

Microcredit participation and nutrition outcomes among women in Peru

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Accepted 21 September 2010

ABSTRACT

Background Microcredit services—the awarding of small loans to individuals who are too poor to take advantage of traditional financial services—are an increasingly popular scheme for poverty alleviation. Several studies have examined the ability of microcredit programmes to influence the financial standing of borrowers, but only a few studies have examined whether the added household income improves health and nutritional outcomes among household members. This study examined the hypothesis that longer participation in microcredit services would be associated with better nutritional status in women.

Methods Cross-sectional data were obtained in February 2007 from 1593 female clients of a microcredit organisation in Peru. The primary predictor variable was length of time as a microcredit client measured in number of completed loan cycles (range 0 to 5.5 years, average loan size US\$350). The outcome variables were age-adjusted body mass index (BMI), haemoglobin levels (g/dl) and food insecurity measured using the US household food security survey module. Extensive data on demographic and socioeconomic status were also collected.

Results Longer microcredit participation was associated with higher BMI ($\beta=0.05$, $p=0.06$), higher haemoglobin levels ($\beta=0.07$, $p<0.01$) and lower food insecurity ($\beta=-0.13$, $p<0.01$). With the inclusion of demographic and socioeconomic variables, the associations with higher haemoglobin ($\beta=0.03$, $p=0.04$) and lower food insecurity ($\beta=-0.08$, $p<0.01$) were sustained.

Conclusion This study supports the notion that microcredit participation has positive effects on the nutritional status of female clients. Further research should explore more definitive causal pathways through which these effects may occur and should examine the effects on other household members.

Microcredit involves the provision of small loans to individuals—usually women—who are too poor or remotely located to take advantage of traditional financial services. The underlying theoretical assumption of using microcredit as an intervention is that the poor lack the capital to invest in their small businesses, which could then allow them to improve their families' living standards.^{1 2} Unlike some forms of micro-lending in which small cash loans are distributed through traditional banking or lending structures, typical microcredit loans are dispersed to a group of clients using a model in which members of the group might provide social collateral for one another in exchange for their lack of physical collateral. While these loans are occasionally administered to the poor as a purely

profit-generating enterprise, the provision of microcredit loans is often accompanied by other social interventions—such as education, healthcare services, or business training—with the intention of promoting social welfare among low-income populations. In this study we focus on a microcredit programme whose goal is poverty alleviation.

In recent years, the microcredit movement has gained tremendous momentum: by the end of 2005, over 3000 microcredit organisations worldwide provided services to more than 113 million clients.³ Impact evaluations of microcredit programmes have also grown in number over this time. Many studies demonstrate that microcredit participation is correlated with improved financial status among clients compared with non-clients based on a variety of indicators, including income, savings, assets and microenterprise size.^{4–6} These studies, however, often have selection and survivorship bias. That is, the majority of studies compare clients with a control group of subjects recruited from the community, and in doing so they fail to account for the fact that clients may be a self-selecting group of motivated entrepreneurs; for this reason, current clients who participate in the studies are more likely to be successful than those who have dropped out and are not captured in interviews. Another set of studies suggest that microcredit programmes are not successful at improving the financial wellbeing of their clients. For example, clients may become trapped in a cycle of debt as they take out new loans to pay off old ones,^{7 8} particularly if they are unlucky or unwise in their investments.^{9 10} These findings appear to be true particularly for clients who are vulnerable because they are ill, poor, less educated, or have fewer resources.¹¹

As a consequence of the studies suggesting that microcredit participation may not be associated with improvements in financial wellbeing, there is reason to be concerned that microcredit may not necessarily improve client health outcomes. Yet in spite of the billions of dollars invested in microcredit programmes on an annual basis, there are only a handful of studies that rigorously examine whether microcredit programme participation is associated with client wellbeing. For example, studies on the effects of microcredit on women's empowerment are mixed. Several authors have shown evidence of associations between microcredit and increased scores on indices of empowerment, decreased self-reported domestic violence and other evidence of increased autonomy among female microcredit clients.^{12–14} Yet others have documented instances in which programmes may adversely affect women's empowerment because

women are forced by their husbands to take out loans for their families, or when domestic violence increases among female clients of microcredit organisations, possibly because of the disruption of traditional gender roles.^{7 15} Moreover, women participating in lending programmes often have a ‘dual burden,’ as they become responsible for both housework and their businesses outside of the home.¹⁶

The results of the few studies examining the associations between microcredit participation and health outcomes demonstrate inconsistent results. Both Doocy *et al*¹⁷ and MKNelly and Dunford¹⁸ found improvements in household food security among female client households compared with controls, although there were no significant differences in the prevalence of acute malnutrition or anthropometric measures (eg, body mass index (BMI) or arm circumference) among clients or their children. Other studies have found improvements in health knowledge and dietary quality, but with no changes in anthropometric status (eg, BMI, height and weight) among adults or children.^{19 20} We are not aware of any studies that have examined haemoglobin as an outcome measure.

With respect to women’s health outcomes, microcredit participation has been linked to both increases and decreases in the level of contraceptive use among clients,^{21 22} with no differences in HIV prevalence.¹² One study of mental health outcomes found lower levels of emotional stress among members compared with non-members,²³ whereas another found both decreased social withdrawal and increased fatalistic attitudes,²⁴ and another reported increased perceived stress among male and female clients with reduced depressive symptoms only among male clients.²⁵ These contradictions are likely to be a result of heterogeneity in outcome measures and of heterogeneity in components of individual microcredit programmes.^{26 27} They may also stem from the fact that economic prosperity, while strongly associated with improved physical and mental wellbeing,^{28 29} does not necessarily lead to healthier families, especially if basic health knowledge or health services are absent or lacking.^{30–32}

Previous authors have proposed several mechanisms to explain how microcredit programmes may influence health outcomes.³³ Increases in income experienced by microcredit clients could allow for the purchase of healthcare services, better food, or household hygiene improvements such as soap or indoor plumbing, which might contribute to improved prevention and treatment of a variety of illnesses among household members.³³ The empowerment of women might contribute to increased self-efficacy surrounding contraception and family planning, thereby improving reproductive health outcomes.¹⁴ Interactions between clients during loan group meetings could improve social support networks,^{34–36} and increased income could lead to decreased stress secondary to financial concerns,^{37–40} both of which might contribute to improved mental health.

AIMS AND HYPOTHESES

The objective of the study reported here was to examine the association between length of participation in a microcredit programme (ranging from 0 to 5.5 years) and adult women’s nutritional outcomes. Clients who had participated for longer amounts of time were considered to have received a higher ‘dose’ of microcredit with more time to experience the beneficial effects of the programme, an association that has been suggested in previous studies.^{26 33} More established clients were thus compared with those who had more recently joined the organisation, with the hypothesis that those who had been clients for longer periods of time would demonstrate better nutritional status, as measured by a variety of indicators of nutritional status.

METHODS

Study design and sampling

This study was conducted in February 2007 among a large sample of male and female clients of PRISMA, a non-governmental organisation (NGO) operating in and around the city of Pucallpa in the jungle (*selva*) region of eastern Peru. Pucallpa has a population of approximately 136 000, with 93% of residents classified as urban and 7% as rural.⁴¹ We approached each of the 2134 clients at this site (figure 1), and a total of 1855 consented to participate, for a response rate of 87.7%. The primary reasons for non-response included absence of the client and refusal. No other information is available on non-responders.

Native Spanish-speaking surveyors were hired and trained locally. All of the NGO’s activities are conducted in Spanish, and the NGO’s officials confirmed that all clients in this region are comfortable communicating in Spanish, with no monolingual speakers of indigenous languages. A questionnaire was developed that included questions about a variety of sociodemographic and health indicators, described below. The questionnaire was translated into Peruvian Spanish by native speakers who were fluent in both English and Spanish. Focus groups were conducted among a small group of the NGO’s clients to ensure proper understanding of the questions, and validity testing was conducted.

Surveyors approached clients after their monthly group meetings to conduct individual interviews or schedule interviews in client homes. Clients who were not present were telephoned to schedule an appointment. Surveyors administered the questionnaire and collected anthropometric measurements from clients using standard techniques.⁴² Wooden stadiometers were constructed locally to measure height, and digital Taylor Electronic Lithium Scales model 7324W (Taylor Precision Products, Las Cruces, New Mexico, USA) recorded weight. Blood haemoglobin levels were obtained with finger pricks using the HemoCue Hb 201+ System (HemoCue Inc, Lake Forest, California, USA).

Ethics approval was obtained from the Institutional Review Board at the University of California, Berkeley, as well as the ethics committee of the NGO, and participants gave their written consent to take part in the study.

Description of intervention

In this organisation, clients organise themselves into loan groups of 10 to 20 clients consisting of both men and women. Loan groups meet monthly in the presence of a loan officer from the NGO in order to make their payments and conduct any other business. The average loan size is US\$350, repaid over 6 months at a monthly interest rate of 4%.

Measures: predictor variable

Programme participation

Clients were asked about how many loan cycles they had completed with the microcredit organisation. For this organisation, a loan cycle lasts for 6 months.

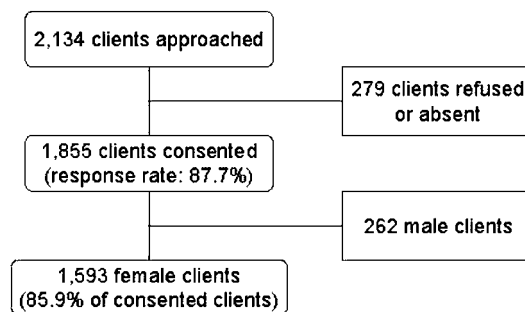


Figure 1 Sampling framework.

Measures: covariates**Age, marital status and education**

Clients were asked about their age, marital status and educational attainment. Each of these indicators was then transformed into a series of indicator variables to allow for potential non-linearity.

Poverty indicators

Information was obtained on assets owned by the household, including televisions, cars, refrigerators, washing machines and others. Clients were asked whether they owned their own homes, and about the materials from which the roof, walls and floors were composed. Other questions addressed the primary source of illumination in the household (eg, formal electricity connection, generator, lanterns, etc) and whether the household had electricity. Finally, clients were asked about the presence of a garbage pick-up service. These questions were adapted from demographic and health surveys questionnaires to allow comparability with regional and national samples,⁴³ and they have been shown to be good metrics of poverty in low-income populations. Principal components analysis (PCA)—a technique that has been employed previously to measure relative poverty of households living in developing countries^{44 45}—was used to construct three principal components for the various poverty indicators: assets, housing and electricity. These principal components were moderately, but not perfectly, correlated with one other, with correlations ranging from 0.31 to 0.42.

Measures: outcomes variables**Nutrition**

BMI was calculated based on height and weight measurements, and clients were categorised as 'underweight', 'normal', 'overweight' and 'obese', using standard techniques.⁴⁶ Haemoglobin was measured using finger-stick blood draws. As Pucallpa lies at 200 m above sea level, it was not necessary to adjust haemoglobin levels for altitude.⁴⁷ Household food insecurity was ascertained using a nine-item index adapted from the US Household Food Security Survey Module (HFSSM). This index, in which a score higher than 2 indicates household food insecurity, has previously been validated in similar contexts.⁴⁸

Data analysis

Data were double-entered using CSPro 3.3 (US Census Bureau, Population Division, Washington, DC, USA). Statistical analyses were conducted using STATA SE 10.1 for Windows.

Fairwise correlations were used to investigate the direction and strength of the associations between the primary predictor variable—number of cycles as a client—and the primary outcome variables (haemoglobin (g/dl), BMI and food security). To explore the potential effects of additional confounder variables on these associations, multivariate regressions were conducted, controlling for the carefully selected array of demographic and socioeconomic variables enumerated above. Hausman tests were used to evaluate potential confounding by unobserved characteristics of loan groups, comparing group-level random effects models with group-level fixed effects models. The null hypothesis was not rejected, so random effects models at the group level were used. There were 139 loan groups, with an average of 13 clients per group. A typical model, shown below, regressed a health outcome variable (y) on the number of cycles in which a woman had participated in the programme and controlled for the aforementioned confounders (i is individual, g is group).

Table 1 Participant sociodemographic characteristics

Variable	Gender		Test of proportions, test of medians, or t test*
	Male	Female	
Demographic characteristics			
Age, years (%)			
<30	20.0	17.4	NS
30–39	26.5	35.9	<0.01
40–49	31.5	29.4	NS
50–59	16.5	15.1	NS
≥60	5.4	2.2	<0.01
Marital status (%)			
Married, living with partner	74.2	80.1	0.03
Single, widowed, separated/divorced	25.8	19.9	
Socioeconomic characteristics			
Education (%)			
Primary or less	23.9	26.9	NS
Incomplete secondary	21.5	27.3	0.05
Complete secondary	28.5	25.8	NS
Post-secondary	26.2	20.0	0.02
Household data			
Assets, PC (mean±SD)	−0.31±1.8	0.05±1.7	<0.01
Housing, PC (mean±SD)	0.11±1.4	−0.02±1.3	NS
Electricity, PC (mean±SD)	−0.62±2.0	0.11±1.2	<0.01
Garbage pick-up available (%)	49.0	60.5	<0.01
Client information			
Length of participation in loan cycles (median (IQR); 1 loan cycle=6 months)	2 (1–4)	2 (1–4)	NS

*NS, not significant ($p>0.10$).

PC, principal component.

$$y = \beta_1 + \beta_2(\text{loan cycles}) + \beta_3(\text{demographics}) + \beta_4(\text{SES}) + \mu_g + \varepsilon_{ig}$$

Interactions between the number of loan cycles and client education, age, marital status and socioeconomic status (SES) were conducted using standard techniques.⁴⁹

RESULTS

Initial analyses showed that participant characteristics differed significantly by gender, and that the sample was not well balanced for gender; 85.9% ($n=1593$) of the sample was women, which is the same client sex ratio as that reported by the NGO. Women were more likely to be married and demonstrated lower educational status on average (table 1). Previous studies have shown that microcredit participants differ in their motivations for participating in and leaving microcredit programmes based on their gender.^{6 50} The remaining analyses were thus conducted using only data from female clients.

Client characteristics

The women interviewed in this study were diverse based on a variety of sociodemographic indicators (table 1). The mean age of participants was 39.4 years, 80.1% were married, and they were evenly spread across the four categories of educational attainment. For length of participation, responses ranged from 0 to 11 completed loan cycles, or 0 to 5.5 years, with '0' representing those who had recently joined the organisation and had not yet completed a full cycle. The mean length of participation was 2.6 loan cycles (1.3 years) with a median of two loan cycles and an IQR of 1–4.

Client health

The majority of clients (74.7%) could be classified as 'overweight' or 'obese' (defined as BMI ≥25); the sample mean for

Table 2 Client health

Variable	Value
Anthropometric measures	
Mean haemoglobin (g/dl)	12.4±1.3
Prevalence of anemia (%)	32.9
Mean BMI	28.0±4.8
Distribution by category (%)	
Underweight (<18.5)	0.7
Normal weight (18.5–24.9)	24.6
Overweight (25–29.9)	44.9
Obese (≥30)	29.8
Food security	
Mean food insecurity score	2.4±2.4
Prevalence of food insecurity (>2) (%)	37.7

BMI, body mass index.

BMI was 28.0 (SD 4.77) (table 2). Only 0.7% were classified as ‘underweight’ (BMI <18.5). Almost one-third of women fell below the WHO cut-off for anaemia of 12 g/dl. The mean score on the food insecurity scale was 2.4 out of 9, and on this scale a score greater than 2 represents food insecurity.

Microcredit participation and client nutrition

Longer microcredit participation was not significantly associated with BMI, although there was a tendency for a positive

association ($\beta=0.05$, $p=0.06$); the association disappeared with the inclusion of sociodemographic covariates (table 3). Longer microcredit participation was associated with higher haemoglobin levels in unadjusted ($\beta=0.07$, $p<0.01$) and adjusted ($\beta=0.03$, $p=0.04$) models (table 3). It was also associated with lower food insecurity in bivariate analyses ($\beta=-0.13$, $p<0.01$), and after adjustment for confounders ($\beta=-0.03$, $p<0.01$) (table 4). Interaction terms between loan length and each of the sociodemographic variables (ie, age, education, marital status and SES) were not significant (data not shown).

DISCUSSION

Longer participation by a large sample of adult women in a microcredit programme in Peru was strongly associated with higher haemoglobin concentration and improved food security, but not BMI, when controlling for a wide range of potential confounders. Women who had participated for 5 years had haemoglobin levels that were higher by 0.3 g/dl on average than those of new clients, and food insecurity scores that were lower by 0.8. Our analytic approach may be overadjusting for wealth, as increased income may be a mechanism through which microcredit affects nutritional status, if the relationship is causal.

Previous researchers have found links between higher SES and higher haemoglobin concentration, reduced prevalence of

Table 3 Bivariate and multivariate analyses predicting BMI and haemoglobin from microcredit participation (no of loan cycles) and sociodemographic covariates

	BMI		Haemoglobin (g/dl)	
	Bivariate: β coefficient	Multivariate: β coefficient (95% CI)	Bivariate: β coefficient	Multivariate: β coefficient (95% CI)
No of loan cycles	0.05‡	0 (-0.09 to 0.10)	0.07*	0.03‡ (0.00 to 0.05)
Age 30–39 years		1.52* (0.81 to 2.23)		-0.01 (-0.21 to 0.19)
Age 40–49 years		1.77* (1.02 to 2.53)		-0.04 (-0.25 to 0.17)
Age 50–59 years		1.87* (0.97 to 2.78)		-0.04 (-0.29 to 0.21)
Age over 59 years		2.01‡ (0.20 to 3.83)		-0.06 (-0.58 to 0.45)
Married/cohabitating		0.42 (-0.20 to 1.04)		0.01 (-0.16 to 0.18)
Education: incomplete secondary		0.53 (-0.17 to 1.22)		0.00 (-0.19 to 0.19)
Education: complete secondary		0.26 (-0.45 to 0.98)		-0.01 (-0.21 to 0.19)
Education: post-secondary		-0.77‡ (-1.58 to 0.03)		-0.22‡ (-0.44 to 0.01)
PC: assets		0.34* (0.17 to 0.51)		0.06‡ (0.01 to 0.10)
PC: housing quality		0.13 (-0.10 to 0.36)		0.01 (-0.06 to 0.07)
PC: electricity		-0.19 (-0.42 to 0.04)		-0.01 (-0.07 to 0.06)
Garbage pick-up available		0.31 (-0.21 to 0.83)		0.07 (-0.08 to 0.21)
Constant		26.05* (25.02 to 27.08)		12.38* (12.08 to 12.67)
Observations	1556	1473	1508	1430
R-squared		0.04		0.01

Bivariate analyses involved pairwise correlations between the outcome variable and number of loan cycles.

Multivariate analyses involved linear random effects model at the loan group level.

* $p<0.01$.

‡ $p<0.05$.

‡ $p<0.10$.

PC, principal component.

Table 4 Bivariate and multivariate analyses predicting food insecurity from microcredit participation (no of loan cycles) and sociodemographic covariates

	Food insecurity	
	Bivariate: β coefficient	Multivariate: β coefficient (95% CI)
No of loan cycles	-0.13*	-0.08* (-0.12 to -0.03)
Age 30–39 years		0.40† (0.07 to 0.74)
Age 40–49 years		0.68* (0.33 to 1.03)
Age 50–59 years		0.35 (-0.08 to 0.77)
Age over 59 years		0.33 (-0.51 to 1.18)
Married / cohabitating		-0.08 (-0.37 to 0.21)
Education: incomplete secondary		-0.38† (-0.70 to -0.06)
Education: complete secondary		-0.93* (-1.27 to -0.59)
Education: post-secondary		-0.80* (-1.18 to -0.42)
PC: assets		-0.31* (-0.39 to -0.23)
PC: housing quality		-0.19* (-0.29 to -0.08)
PC: electricity		0 (-0.11 to 0.11)
Garbage pick-up available		0.11 (-0.15 to 0.36)
Constant		2.74* (2.25 to 3.23)
Observations	1571	1489
R-squared		0.15

Bivariate analyses involved pairwise correlations between the outcome variable and number of loan cycles.

Multivariate analyses involved linear random effects model at the loan group level.

* $p < 0.01$.

† $p < 0.05$.

PC, principal component.

anaemia^{51–54} and increased food security.⁵⁵ Also, previous evaluations of interventions to increase income have shown decreased anaemia,⁵⁶ although others have shown increased obesity and blood pressure.⁵⁷ If the relationship between loan length and haemoglobin concentration in our study is causative, these studies suggest that increases in income might be one mechanism through which microcredit affects haemoglobin levels. The association between increased haemoglobin and stable BMI with longer participation in microcredit suggests that the nutritional status of microcredit clients may improve with participation in the lending services. Clients could experience improved food security and haemoglobin levels as a result of an ability to purchase food of better nutritional quality.³⁶ These higher quality foods (eg, meats, legumes, vegetables) may not have been different in terms of the number of calories, thereby decreasing anaemia but leaving BMI unchanged.⁵⁸ Alternatively, the higher haemoglobin concentration might represent improved prevention or treatment of intestinal parasites and malaria, both significant risk factors for anaemia in developing countries.⁵⁹ Future studies should explore these issues further by evaluating how women's eating habits and healthcare practices change over the course of their participation in microcredit programmes with specific attention to the risk factors listed here.

The initial association between longer microcredit participation and higher BMI disappeared after controlling for other variables, in particular client age. Of note, our results are consistent with previous findings that BMI tends to increase with age among the non-elderly.⁶⁰

In the sample as a whole, nutritional status was poor but food insecurity was relatively mild. The prevalence of overweight (44.9%) and obesity (29.8%) among women in this sample was higher than previous studies in Peru, which found rates of overweight and obesity at 35.5% and 9.4%, respectively, in 1998,⁶¹ and 30.4% and 12.5% in 2005.⁶² At the same time, mean haemoglobin for these women was 12.4 (SD 1.3), which was close to the WHO cut-off for anaemia of 12 g/dl. The percentage of women in this sample with anaemia was 32.9%, comparable to the national average of 32% among women aged 15–49 years.⁶³ Together, these findings suggest that women may be consuming energy-dense and nutrient-poor foods, a trend that has been noted in the literature on nutrition in developing countries.⁶⁴ Such studies have found that the increasing availability of new cheaper foods that are high in calories and low in nutritional value has led to stunting in children and excess weight in adults in countries at an intermediate level of development that are experiencing changes in diet, food availability and lifestyle.^{64 65} More than a third of clients (37.7%) reported household food insecurity. There are currently no published reports of the use of the US HFSSM in Peru with which to compare these results, although this rate is lower than a prevalence of food insecurity of greater than 70% reported in several studies in Bolivia.^{18 48}

Women in this sample represent a more educated group than other women in the jungle region of Peru, as evidenced by a comparison with a national sample,⁶² which could be expected considering that membership requirements in the NGO include proof of property ownership and a source of steady income. Households of women in this sample also appear to be more advantaged than the general Peruvian population; for example, a larger percentage had electricity in the home (93% of this sample, 73% nationally) and a smaller percentage had dirt floors (35% vs 39%).⁶² Although the higher SES of women in our sample in comparison with others in the jungle region could imply that microcredit has improved the financial standing of borrowers, it is more likely that selection bias is at work. Clients are likely to be a self-selecting group of educated and motivated individuals, and those who fail to utilise their loans successfully may drop out and may not be captured by surveys that do not specifically seek out this subgroup. This suggests the presence of selection bias and implies that a cross-sectional study comparing clients with a random group of non-clients—of which there are many in the literature on microcredit—may fail to provide an adequate control group. Whereas this study avoids this limitation by comparing long-term clients with short-term clients, it may still contain survivorship bias, in that long-term clients may be those who are more successful in managing their loans and are more likely to remain members of the organisation.⁵⁰

CONCLUSIONS

Improved nutritional outcomes, as measured by client haemoglobin levels and household food security, are associated with longer participation in microcredit services. These findings should be confirmed with prospective randomised controlled studies that can better assess causation. Such studies are notoriously difficult to conduct in this field, however, as participants assigned to receive no services can easily approach another lending organisation for a loan. Longitudinal studies, more

What is already known on this subject

Several studies have examined the ability of microcredit lending programmes to influence the financial standing of borrowers, but only a few studies have examined whether participation in such programmes is associated with differences in health and nutritional outcomes among household members.

What this study adds

This study showed that improved nutritional outcomes, as measured by client haemoglobin levels and household food security, are associated with longer participation in microcredit services among female clients. These findings should be confirmed with longitudinal or prospective randomised controlled studies that can better assess causation.

feasible in this setting, may be better able to address survivorship bias. It should be emphasised that this study examines only a small subset of the variety of health outcomes that are assumed to be positively impacted by microcredit participation. Public health practitioners may have assumed that the largely positive evaluations of financial outcomes—most of which have selection and survivorship bias—also suggest improved health outcomes. Evidence does not exist to support this assumption, and future studies should work to fill this gap. For example, there are reasons to believe that female clients invest the additional resources in their children, so data on child nutrition and education should be rigorously examined.

Finally, while this study suggests that microcredit may be associated with better nutritional status, it is important to be realistic about what this intervention, which gives loans rather than grants to people with very few resources, can accomplish. In the absence of broader changes to the architecture of poor communities and in the context of global policies that continue to marginalise vulnerable populations, microcredit may only be able to bring about modest changes in the health and financial wellbeing of clients.^{66 67} Instead of being portrayed as a panacea, microcredit programmes may be better seen as providing a forum to link vulnerable populations to public health and poverty alleviation programmes to address the barriers faced by the poor.

Acknowledgements The authors are grateful to Dean Karlan, Silvia Robles, Miguel Almunia and Tania Alfonso for their roles in data collection and cleaning, as well as the surveyors, collaborating organisation and study subjects for their participation in this research. They would also like to acknowledge Will Dow, Nap Hosang and Ndola Prata for their input on early drafts of this document, and the anonymous reviewers for their valuable contributions.

Funding This project was supported financially by the American Women's Hospitals Services, the Bixby Program at the University of California Berkeley (UCB), the Center for Latin American Studies at UCB, the Dean's Summer Fellowship at the University of California San Francisco (UCSF), the Human Rights Center at UCB, Innovations for Poverty Action, the Interdisciplinary MPH Program at the UCB School of Public Health, the Rainer Fund and the UCSF—UCB Joint Medical Program. Study funders had no role in the study design; in collecting, analysing, or interpreting the data; in writing the report; or in the decision to submit the article for publication.

Competing interests None.

Patient consent Obtained.

Ethics approval This study was conducted with the approval of the institutional review board of the University of California Berkeley and the ethics committee of the collaborating organisation in Peru.

Provenance and peer review Not commissioned; externally peer reviewed.

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