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Community-Based Financing of Family Planning in Developing Countries: A Systematic Review

Mahesh Karra, David Canning, Janice Hu, Moazzam Ali, and Craig Lissner

In this systematic review, we gather evidence on community financing schemes and insurance programs for family planning in developing countries, and we assess the impact of these programs on primary outcomes related to contraceptive use. To identify and evaluate the research findings, we adopt a four-stage review process that employs a weight-of-evidence and risk-of-bias analytic approach. Out of 19,138 references that were identified, only four studies were included in our final analysis, and only one study was determined to be of high quality. In the four studies, the evidence on the impact of community-based financing on family planning and fertility outcomes is inconclusive. These limited and mixed findings suggest that either: 1) more high-quality evidence on community-based financing for family planning is needed before any conclusions can be made; or 2) community-based financing for family planning may, in fact, have little or no effect on family planning outcomes.

In spite of declining birth rates and improvements in maternal health care, the number of unintended pregnancies and unwanted births in sub-Saharan Africa, particularly among young and poor women, remains high. Estimates from Demographic and Health Surveys indicate that in most sub-Saharan countries, between 25 and 40 percent of unmarried women have at least one birth by the age of 19, and many of these births are unplanned (Singh 1998). Large numbers of unintended pregnancies and unwanted births contribute to high rates of induced abortion, maternal morbidity, and infant mortality, which in turn place substantial health and economic burdens on women, their children, and their families (Bongaarts and Sinding 2009; Cleland et al. 2006).

Improving uptake of reproductive health services and family planning could help women and couples prevent unintended pregnancies and unwanted births; however, in many countries, funding for family planning has been curtailed, and many low-income countries

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do not have adequate contraceptive supplies to meet demand for family planning (UNFPA 2012). Studies have shown that young women and women from disadvantaged backgrounds are two of the largest groups that lack access to reproductive health services and have an unmet need for modern family planning (Casterline and Sinding 2000; Gribble 2012; Westoff and Ochoa 1991). Interventions that aim to influence sexual and reproductive health behaviors, inform women and couples about the benefits of family planning, and improve uptake of contraceptives have become increasingly common in developing countries. These interventions have targeted key populations in a variety of ways, from education and awareness programs in schools to multicomponent distribution campaigns (Speizer, Magnani, and Colvin 2003).

One approach to improving family planning uptake has been to finance the cost of procuring contraceptive methods and reproductive health services by means of community financing or community health. Community-based financing programs for family planning focus on the role of the community in mobilizing, pooling, and allocating resources through a range of health financing instruments, including micro-insurance, mutual health organizations, and community-managed user fees (Preker and Carrin 2004; USAID 2014; World Health Organization 2014). These strategies provide a means of financial protection and risk sharing to prospective family planning users by safeguarding users against some or all of the financial cost of obtaining services. In recent years, community financing and health insurance schemes have been implemented in contexts where: 1) out-of-pocket payments and user fees for family planning are high; 2) financial access to services, particularly for poor and vulnerable populations, is inadequate; 3) national capacity for coordinating reproductive health sector resources is weak; and 4) availability of resources for family planning is limited (Phillips, Greene, and Jackson 1999; Preker et al. 2002).

Family planning services lack the usual rationale for risk pooling based on having large, but uncertain, care costs. However, community-based health insurance or health care programs may cover family planning either as a preventive measure that may lead to lower costs to the scheme in the future or as a mechanism to fulfill their social benefit goals. While the costs of family planning are usually fairly low, and are usually considered to be a good economic investment, they may still represent a barrier to access for very poor families. Microfinance credit schemes that allow women to borrow small sums may provide a way of overcoming the barriers of user fees or transport costs. In addition to overcoming the financial constraint, microfinance programs may improve women's status and give them greater leverage in household decision making, including family planning decisions. We therefore include microfinance as a possible mechanism for financing family planning.

Although community-based financing is viewed as a key effort in meeting unmet need and improving financial access to family planning, the conditions under which different community financing schemes for health are developed, implemented, and evaluated vary considerably (Jakab and Krishnan 2014). Little is known about the general effectiveness of community-based financing in promoting family planning uptake or about the role that community-based financing programs play in improving long-term health and well-being.

OBJECTIVES

This systematic review gathers evidence on past and present community financing schemes and community-based insurance programs for family planning in developing countries and assesses the impact of these programs on uptake of family planning and other outcomes. To identify and evaluate the research findings, we adopt a four-stage review process that employs a weight-of-evidence and risk-of-bias analytical approach. We shed light on the impact of increased contraceptive availability due to community-based financing on first-tier health outcomes (e.g. contraceptive use, fertility, birth spacing, maternal and child health) as well as downstream socioeconomic outcomes (e.g., labor force participation and employment) at the individual and household levels.

This review is part of a larger series of systematic reviews commissioned by the World Health Organization technical working group on financing family planning. The aims of the WHO-led initiative are to: identify those areas in which the evidence base for financing of contraception is already strong and to make recommendations accordingly; identify gaps in knowledge and potential research topics in health care financing in contraception by systematically reviewing the available evidence; and promote dialogue with the aim of joint investment in research to fill the gaps identified by the review of evidence.

SEARCH METHODS

Stage 1A: Database Screening

The first stage, referred to as the scoping stage, offers a preliminary indication of the potential size and scope of the relevant literature and enables researchers to familiarize themselves with the topic area and with the key documents of interest.

In accordance with the WHO Systematic Review technical working group guidelines, the formal literature search and database screening were comprised of: 1) developing a general search strategy; 2) identifying the literature in key medical and social science databases using the strategy; and 3) conducting a preliminary screening of the literature by title in accordance with the following inclusion criteria: i) the study title and abstract or executive summary were available in English, French, or Spanish; ii) the study was conducted between January 1, 1994 and May 31, 2016; iii) the study was conducted in a low- or middle-income country; iv) the study assessed the impact of community-based financing or community-based health insurance interventions and programs, including micro-insurance, microfinance and microcredit, mutual health organizations, and community-managed user fees.

By defining the inclusion criteria in this manner, the formal database screening aimed to identify the extent to which the literature examines the key research question: What is the potential impact of community-based financing on improving family planning uptake, use of reproductive health services, and other related health outcomes in developing countries? In addition, a primary goal of the database screening was to gather evidence and to assess lessons learned from studies conducted in low-income countries. For these reasons, a relatively expansive search was undertaken in order to collect as many potentially relevant published and unpublished works as possible.

A comprehensive search strategy was developed and tested as part of the formal database screening. Search strategy terms related to key community-based financing mechanisms (microcredit, risk pooling, micro-insurance, social health insurance, etc.) and to key family planning and reproductive health outcomes (contraceptive use, method mix, fertility, pregnancy, etc.) were first identified, and search term blocks were constructed using combinations of these terms. The main search strategy was then developed by combining search term blocks with key filters that reflected the screening criteria, including filters to limit the publication date range and restrict results to studies conducted in low- and middle-income countries. This search strategy was chosen because it was flexible enough to capture a wide range of literature across a variety of databases, and specific enough to screen the literature for references where the terms used to describe family planning financing were most closely in line with the broader review objectives and guidelines set by the WHO technical working group.

Studies were identified by searching several computerized medical and social science databases. The main databases searched were: 1) CINAHL, 2) Cochrane Central Register of Controlled Trials, 3) Cochrane Database of Systematic Reviews, 4) Embase Global Health Library-Regional databases, 5) Pubmed/Medline databases 6) POPLINE, 7) databases for economics literature, including RePEc EconPapers and EconLit; 8) Web of Science and Web of Social Science databases; 9) the Grey Literature Report database; and 10) donor databases, including USAID, DFID, and CIDA. A total of 19,071 references, including duplicates, were identified as part of this formal scoping search.

Stage 1B: Gray Literature Search

Following the formal database screening, several other online resources, institutional sites, and general search engines were searched and relevant reports were collated. Simple internet searches were also used to identify gray literature. We used a snowballing approach at all stages of the gray literature search in order to identify any other material of relevance. Several keywords and phrases were used to initiate the gray literature search and identify potential references. Once a potential reference was identified, a backward-and-forward citation search was implemented, in which sources that were cited in the identified reference (backward citation search) and other sources that cite the identified reference (forward citation search) are themselves identified and screened for relevance. A total of 66 references, including duplicates, were identified as part of this gray literature search. Finally, one additional study was added following its presentation at the 2015 Annual Meeting of the Population Association of America.

In total, 19,138 references were identified from the formal database screening and gray literature search. Additional details on the scoping strategy can be found in the online Appendix at <https://www.hsph.harvard.edu/david-canning/>.

REVIEW PROCESS

Stage 2: Scoping Review

Two independent researchers carried out the first-stage title and abstract scoping review of the 19,138 references retrieved by the search. Duplicate studies were dropped, and

disagreements were discussed and resolved by consensus following the independent screening of the references. Endnote and Refworks reference management software was used to keep track of references as they were evaluated. Each study title and abstract was scanned for keywords and re-assessed to determine whether the study 1) matched the systematic review inclusion criteria and 2) could be relevant in answering the research question of interest. A total of 39 studies were selected from this scoping review.

Stage 3: Abstract Sorting

Following the title screening, an additional sorting by abstract was implemented, in which abstracts of those remaining studies were more thoroughly reviewed in preparation for the in-depth article evaluation. This step narrowed the list from 39 studies to 27 studies that were selected for in-depth review. We retrieved the electronic (PDF) full-text files for each of the 27 identified studies, along with their corresponding references, either through the Harvard library databases, by contacting POPLINE database managers, or by contacting authors directly.

Stage 4: In-Depth Review

The 27 studies selected from the first-stage scoping review and screening process were then subjected to a more rigorous in-depth review in which each study was reexamined using a narrower and more detailed set of criteria. The goal of the in-depth review was to identify interventions or programs that were conducted in low-income and middle-income countries and that rigorously examined the effects of specific community financing and community-based insurance interventions on family planning service use and relative health outcomes. For these reasons, studies that were chosen for in-depth review had to meet the following criteria:

1. The study included a control or credible counterfactual as part of one of the following study designs: a randomized control trial (RCT) or cluster-randomized control trial (c-RCT), a controlled before and after (CBA) analysis, an interrupted time series analysis (ITS), a cohort or longitudinal (panel) analysis, a regression discontinuity design (RDD) analysis.

2. The study assessed the impact of specific community-based financing or insurance interventions, such as micro-insurance, microcredit, mutual health organizations, and community-managed user fees. The in-depth review included interventions that provided community-based microcredit loans, women's savings groups, subsidized government health insurance using private microfinance intermediaries, and credit combined with improved access to family planning services.

3. The study reported one or more of the following primary outcomes, as delineated by the Terms of Reference for the WHO Systematic Review on Financing Mechanisms for Contraception: use of contraceptive services and/or commodities, continuation and switching of family planning methods, contraceptive prevalence rate (modern methods, overall and by method), unmet need (modern methods).

Our primary outcomes relate to contraceptive use, and we also have secondary outcomes relating to fertility, which may be related to contraceptive use. We do not focus on broader

outcomes related to sexual and reproductive health more generally. The following secondary outcomes were considered: fertility-related outcomes, including parity, birth spacing, timing of first birth, etc.; other maternal and child health outcomes, including maternal and child mortality; measures of cost and cost-effectiveness of the intervention or program; measures of client acceptability of and satisfaction with services; measures related to the quality of care and services; discussion of the scaling up of financing interventions and programs; and unintended consequences of family planning use (e.g. prevalence of contraceptive-related side effects, discontinuation of family planning, etc.). However, studies that met all other inclusion criteria but examined only secondary outcomes were excluded from the main analysis.

Given the motivation for conducting this systematic review, eligibility for in-depth review was restricted primarily to studies that either employed experimental or quasi-experimental methods or aimed to analyze community-based financing impact through the use of rigorous estimation methods, including longitudinal/panel data analysis, natural experiments, and regression discontinuity approaches. As a result, 21 additional studies that employed study designs that were not aimed at rigorously identifying causal effects (e.g. cross-sectional analyses, descriptive studies, qualitative studies) were subsequently excluded. Finally, we identified two methodologically rigorous studies that did not examine a primary family planning-related outcome of interest but did evaluate at least one identified secondary outcome. These studies were also excluded from the main review.

DATA ANALYSIS

The four studies that met the in-depth review inclusion criteria and were selected for the final systematic review were subsequently evaluated for quality of evidence using the EPOC Risk of Bias (RoB) criteria. The primary objective was to determine which studies should be seen as contributing most significantly and robustly to understanding the impacts of community-based financing programs on key outcomes of interest. The quality assessment and grading of research studies were based on the rigor of the study design, appropriateness of the research question, fidelity of study implementation, equivalence of comparison groups, valid and relevant endpoints, appropriateness of analysis and interpretation of results and implications, and generalizability of results.

Each of the studies was scored on the following nine risk of bias categories: whether the allocation sequence was adequately generated (RoB A); whether the allocation sequence was adequately concealed (RoB B); whether baseline outcome measurements across study groups were similar (RoB C); whether baseline characteristics were similar (RoB D); whether incomplete outcome data were adequately addressed (RoB E); whether study participants' knowledge of the allocated interventions and their treatment assignment (intervention or comparison) was adequately prevented during the study (RoB F); whether the study was adequately protected against contamination (RoB G); whether the study was free from selective outcome reporting (RoB H); and whether the study was free from other risks of bias, including publication bias, etc. (RoB I). For each category, a study could receive a rating of Low, High, or Unclear risk. Numerical rating codes were assigned to each of the three ratings: Low risk was

assigned a numerical code of 1, High risk a numerical code of -1, and Unclear risk a numerical code of 0. A composite quality of evidence (QoE) score for each study was calculated by taking the average of the nine numerical rating codes for the study and assigning it an overall QoE category score as follows: Low (an average of 1 or lower), Low/Medium (an average of 2 or 3), Medium (an average of 4), Medium/High (an average of 5 or 6), or High (an average of 7 or higher).

When synthesizing and reporting study findings, the approach to synthesis was driven by the types of studies identified and the data included in the review, study heterogeneity across interventions and key outcomes, and the detail and quality of reporting. Given the level of heterogeneity of study designs, populations involved, and types of interventions employed, results were not pooled for further statistical analysis. Instead, a textual narrative synthesis using Barnett-Page and Thomas's (2009) review methodology was conducted in which studies were first arranged into relatively homogeneous groups by study characteristics, context, quality of evidence, and findings and then were analyzed by study outcomes, type of intervention, and overall contribution to the research question. All relevant outcome data and follow-up measures were extracted from the studies using a data extraction template developed by the WHO technical working group. Outcome data reported in the studies were considered relevant if they matched one or more of the pre-specified outcomes listed in the inclusion criteria.

MAIN RESULTS

Table 1 offers detailed summaries of the four studies selected for systematic review, including information on sample size, analytical methods used, types of community-based financing interventions and/or programs implemented, and outcomes assessed. In total, the four studies, conducted between 2006 and 2011, surveyed more than 20,000 couples and women. Each study was conducted in a different country, and the four studies collected data from three different continents. The overall quality of evidence (QoE), which was determined by taking the average of the specific risk of bias category scores (RoB A to RoB I), varied across the four studies (see Table 2). Of the four studies, two received a medium overall QoE score, one received a medium/high QoE score, and one received a high QoE score.

In assigning a study's risk of bias scores, significant emphasis was placed on the type of study design and the method of analysis. Table 2 summarizes each study's risk of bias scores by category. Two studies (Desai and Tarozzi 2011; Hatt et al. 2009) used experimental designs and methods to evaluate program impact, and hence received relatively low risk of bias scores. In accordance with the evaluation criteria, studies that used quasi-experimental or non-experimental methods (e.g. pre- and post-test comparisons between non-randomized control and treatment groups, controlled before-and-after designs, panel and longitudinal data designs, and regression discontinuity designs) generally received higher risk of bias scores. That said, one study (Buttenheim 2006) sought to identify program impact by exploiting rich longitudinal datasets and using sophisticated statistical methods to control for non-programmatic differences between control and treatment groups; for this reason, the study received more favorable QoE scores in spite of its non-randomized study design.

TABLE 1 Summary of selected studies

Date	Study name	Author(s)	Outcomes	Country	Data and sample	Key exposure variables	Financing intervention/program	Empirical strategy used	Key findings
2011	Microcredit, family planning programs, and contraceptive behavior: evidence from a field experiment in Ethiopia	Desai and Tarozzi	<ul style="list-style-type: none"> – Contraceptive use – Fertility 	Ethiopia	<ul style="list-style-type: none"> – 6,440 households in 356 villages in 133 peasant association (PA) areas – Surveys in 2003 and 2006 – Same villages but different households in 2006 survey 	<ul style="list-style-type: none"> – Four-arm randomized controlled trial at PA level after baseline: <ol style="list-style-type: none"> 1) Credit/loan services 2) Family planning services 3) Both interventions 4) control group 	<ul style="list-style-type: none"> – Credit programs targeting poor and women with group repayment. Family planning program involves home visits and provision of pills and condoms. 	<ul style="list-style-type: none"> – Randomized control trial at the PA level. Estimates of changes in outcomes between 2003 and 2006 in treatment areas relative to control area. Intention to treat analysis at PA level. 	<ul style="list-style-type: none"> – No statistically significant effects on contraceptive use or fertility
2009	Extending social insurance to informal sector workers in Nicaragua via microfinance institutions: Results from a randomized evaluation	Hatt, Thornton, Magnoni, and Islam	<ul style="list-style-type: none"> – Contraceptive use – Contraceptive method – Insurance coverage – Health care use 	Nicaragua	<ul style="list-style-type: none"> – 2,608 male and female vendors aged 18-54 – Baseline 2007 – Follow up 2008 	<ul style="list-style-type: none"> – Multi-arm randomized trial: <ol style="list-style-type: none"> 1) insurance brochure; 2) On the spot enrollment 3) six-month insurance subsidy with instructions to sign up with insurer 4) six-month subsidy with instructions to sign up at microfinance provider 5) six-month subsidy with on the spot enrollment 	<ul style="list-style-type: none"> – Health insurance covering services such as antenatal care, delivery, family planning 	<ul style="list-style-type: none"> – Intention to treat estimates of random assignment on health insurance enrollment. Comparison of health care use and contraceptive use in insured versus not-insured groups in follow up. 	<ul style="list-style-type: none"> – Significant effect in raising health insurance coverage from 1 percent to over 32 percent. No significant effect on contraceptive use or health care use. Shift of attendance to facilities covered by insurance.

(Continued on next page)

TABLE 1 (Continued)

Date	Study name	Author(s)	Outcomes	Country	Data and sample	Key exposure variables	Financing intervention/program	Empirical strategy used	Key findings
2006	Empowering women with micro finance: evidence from Bangladesh	Pitt, Mark, Khandker, and Cartwright	<ul style="list-style-type: none"> - Contraceptive use by husbands - Discussion of family planning with husband - Women's empowerment 	Bangladesh	<ul style="list-style-type: none"> - 1,798 households from 27 program areas and 5 non-program areas. Survey in 1998-1999 	<ul style="list-style-type: none"> - Being in a treatment area with access to microfinance and being eligible for microfinance (land ownership less than 0.5 acres) 	<ul style="list-style-type: none"> - Provides microfinance to women in eligible households 	<ul style="list-style-type: none"> - Difference-in-differences model comparing the outcome for eligible women in treatment area with eligible women in non-treatment area relative to difference in non-eligible women between treatment and non-treatment areas. 	<ul style="list-style-type: none"> - No significant effect on husband's use of male family planning methods. Significantly increased discussion of fertility and family planning with husband and women's empowerment.
2006	Microfinance programs and contraceptive use: Evidence from Indonesia	Buttenheim	<ul style="list-style-type: none"> - Contraceptive use - Women's empowerment 	Indonesia	<ul style="list-style-type: none"> - Longitudinal data - Cluster random sample of women. - Surveys in 1993, 1997, 2000 - Survey of married women aged 15-39; 3,432 from 1993, 3,456 from 1997, 3,765 from 2000. 	<ul style="list-style-type: none"> - Cluster has microfinance program 	<ul style="list-style-type: none"> - Government and NGO-sponsored programs that offer short-term credit and loans. Not targeted at women except for KUKESRA project. 	<ul style="list-style-type: none"> - Difference-in-differences model looking at change over time in clusters that introduce microfinance program relative to comparison cluster that does not receive the program. 	<ul style="list-style-type: none"> - No effect on contraceptive prevalence overall but evidence that access to microfinance increases contraceptive use in women who do not want more children (odds ratio 1.201, p value 0.058) but lowers it in women who do want more children (odds ratio 0.732, p value 0.004).

TABLE 2 Risk of bias and quality of evidence scores

Authors, date	Fertility, birth spacing, and family size	Contraceptive use, FP/RH use			
	Desai and Tarozzi 2011	Desai and Tarozzi 2011	Hatt et al. 2009	Pitt et al. 2006	Buttenheim 2006
Country	Ethiopia	Ethiopia	Nicaragua	Bangladesh	Indonesia
RoB A	Low	Low	Low	Low	Low
RoB B	Low	Low	Low	Unclear	Low
RoB C	Low	Low	Low	Low	Low
RoB D	Low	Low	Low	Unclear	Low
RoB E	Low	Low	Low	Low	Unclear
RoB F	Unclear	Unclear	Unclear	Unclear	Unclear
RoB G	Low	Low	High	Unclear	Unclear
RoB H	Low	Low	Unclear	Low	Low
RoB I	Unclear	Unclear	Unclear	Unclear	Unclear
Overall QoE Score (Score, QoE)	7, High QoE	7, High QoE	4, Medium QoE	4, Medium QoE	5, Med/High QoE

Of the four studies that meet our inclusion criteria related to effects on contraceptive use, two were pure microfinance programs, one in Bangladesh, the other in Indonesia, that give small loans to women. While these do not address the financing of family planning directly, they may affect contraceptive purchases by allowing the household to borrow or by increasing women's empowerment and control over decision making. The study in Ethiopia had four arms: a control arm, a microfinance arm, a family planning arm that gave information on methods and providers and supplied condoms and pills in home visits, and an arm with both microfinance and family planning.

Only the study in Ethiopia had a direct family planning information and provision component. Its lack of impact contrasts with interventions in Matlab, Bangladesh, and Navrongo, Ghana, where home visits that supplied access to a range of contraceptive methods led to significant increases in family planning and reductions in fertility (Debuur et al. 2002; Phillips et al. 1982). The study in Nicaragua examined the effect of community-based health insurance provision that included family planning in the services covered. There is a question whether family planning is best provided through a focused community-based financing scheme or as part of broader health financing, which inevitably leads to a broader discussion on the relative advantages of vertical versus horizontal types of interventions in health care provision (Das Gupta et al. 2009).

Outcomes Analysis

The four studies received overall quality of evidence scores based on the following criteria: relevance of the study sample in answering the research question of interest; appropriateness of the chosen measures and indicators; and strength of evidence as determined by outcome-specific results.

In assigning an overall quality of evidence score, considerable emphasis was placed on the types of outcomes that were measured and on the degree to which outcome-specific findings were relevant to strengthening the evidence base. Study-specific outcomes, which were reported in Table 1, were summarized and grouped by the type of outcome(s) in Table 2. Table 2 also reports the overall quality of evidence score and rating for each study. Reported findings covered a wide range of outcomes, from short-term

family planning outcomes (contraceptive use, awareness, knowledge of family planning) to intermediate and long-term fertility outcomes (parity, birth spacing). The Ethiopia study was able to examine a wider range of outcomes over time. To facilitate analysis, quality of evidence scores were categorized by outcome type into two domains as follows:

1. *Contraceptive use and family planning/reproductive health service uptake.* All four studies measured outcomes related to contraceptive use, family planning uptake, or the likelihood of using contraception. Relevant outcomes can be classified into two main types: reported use of a method and likelihood of using a method. When defining use or likelihood of use, most authors applied the term “acceptance” (or an equivalent) to both the self-administering of contraceptives, such as condoms, and the use of long-acting methods, such as IUDs and implants (with the latter clearly indicating contraceptive use). Because of inconsistencies within the studies themselves, outcomes that were method-specific were combined under a single label termed “use” (or variations thereof) of a modern method. Most studies reported the types of modern contraceptive methods that women accepted or used. A broad range of modern methods was chosen, including long-acting methods; that said, most studies found that oral pills, condoms, and injectables were the most commonly chosen methods, although these findings are heavily dependent on the types of contraceptives that were made available to women as part of the intervention. Moreover, family planning outcomes were primarily limited to use of any contraceptive method or to use of modern methods, and no study measured other key family planning–related outcomes of interest, such as method (dis)continuation, method switching, or unmet need for family planning.

The evidence assessing the impact of community-based financing on use of family planning and reproductive health services is generally negative. Two of the four studies found that improving access to microfinance had no significant impact on the use of family planning (Hatt et al. 2009; Pitt, Khandker, and Cartwright 2006) while the other two found that financing may even slightly decrease contraceptive use (Buttenheim 2006; Desai and Tarozzi 2011). Point estimates from these studies cover a wide range of values on either side of the null hypothesis and provide no conclusive evidence of the impact of community-based financing interventions on the use of family planning.

2. *Fertility, birth spacing, and family size.* As shown in Table 2, only one of the four studies (Desai and Tarozzi 2011) was categorized into this domain for having directly measured both family planning outcomes and fertility-related outcomes, including desired family size. Two other studies examined the impact of microfinance on fertility outcomes (total fertility rates, family size, pregnancy rates, probability of a birth) using study designs from large-scale quasi-experimental settings in Bangladesh (Kuchler 2012) and India (Field, Pande, and Martinez 2015); however, neither study directly examined program effects on family planning outcomes and were therefore excluded from the main analysis.

Results from these four studies show that the programmatic effects of financing on fertility are small but significant. However, many of the main point estimates on fertility are not convincingly robust to specification checks and other empirical tests. Interestingly, findings from Desai and Tarozzi’s (2011) field experiment in Ethiopia suggest that desired family size in the treatment groups that received access to credit actually increased over the study period, although this effect was localized to Oromia province, with the effects of credit on desired fertility being insignificant in Amhara province. Although these studies were of

relatively high quality, their findings do not lead to conclusive understanding of the impact of community-based financing interventions on any of the fertility outcomes of interest.

Summary of Results from Additional Studies

Table A4 in the online Appendix summarizes the key findings from the 21 studies that were excluded from the review for methodological reasons. A majority of these studies presented evidence from microfinance programs in South Asia, and particularly from evaluations of rural credit expansion interventions in Bangladesh, such as those implemented by the Grameen Bank, Bangladesh Rural Advancement Committee (BRAC), or Bangladesh Rural Development Board (BRDB). Most of these evaluations suggested that such microcredit schemes may have increased contraceptive use. However, these studies also found that the areas where such credit schemes were offered had systematically lower access to family planning services than those comparison areas where credit schemes were not offered. Further, the evidence on the impact of these credit programs on fertility and empowerment outcomes was far more mixed than in the four studies analyzed here. Two studies examined the effect of microfinance programs on fertility (rather than our primary outcome of contraceptive use). One study in urban India found that women's access to microfinance led to a significant reduction in fertility, while the other in rural Bangladesh found no significant fertility effect. Details of these studies, along with their respective assessments, are given in the online Appendix.

CONCLUSIONS

Several gaps and directions for future research have been identified through our four-stage systematic review. First and foremost is the scarcity of relevant, high-quality studies; out of 19,138 references identified from the formal database screening and gray literature search, only four studies assessing the impact of community financing were rigorous enough for inclusion in our final analysis. Few community-based financing interventions that aim to improve family planning outcomes in developing countries have been conducted and evaluated. Of the studies identified, the quality of evidence is mixed and findings on particular outcomes of interest are either inconclusive or incomplete. Only one study (Desai and Tarozzi 2011) was determined to be of high quality. Although the primary outcomes of contraceptive use and fertility were examined, none of the studies considered continuation and switching of family planning methods or unmet need for modern methods. The results from our review are even less consistent in terms of effects of such programs on fertility and other secondary outcomes. More information on secondary outcomes such as cost and cost-effectiveness, sustainability, quality of care and services, and other reproductive health outcomes would have enriched our analysis.

With the exception of Hatt et al. (2009), the included studies focused on microcredit or microfinance interventions not targeted specifically at health. However, none of the financing interventions included explicit conditions for directly targeting family planning or reproductive health outcomes, although the Grameen Bank–BRAC–BRDB microfinance intervention in Bangladesh contained an educational training component that promoted small families and contraceptive use. Consequently, nothing can be said specifically about the impact of

community-based financing for family planning. Given the long-term presence of microfinance programs and institutions, such as the Grameen Bank or BRAC in Bangladesh and the Self-Employed Women's Association (SEWA) in India, there are promising opportunities in this area for future data collection to build on existing research. Moreover, it may be possible to study the scaling up of existing programs or replication of efforts in other contexts in order to more directly examine the effects of the interventions on contraceptive behavior and fertility. And there is clearly need for evaluation of other community-based financing interventions such as mutual health organizations, community-managed user fees, and micro-insurance in low- and middle-income countries.

Evidence from the selected studies on the impact of community-based financing on family planning and fertility outcomes is inconclusive. For instance, Desai and Tarozzi found overall null effects and significant, but mixed results when the impact of the intervention was assessed separately for each of the two regions of the study. The impact of community-based financing seems to vary according to the global and country-specific region, socioeconomic status (e.g., Kuchler (2012) finds that being a member of BRAC significantly increased fertility among low-income households), and whether the financing is combined with other initiatives such as service delivery for family planning. These mixed findings suggest that either: 1) more high-quality evidence on community-based financing is needed before any conclusions can be drawn; or 2) community-based financing for family planning may, in fact, have little or no effect on family planning outcomes. Given that many government family planning programs in low- and middle-income countries offer family planning services and commodities for free or at low cost to users, it might seem that community-based financing would not lead to additional uptake (Cleland et al. 2006). However, free government services may be low quality and subject to stock-outs of popular methods, and in many such settings there is a vibrant market for private provision and social marketing of high-quality fee-based services that are attractive even to poor women. In addition, transport barriers to obtaining family planning services may impose additional financial costs.

Several limitations of this review should be noted. Although a range of search sources was used and manual handsearching for gray literature was undertaken during the first stage, the number of international sources was limited and particular items (such as dissertations or unpublished manuscripts) may have been missed. Depending on the level of depth and detail that was provided in each study, extrapolating information on the particular intervention, methodological details, and study findings of interest was not always possible. This was particularly problematic in studies that evaluated multi-component programs and did not run separate analyses for each component. Additionally, given the process used to select the literature, this review is likely to reflect a general publication bias whereby studies with significant findings were more likely to be published, searched for, and included in the review. Given that many study outcomes were measured using self-reported data on sexual and health behaviors, including use of family planning, any study findings that use these outcomes may be biased due to measurement error and underreporting, which has been shown to be common in such data types (Mwaikambo et al. 2011; Speizer et al. 2003). Such biases in the data would be magnified by the fact that many of the self-reported measures, for the purposes of more efficient analysis, would be recoded into categorical indices, in which case nuanced information examining respondents' preferences for family planning may be lost. Finally, it was not

possible to conduct a meta-analysis and compare results across studies, given the diversity observed across selected studies in terms of the samples used, the measures calculated, and the methods implemented.

It is clear from our review that more rigorous evaluations should be planned when future interventions are designed in order for programs to be refined and for intermediate and long-run outcomes to be documented. Given the overall paucity of evidence, current and future financing programs should place equal emphasis on implementation and on evaluation that can clearly attribute changes in the outcome(s) of interest to particular program activities. Such consistent attention to impact evaluation will increase accountability, increase evidence-based program capacity, and improve our understanding of how such interventions contribute to family planning uptake, fertility-related outcomes, and longer-term development.

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