamura 2010	Malawi Rural Financial Company, Malawi	Stratified random sample of matched controls	(-) school attendance by girls, (/) school attendance by boys	Although microcredit overall had a negative impact on girls' school attendance, the study did find a simultaneous increase in schooling among older girls that coincides with an increase in chores, but this start in schooling was delayed.
Takahashi 2010	Yayasan Bina Swadaya (YBS)-Bank Perkreditan Rakyat (BPR), Indonesia	Difference in difference with propensity score matching	(+) school expenditures per school-aged child, (+) school expenditures per all children attending school	Education expenditure increases were primarily found among the most poor, but the program itself primarily reached relatively wealthier individuals.
Tarozzi 2013, Tarozzi 2015	Oromiya Credit and Savings Share Company (OC-SSC) and the Oromiya Development Association (ODA) in Oromiya and by the Amhara Credit and Savings Institute (ACSI) and the Amhara	Cluster RCT	(/) school attendance	Small positive gains in school and labor, but neither were statistically significant. This study found similar results to Shimamura (2010) in that when older children start school household chores also increased.

Source	Program/MFI, Country	Method	Impact	Notes
	Development Association (ADA), Ethiopia			
Wagner 2012	Uganda Cares, Uganda	Qualitative - semi-structured interviews	(+) pay for children to attend school	Qualitative results.
You 2013, You 2014	Various, China	Randomly selected sample	(/) schooling gap, (/) average test scores	Narrowed schooling gap and increased test scores significantly associated with MFI participation in 2000, but in 2004 results were not significant or both positive and negative. Authors believe difference in schooling gap may be result of study dropouts. Rising tuition cost was associated with helping to close the schooling gap for MFI users.

IMPACT ON CHILDREN'S HEALTH AND NUTRITION

The impact of microfinance on children's health and nutrition in the 28 studies included in this review were positive overall. Given the large range of measures used among all studies evaluated in this review, it is worth considering that the overall number of studies per indicator is smaller as compared to child labor or the two primary measures of education—education expenditures and school enrollment and attendance.

HEALTH CARE EXPENDITURES

Of the six studies that evaluated the impact of microcredit on health care expenditures or other related measures such as seeking care from a medical professional, five saw positive impacts that resulted from receiving a microfinance loan (Adjei et al., 2009; Montgomery & Weiss, 2011; Hennink & McFarland, 2013; Mukherjee & Kundu 2013; Diro & Vadde 2014; Khandker & Samad, 2014). One study, a large time series panel survey of over 1,500 microcredit participants in Bangladesh, and a convenience sample of existing microcredit participants in the Dominican Republic, found no significant impact of microcredit on spending on health care expenses for children (Khandker & Samad, 2014).

HEALTH-SEEKING BEHAVIORS

Health-seeking behaviors (excluding those related to nutrition) spanned a wide range of topics, from breastfeeding practices to vaccinations. These results were again primarily positive, with four studies indicating positive outcomes and two studies indicating mixed results (Dohn et al., 2004; Ahmed & Rana, 2005; Ahmed, 2009; Dunbar et al., 2010; Hennink & McFarland, 2013; Flax et al., 2014). Because the indicators measure impacts on a wide range of health topics, the mechanisms through which participation in microcredit impacts these health-seeking behaviors is unclear.

FOOD EXPENDITURES, CONSUMPTION BEHAVIORS, AND OTHER MEASURES OF NUTRITION AND FOOD SECURITY

This category of indicators includes self-reported nutrition outcomes both directly related to good nutrition, such as the consumption of animal source proteins, as well as proxies for food security, such as household expenditures on food. These measures do not include directly observable or biological markers of nutrition, such as height or weight.

Of the 28 studies reviewed with any measured health impacts, 12 studies evaluated nutrition and food security (Ahmed & Rana 2005; Hietalahti & Linden, 2006; Calderon et al., 2008; Ahmed, 2009; Colecraft et al., 2009; Chhay, 2011; Chowdhury & Chowdhury, 2011; DeLoach & Lamanna, 2011; Friesen et al.,

2012; Marquis & Colecraft, 2013; Tarozzi et al., 2013; Moseson et al., 2014; Tarozzi et al., 2015). Of these 12, nine found positive impacts, while two found mixed or no impact on nutrition or food security as a result of participation in microcredit loans. Interestingly, the two studies that found no measurable change as a result of participation in microfinance, used more general measures of food insecurity and household food expenditures, such as the Household Food Security Questionnaire. When looking to specific measures of nutritional intake such as animal source protein or dairy intake, the results are consistently positive. Given that the construct of food security can be complex and impacted by regional access to certain types of foods, it is not surprising that smaller and more specific measures were more positive overall. One study found that participation in a microcredit program increased the likelihood of food insecurity, but the authors believed this outcome was an outlier and hypothesized a spurious relationship based on an unknown variable in light of the other positive impacts measured in the evaluation (Tarozzi et al., 2013; Tarozzi et al., 2015).

HEALTH STATUS INDICATORS

Various measures of child health status were used in the reviewed studies. Although primarily biological indicators such as weight-for-age z scores and hemoglobin levels were used, two of the studies in this category also included perceived child health status based on parent survey responses. Directly observable nutrition status indicators are also included in this category, as opposed to the self-reported measures described in the previous category. Biological markers are considered to be the "gold standard" as compared other participant-reported health indicators, because they are not susceptible to any potential response bias from either the participant or researcher during data collection.

Of the ten studies that measured one or more health status indicators, nine measured at least one positive outcome, six studies measured at least one mixed outcome or an outcome that was not influenced by microcredit status, and one study measured negative outcomes as the result of participation in a microcredit loan program (Dohn et al., 2004; Ahmed & Rana, 2005; Doocy et al., 2005; Ahmed, 2009; De & Sarker, 2011; DeLoach & Lamanna, 2011; Friesen et al., 2012; Banerjee et al., 2013; You, 2013; Moseson et al., 2014; You & Annim, 2014; Gordon-Strachan et al., 2015). Excluding the two perceived health status studies (both with positive impacts), health status indicator results lean toward only slightly positive outcomes.

The following table provides an overview of all studies included in this review with at least one health and nutrition related outcome. Studies are presented by lead author last name and year, the program(s) evaluated in the study, the country of the program, methods for comparing microcredit participants to non-recipients (see Methods for a description of these strategies), estimated impact, and any important notes for consideration with the results. Please note (+) indicates a positive impact on the indicator, while (-) indicates a negative impact, and (/) indicates overall no impact on children for the given indicator.

TABLE 2: IMPACT OF MICROCREDIT LOANS ON CHILDREN'S HEALTH AND NUTRITION

Source	Program/MFI, Country	Method	Impact	Notes
Adeji 2009	Sinapi Aba Trust (SAT), Ghana	Established clients vs. new clients	(+) health care expenditures	Women who were traders were more likely to self-select into microfinance program, as compared to farmers, artisans, small scale manufacturing.
Ahmed 2009, Ahmed 2005	BRAC Challenging the frontiers of poverty reduction/targeting ultra-poor, targeting social constraints (CFPR/TUP), Bangladesh	Matched controls	(+) severe child malnourishment, (+) severe child wasting, (-) severely underweight children, (-) stunted children, (+) remain malnourished over study period, (+) deterioration to malnourished from baseline (/) for stunted and severely underweight children over study period and deterioration, (+) child immunizations, (+) household food and calorie consumption, quantity and quality of food intake, more diversified diets (animal sources and spent more on food), (+) child nutrition and immunization status	Although improvements were noted, overall child nutrition and immunization status are not statistically significant. Intervention also included human capital development, promoting gender equity, and building legal awareness, in addition to customized health interventions.
Banerjee 2013	Spandana, India	RCT	(/) major child illness in last year	Insignificant at endline 1 in 2008 and endline 2 in 2010.
Calderon 2008	Red Cross Spain/Red Cross Rwanda, Rwanda	Matched controls	(+) consume meat once a month	

Source	Program/MFI, Country	Method	Impact	Notes
Chhay 2011	Lutheran World Federation, Cambodia	Qualitative - semi-structured interviews	(+) better food and nutrition for household	Qualitative results.
Chowdhury 2011	multiple MFIs, Bangladesh	Difference in difference	(/) household food expenditures	Among eligible participants at different time points, not statistically significant between eligible participants and eligible non-participants. History effect is suggested for this result. Women spent more on food, but overall expenditures went up on non-food goods as opposed to food as a result of participation in microfinance.
Colecraft 2009	ENAM project, Ghana	RCT	(+) consumption of animal source foods in last week	
De 2011	SHGs both linked and not linked to NGO MFI initiatives, India	Difference in difference	(+) z score weight for age of child, (+) household protein intake	Higher age, marriage age, and education of mother had significant positive effect on nutritional status of child.
DeLoach 2011	Various, Indonesia	Randomly selected sample	(+) height, (+) household food expenditures per person, (+) monthly food expenditures	Used height as a proxy for child health.
Diro	DECSI, Ethiopia	Matched controls	(+) children medical expenditures	Results not statistically significant.
Dohn 2004	Esperanza Internacional, Dominican Republic	Purposive convenience sample	Microcredit program only: (/) vaccinations, (/) diarrhea in last 30 days, (/) acute respiratory infection in past 30 days. Microcredit and health	Microcredit program pre-existed the study period. Study evaluated microcredit program vs. microcredit combined with health education program.

Source	Program/MFI, Country	Method	Impact	Notes
			promotion program: (+) vaccination, (+) diarrhea in last 30 days, (/) respiratory infection	
Doocy 2005	WISDOM, Ethiopia	Matched controls	(/) Mean upper arm circumference, (/) prevalence of wasting (both severe and moderate), (/) prevalence of acute malnutrition, (+) nutritional status of children of female clients only, (+) household nutritional status female households only, (+) prevalence of acute malnutrition female households	Very small overall differences between established clients, new clients, and controls. However, when broken down by gender, established female clients had better health outcomes in malnourishment, severe wasting, moderate to severe wasting, and acute malnutrition.
Dunbar 2010	SHAZ!, Zimbabwe	Mixed methods – Randomly selected sample and IDI	(/) current sexual activity, (/) condom use	Pilot program with poor adolescent girls HIV/life skills and business training combined with microcredit and mentorship.
Flax 2014	Partners for Development, Nigeria	Cluster RCT	(+) breastfeeding practices of mother	Microcredit combined with breastfeeding lessons during microcredit meetings, text and voice messages, and songs and dramas created by participants.
Friesen 2012	Not specified, Ghana	Matched controls	(+) child dairy product consumption, (+) child iron fortified foods, (+) child meets minimum dietary diversity recommendations., (+) weight for age z score (not SS p=.09)	Children in non-MFI consumed more legumes and nuts ($p<.05$).

Source	Program/MFI, Country	Method	Impact	Notes
Gordon–Strachan 2015	Not specified, Jamaica	Matched controls	(/) height for age z score, (+) weight for age z score, (+) BMI for age, (+) waist circumference, (/) blood pressure	Children of MF clients were more likely to be overweight or obese (OR 1.46).
Hennink 2013	Fonds d'Appui aux Activite´s Renumeratrices des Femmes (FAARF), Burkina Faso	Qualitative – IDI and FGD	(+) child vaccinations, (+) preventative medicines stocked at home for children, (+) access formal health services for children	Qualitative, results not statistically significant.
Hietalahti 2006	Micro Credit Programme (MCP) and the Tshomisano Credit Programme (TCP), South Africa	Qualitative – semi structured interviews	(/) food security	Qualitative, results not statistically significant.
Khandker 2014	multiple programs, Bangladesh	Randomly selected sample	(/) medical expenses for children	
Korth 2012	Various, Sub-Saharan Africa	Systematic review of 15 studies	(+) various child health indicators	"The absence of evidence for significant improvements in financial wealth would suggest that sustainable improvements in terms of health and education outcomes would be out of reach for any household member—be it women or men. Instead, we believe that we are seeing improvements in health and education because—and possibly only because—clients are investing their loans and savings directly in these areas; in other words, they do not employ loans to generate further income that is then used for health or education expenses."

Source	Program/MFI, Country	Method	Impact	Notes
Marquis 2013	ENAM project, Ghana	Mixed methods – matched controls	(+) children's animal source foods (ASF) diversity, (+) children's nutritional status	
Montgomery 2011	Khushhali, Pakistan	Established clients vs. new clients; Stratified random sample	(+) seek treatment for children's illnesses, (+) seek treatment for children from trained medical professional	
Moseson 2014	Prisma, Peru	Convenience sample	(+) food security, (+) incidence of anemia, (+) red meat consumption, (/) access to clean water, (/) height, (/) weight, (/) incidence of illness	Red meat consumption and anemia were borderline positive results, continued participation in loan cycles increased food security.
Mukherjee 2013	Swarnajayanti Gram Swarojgar Yojana (SGSY), India	Difference in difference with propensity score matching	(+) Expenditures on health care expenses for children	Increases across all programs, but statistically significant for only two castes of the ones evaluated in the study. Education of head of household had significant positive impact on spending.
Tarozzi 2013, Tarozzi 2015	OC-SSC, ODA, ACSI, and ADA, Ethiopia	Cluster RCT	(-) food security	Decreased food security in household, but believe result may be spurious relationship because of other impacts
You 2013, You 2014	N/A China	Randomly selected sample	(+) parent-reported child health status, (+) BMI, (/) hemoglobin, (/) zinc, (/) schooling gap, (/) average test scores	Hemogobin showed no impact, zinc showed statistically significant impact in one test, but not other two.

IMPACT ON CHILD LABOR

Although child labor across the world has decreased by one-third since 2000, 168 million children are still engaged in child labor, with 85 million of them participating in hazardous work (International Labour Organization - International Programme on Elimination of Child Labour 2013). Concerns regarding the relationship between microcredit and child labor are twofold. First, critics of microcredit schemes purport that when parents take out microcredit loans to fund new enterprises, children are drawn into either increased child labor by assisting the parent with the actual business, or increased child work by picking up household chores that the parent now does not have time for, such as cooking, cleaning, or child care. This increase in child labor and/or work, in turn, can lead to decreased enrollment in school if parents prioritize these responsibilities over school attendance. Because these tasks are traditionally female designated roles, girls' school attendance in particular may be harmed by increased labor either in the enterprise or at home.

In the studies reviewed, the measurement of child labor was generally given as an overall indicator, with a few studies that documented the hours spent on labor and types of labor conducted or between labor and work. Out of the 11 studies that measured child labor or child work, two found microcredit loans increased child labor, one found loans decreased teenage labor, one found a decrease in child labor for girls, but no change for boys, and the majority of studies found mixed impacts or no impact on child labor or child work (Brett, 2006; Hazarika & Sarangi, 2008; Carothers et al., 2010; Shimamura & Lastarria-Cornhiel, 2010; Holland & Wang, 2011; Augsburg et al., 2013; Augsburg et al., 2012; Banerjee et al., 2013; Islam & Choe, 2013; Tarozzi et al., 2013; Angelucci et al., 2014; Crépon et al., 2014; Tarozzi et al., 2015). Of those with mixed impacts, often differences in the direction of the relationship or the statistical significance of the impacts occurred between genders or by age group.

Because ultimately most researchers in the reviewed studies were interested in measuring the influence of microcredit loans on the relationship between child labor and education, most included studies also evaluated the impact of child labor on education enrollment. Overall, the results were inconclusive with little consistency between the included studies. Five studies found that participation in microcredit schemes specifically led to increased chores around the household, but only two of these also found that this had a negative relationship on schooling (Hazarika & Sarangi, 2008; Shimamura & Lastarria-Cornhiel, 2010; Holland & Wang, 2011; Islam & Choe, 2013; Tarozzi et al., 2013; Tarozzi et al., 2015).

The following table provides an overview of all studies included in this review with at least one child labor- or work-related outcome. Studies are presented by lead author last name and year, the program(s) evaluated in the study, the country of the program, methods for comparing microcredit recipients to non-recipients (see Methods for a description of these strategies), estimated impact, and any important notes for consideration with the results. Please note (+) indicates a positive impact on the indicator (decreased child labor or work), while (-) indicates a negative impact (increased child labor or work), and (/) indicates overall no impact on children for the given indicator. In the table below for the purposes of this review "child labor" is defined as work conducted by children outside the home in

support of the microcredit enterprise, whereas "child work" is defined as activities conducted by the child to support the family in the home, such as child care, cooking, or cleaning. The impact variable "work and labor" indicated the studies did not differentiate between labor outside the home or work inside the home (International Labour Organization).

TABLE 3: IMPACT OF MICROCREDIT ON CHILD LABOR

Source	Program/MFI, Country	Comparison Method	Impact	Notes
Angelucci 2014	Credito Mujer, Mexico	Randomized clusters by neighborhoods	(/) child labor	Results were not statistically significant.
Augsburg 2013, Augsburg 2012	Not specified, Bosnia and Herzegovina	RCT	(-) teen (ages 16–19) labor, (/) teen (ages 16–19) work	Reduced schooling did not hold with multiple hypothesis testing in 2013 study.
Banerjee 2013	Spandana, India	RCT	(/) child work and labor ages 9–17	All results insignificant at endline 1 in 2008 and endline 2 in 2010.
Brett 2006	Promujer/ Crecer, Bolivia	Qualitative – IDIs	(-) child labor	Qualitative results.
Carothers 2010	Promoting and Protecting the Interests of Children who Work Project, Egypt	Qualitative – IDIs and FGD	(+) better wages for children, (+) higher standard of wages for children, (+) working conditions for children, (+) math and computer skills, (+) child worker rights, (+) gender equality awareness	Qualitative results. This intervention provided microcredit in exchange for child working conditions. Vast majority of enterprises were owned by parents.
Crépon 2014	Al Amana, Morocco	Propensity score matching	household members ages 6–15 years old: (/) child labor, (+) child work household members ages 15–20 years old: (+) child labor, (/) child work	

Source	Program/MFI, Country	Comparison Method	Impact	Notes
Hazarika 2005	Malawi Rural Finance Company [MRFC], Promotion of Micro-Enterprises for Rural Women [PMERW], the Malawi Mudzi Fund [MMF], and the Malawi Union of Savings and Credit Cooperatives [MUSCCO], Malawi	Matched controls	(/) child labor, (-) child work	Improved access to microcredit increases children's propensity to do household chores, doesn't impact school attendance. Children take up household work while parents do labor outside the home. Children were significantly less likely to work in female-headed households. Girls were significantly more likely to work compared to boys.
Holland 2011	Association for Women's Development ADIM, Nicaragua	Qualitative - semi-structured interviews	(/) child labor, (-) child work	Qualitative results. Children helped out around house, but only in a way that did not impact school attendance.
Islam 2013	13 different MFIs, Bangladesh	Matched controls	(+) child labor girls, (/) child labor boys	Microcredit beneficiaries who are less poor or more highly educated increases likelihood of school enrollment and reduces likelihood of child labor. Children from microcredit households were more likely to help out with household enterprises.
Shimamura 2010	Malawi Rural Financial Company, Malawi	Stratified random sample with matched controls	(/) child work	Microcredit use decreases household chores among younger children, but had no impact on crop farming. Once children, particularly girls, begin school they tend to also increase chores at home. Credit delays girls both starting school and increasing chores, although it is unclear why.
Tarozzi 2013, Tarozzi 2015	OC-SSC, ODA, ACSI, ADA, Ethiopia	Randomized clusters by neighborhoods	(/) child labor, (/) child work	Small positive gains in school and labor, but neither were statistically significant. Found that with older children when starting school, household chores also increased.

CONCLUSIONS AND IMPLICATIONS FOR POLICYMAKERS

This literature review sought to examine the existing literature measuring the impact of parent participation in microcredit loan programs on child-level outcomes. Across the 53 studies included for review, three domains of impacts on children's education and cognitive development, health and nutrition, and child labor emerged as the primary categories of indicators utilized in these studies. In reviewing the existing body of literature, outcomes directly impacted by the increased influx of cash that resulted from microcredit participation have the most overall positive results. These include education expenditures, health care expenditures, and food expenditures. Due to the short evaluation period of the vast majority of these studies, this result is not surprising. Participants often participate in multiple loan cycles to slowly grow their businesses; the major impacts that may require a sustained source of income such as long term school enrollment and biological markers of health such as weight-for-age z scores will only come with time as individuals are able to break the cycle of poverty.

In addition, a few of the researchers noted that although loans are generally given with the expectation of use only for enterprise development, many microcredit participants used loan funds to pay for medical or education expenses. Based on prioritization of needs, it is easy to see how an individual may justify using loan funds to pay for a sick family member or necessary school uniforms as opposed to investing in an enterprise with a return on investment farther into the future. Although microcredit participants typically have a very high repayment rate, policymakers need to be aware of this tendency when designing microcredit programs to both maximize the benefit of microcredit to the participant and ensure the microfinance institution is able to recover their investment (Sengupta & Aubuchon, 2008). Considering the existing evidence base, future interventions may best serve the intended beneficiaries by combining microcredit with additional support services to avoid these tendencies, such as pairing programs with free health and education services.

Another aspect of microcredit worth considering are concerns presented by study authors regarding the relationship between increased child work in the household and decreased schooling for girls specifically. As parents take on additional responsibilities to start and maintain a new enterprise using microcredit funds, female children in the family are often the first to be handed household tasks and chores due to traditional gender roles. However, in one study (Hazarika, 2005), this effect was mitigated by loan provision to female heads of households. In households headed by women or households where women were the intended beneficiary of the loan, positive improvements in both schooling and labor were seen among girls. These same impacts were not seen when men were the head of household or the microcredit beneficiary. To truly break the cycle of poverty, future initiatives must take care in

designing programs and policies that enable families to run successful microcredit enterprises while still empowering and enabling girls to attend school.

One limitation of the studies worth considering is their ability to reach the ultra poor, defined as those living on less than USD $1.25 per day. Although this population has historically been the target population of microcredit initiatives and sees the largest benefits from participation in microcredit schemes, they make up just over half of those reached by microcredit institutions each year (Microcredit Summit Campaign 2014). Coinciding with these statistics, many of the studies reviewed indicated difficulty in reaching the ultra poor. This inability to reach those most in need of microcredit has proved to be a consistent challenge for the sector, and those interested in continuing to move microcredit forward must adapt and develop innovative strategies to address this issue to truly have a significant impact.

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