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What works in family planning interventions: A systematic review of the evidence

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Abstract

This study presents findings from a systematic review of evaluations of family planning interventions published between 1995 and 2008. Studies that used an experimental or quasi-experimental design or had another way to attribute program exposure to observed changes in fertility or family planning outcomes at the individual or population levels were included and ranked by strength of evidence. A total of 63 studies were found that met the inclusion criteria. The findings from this review are summarized in tabular format by the type of intervention (classified as supply-side or demand-side). About two-thirds of the studies found were on demand generation type-programs. Findings from all programs revealed significant improvements in knowledge, attitudes, discussion, and intentions. Program impacts on contraceptive use and use of family planning services were less consistently found and less than half of the studies that measured fertility or pregnancy-related outcomes found an impact. Based on the review findings, we identify promising programmatic approaches and propose directions for future evaluation research of family planning interventions.

BACKGROUND

By the early 1970s, international efforts to reduce rapid population growth in the developing world were well advanced. The vast majority of countries adopted voluntary family planning programs, which in most cases were part of their maternal and child health or primary health care systems (Sinding 2007). A golden era of family planning from 1970 to 1990—during which a reproductive revolution occurred in every region of the world except sub-Saharan Africa—was underway (Donaldson 1990; Donaldson and Tsui 1990).

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Between the mid-1960s and the mid-1990s, average fertility in the developing world, including China, fell from around six children per woman over her reproductive lifetime to around three, a 50 percent decline. During the same period, the prevalence of contraceptive use among women increased from less than 10 percent to nearly 60 percent, but the rise was uneven (Sinding 2007).

Despite decades of research on the subject, considerable uncertainty exists about the processes and factors that motivate couples to limit their family size; this is related to variations in the adoption of birth control in different societies at different times (Bongaart et al. 1990). There is general agreement that socioeconomic development and organized family planning programs both play significant roles in bringing about changes in reproductive behavior; however identifying independent effects of family planning programs proves more difficult (see United Nations 1979, 1986, and Lloyd and Ross 1989 for a review of this work).

Lapham and Mauldin (1985) showed that it is the combination of improved socioeconomic conditions and greater family planning program effort that leads to the strongest associations with increased use of contraception. These findings were used to demonstrate to economic and social development policymakers that consideration of ways to initiate or improve family planning delivery systems should be an integral part of any development strategy.

Family planning programs have varied widely in their emphasis on demand generation activities and supply-side activities such as increasing contraceptive method choice and using varying service delivery approaches. Despite such differences in their characteristics, Bongaarts, Mauldin, and Phillips (1990) outline certain key issues that are relevant for strengthening program performance in a variety of settings:

1. Passive clinical approaches are less successful than programs that make services available to couples in their villages and home.
2. The quality of services is a crucial but often neglected element of programs; this entails choice among a number of methods, to be well informed about alternative methods, to have competent and caring providers of services, to have follow-up exchanges with knowledgeable program staff.
3. No single formula for program design suits all needs. It is imperative to develop culturally appropriate, sensitive approaches and monitor and adjust programs as a result of lessons learned.
4. Political support for family planning is often critical to establishing strong program effort.

The Matlab Project from rural Bangladesh exemplifies the importance and ultimate success of taking into account all of the above mentioned issues. It is one of the most well-documented experimental projects on family planning in developing countries as a result of the Demographic Surveillance System (DSS) developed by the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B). The experimental design of Matlab has allowed researchers to examine the differences between the special services invested in the treatment areas against the standard government services provided in the comparison areas. These areas are similar culturally and socioeconomically allowing researchers to conclude that the Matlab Project has succeeded in raising contraceptive prevalence and reducing child mortality substantially even in an environment that is economically and socially unfavorable to these developments (Nag 1992).

The longitudinal, experimental study design of Matlab has allowed researchers to study a variety of inputs and outcomes as a result of the interventions. The very nature of the study

design allows researchers to draw conclusions on cause and effect. Unfortunately, this is not always the case in public health research. Although randomized controlled trials are the gold standard, a number of real-world issues are encountered that often prevent the use of randomized trials in public health research; these include feasibility and ethical concerns among others. Randomized controlled trials are "primarily a vehicle for evaluating biomedical interventions, rather than strategies to change human behavior. Altering the norms and behaviors of social groups can sometimes take considerable time…." (Global HIV Prevention Working Group, 2008).

From the available evidence that varies in strength, Bongaarts, Mauldin, and Phillips (1990) estimated that without the effects of family planning programs in the 1970s-1980s, fertility in developing countries would have been 5.4 births per women during 1980 to 1985 rather than the actual 4.2. These program effects reflect the buildup of program strength over the preceding years. Ironically, this success, in combination with increased attention to the AIDS epidemic, has led to reduced funding for contraceptive research and most importantly, investment in family planning services in the mid-1990s (UN Population Fund 2005). And, despite the positive effects that family planning programs have had, in much of the developing world and particularly in sub-Saharan Africa, fertility remains well above the level observed in the developed world, where women average about two births.

INTRODUCTION

Worldwide, there is a large and empirically verified demand for family planning services to space or limit childbearing. Currently, about 201 million women have an unmet need for modern contraception (PRB 2008), that is, they are sexually active, they want to delay or stop childbearing, and are not using a modern method of contraception. Notably, more than 80 million mistimed or unwanted pregnancies (unintended pregnancies) occur each year worldwide, contributing to high rates of induced abortions, maternal morbidity and mortality, and infant mortality (Cleland et al. 2006). Furthermore, family planning has been found to be an essential approach for countries to achieve their Millennium Development Goals (MDGs), particularly goals four and five for improved child and maternal health outcomes (Cleland et al. 2006; Potts and Fotso 2007; Allen 2007; Moreland 2006). Family planning is a cost-effective public health and development intervention. The cost of averting unwanted births is miniscule compared to the costs to the family and country of unwanted births (Cleland et al. 2006). Few public health interventions are as effective as family planning programs at reducing the mortality and morbidity of mothers and infants and have such a breadth of positive impacts (Cleland et al. 2006; Bongaarts et al. 2009).

In the 1970s-1980s, family planning programs were on the rise, leading to important impacts on increasing voluntary family planning use and reducing fertility in many parts of the world. During this same period, numerous family planning program evaluations were undertaken to demonstrate the impact of demand generation and service delivery improvements on contraceptive use and fertility-related outcomes (Bauman, Viadro, Tsui 1994; Samara, Buckner, Tsui 1996; Cuca and Pierce 1977). Evaluations undertaken in this period included small-scale evaluation efforts to test novel service delivery approaches as well as evaluations of community- and national-level mass media, community-based delivery, and policy change initiatives (Samara, Buckner, Tsui 1996). The family planning evaluations used varying study designs, especially in terms of the outcomes measured, the assumptions required, and the strength of the conclusions (Bertrand, Magnani, Rutenberg 1996). The more rigorous family planning evaluations used randomized experiments (experimental designs), quasi-experiments, and multilevel regression methods. Notably, examining the period through the end of 1992, Bauman (1997) found sixteen family planning evaluations that were considered to be randomized experiments (i.e., random

assignment of individuals or groups). Thus, while many authors at the time acknowledged the difficulties in undertaking randomized experiments of family planning programs (Cuca and Pierce 1977), Bauman's analysis demonstrated that this was not impossible. That said, even the most widely recognized family planning evaluation, the Matlab study mentioned above, did not randomly assign participating villages; a strong advantage of Matlab, however, was the use of longitudinal data and multivariate analyses to demonstrate program impacts.

Although significant gains have been made since the 1970s, the potential benefits of family planning programs have not been realized for millions of women (Cleland et al. 2006). To revitalize political will and funding for a new era in the promotion of family planning and reproductive health (FP/RH) services, robust evidence-based strategies must continue to demonstrate research-driven best practices and outline the logistics of implementation. A recent report by the Center for Global Development (CGD) Evaluation Gap Working Group concluded that missed opportunities for the collection and analysis of program impacts have led to continued funding of ineffective and inefficient programs (William 2006). Impact evaluation studies are imperative in providing critical evidence to decision makers on how to effectively spend scarce resources. As a result, the objective of this review is to provide an update on family planning program effectiveness since 1994 when there was less attention and funding for family planning programs. In particular, we a) synthesize recent research on family planning program effectiveness, focusing on experimental and quasi-experimental impact evaluation studies; b) discuss program approaches that are successful (and those that are less successful); c) identify gaps in family planning evaluation research; and d) recommend future research and evaluation directions.

METHODOLOGY

We undertook a systematic search of journal databases for peer-reviewed articles as well as a companion search of gray literature through funder clearinghouse websites, project websites, and correspondence. In addition, we utilized a 'snowball' sampling approach through searching the reference lists of identified articles. The search strategy included word combinations that incorporated evaluation or outcomes with the following terms: family planning, contraceptive use, child spacing, fertility, unmet need, maternal health, quality of care, private sector family planning services, adolescent pregnancy, unintended pregnancy, abortion, cost effectiveness, male involvement, breastfeeding and lactational amenorrhea method (LAM), and family planning/reproductive health policy.

The inclusion criteria for the review focused on studies of family planning interventions that took place in developing countries, assessed changes in outcomes that are directly attributable to a program (causality), and included the following family planning outcomes of interest: use of family planning services, knowledge and/or attitudes about family planning, discussions around family planning, intentions to use family planning, contraceptive use, unmet need, total fertility rate, unintended pregnancies, and abortion. These outcomes were selected as they provide both short-term and longer term perspectives of family planning program achievements. While the long-term outcomes (fertility, unintended pregnancies, and abortion) are the most important, few evaluations have a long enough follow-up period to observe changes at this level. Thus, using the short-term outcomes provides an understanding of whether programs are on track for achieving their intended impacts; a program that is unable to affect short-term outcomes is unlikely to have long-term impacts. The systematic search covered published and unpublished papers from 1995 to 2008.

Studies identified were categorized based on their study methodology as experimental designs, quasi-experimental designs, and non-experimental designs. Studies that included experimental designs, that is, the groups or individuals were randomly assigned and quasi-experimental designs with non-random assignment to groups were included in this review. Most of these studies used a pre-test and post-test study design or a panel/longitudinal design. A small number of included studies used a post-test only design with an appropriately defined comparison group. Finally, a few of the included studies were non-experimental and thus did not include a comparison group but were able to attribute changes in outcomes to program exposure through multivariate analyses.

The studies included in this review meet the above criteria; however, they still vary widely in strength of design and robustness of the findings. For this reason, we further ranked the studies by the methodological quality, creating a rating scale based on the strength of the research design, scope of the study (i.e., ability to generalize results), and the control of confounders and selection bias. As a result, three categories of strength of evidence emerged:

- **High** – This includes randomized cluster designs that included details on the randomization process and where necessary, controlled for differences in the small number of groups randomized. Also included in this category are studies that randomized individual-level participants; many of these often first randomized sites and then randomized participants within sites. A small number of studies met the high quality criteria by using a longitudinal design with a low loss to follow-up, a long follow-up period, and a comparison group (e.g., Matlab and Navrongo); most of these studies also controlled for differences in groups.
- **Medium** – Most of the studies in this category used a pre-post test with comparison group design that had a follow-up period of at least six months. All of the studies in this category controlled for possible selection bias between the groups through multivariate analyses. This category also included longitudinal studies without a control group and with low loss to follow-up as well as a small number of studies that used a randomized cluster design but either did not provide details on the randomization process and/or did not control for differences between the small number of intervention and control groups;
- **Low** – These studies were quasi-experimental designs that often included a pre-post test control group design with no control for differences between the groups and/or a very short follow-up period (e.g., <6 months). Also in this category are the post-test only comparison group design studies and the longitudinal studies with high loss to follow-up and no comparison group.

Two individuals (the first two authors) independently assessed the studies for inclusion and rated the studies according to the inclusion criteria and above rating scale. The majority of the studies in this review fall into the medium strength of evidence category.

No attempt was made to conduct a meta-analysis and reanalyze the data from the studies, as is done in the *Cochrane Collaboration. As noted in the Cochrane Handbook for Systematic Reviews of Interventions*, “Public health and health promotion interventions are broadly-defined activities that are evaluated using a wide variety of approaches and study designs. For some questions, the best available evidence may be from non-randomized studies” (Armstrong R et al., 2008). Thus merging study designs and observations from multiple studies would not provide useful information to summarize the varying types of family planning program activities.

Search results (as of August 2009) yielded 225 studies that consisted of a family planning intervention. Of these, 63 studies met the above methodological criteria for rigor of evaluation. A number of studies were excluded due to their lack of multivariate analysis with non-randomized study designs, focus on reproductive health outcomes other than the family planning outcomes of interest (e.g., HIV prevention programs and youth programs focusing on delayed sexual debut and condom use), or being strictly operations research (e.g., feasibility and acceptability studies) that did not go on to examine population-based family planning and fertility outcomes. Notably, many of the operations research studies were undertaken as part of the FRONTIERS Project led by the Population Council and can be found on the Frontiers Legacy website (http://www.popcouncil.org/publications/FRONTIERSLegacy/index.asp).

In numerous cases, the interventions consist of various activities using both demand- and supply-side strategies. However, for this review, we have categorized each intervention study as predominantly demand or predominately supply. Forty-two of the included articles are classified as demand-side interventions, while the remaining twenty-one are classified as supply-side interventions. Within the demand generation activities, we further classified programs as mass media, interpersonal communication, and development approaches. The development approaches that included conditional cash transfer programs and a savings and credit program tended to be the most integrated in terms of demand- and supply-side strategies and four out of five of them had high quality evidence (see details below). Among the supply-side interventions, we further classified programs into access, quality, and cost approaches. The one cost approach identified (a voucher program) had features of both a supply-side and a demand generation activity and was classified in the low quality of evidence category.

RESULTS

Among the 63 studies included, the strength of the evidence varies widely. In particular, among the 42 studies that were in the demand category, 7 were of low quality, 27 were of medium quality, and 8 were considered to be of high quality (see Table 1 for citations by category). Half of the high quality studies were of studies and interventions classified as development approaches - conditional cash transfer programs and a savings and credit program (Stecklov et al. 2007; Steele et al. 2001). Among the remaining high quality demand programs, two were interpersonal communication programs with an instructor/facilitator (Cabezon et al. 2005; Walker et al. 2006) and two were community-level interpersonal communication programs (Lou et al. 2004; Ross et al. 2007). Among the programs in the supply-side interventions, 8 were considered low quality, 7 were considered medium quality, and 6 were considered high quality. Among those supply-side programs of high quality, three are access/community outreach programs that were undertaken in large demographic surveillance sites (Bangladesh and Ghana), permitting long-term follow-up of a longitudinal sample (Rahman et al. 2001, Sinha 2005, Debpuur et al. 2002). The three others were quality of care/integrated service programs (Bashour et al. 2008; Bolam et al. 1998; Xiaoming et al. 2000), two of which were able to randomize individuals at the clinic level. Notably, the remaining demand-side and supply-side interventions were of medium or low quality but still met the inclusion criteria of being quasi-experimental designs (or having another way to attribute program exposure to outcomes).

Table 2 summarizes the findings of the 63 rigorously evaluated studies included in this review. Generally speaking, the available evidence over the last 15 years suggests that family planning programs have positively impacted individuals' family planning knowledge, attitudes, discussion, intentions, and to a smaller degree, contraceptive use. Seventy-five percent of the studies that measured contraceptive use as an outcome reported positive

findings for increased contraceptive use or reduced unmet need, while the outcomes of knowledge, attitudes, discussion, and intentions were more commonly found to be significant. Increased service use and changes in fertility-related outcomes were less consistently evident. All of the supply-side interventions that measured fertility outcomes (4 studies - Rahman et al. 2001; Sinha 2005; Debpuur et al. 2002; Sherwood-Fabre et al. 2002) were positive and significant, revealing either a decrease in fertility rates, reduced unintended pregnancies, or a decrease in abortion rates, while only 2 (Askew et al. 2004 (sites A & C); Cabezon et al. 2005) out of 9 demand-side intervention studies (Rogers et al. 1999; Vernon et al. 2004; Mathur et al. 2004; Stecklov et al. 2007 (included as 3 separate studies – Honduras, Nicaragua, and Mexico); Signorini et al. unpublished, PAA 2009) that measured fertility-related outcomes revealed statistically significant, positive findings on this outcome.

As shown in Table 3, the majority of the evaluation studies reported on interventions that took place in Africa (n=25 studies), while 21 studies reported on data from Asia, 14 studies from the Americas, 2 study from Eurasia, and 2 studies from the Middle East.[1]

To facilitate synthesis and presentation, studies are presented based on their categorization as demand-side or supply-side interventions below. More detailed summaries of the intervention type, program description, research design/analytic methods, and results may be found in the Appendix.

The next three sections outline specific demand-side approaches that the articles from our review broadly fall within – mass media, interpersonal communication, and development approaches. The subsequent three sections divide the supply-side studies from our review into the three broad supply-side categories – access, quality of care, and cost. The article concludes with a discussion of gaps and directions for future evaluation research.

Demand-side approaches

Mass media—The central goals of family planning demand-side interventions include changing women's, men's, and couples' knowledge and attitudes about family planning methods, increasing their knowledge of sources of contraceptives, and increasing their use of family planning to meet their fertility desires (Salem et al. 2008). As an intervention, mass media through the radio, television, or print media is an appealing strategy for the promotion of family planning because of its potential reach and ability to address often culturally taboo issues in an entertaining way. The use of media to deliver primarily social development messages has been employed in family planning (FP) and reproductive health (RH) programs for over five decades (Salem et al. 2008). As FP/RH programs have grown and evolved so have the communication approaches. These approaches are referred to by many names such as entertainment-education (EE); edutainment; information, education, and communication (IEC); and behavior change communication (BCC), to name a few (Salem et al. 2008).

Nine articles (Rogers et al. 1999; Kincaid 2000a; Meekers et al. 1997; Meekers et al. 1998; Van Rossem et al. 1999a; Van Rossem et al. 1999b; Kim et al. 2001; Magnani et al. 2000a; Sood et al. 2004) evaluating the impact of mass media interventions that met our inclusion criteria for rigorous evaluation were found in the literature search. Often, in the case of mass media interventions, evaluations must use creative methods to compare those exposed to the intervention to those not exposed given that the programs tend to be full coverage programs. In cases where a comparison group is not feasible, researchers sometimes divide the sample

[1]The total does not equal 63 studies because the Brieger 2001 article reports on data from Nigeria and Ghana.

into groups based on exposure to the various components of the intervention. Comparing the groups based on exposure experience or extent of exposure, controlling for background differences, provides researchers with an opportunity to measure dose response effects on the fertility or family planning outcomes of interest (Kincaid 2000a; Magnani et al. 2000a; Sood et al. 2004). Given these methodological challenges with evaluating mass media approaches, all but one of these studies were considered to be of medium quality; this last study was considered of lower quality because it used a post-test only comparison group design (Sood et al., 2004).

Of the nine mass media intervention evaluations we reviewed, results usually focused on short-term outcomes such as changes in knowledge, attitudes, beliefs, and discussion patterns either between partners or between parents and their children. Few behavioral outcomes were measured. However, when behavioral outcomes such as contraceptive use were measured among the study population, results were positive (Rogers et al. 1999; Kincaid 2000a). Most positive behavioral results emerged from studies where mass media was combined with other intervention components, such as social marketing (Meekers et al. 1998; Van Rossem et al. 1999a; Van Rossem et al. 1999b) or interpersonal communication interventions (Kim et al. 2001; Magnani et al. 2000a; Sood et al. 2004).

In Tanzania, Rogers and colleagues (1999), which was considered to be a medium quality study, measured married women's use of contraceptives as a result of exposure to an entertainment-education radio soap opera, "Twende na Wakati" (Let's Go with the Times). The authors used a quasi-experimental design since the soap opera was broadcasted on seven mainland stations of Radio Tanzania and not on the eighth station covering the Dodoma area. While the seven stations were broadcasting the soap opera twice a week, the Dodoma area station was broadcasting locally produced programs at the same time. Consequently, it was able to serve as the comparison site. In addition to triangulating a number of different data sources, the authors used a repeat cross-sectional design, in which they surveyed individuals in the same 35 wards in two regions of the Dodoma comparison area and seven regions in the treatment area at one-year intervals from 1993 to 1997. The authors found that all statistical tests supported a significant effect of exposure to "Twende na Wakati" from 1993 to 1995 on married women's use of contraceptives. As a result of the positive findings from the 1993-1995 analysis, Radio Tanzania began broadcasting the soap opera in the Dodoma area. The authors found this statistically significant effect between exposure to the soap opera and contraceptive use of married women replicated in the Dodoma comparison area from 1995 to 1997.

Interpersonal communication—Interpersonal communication approaches including one-on-one discussions, small-group sessions, and facilitator-led curriculum-based programs are another demand-side strategy used to influence knowledge, attitudes, intentions, and behaviors related to FP and RH. Interpersonal communication interventions take place in varying settings including schools, workplaces, and the community. These interventions are often facilitated by peers, teachers, or expert trainers. Twenty-eight articles using interpersonal communication approaches met our inclusion criteria. Of these articles, 11 reported on peer-led interventions (Agha et al. 2004; Magnani et al. 2000b; Brieger et al. 2001; Speizer et al. 2001; Cartagena et al. 2006; Askew et al. 2004; Diop et al. 2004; Vernon et al. 2004; Bhuiya et al. 2004; Mathur et al. 2004; Ozcebe et al. 2003); 12 were instructor/facilitator-led (Cabezon et al. 2005; Eggleston et al. 2000; Magnani 2001; Mbizvo et al. 1997; Murray et al. 2000; Martiniuk et al. 2003; Mba et al. 2007; Rusakaniko et al. 1997; Shuey et al. 1999; Stanton et al. 1998; Walker et al. 2006; FOCUS/CARE International - Cambodia 2000); and, 5 were community-based (Levitt-Dayal et al. 2001; Erulkar et al. 2004; Lou et al. 2004; Tu et al. 2008; Ross et al. 2007).

Within these categories, the overwhelming majority were of medium quality with the exception of two of the peer-led interventions that were lower quality (Cartagena et al. 2006; Ozcebe et al. 2003); two of the instructor/facilitator led that were of high quality (Cabezon et al. 2005; Walker et al. 2006); two of the instructor/facilitator led of low quality (Mba et al. 2007; Shuey et al. 1999); two of the community-based that were high quality (Lou et al. 2004; Ross et al. 2007); and one of the community-based that was low quality (Levitt-Dayal et al. 2001). Notably, none of the articles compared the different types of facilitators to help inform whether one approach is more effective than another. However, Table 2 reveals that the peer-led and adult-led intervention studies had similar outcomes.

The interpersonal communication interventions almost exclusively targeted adolescents and young adults (the age range included 10 year olds to 26 year olds), and the evaluations all included short-term outcomes (knowledge, attitudes, and beliefs) and only a few included behavioral outcomes (contraceptive use and unintended pregnancies). Most studies (86% - 18 studies out of 21) reported improved knowledge and attitudes, while about two-thirds of the studies (12 studies out of 19) measuring family planning use found a positive effect (Magnani et al. 2000b; Brieger et al. 2001; Speizer et al. 2001; Askew et al. 2004; Murray et al. 2000; Stanton et al. 1998; Walker et al. 2006; Levitt-Dayal et al. 2001; Erulkar et al. 2004; Lou et al. 2004; Tu et al. 2008; Ross et al. 2007) and half of those measuring fertility outcomes (2 studies out of 4) led to declining fertility (Askew et al. 2004; Cabezon et al. 2005).

Askew and colleagues (2004) compared three intervention sites in the Western Providence of Kenya. Interventions to create a supportive environment at the community level and strengthen the health system's ability to meet the reproductive health information and service needs of adolescents were introduced into Site A locations. Site B locations consisted of the same intervention activities as in Site A plus an in-school life-skills and development curriculum and parent sensitization, so that the additional effect of educating school children on reproductive health issues could be assessed. Site C locations were identified as comparison sites, where no interventions were introduced. This was considered to be a medium quality study. For most socio-demographic characteristics, there were no differences, between the sites nor between baseline and endline cross-sectional characteristics. Where differences did occur for a characteristic, it was taken into account in the analysis and interpretation of the findings. This indicates that any differences in measures of the key indicators found between baseline and endline are most likely due to the influence of the interventions themselves. Among the never married girls living in Site B there was no change over time in terms of experiencing pregnancy, with about one quarter of sexually active girls reporting a pregnancy. In intervention Site A and the comparison site, however, large and significant reductions in pregnancy were reported over time. This may be a result of the fact that approval of contraception and condom use improved in the comparison site and in Site A but not in Site B. This finding is particularly interesting because Site B, which offered exposure to the largest number of program components, had the least effect.

Alternatively, Cabezon and colleagues (2005), in their high quality study, found that a school-based intervention taught by teachers had a protective effect in preventing unintended pregnancies. Three cohorts of first year high school students were enrolled in a randomized control trial in which some students received no intervention and other students received the TeenSTAR abstinence-centered sex education program which consisted of 14 units taught over a school year. The cohorts represent the years 1996, 1997, and 1998; the 1996 cohort did not experience any intervention program. No interventions were received by any of the cohorts during their second, third, or fourth years. All cohorts were followed up for four years; pregnancy rates were recorded and subsequently contrasted in the

intervention and control groups. Pregnancy rates for the intervention and control groups at four year follow-up in the 1997 cohort were 3.3% and 18.9%, respectively; while pregnancy rates for the intervention and control groups at four year follow-up in the 1998 cohort were 4.4% and 22.6%, respectively. The pregnancy rate for the 1996 cohort that was not exposed to the program was 14.7%. The differences between intervention and control group by cohort were statistically significant demonstrating an impact of the TeenSTAR program using a high quality study design.

Development approaches—The development approaches, which included four conditional cash transfer programs and a savings and credit program, all focused on intermediate and long-term behavioral outcome indicators, such as contraceptive use and fertility. Four out of five of these studies were of high quality (Stecklov et al. 2007 – counting for three studies; Steele et al., 2001) and the remaining one was of medium quality (Signorini et al. unpublished, PAA 2009). In the case of Stecklov and Signorini, they used population-level secondary data for the evaluation. In particular, by relying on large, nationally representative surveys that are infrequently available, the authors were able to examine longer-term outcomes than what is usually available immediately following the intervention activities. Stecklov and colleagues (2007) explored the possible association between conditional cash transfer (CCT) programs in three Latin American countries (Mexico, Nicaragua, and Honduras) and fertility. The authors compared three sets of panel data from experimental CCT programs in these countries to assess the impact of these programs on childbearing. Each program first identified a set of communities eligible for the program and then randomly assigned them into control and treatment groups. The treatment groups were provided payments conditional on the household's behavior, such as enrolling children into public schools, getting regular check-ups at the doctor's office, and receiving vaccinations.

Findings, based on difference-in-difference models, show that the program in Honduras, which inadvertently created large incentives for childbearing, may have raised fertility by between 2 and 4 percentage points. The Honduras program created incentives by establishing different targeting and eligibility criteria and transfer amounts. For example, the Honduras' Family Allowance Program (PRAF, after its Spanish acronym) allowed parents to join or obtain increased benefits by bearing children after the program had begun (Stecklov et al. 2007). The CCT programs in the two other countries, Mexico and Nicaragua, did not have the same unintended incentives for childbearing; however, they also did not have a net impact on fertility (Stecklov et al. 2007). The data were more positive when examining contraceptive use, where it was measured. The data from the PROGRESA program in Mexico revealed significant increases in contraceptive use, while the Nicaragua data illustrated an increase, albeit one that was not significant. Similarly, an evaluation of a similar conditional cash transfer project in Brazil, called Bolsa Familia Program, was found to have no impact on the fertility of program beneficiaries (Signorini et al. unpublished, PAA 2009).

Likewise, evidence from a high quality evaluation of a Save the Children USA program examining the characteristics of women who choose to join a women's savings or a credit group in rural Bangladesh and the impact of their participation on contraceptive use revealed mixed results (Steele et al. 2001). The credit approach required more stringent criteria for membership based on credit worthiness, an admission fee, and there were individual and group expenses for meeting rooms. In addition, the group funds were managed by a credit officer who collects weekly savings and loan payments to deposit at a government bank. The savings groups were more autonomous than the credit groups, and set their own rules with regard to frequency of meetings, savings contributions by members, size of group, and how group savings were managed. To evaluate the impact of the credit program, the authors

compared credit members with eligible nonmembers in the same village communities. The savings group members were compared with eligible nonmembers in the same village communities as well as in village communities in which the savings program was not introduced. The use of a longitudinal design for this evaluation controlled for two types of endogeneity that often threatens evaluation research: self selection and non-random program placement (Steele et al. 2001). Increased contraceptive use was found among participants of the credit program but not among participants of the savings group.

Supply-side approaches

The overarching strategy of successful supply-side family planning programs is to make contraceptive methods as accessible as possible to clients in a good quality, reliable fashion. This includes offering a wide range of affordable contraceptive methods, making services widely accessible through multiple service delivery channels, making sure potential clients know about services, following evidence-based technical guidelines that promote access and quality, and providing client-centered services (Richey et al. 2008). These types of supply-side interventions ensure that women and couples are able to effectively use family planning when the need arises. Understanding which supply side interventions lead to increased contraceptive use and reductions in unmet need and unintended pregnancy is important for making recommendations to program managers and policy makers on how to expend finite resources. Much of the research to date on supply-side interventions has been undertaken through operations research that has generally focused on outcomes such as improved service quality, increased client satisfaction, and increased service use. Fewer recent evaluation studies of supply-side strategies examine whether changes in family planning availability, accessibility, quality, and costs lead to increased contraceptive use and reduced unintended pregnancy at the population level. The studies that we sought for this assessment of rigorous evaluations did just this; they examined the impact of supply-side activities on fertility and family planning outcomes. In total, we found twenty-one articles that evaluated the population-level impact of supply-side interventions.

Access—Nine studies focusing on issues of accessibility met our inclusion criteria; three of these (two with medium quality and one with low quality) evaluated the impact of fractional social franchising programs (Agha et al. 2007, Hennink and Clements 2005, Babalola et al. 2001) and six focused on community-based distribution or outreach programs (high quality: Rahman et al. 2001, Sinha 2005, Debpuur et al. 2002; medium quality: Phillips et al. 1996; low quality: Douthwaite et al. 2005, Kincaid 2000b). Social franchising typically entails the creation of networks of private medical practitioners (doctors, nurses, midwives, pharmacists) that offer a standard set of services at lower costs under a shared brand name. Franchise members are offered training, commodity advertising, inter-franchise referrals, a branding that shows high-quality standards, and other benefits. Fractional social franchises are businesses that add a franchised service or product to the existing operations (LaVake 2003). Among the three studies that used this approach, one with medium quality and one with low quality (Hennink and Clements 2005; Babalola et al. 2001) had a significant effect on family planning outcomes in the intended direction, while the Agha et al. 2007 article found a marginally significant effect on current use of family planning (p=. 067). None measured an effect on fertility-related outcomes. Similarly, those that examined knowledge, attitudes, and intentions also demonstrated positive effects. One study, however, that examined whether fractional social franchising leads to increased service use in Nepal failed to show the hypothesized effect and showed only a marginally significant effect for contraceptive use (Agha et al. 2007). This may be a result of the fact that clients had other sources of reproductive health services available to them that they felt comfortable using; 10-12% of the population in the intervention district went to a medical store/pharmacy for

reproductive health services. In addition, the project was implemented for less than a year (Agha et al. 2007).

Hennick and Clements (2005) found that the introduction of new family planning clinics in urban Pakistan resulted in increased knowledge of family planning methods, distinct effects on contraceptive uptake, and decline in unmet need. However, the impacts were different by provinces, which represent different cultural contexts. The new clinics in Sargodha and Gujranwala in the Punjab province contributed to a significant decline in unmet need for family planning; most of this change was comprised of a decline in unmet need for limiting births. In the more culturally conservative cities of Hyderabad and Shikarpur in the Sindh province, the operation of the new clinics led to no reduction in overall unmet need but led to increases in the demand for family planning. This study highlights the importance of taking into account the socio-cultural context of the study location.

Among the six community outreach/distribution studies, positive findings were found for all outcomes measured, including three studies that measured fertility related outcomes. The three studies that measured fertility outcomes were all of high quality and used longitudinal study designs – Matlab and Maternal and Child Health-FP Extension projects in Bangladesh (Rahman et al. 2001; Sinha 2005) and Navrongo project in Ghana (Debpuur et al. 2002) over long follow-up periods. This reflects the fact that it is often difficult to report on changes in fertility-related outcomes in the absence of datasets that cover a long period of time. In addition, the Matlab and Maternal and Child Health-FP Extention and Navrongo projects include a combination of demand- and supply-side activities, which may explain the positive FP and fertility outcomes.

These long follow-up periods also provided the time necessary to compare different intervention approaches on the outcomes of interest. For example, Debpuur and colleagues (2002) examined approaches to mobilizing Ghana's Ministry of Health outreach program and compared this with mobilizing traditional community-based organizations as well as mobilizing both sectors simultaneously. Their study had four arms: a comparison site with no intervention, a nurse outreach only site, a traditional community organization (zurugelu) site, and a combined zurugelu plus nurse outreach site. They found that contraceptive use remained the same when analyzing the effects of the approaches separately. However, when examining the combined zurugelu plus nurse outreach approach, they found that contraceptive use increased significantly and fertility decreased significantly.

Quality of care—Programs that seek to improve quality of services often focus on the various components of quality as defined by Bruce (1990) in her seminal article. These include choice of methods, information given to users, technical competence, interpersonal relations, follow-up or continuity mechanisms, and appropriate constellation of services. Quality is inconsistently defined across different studies, and between different stakeholders. This makes it difficult to draw larger conclusions about studies that seek to improve family planning service quality.

Eleven articles to improve quality of care met the inclusion criteria for this review. One article of lower quality focused on increased method options (Khan et al. 2004 - introducing emergency contraceptive pills into the method mix); another of lower quality focused on client provider interactions (Nawar et al. 2004). Nine reported on various quality improvement approaches (high quality: Bashour et al. 2008, Bolam et al. 1998, Xiaoming et al. 2000; medium quality: Khan et al. 2008, Kunene et al. 2004, Sherwood-Fabre et al. 2002, Sanogo et a. 2003; low quality: Varkey et al. 2004, Speizer et al. 2004).

Studies that sought to improve quality were not consistently successful; six studies (Sanogo et a. 2003; Xiaoming et al. 2000; Speizer et al. 2004; Bolam et al. 1998; Khan et al. 2008; Varkey et a. 2004) out of ten revealed a significant increase in contraceptive use. Five of the seven integrated service delivery studies focused on postpartum contraceptive use (Bashour et al. 2008; Bolam et al. 1998; Khan et al. 2008; Kunene et al. 2004; Varkey et al. 2004), and of these, three reported significant results (Bolam et al. 1998; Khan et al. 2008; Varkey et a. 2004). The one integrated service delivery study that provided family planning to post-abortion clients in Russia (Sherwood-Fabre et al. 2002) found a reduction in abortion rates but no corresponding increase in contraceptive use. The authors explained that this situation may be a result of the fact that the intervention was unevenly implemented; the survey indicated that there were many missed opportunities to reinforce and personalize the family planning information that women received. In addition, it was found that there was an increase in the proportion of unintended pregnancies that resulted in live births during the study period; this affected the abortion rates (Sherwood-Fabre et al. 2002). Finally, one study investigated the impact of integrating an HIV prevention intervention into a well-established family planning network of services in China. The authors found that at 12-months follow-up, significantly more respondents from the experimental sites were using condoms as their main contraceptive method ($p<.05$) (Xiaoming et al. 2000) as compared to in the comparison sites.

The feasibility of male involvement in antenatal care (ANC) counseling sessions and the effectiveness of their involvement in postpartum contraceptive use was evaluated by two studies – one of medium quality from South Africa (Kunene et al. 2004) and one of lower quality from India (Varkey et al. 2004). In KwaZulu-Natal, South Africa, the study team matched facilities by size and rural/urban status and then randomly assigned six clinics as the intervention sites and six as the comparison sites. Implementing joint couple counseling was challenging for this program because the population being served was mostly unmarried. One-third of the couples invited attended the joint counseling sessions, and communication among them was reported to improve with male partners more likely to provide support in the event of pregnancy complications; however, postpartum family planning use and overall risk behavior did not change (Kunene 2004). The other study that examined male involvement had positive effects; however, did not randomly assign sites or control for differences between the groups (Varkey et al. 2004).

Cost—The issue of cost of family planning methods is often discussed as both a supply-side and demand-side issue. From the supply-side perspective, the direct cost of a family planning method is seen as a barrier to use. From the demand-side perspective, many family planning programmers and advocates have pointed out that there are many indirect costs associated with access to family planning, such as large, unofficial payments to staff and long waiting times to see service providers; each of these affects demand (Ensor and Cooper 2004).

Only one article evaluating a cost-based intervention was found that met our inclusion criteria. Although Meuwissen and colleagues (2006) used a quasi-experimental design to evaluate the impact of a competitive voucher pilot program on adolescents' use of sexual and reproductive health care (SRHC) services and contraceptives in urban Managua, Nicaragua, the authors used a post-test only design so the study design is considered lower quality. Self-administered questionnaires were distributed randomly among female adolescents 3 to 15 months after the vouchers had been distributed in their area. The voucher receivers were considered the intervention group to be compared at a group level with the control group, the non voucher receivers. Voucher receivers demonstrated significantly higher use of SRHC services and knowledge of contraceptives and sexually transmitted infections compared with non-receivers. There was no change in overall contraceptive use

between the two groups – receivers and non-receivers. However, effects were modified by place of survey – school versus neighborhood. Focus group discussions and interviews with adolescents during the intervention suggest that the factors that contributed to the success of the voucher program were the removal of practical obstacles (e.g., financial, the need to make an appointment, the lack of information on clinic location, and opening times) plus the guarantee of confidential access to a service provider of their choice. These results reveal the interplay between demand-side and supply-side barriers.

DISCUSSION

The available evidence on the effectiveness of family planning interventions in developing countries over the last fourteen years reveals a positive picture with no one size fits all approach. Both demand- and supply-side interventions led to improvements in knowledge, attitudes, discussion of family planning and sexuality, and intentions to use family planning. Results were less consistent in terms of effects on fertility and family planning outcomes.

The examination of mass media interventions illustrated positive results on contraceptive use and/or unmet need, while the wealth of interpersonal communication interventions less consistently demonstrated these effects. A notable example is the quasi-experimental study by Rogers and colleagues (1999) that showed a significant effect of exposure to an entertainment-education radio soap opera on contraceptive use by married women, which led to the scale-up of the program nationwide throughout Tanzania.

Only two (Askew et al. 2004; Cabezon et al. 2005) out of the four studies from the interpersonal communications category that measured fertility related outcomes found significant reductions in unintended pregnancies. For example, Askew and colleagues (2004) found differential effects by exposure arm such that those with the greatest exposure had the least fertility and family planning impacts. Askew and colleagues acknowledged that their multi-sectoral approach reached adolescents with reproductive health information; however, they cautioned that the findings need to be interpreted with care in light of the fact that the community-based intervention was more intensively implemented in varying sites. They also pointed to the fact that the teachers who implemented the school-based intervention were more comfortable with providing the abstinence messages than the safer sex messages to their students. These challenges are representative of similar challenges experienced by all programs working with adolescents on issues of sexual and reproductive health.

Contrary to Askew's findings, Cabezon and colleagues (2005) revealed a protective effect in preventing unintended pregnancies from a school-based intervention taught by teachers. The authors reported that the success of their teacher-led program was due to the accurate and comprehensive information provided and the focus on developing assertiveness and negotiation skills. The authors also acknowledged that the implementation of the program over an academic year was ideal and found the teachers to be effective implementers of the program. This example along with the example provided by Askew highlights the importance of the program facilitators' comfort with the subject matter and their commitment to the program.

Once demand for contraceptive use is achieved, it is imperative that the supply is readily available and accessible. Our review found that supply-side interventions that addressed access to family planning led to positive effects on family planning use, whereas improved quality less consistently showed positive effects on family planning behaviors. Notably, few studies measured fertility-related outcomes such as reduced unintended pregnancies and abortions; however, the supply-side intervention studies that did measure fertility showed

the most consistent and positive findings, generally using the strongest study designs (Khan et al. 2008; Debpuur et al. 2002; Rahman et al. 2001; Sherwood-Fabre et al. 2002).

It is also notable that even in some places where the findings were positive; results were not necessarily consistent across different locations or target groups. For example, the voucher program in urban Nicaragua found different effects among school-going youth and youth who participated from community-based sites (Meuwissen et al. 2006). Hennick and Clements (2005) reported differential changes in unmet need as a result of introducing new family planning clinics in two culturally distinct provinces of Pakistan. Debpuur and colleagues (2002) found a significant increase in contraceptive use and decrease in fertility when they examined the combined approach of two different community-based outreach interventions in contrast to when they analyzed the effects of the interventions separately.

Although the findings presented in this review categorized studies as demand-side and supply-side interventions, a small number of studies explicitly included a multi-component approach, such as undertaking mass media and interpersonal communication (Kim et al. 2001; Magnani et al. 2000a; Sood et al. 2004), mass media and social marketing (Meekers et al. 1998; Van Rossem et al. 1999a; Van Rossem et al. 1999b), fractional social franchising with strong media promotional presence (Agha et al. 2007; Babalola et al. 2001), and fractional social franchising and community-based outreach (Hennick and Clements 2005). These studies generally found positive family planning outcomes and, when measured, positive fertility outcomes as well. The importance of multi-component programs has been demonstrated in other reviews that have examined rigorous evaluations of adolescent reproductive health programs (Speizer et al. 2003; Ross et al. 2006).

It is also worth noting where the evidence was weak or non-existent in this review. While male involvement programs are becoming increasingly important in the international family planning arena, there is limited evidence on the effectiveness of this approach on population-based fertility and family planning outcomes. A small number of operations research studies have been undertaken and reveal that approaches to increase male involvement in prenatal and postpartum care lead to increased attendance at these critical events; these studies with medium to low quality of quasi-experimental design, however, have shown mixed results in regards to behavioral outcomes such as contraceptive use and unintended pregnancies (Kunene et al. 2004; Varkey et al. 2004).

In addition to the limited evidence provided on evaluations of male involvement programs, only one study of lower quality (Meuwissen et al. 2006) was found that examined the effect of a voucher program on increased contraceptive use behaviors; this is an important gap because voucher programs are an increasingly popular approach in public health programming. Several developing countries, with international donor support, are considering or in the process of implementing a voucher program (examples include India, Tanzania, Uganda, Kenya and Bangladesh) (Arur et al. 2009). However, more research is needed to inform the design and expansion of voucher programs throughout the developing world. Important areas for further voucher studies include: impact evaluations, cost and cost-effectiveness studies, and the effect of using technology to simplify implementation and reduce overhead costs. Vouchers are a relatively untested approach in low-income countries. Although results from these early experiences are positive, there is a clear need for rigorous research that can conclusively establish that voucher programs can increase coverage and use of FP/RH and other health services among underserved target populations (Arur et al. 2009).

Limitations

There are a number of limitations to this type of systematic review. First, depending on the level of depth provided in each study, it is not always possible to extrapolate the features of each intervention and the corresponding evidence as to which components were the most effective. Second, most studies of multi-component programs examined overall program effects and did not separate out the effects of the different components. Third, the majority of studies considered were written in English although the authors also reviewed studies in French. Fourth, as expected for the outcomes of interest, most of the studies were based on self-reported sexual and health-seeking behaviors; previous studies have demonstrated potential biases of self-reported behaviors (Curtis and Sutherland 2004). Fifth, service utilization statistics were included but only as a complement to individual level data; this limited the inclusion of most of the operations research studies. Sixth, there is likely to be a publication bias with this type of review whereby studies with positive findings are more likely to be published (and found) whereas studies with non-significant or negative findings are unavailable. Finally, given the diversity in study methods and implementation strategies, it was not possible to do a formal meta-analysis that joins the samples and compares the odds ratios. Therefore, a limitation of this study is that while all studies included met the experimental or quasi-experimental (or another form of attribution) criteria, there was still variability across the rigor of the studies. We have categorized the identified studies into three quality categories: low, medium, and high to help clarify these types of distinctions across the multiple approaches. Where appropriate, we have identified which findings come from those studies with a higher study quality (e.g., are from a randomized cluster design and/or use longitudinal data with a comparison group to determine attribution).

Conclusions

In spite of limited funding for family planning programs during the period 1995 to 2008, this systematic review reveals that both demand- and supply-side interventions that have been rigorously evaluated have been found to be generally successful in increasing knowledge, attitudes, beliefs, and discussions around family planning as well as increasing contraceptive use. These impacts are often a result of programs that have taken into account the importance of various approaches to reaching women and couples with family planning products and services, providing quality information and service delivery, addressing cultural norms and barriers to contraceptive use, and seeking community support.

That said, a number of gaps and directions for future research have also been identified. In particular, there is a need to undertake evaluations of broader development approaches and supply-side interventions measuring population-level outcomes (beyond operations research) and their long-term impacts on family planning and fertility. Likewise, there is a need for more research around the impact of male involvement, integrated services, public-private partnerships, and voucher programs, especially in light of the recent push and funding for these approaches. There is also a need for information on the effectiveness and cost-effectiveness of alternative implementation approaches for both demand and supply-side interventions. For example, there are gaps in our understanding of the impact of a peer-led versus instructor or facilitator led program as well as gaps in the understanding of intervention costs and the comparison of costs for alternative implementation approaches.

Most evaluations are of small-scale interventions and implemented over relatively brief periods of time (often a pilot test). There is little evidence on the long-term behavioral effects of the interventions that would provide us the evidence required to make decisions about scale-up or replication. The strongest evidence to support reaching long-term fertility measures comes from long-standing longitudinal studies, such as Maternal and Child Health-FP Extension projects in Bangladesh (Rahman et al. 2001; Sinha 2005) and the

Navrongo project in Ghana (Debpuur et al. 2002). This reflects the need for long-term follow-up in measuring and observing such changes in fertility-related outcomes. A number of Demographic Surveillance Systems coordinated through the INDEPTH network (http://www.indepth-ishare.org/) are now currently available and could possibly serve as data for these types of long-term evaluations of existing models in varying sites.

Furthermore, lacking in most studies is an assessment of the differential impact of interventions across target audiences. For example, it is important to consider the impacts of programs on the populations most in need of services, such as high risk subgroups, migrants, and the urban poor, to name a few. The examination of differential impacts by subgroups was rarely examined within the studies found. More specific information on the actual beneficiaries of interventions is still needed by policy makers wishing to target scarce resources to those most in need. The study by Hennick and colleagues (2005) highlights the importance of not only understanding the cultural backgrounds of the various populations that are being studied, which helps in explaining the different results in unmet need and where these two distinct populations are in terms of acceptance and intentions to use family planning methods, but also the importance of looking at the socio-demographic characteristics of beneficiaries. They found that women who live outside of the catchment areas are often married with four or more children and are of low socioeconomic status. They also found that young (aged 16-19), poor women who are separated or unmarried were seeking services from outside the catchment areas. These findings reveal that women who are poor were willing to travel some distance to obtain services for which they pay fees.

The findings of this review reveal that all of the intervention approaches have some benefit at least on short-term outcomes. The main program approaches that led to increases in contraceptive use included development approaches and supply-side interventions. Whether the other approaches did not have an effect or did not measure one is a different issue. Notably, only a small number of studies had an impact on fertility outcomes; most of these were high quality studies of supply-side approaches working in supportive, long-term settings using multi-component, integrated programs. As interventions are designed, it is imperative that planning goes into monitoring and evaluating the activities, so that programs can be refined and lessons learned can be shared widely. Particular attention needs to be paid to undertaking rigorous impact evaluations that can attribute program activities to changes in outcomes of interest. Randomized controlled trials will not be feasible for most FP program activities; thus evaluators need to identify alternative study designs (quasi-experimental; longitudinal) that are appropriate for the varying settings where programs are being implemented (Victora, Habicht, and Bryce, 2004). This attention to rigor of family planning evaluations will increase accountability, improve program decision making, and in the end, improve maternal and infant health outcomes.

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References

Agha S. A Quasi-Experimental Study to Assess the Impact of Four Adolescent Sexual Health Interventions in Sub-Saharan Africa. International Family Planning Perspectives. 2002; 28(2):67–118.

Agha S, Van Rossem R. Impact of a school-based peer sexual health intervention on normative beliefs, risk perceptions, and sexual behavior of Zambian adolescents. Journal of Adolescent Health. 2004; 34(5):441–452. [PubMed: 15093801]

Agha S, Karim AM, Balal A, Sosler S. The impact of a reproductive health franchise on client satisfaction in rural Nepal. Health Policy and Planning. 2007; 22:320–328. [PubMed: 17644555]

Allen R. The role of family planning in poverty reduction. Obstetrics and Gynecology-New York. 2007; 110(5):999.

Armstrong, R.; Waters, E.; Doyle, J., editors. Chapter 21: Reviews in health promotion and public health. Higgins, JPT.; Green, S., editors. Cochrane Handbook for Systematic Reviews of Interventions. Version 5.0.1. The Cochrane Collaboration; 2008. [updated September 2008], Available from www.cochrane-handbook.org

Arur, A.; Gitonga, N.; O'Hanlon, B.; Kundu, F.; Senkaali, M.; Ssemujju, R. Insights from Innovations: Lessons from Designing and Implementing Family Planning/Reproductive Health Voucher Programs in Kenya and Uganda. Bethesda, MD: Private Sector Partnerships-One project, Abt Associates Inc; Nov. 2009

Askew, I.; Chege, J.; Njue, C.; Radeny, S. A Multi-sectoral Approach to Providing Reproductive Health Information and Services to Young People in Western Kenya: Kenya Adolescent Reproductive Health Project. Washington, DC: FRONTIER, Population Council; 2004 Jun.

Babalola S, V C, Brown J, Traore R. The impact of a regional family planning service promotion initiative in sub-Saharan Africa: evidence from Cameroon. International Family Planning Perspectives. 2001; 27(4):186–193.

Bashour HN, Kharouf MH, Abdulsalam AA, El Asmar K, Tabbaa MA, Cheikha SA. Effect of postnatal home visits on maternal/infant outcomes in Syria: a randomized controlled trial. Public Health Nurs. 2008; 25(2):115–125. [PubMed: 18294180]

Bauman KE, Viadro CI, Tsui AO. Use of true experimental designs for family planning program evaluation: Merits, problems and solutions. International Family Planning Perspectives. 1994; 20(3):108–113.

Bauman KE. The effectiveness of family planning programs evaluated with true experimental designs. American Journal of Public Health. 1997; 87(4):666–669. [PubMed: 9146451]

Bertrand, J.; Magnani, R.; Rutenberg, N. Evaluating family planning programs: with adaptations for reproductive health. Chapel Hill, NC: The EVALUATION Project; 1996.

Bhuiya, I.; Rob, U.; Chowdhury, JH.; Rahman, L.; Haque, N.; Adamchak, S., et al. Improving adolescent reproductive health in Bangladesh. Washington, DC: FRONTIER, Population Council; 2004.

Bolam A, Manandhar DS, Shrestha P, Ellis M, Costello AMdL. The effects of postnatal health education for mothers on infant care and family planning practices in Nepal: a randomised controlled trial. BMJ. 1998; 316(7134):805–811. [PubMed: 9549449]

Bongaarts J, Mauldin WP, Phillips J. The Demographic Impact of Family Planning Programs. Studies in Family Planning. 1990; 21(6):299–310. [PubMed: 2075620]

Bongaarts J. Fertility transitions in the developing world: progress or stagnation. Studies in Family Planning. 2008; 39(2):106–110.

Bongaarts J, Sinding S. A response to critics of family planning programs. International perspectives on sexual and reproductive health. 2009; 35(1):39. [PubMed: 19465347]

Brieger WR, Delano GE, Lane CG, Oladepo O, Oyediran KA. West African youth initiative: outcome of a reproductive health education program. Journal of Adolescent Health. 2001; 29(6):436–446. [PubMed: 11728893]

Buvinic, M.; Médici, A.; Fernández, E.; Torres, AC. Gender Differentials in Health. In: Jamison, DT.; Breman, JG.; Measham, AR.; Alleyne, G.; Claeson, M.; Evans, DB.; Jha, P.; Mills, A.; Musgrove, P., editors. Disease Control Priorities in Developing Countries. 2. New York: Oxford University Press; 2006. p. 195-210.

Cabezón C, Vigil P, Rojas I, Leiva ME, Riquelme R, Aranda W, et al. Adolescent pregnancy prevention: an abstinence-centered randomized controlled intervention in a Chilean public high school. Journal of Adolescent Health. 2005; 36(1):64–69. [PubMed: 15661598]

Cartagena RG, Veugelers PJ, Kipp W, Magigav K, Lain LM. Effectiveness of an HIV prevention program for secondary school students in Mongolia. Journal of Adolescent Health. 2006; 39:925.e9–925.e16. [PubMed: 17116526]

Casterline JB, Sinding SW. Unmet Need for Family Planning in Developing Countries and Implications for Population Policy. Population and Development Review. 2000; 26(4):691–723.

Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: the unfinished agenda. Lancet. 2006; 368(9549):1810–1827. [PubMed: 17113431]

Cuca, R.; Pierce, CS. Experiments in family planning: Lessons from the developing world. Washington, DC: The World Bank; 1977.

Curtis SL, Sutherland EG. Measuring sexual behaviour in the era of HIV/AIDS: The experience of Demographic and Health Surveys and similar enquiries. Sexually Transmitted Infections. 2004; 80(Suppl II):ii22–ii27. [PubMed: 15572636]

Debpuur C, Phillips JF, Jackson EF, Nazzar A, Ngom P, Binka FN. The impact of the Navrongo Project on contraceptive knowledge and use, reproductive preferences, and fertility. Stud Fam Plann. 2002; 33(2):141–164. [PubMed: 12132635]

Diop, N.; Bathidja, H.; Touré, ID.; Dieng, T.; Mané, B.; RamaRao, S., et al. Improving the Reproductive Health of Adolescents in Senegal. Washington, DC: FRONTIER, Population Council; 2004 Dec.

Donaldson, PJ. Nature against Us: The United States and the World Population Crisis, 1965–1980. Chapel Hill, NC: University of North Carolina Press; 1990.

Donaldson PJ, Tsui AO. The International Family Planning Movement. Population Bulletin. 1990; 45(3)

Douthwaite M, Ward P. Increasing contraceptive use in rural Pakistan: an evaluation of the Lady Health Worker Programme. Health Policy Plan. 2005; 20(2):117–123. [PubMed: 15746220]

Eggleston E, Jackson J, Rountree W, Pan Z. Evaluation of a sexuality education program for young adolescents in Jamaica. Rev Panam Salud Publica. 2000; 7(2):102–112. [PubMed: 10748661]

Ensor T, Cooper S. Overcoming barriers to health service access: influencing the demand side. Health Policy and Planning. 2004; 19(2):69–79. [PubMed: 14982885]

Erulkar AS, Ettyang L, Onoka C, Nyagah C, Muyonga A. Behavior change evaluation of a culturally consistent reproductive health program for young Kenyans. International Family Planning Perspectives. 2004; 30(2):58–67. [PubMed: 15210404]

FOCUS on Young Adults and CARE International-Cambodia. Impact of an Adolescent Reproductive Health Education Intervention Undertaken in Garment Factories in Phnom Penh, Cambodia. Washington, DC: 2000.

Glasier A, Gülmezoglu A, Schmid G, Moreno C, Van Look P. Sexual and reproductive health: a matter of life and death. The Lancet. 2006; 368(9547):1595–1607.

Global HIV Prevention Working Group. Behavior Change and HIV Prevention: [Re]Considerations for the 21stCentury. 2008. www.GlobalHIVPrevention.org

Gupta G, Parkhurst J, Ogden J, Aggleton P, Mahal A. Structural Approaches to HIV Prevention. The Lancet. 2008a; 372:764–775.

Hennink M, Clements S. The impact of franchised family planning clinics in poor urban areas of Pakistan. Stud Fam Plann. 2005; 36(1):33–44. [PubMed: 15828523]

Hermalin A. Family planning impact evaluation: the evolution of techniques. Población y Salud en Mesoamérica. 2003; 1(1):1–37.

Islam, M. Vouchers for health: a focus on reproductive health and family planning services. Bethesda, Maryland: Abt Associates, Private Sector Partnerships One [PSP-One]; 2006.

Khan, ME.; Hossain, S.; Rahman, M. Introduction of Emergency Contraception in Bangladesh: Using Operations Research for Policy Decisions. Washington, DC: FRONTIER, Population Council; 2004.

Khan, ME.; Phillip Sebastian, M.; Sharma, U.; Idnani, R.; Kumari, K.; Maheshwari, B., et al. Promoting Healthy Timing and Spacing of Births in India through a Community-based Approach. Washington, DC: FRONTIER, Population Council; 2008.

Kim YM, Kols A, Nyakauru R, Marangwanda C, Chibatamoto P. Promoting sexual responsibility among young people in Zimbabwe. International Family Planning Perspectives. 2001 Mar; 27(1): 11–19.

Kincaid DL. Mass media, ideation, and behavior: a longitudinal analysis of contraceptive change in the Philippines. Communication Research. 2000a; 27(6):723–763.

Kincaid DL. Social networks, ideation, and contraceptive behavior in Bangladesh: a longitudinal analysis. Social Science & Medicine. 2000b; 50(2):215–231. [PubMed: 10619691]

Kunene, B.; Beksinska, M.; Zondi, S.; Mthembu, N.; Mullick, S.; Ottolenghi, E., et al. Involving Men in Maternity Care, South Africa. Washington, DC: FRONTIER, Population Council; 2004.

Lapham RJ, Mauldin WP. Contraceptive Prevalence: The Influence of Organized Family Planning Programs. Studies in Family Planning. 1985; 16(3):117–137. [PubMed: 4012818]

LaVake, SD. Applying Social Franchising Techniques to Youth Reproductive Health/HIV Services. Arlington, VA: Family Health International, YouthNet Program; 2003.

Levitt-Dayal, M.; Motihar, R. Adolescent Girls in India Choose a Better Future: An Impact Assessment. CEDPA; India: 2001.

Lloyd, C.; Ross, J. Research Division Working Papers No 7. NY: The Population Council; 1989. Methods for measuring the fertility impact of family planning programs: The experience of the last decade.

Lou CH, Wang B, Shen Y, Gao ES. Effects of a community-based sex education and reproductive health service program on contraceptive use of unmarried youths in Shanghai. Journal of Adolescent Health. 2004; 34(5):433–440. [PubMed: 15093800]

Magnani, R.; Robinson, A.; Seiber, E. Evaluation of 'Arte y Parte': An Adolescent Reproductive Health Communications Project Implemented in Asunción, San Lorenzo and Fernando de la Mora, Paraguay. Washington, DC: FOCUS on Young Adults Program; 2000a.

Magnani, R.; Gaffikin, L.; Espinoza, V.; Zielinski Gutierrez, E.; Rivas, MI.; Seiber, E., et al. Evaluation of Juventud EsSalud: An Adolescent Reproductive and Sexual Health Peer Education Program Implemented in Six Departments in Peru. Tulane University School of Public Health and Tropical Medicine/FOCUS on Young Adults Program; 2000b Jul.

Magnani R. Impact of an integrated adolescent reproductive health program in Brazil. Studies in Family Planning. 2001; 32(3):230–243. [PubMed: 11686184]

Martiniuk ALC, O'Connor KS, King WD. A cluster randomized trial of a sex education programme in Belize, Central America. Int J Epidemiol. 2003; 32(1):131–136. [PubMed: 12690024]

Mathur, MM.; A, M. Youth reproductive health in Nepal: Is participation the answer?. Washington, DC: International Center for Research on Women [ICRW]; 2004 Jan.

Mba C, Obi SN, Ozumba BC. The impact of health education on reproductive health knowledge among adolescents in a rural Nigerian community. Journal of Obstetrics and Gynaecology. 27(5): 513–517. [PubMed: 17701804]

Mbizvo MT, Kasule J, Gupta V, Rusakaniko S, Kinoti SN, Mpanju-Shumbushu W, et al. Effects of a randomized health education intervention on aspects of peproductive health knowledge and reported behaviour among adolescents in Zimbabwe. Social Science & Medicine. 1997; 44(5): 573–577. [PubMed: 9032825]

Meekers, D.; Stallworthy, G.; H, J. Working Paper No 3. Washington, DC: Population Services International [PSI], Research Division; 1997. Changing adolescents' beliefs about protective sexual behavior: the Botswana Tsa Banana program.

Meekers, D. Working Paper No 16. Washington, DC: Population Services International [PSI], Research Division; 1998. The Effectiveness of Targeted Social Marketing to Promote Adolescent Reproductive Health: The Case of Soweto, South Africa.

Meuwissen LE, Gorter AC, Knottnerus AJA. Impact of accessible sexual and reproductive health care on poor and underserved adolescents in Managua, Nicaragua: a quasi-experimental intervention study. Journal of Adolescent Health. 2006; 38(1):56.e1–56.e9. [PubMed: 16387251]

Moreland, S.; Talbird, S. Achieving the Millennium Development Goals: The contribution of fulfilling the unmet need for family planning. Washington, DC: Futures Group/POLICY Project; May. 2006

Murray NT, Luengo X, Molina R, Zabin L. An evaluation of an integrated adolescent development program for urban teenagers in Santiago, Chile. 2000

Nag, M. No 1041, Policy Research Working Paper Series. Washington, DC: The World Bank; 1992. Family planning success stories in Bangladesh and India.

Nawar, L.; Kharboush, I.; Ibrahim, MA.; Makhlouf, H.; Adamchak, S. Impact of Improved Client-Provider Interaction on Women's Achievement of Fertility Goals in Egypt. Washington, DC: FRONTIER, Population Council; 2004.

Özcebe H, Akin L. Effects of peer education on reproductive health knowledge for adolescents living in rural areas of Turkey. Journal of Adolescent Health. 2003; 33(4):217–218. [PubMed: 14519561]

Phillips JF, Hossain MB, Arends-Kuenning M. The long-term demographic role of community-based family planning in rural Bangladesh. Stud Fam Plann. 1996; 27(4):204–219. [PubMed: 8875733]

Population Reference Bureau [PRB]. Family Planning Worldwide 2008 Data Sheet. Washington, DC: PRB; 2008.

Potts M, Fotso J. Population growth and the Millennium Development Goals. The Lancet. 2007; 369(9559):354–355.

Rahman M, DaVanzo J, Razzaque A. Do better family planning services reduce abortion in Bangladesh? Lancet. 2001; 358(9287):1051–1056. [PubMed: 11589936]

Richey, C.; Salem, RM. Elements of Success in Family Planning Programming. Baltimore, MD: INFO Project, Johns Hopkins Bloomberg School of Public Health; Sep. 2008

Rogers EM, Vaughan PW, Swalehe RMA, Rao N, Svenkerud P, Sood S. Effects of an entertainment-education radio soap opera on family planning behavior in Tanzania. Studies in Family Planning. 1999; 30(3):193–211. [PubMed: 10546311]

Ross DA, Changalucha J, Obasi AI, Todd J, Plummer ML, Cleophas-Mazige B, et al. Biological and behavioural impact of an adolescent sexual health intervention in Tanzania: a community-randomized trial. AIDS. 2007; 21(14):1943–1955. [PubMed: 17721102]

Rusakaniko S, Mbizvo MT, Kasule J, Gupta V, Kinoti SN, Mpanju-Shumbushu W, et al. Trends in reproductive health knowledge following a health education intervention among adolescents in Zimbabwe. Cent Afr J Med. 1997; 43(1):1–6. [PubMed: 9185371]

Salem, RM.; Bernstein, J.; Sullivan, TM.; Lande, R. Communication for Better Health. Baltimore, MD: INFO Project, Johns Hopkins Bloomberg School of Public Health; Jan. 2008

Samara, R.; Buckner, B.; Tsui, AO. Understanding how family planning programs work: Findings from five years of evaluation research. Chapel Hill, NC: The EVALUATION Project; 1996.

Sanogo D, RamaRao S, Jones H, N'diaye P, M'bou B, Diop CB. Improving quality of care and use of contraceptives in Senegal. Rev Afr Santé Reprod. 2003; 7(2):57–73.

Shelton J, et al. Putting unmet need to the test: community-based distribution of family planning in Pakistan. International Family Planning Perspectives. 1999; 25(4):191–195.

Sherwood-Fabre L, Goldberg H, Bodrova V. The impact of an integrated family planning program in Russia. Eval Rev. 2002; 26(2):190–212. [PubMed: 11949538]

Shuey DA, Babishangire BB, Omiat S, Bagarukayo H. Increased sexual abstinence among in-school adolescents as a result of school health education in Soroti district, Uganda. Health Educ Res. 1999; 14(3):411–419. [PubMed: 10539231]

Signorini, Queiroz. The impact of Bolsa Familia program in the beneficiary fertility. 2009 draft.

Sinding, SW. Overview and Perspective. In: Robinson, Warren C.; Ross, John A., editors. The Global Family Planning Revolution: Three Decades of Population Policies and Programs. Washington, DC: The International Bank for Reconstruction and Development / The World Bank; 2007.

Sinha N. Fertility, child work, and schooling consequences of family planning programs: Evidence from an experiment in rural Bangladesh. Economic Development and Cultural Change. 2005; 54(1):97–128.

Sood S, Sengupta M, Mishra PR, Jacoby C. 'Come gather around together': an examination of radio listening groups in Fulbari, Nepal. Gazette. 2004; 66(1):63–86.

Speizer IS, Tambashe BO, Tegang SP. An evaluation of the 'Entre Nous Jeunes' peer-educator program for adolescents in Cameroon. Studies in Family Planning. 2001; 32(4):339–351. [PubMed: 11831052]

Speizer IS, Magnani RJ, Colvin CE. The effectiveness of adolescent reproductive health interventions in developing countries: a review of the evidence. Journal of Adolescent Health. 2003; 33(5):324–348. [PubMed: 14596955]

Speizer IS, Kouwonou K, Mullen S, Vignikin E. Evaluation of the ATBEF Youth Centre in Lome, Togo. African Journal of Reproductive Health. 2004; 8(3):38–54. [PubMed: 17348324]

Stanton B, Li X, et al. Increased protected sex and abstinence among Namibian youth following a HIV risk-reduction intervention: a randomized, longitudinal study. AIDS. 12(18):2473–80. [PubMed: 9875586]

Stecklov G, Winters P, Todd J, Regalia F. Unintended effects of poverty programmes on childbearing in less developed countries: experimental evidence from Latin America. Popul Stud (Camb). 2007; 61(2):125–140. [PubMed: 17558882]

Steele F, Amin S, Naved RT. Savings/credit group formation and change in contraception. Demography. 2001; 38(2):267–282. [PubMed: 11392912]

Tu X, Lou C, Gao E, Shah IH. Long-term effects of a community-based program on contraceptive use among sexually active unmarried youth in Shanghai, China. Journal of Adolescent Health. 2008; 42(3):249–258. [PubMed: 18295133]

United Nations. Manual IX: The Methodology of Measuring the Impact of Family Planning Programs on Fertility, Addendum. New York: UN; 1986.

United Nations. Manual IX: The Methodology of Measuring the Impact of Family Planning Programs on Fertility. New York: UN; 1979.

United Nations Population Fund. State of the world population 2005. New York: UN Population Fund; 2005.

Van Rossem, R.; Meekers, D. Working Paper No 19. Washington, DC: PSI, Research Division; 1999a. An Evaluation of the Effectiveness of Targeted Social Marketing to Promote Adolescent and Young Adult Reproductive Health in Cameroon.

Van Rossem, R.; Meekers, D. Working Paper No 23. Washington, DC: PSI, Research Division; 1999b. An Evaluation of the Effectiveness of Targeted Social Marketing to Promote Adolescent Reproductive Health in Guinea.

Varkey, C.; Mishra; Das; Ottolenghi; Huntington; Adamchak, et al. Involving Men in Maternity Care in India. Washington, DC: FRONTIER, Population Council; 2004.

Vernon, R.; Dura, M. Improving the Reproductive Health of Youth In Mexico. Washington, DC: FRONTIER, Population Council; 2004.

Victora CG, Habicht J-P, Bryce J. Evidence-based public health: moving beyond randomized trials. American Journal of Public Health. 2004; 94(3):400–05. [PubMed: 14998803]

Walker D, Gutierrez JP, Torres P, Bertozzi SM. HIV prevention in Mexican schools: prospective randomized evaluation of intervention. BMJ. 2006:1–6.

William, D.; Savedoff, WD.; Levine, R.; Birdsal, N. Report of the Evaluation Gap Working Group. Washington, DC: Center for Global Development; 2006. When Will We Ever Learn? Improving Lives through Impact Evaluation.

World Health Organization. Global and regional estimates of the incidence of unsafe abortion and associated mortality in 2000. Geneva: WHO; 2004.

Xiaoming S, Yong W, Choi K-H, Lurie P, Mandel J. Integrating HIV Prevention Education into Existing Family Planning Services: Results of a Controlled Trial of a Community-Level Intervention for Young Adults in Rural China. AIDS and Behavior. 2000; 4(1):103–110.

Table 1

Strength of Evidence of Included Family Planning Evaluation Studies by Type of Intervention and Strength of Evidence

	Strength of Evidence		
	Low	**Medium**	**High**
Demand-side interventions			
• **Mass media**	Sood et al. 2004	Rogers et al. 1999	
		Kincaid 2000a	
		Meekers et al. 1997	
		Meekers 1998	
		Van Rossem et al. 1999a	
		Van Rossem et al. 1999b	
		Kim et al. 2001	
		Magnani et al. 2000a	
• **Interpersonal communication**			
• **Peer**	Cartagena et al. 2006	Agha et al. 2004	
	Ozcebe et al. 2003	Magnani et al. 2000b	
		Brieger et al. 2001	
		Speizer et al. 2001	
		Askew et al. 2004	
		Diop et al. 2004	
		Vernon et al. 2004	
		Bhuiya et al. 2004	
		Mathur et al. 2004	
• **Instructor/facilitator**	Mba et al. 2007	Eggleston et al. 2000	Cabezon et al. 2005
	Shuey et al. 1999	Magnani 2001	Walker et al. 2006
	FOCUS/CARE International, 2000	Mbizvo et al. 1997	
		Murray et al. 2000	
		Martiniuk et al. 2003	
		Rusakaniko et al. 1997	
		Stanton et al. 1998	
• **Community-based**	Levitt-Dayal et al. 2001	Erulkar et al. 2004	Lou et al. 2004
		Tu et al. 2008	Ross et al. 2007
• **Development approaches**		Signorini et al. no date	Stecklov et al. 2007 *
			Steele et al. 2001
Supply-side interventions	Babalola et al. 2001	Agha et al. 2007	Rahman et al. 2001
• **Access**	Douthwaite et al. 2005	Hennink and Clements, 2005	Sinha 2005
	Kincaid 2000b	Phillips et al. 1996	Debpuur et al. 2002
• **Quality**	Khan et al. 2004	Khan et al. 2008	Bashour et al. 2008
	Nawar et al. 2004	Kunene et al. 2004	Bolam et al. 1998
	Varkey et al. 2004	Sherwood-Fabre et al. 2002	Xiaoming et al. 2000

	Strength of Evidence		
	Low	**Medium**	**High**
• **Cost**	Speizer et al. 2004 Meuwissen et al. 2006	Sanogo et al. 2003	

* Included as 3 separate studies

Table 2

Evaluation Studies of Family Planning Interventions on Knowledge, Attitudes and Behaviors

		Impact on Key Behaviors					
		No. of Programs Showing Significant Impact/Total Number of Programs Studied					
Type of Program	**Number of Studies**	**Increased service use**	**Improved knowledge and/ or attitudes**	**Increased relevant discussion around sexuality/FP**	**Increased intentions to use FP; decreased fertility preferences**	**Increased contraceptive use; Reduced unmet need**	**Fertility-related measures - Reduced unintended pregnancy; Reduced abortions**
All programs	**63**	**4/8**	**34/38**	**18/20**	**6/7**	**36/49**	**6/13**
Demand side interventions	***42***	***3/5***	***26/30***	***14/15***	***3/4***	***21/30***	***2/9***
Mass media/BCC	**9**	**1/1**	**8/9**	**7/7**	**1/2**	**7/8**	**0/1**
Mass media only	(2)	-	2/2	2/2	1/1	2/2	0/1
Mass media + social marketing	(4)	-	3/4	3/3	-	2/3	-
Mass media + interpersonal communication (IPC)	(3)	1/1	3/3	2/2	0/1	3/3	-
Interpersonal communications	**28**	**2/4**	**18/21**	**7/8**	**2/2**	**12/19**	**2/4**
Peer led	(11)	2/3	9/10	3/4	1/1	5/9	1/3
Instructor/facilitator led	(12)	0/1	8/10	3/3	1/1	3/5	1/1
Community based	(5)	-	1/1	1/1	-	4/5	-
Development approaches	**5**	-	-	-	-	**2/3**	**0/4**
Conditional cash transfer	(4)	-	-	-	-	1/2	0/4
Savings/credit group	(1)	-	-	-	-	1/1	-
Supply side interventions	***21***	***1/3***	***8/8***	***4/5***	***3/3***	***15/19***	***4/4***
Access	**9**	**0/1**	**4/4**	**2/2**	**2/2**	**7/7**	**3/3**
Fractional social franchising	(3)	0/1	2/2	1/1	-	3/3	-
Community outreach/distr	(6)	-	2/2	1/1	2/2	4/4	3/3
Quality of care	**11**	**0/1**	**3/3**	**2/3**	**1/1**	**7/11**	**1/1**
Method options	(1)	-	-	-	-	1/1	-
Provider/integrated servs	(10)	0/1	3/3	2/3	1/1	6/10	1/1
Cost	**1**	**1/1**	**1/1**	-	-	**1/1**	-

		Impact on Key Behaviors					
		No. of Programs Showing Significant Impact/Total Number of Programs Studied					
Type of Program	**Number of Studies**	**Increased service use**	**Improved knowledge and/ or attitudes**	**Increased relevant discussion around sexuality/FP**	**Increased intentions to use FP; decreased fertility preferences**	**Increased contraceptive use; Reduced unmet need**	**Fertility-related measures - Reduced unintended pregnancy; Reduced abortions**
Vouchers	(1)	1/1	1/1	-	-	1/1	-

Table 3

Regional Distribution of Studies

	Africa	Asia	Americas	Eurasia	Middle East	INTERVENTION-TYPE TOTALS
Demand	19	9	13	1	1	43*
Supply	6	12**	1	1	1	21
REGIONAL TOTALS	25	21	14	2	2	

* The total does not equal 63 because the Brieger 2001 article reports on data from Nigeria and Ghana.

** Of the 10 Asian studies, 5 are from Bangladesh - Matlab program.

A.1

Research on Effectiveness of Demand-side Interventions

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
Rogers et al. 1999 (mass media only)	• Tanzania • Five annual surveys of about 2,750 households in the comparison and the treatment areas • Plus, a sample of new family planning adopters in 79 health clinics	Radio soap opera program, *Twende na Wakati* (Let's be modern/let's control out lives), was broadcasted on seven mainland stations of Radio Tanzania. An eighth station broadcast alternative programming from 1993 to 1995, its listenership serving as a comparison area. The program was designed based on a values grid containing 57 statements, such as not favoring male children over female children and encouraging couples to use FP methods.	• RCS-C: 7 intervention areas and 1 comparison area • Regression models; ANOVA • Strength of evidence: medium	1993-1995	• Knowledge of FP: 0 • Attitudes toward FP (measured by self efficacy): + • Attitudes toward FP (measured by ideal number of children): 0 • Attitudes toward FP (measured by ideal age at marriage for women): + • Attitudes toward FP (measured by approval of FP): + • Discussed FP with spouse: + • Contraceptive use: + • Currently pregnant: 0
Kincaid 2000a (mass media only)	• Philippines • Intact panel of 1,253 married women ages 15-49	National Communication Campaign of 1995/1996 (NCC-95/96) used six method-specific TV spots developed for the first campaign and added four new ones, two to promote breast-feeding and injectables and two others to involve men in decisions about FP.	• PS: Longitudinal design with lagged variables and comparable measures at Time 1. • Conditional change regression analysis; structural equation modeling • Strength of evidence: medium	6 months	• Knowledge of modern contraceptive methods: + • Attitudes toward the practice of FP: + • Attitudes toward contraceptive methods: + • Discussion of FP with one's husband: + • Discussion of FP with other women: + • Advocacy of FP to others: + • Exposure to campaign: + • Intention and contraceptive use: +

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Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
Meekers et al. 1997 (mass media + social marketing)	• Lobatse, Botswana (treatment); Francistown, Botswana (comparison) • Males and females aged 13-18 • n=1002 at baseline; n=2396 follow-up	Youth friendly outlets for RH information and products that referred adolescents to Tsa Banana clinics; multi-media campaign; social marketing of condoms; peer sales outreach to community; and education sessions in school. Communications: radio, print media, and information targeted to parents, teachers, and community leaders.	• RCS-C: 1 intervention and 1 comparison site • Logistic regression • Strength of evidence: medium	16 months after baseline, 8 months after implementation of project	• Believe that condoms reduce AIDS and pregnancy risk: Males: 0 Females: + • Believe AIDS is not curable: Males: 0 Females: + • Believe sex leads to marriage: Males: 0 Females: + • Believe sex increases one's status: Males: - Females: 0 • Believe sex is an AIDS risk: 0 • Believe abstinence is protective: Males: 0 Females: + • Attitude toward female's initiating condom use: 0
Meekers 1998 (mass media + social marketing)	• Soweto, South Africa (treatment community); Umlazi, South Africa (control community) (both locations are urban) • Females only aged 17-20 • n=226 pretest; n=204 posttest	Participatory media development - live weekly talk shows; mass media campaign; peer education; and targeted condom distribution. 70 adolescents trained in participatory media development process, peer education, and condom distribution. 300 condom distribution outlets opened to support intervention. Communications: television, print media, radio (limited reach).	• RCS-C: 1 intervention and 1 comparison site • Logistic regression • Strength of evidence: medium	1 year after pretest	• Awareness about risks of becoming pregnant: + • Perceived susceptibility to sexual risk: 0 • Believe condom use is best way to protect against HIV/AIDS: + • Believe condom use is best way to protect against pregnancy: + • Believe other contraceptives are the best way to protect against pregnancy: + • Perception of barriers to pregnancy prevention: 0 • Discussed contraceptives/self-efficacy for pregnancy prevention: + • Discussed STD/HIV prevention: 0 • Sexual experience: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
					• Current use of condoms to prevent pregnancy: 0 • Condom use at last sex: + (but at p=.10)
Van Rossem et al. 1999a (mass media + social marketing)	• Edea, Cameroon (treatment community); Bafia, Cameroon (control community) • Males and females aged 12-22 • n=1606 pretest; n=1633 posttest	Peer education (28 adolescents trained as peer educators), youth clubs in schools, mass media campaign, behavior change communication, social marketing of condoms. Communications: brochures, posters, and community radio and live talk shows targeting youth with messages about RH and condom use.	• RCS-C: 1 intervention and 1 comparison site • Logistic regression • Strength of evidence: medium	15 months after pretest, 13 months of intervention	• Knowledge of preventive behavior: + • Knowledge of FP methods: + • Perceived risk for STI/ AIDS: Males: + Females: 0 • Perceived risk for unwanted pregnancy: 0 • Awareness of responsibility for use of protection: + • Discuss sexuality and contraceptive use: + • Ever visited health center for contraceptive information: 0 • Onset of sexual activity <15: Males: 0 Females: + • Use of modern method to prevent pregnancy: Males: + Females: 0 • Ever tried condoms: Males: 0 Females: + • Condom use at last sex: 0 • 2+ sexual partners in last 30 days: Males: + Females: 0
Van Rossem et al. 1999b (mass media + social marketing)	• Conakry and Kankan, Guinea • Males and females aged 12-19 • n=2016 pretest; n=2005 posttest	Peer education; media materials; intense, targeted marketing effort in context of broader social marketing activity; distributed free contraceptives to adolescents; developed logo “My Future First” to identify youth-friendly retail outlets. Small youth-friendly service component (certain clinics held special hours for youth);	• RCS-C: selected neighborhoods in each city were chosen for the intervention while others were chosen as comparison sites • Logistic regression	13 months after pretest, about 8 months of intervention period	• Awareness of risk for HIV: 0 • Awareness of risk for pregnancy: + • Knowledge of condoms as contraception: + (males only)

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
		recreational activities. Communications: brochures and posters. Also added theater, dance, and discussion groups to existing social marketing program.	• Strength of evidence: medium		• Knowledge of other forms of contraception: + (females only) • Visited a health center in past year: + (females only) • Discussed sex often: + (males only) • Sexually experienced: 0 • Onset of sexual activity by age 15 or earlier: + (males only) • 2+ sexual partners during past 4 weeks: + (marginally significant for both at .08) • Usually uses condoms: + (males only) • Used condom during last sexual encounter: +
Kim et al. 2001 (mass media + IPC)	• Zimbabwe: Mutare (urban), Maphisa, Tongogara, Nzvimbo, and Nemanwa (all towns at the center of rural districts) • Males and females aged 10-24, with half the sample between 15-19 • n=1426 at pretest n=1400 at follow-up	Youth multi-media campaign to education about RH issues. Trained providers in “youth friendly services,” encouraged parental involvement, and included peer educators. Communications: posters, leaflets, peer educators, radio, drama, campaign launch events, hot line, training programs for drama, seminars to solicit media and local leaders.	• RCS-C: 5 intervention and 2 control sites • Chi-square tests • Logistic regression • Strength of evidence: medium	Follow-up 1 year after pretest, 3 months after completion of intervention	• Knowledge of FP: + • Knowledge of RH: 0 • Sexual decision-making: 0 • Discussion with anyone about RH topics: + • Refused sex: + • Use of contraception: + • Have only one partner: + • Start using condoms: + • Use of RH services: +
Magnani et al. 2000a (mass media + IPC)	• Asuncion, San Lorenzo and Fernando de la Mora, Paraguay • Males and females from in-school and out-of-school sites, aged 15-19	Adolescent-specific mass media product development and placement and peer educators. Designed to (a) increase the media’s understanding and coverage of adolescent RH issues, (b) increase knowledge of SRH issues to promote responsible sexual behavior among adolescents, and (c)	• RCS (reflexive controls) • Chi-square tests; F-tests; Student’s t-tests; logistic regression • Strength of evidence: medium	30 months between pretest and follow-up	• Knowledge that condoms prevent STI: + • Believe both partners are responsible for protection: + • Believe that girls who use protection are responsible:+ • Ever had sex: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
	• n=947 pretest, n=1575 follow-up	improve communication and negotiation skills related to SRH issues among young adults. Peer educators received 80 hours of training.			• Condom use at first sex: +
Sood et al. 2004 (mass media + IPC)	• Nepal (rural): Fulbari VDC (intervention); Parbatipur VDC (control) • n=408	Radio Communication Project (RCP) combines mass media messages, distance education, and interpersonal communication and counseling (IPC/C) training programs featuring workshops, radio-based health worker training in FP and a national drama. First phase aired between 1995 and 1996; three more phases aired between 1996 and 2001. Fourth phase of project was on the air when Fulbari VDC Listening Groups were being formed. Participants get together to listen to the 15 minute program and then discuss the episode.	• PT-C: Three groups - Group 1: radio program + the listening groups (n=204); Group 2: radio program only (n=73); Group 3: no exposure (n=131) • Logistic regressions; service statistics were also collected from the sub-health posts. • Strength of evidence: low		• Knowledge of FP (spontaneous recall of 5 or more methods): + (Group 1 & 2) • Discussed FP with spouse: + (Group 1 only) • Discussed FP with others: + (Group 1 & 2) • Current use of any modern method: + (Group 1 only) • Approval of FP: 0 • Recommending method: 0 • Future use: 0
Agha et al. 2004 (IPC - peer education)	• Zambia (urban secondary, boarding schools) • n=416 respondents aged 14-23 (at baseline) were interviewed in all three survey rounds (86% follow-up rate)	Single session school-based peer sexual health intervention - included discussions, condom demonstration, drama skits, and leaflet.	• PS-C: 3 schools were randomly assigned to the intervention & 2 to the control condition (session on water purification). • Mixed effects logistic regression growth curve; adjusted odds ratios • Strength of evidence: medium	First follow-up: 1 week; Second follow-up: 6 months after intervention	• Normative beliefs about abstinence: + (sustained until 6 months) • Approval of condom use and intention to use: + (not sustained at 6 months) • Normative beliefs about condom use: + (only at 6 months follow-up) • Condom use: 0 • Multiple regular partners: + (only at 6 months follow-up)
Magnani et al. 2000b (IPC - peer education)	• Peru: 6 departments: Lima, Lambayeque, Ica, San Martin, Arequipa, and Tacna • n=6962 secondary school males and females	Third year secondary school students selected as peer leaders and trained by health professionals over a 2-month period. Each leader was responsible for making at least 25 youth contacts in 6-month period. Content of Peer Leader Workshops: sexual development, body consciousness, self-esteem,	• RCS-C: Pilot project • Chi-square tests; logistic regression • Strength of evidence: medium	18 month follow-up period	• Knowledge of correct day of ovulation: + • Knows that woman can get pregnant at first sex: + • Believe could convince partner to use a condom: 0 • Ever had sex: + (only measured among boys)

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
		assertiveness, anatomy and physiology, values, STIs/HIV, parenthood, relationships, adolescent pregnancy.			• Contraceptive use at last sex: + (among boys only)
Brieger et al. 2001 (IPC - peer education)	• 8 Nigerian communities • 2 Ghanaian communities • In and out of school males and females aged 12-24 • n=1714 at pretest; n=1801 at posttest	Worked with youth serving organizations to develop activities for youth. All sites developed peer education programs. Some sites worked in schools (secondary or post-secondary). Others worked with out-of-school youth.	• RCS-C: 10 intervention and 10 control sites • Logistic regression • Strength of evidence: medium	18 months	• Knowledge of AIDS/STI, pregnancy prevention, SRH: + (in school) • Contraceptive opinion: 0 • Contraceptive self-efficacy: + (in school-males) • Willingness to buy condoms: + (in school-males) • Willingness to buy foaming tablets: + (in school) • Used modern contraceptives: + (in school)
Speizer et al. 2001 (IPC - peer education)	• Cameroon: Nkongsamba and Mbalmayo • Males and females aged 10-25 • n=802 pretest; n=818 posttest	Peer education program to increase contraceptive prevalence and reduce prevalence of STIs and unwanted pregnancies. Activities: trained peer educators provide information to peers in communities and refer them through discussion groups, one-on-one meetings and development of health associations. Developed and distributed promotional materials (calendars, comic strips, posters).	• RCS-C: 1 intervention and 1 control site • Logistic regression • Strength of evidence: medium	17 months after pretest, 3 months after intervention completion	• Knowledge of contraceptives: + • Knowledge of female STI symptoms: + • Knowledge of male STI symptoms: Males: + Females:0 • Use of modern method: + • Condom use at last sex: +
Cartagena et al. 2006 (IPC – peer education)	• Mongolia • Males and females aged 150=-19 • n=647	A sexual health peer education program for secondary school students was launched in 2001. Peer educators (boys and girls) were chosen by local GTZ coordinators and teachers based on: openness, student interest, grades, expressiveness, communication skills, and friendliness. They were trained for 3 days in: reproductive health, AIDS and STI transmission, symptoms and prevention, safe sex, and	• PT-C: 16 schools – 8 intervention and 8 control • Multilevel regression • Strength of evidence: low	3 years	• Knowledge, attitudes, and self-efficacy:: + • Consistent condom use during last 3 months: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
		discussions and interactive communication skills.			
Askew et al. 2004 (IPC - peer education)	• Kenya (rural) • Total baseline n=3653 adolescents (87%) and n=1192 parents (93%); Total endline n=3774 adolescents (89%) and n=1143 parents (93%) (also included cost analysis)	Multi-sectoral approach: community-based included mobilization for engaging local civic and religious leaders and parents and reaching out of school youth with peer educators, training them in adolescent health and sexuality issues, and holding sessions during religious and community meetings - drama, theater, video shows and targeted public events; facility-based included training staff, creating designated spaces within the clinic for adolescents, and inviting out-of-school peer educators to hold group and individual meetings; school-based included training teachers, establishing extracurricular classes, recruiting, training, supervising school-based peer educators.	• RCS-C: cluster randomization of sites; 2 intervention sites: site A = community- + facility-based interventions; site B = community-, facility- + school-based interventions; and 1 control site = site C. • Two-sample, two-tailed test of differences • Strength of evidence: medium	42 months	• Received RH information: + • Knowledge of contraception: + • Knowledge of STIs: + • Awareness of preventive behaviors: + (site A - abstinence & condoms; site B males - abstinence) • Knowledge of reproductive physiology: 0 • Disapproval of male premarital sex: + (site A) • Disapproval of premarital childbearing: + (site A) • Approval of condom use: + • Sex: 0 • Delay of onset: + (site A boys & site B) • Secondary abstinence: + • Discuss RH issues with their parents: + (those who met with a peer educator) • Use of protection at last sex: + (sites A & C girls) - (site B for boys) • Pregnancy: + (site A & C)
Diop et al. 2004 (IPC - peer education)	• Senegal (urban): Louga and Saint-Louis (treatment); Diourbel (control) • Baseline adolescents=2893 and parents=1683; Endline adolescents=2738 and parents=1409 (also	Multi-sectoral approach: Community-based included sensitization of adults, peer educators using a life skills curriculum, IEC activities - festivals, sports events, theater – radio programming; facility-based included training staff, infrastructure modifications when possible, and information campaigns led by peer educators; school-based included training teachers, establishing	• RCS-C: 2 intervention sites: Louga = community- + facility-based interventions; Saint-Louis = community-, facility- + school-based interventions; and Diourbel = control site • Logistic regression	April 2000-July 2002	• Parents' approval of adolescents receiving RH services: + • Communication between parents and adolescents: + • Knowledge of risks of early sexuality, pregnancy, and abortion: + • Knowledge of contraceptive methods: Males + Females

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Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
	included cost analysis)	extracurricular classes, recruiting, training, supervising school-based peer educators. Focus on abstinence and values clarification.	• Strength of evidence: medium		+ (for Louga and only 15-19 Saint-Louis) • Attitudes regarding contraceptive use: 0 • Sexual debut: + (positive delays/increases in age for younger boys and older girls) • Use of services: + (excluding all girls in Louga and older boys in Saint-Louis)
Vernon et al. 2004 (IPC - peer education)	• Mexico (small cities) • n=2191 adolescents (10-19 years old) and 950 parents at baseline; n=1915 adolescents and 850 parents at endline.	A Young People Coordinator (YPC) for each experimental city was hired and trained. A YPC space was opened in each city; meeting space, IEC materials, video and film showings; school teachers, service providers, peer promoters, and other adult community volunteers were trained as multipliers. Schools and clinics in each city given a set of materials including a sex education training manual, 7 videos, 6 flipcharts, brochures, and pamphlets on adolescent SRH. Sport events, graffiti sessions, parades, rock concerts, etc. were organized to promote IEC materials and contraceptives.	• RCS-C: 2 experimental groups and 1 nonequivalent control of 4 cities each: 2-Int = community + facility-based interventions; 3-Int = community, facility + school-based interventions; control group = no activities. • Logistic or multiple regressions • Strength of evidence: medium	21 months	• Use of contraceptive method at last sexual intercourse: - • Knowledge of FP methods: 0 • Aware of EC: + (2-Int group) • Talked with partner about sexual relations: - (3-Int group only) • Felt trust to clarify doubts: - (2-Int group only) • Use of services: 0 • Pregnant: 0
Bhuiya et al. 2004 (IPC - peer education)	• Bangladesh (urban) • n=about 6000 adolescents (aged 13-19) and about 3000 parents were interviewed in total (from baseline & endline)	Strategy I (Site A) provided RH education to out-of-school adolescents linked with adolescent-friendly services at health facilities as well as community support activities. Strategy II (Site B) provided RH education to both in-school and out-of-school adolescents linked with adolescent-friendly services at health facilities and community support activities.	• RCS-C: Pabna (Site A), Dinajpur (Site B), and Rangpur (Site C). Sites A & B were intervention sites while Site C served as a control. • Bivariate and multivariate analyses • Strength of evidence: medium	Baseline conducted in Feb-April 2000 and endline April-June 2002	• Knowledge of HIV/AIDS: Males + (Site B) • Knowledge of three routes of transmission: Males + Females + (Site B) • Knowledge of contraceptives: Males + (Site B) Females + (Site A) • Knowledge of fertile period: Males + Females: (Site B) • Knowledge of potential health risks of early

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
					pregnancy: Males + (Site B & C) Females (Site C) • Attitudes towards RH education and services: Males 0 Females - (older girls in Site A) • Attitudes toward contraceptive use: Males + (Site B & older boys of Site A) Females + (Site A) • Condom use: 0 • RH service utilization: +
Mathur et al. 2004 (IPC - peer education)	• Nepal • Baseline: n=724 adolescents aged 14-21; Endline: n=979 adolescents aged 14-25	At the control sites, traditional RH research and interventions - adolescent-friendly services, peer education and counseling and teacher training - were employed. At intervention sites, youth and adult community members identified a broader set of 8 integrated interventions: adolescent-friendly services, peer education and counseling, IEC campaign, adult peer education, youth clubs, street theater, livelihood opportunities, teacher education.	• RCS-C: 2 intervention sites (one rural and one urban) and 2 control sites (one rural and one urban). Quantitative, qualitative, and participatory methods were employed. • Multivariate regressions; odds ratios • Strength of evidence: medium	12-24 months	• Correctly identified at least 2 modes of HIV transmission: + (urban & rural females) • Ever discussed sex with anyone: + (rural females) • Had premarital sex: + (urban unmarried males) • Contraceptive use: 0 • Ever visited an organization for FP advice: + (marginally significant at .06 for rural married females) • Knowledge of at least one serious problem during childbirth: + (rural males) • Experience of pregnancy: 0 • Currently in school: + (rural females) • Membership in group activities: + (rural females)
Ozcebe et al. 2003 (IPC - peer education)	• Turkey (rural) • Treatment: n=113 females and n=109 males aged 15-24; Control: n=108	Volunteers, who were married or unmarried women and men aged 15-24 years were designated as peer educators and trained on reproductive health issues.	• RCS-C: Peer education intervention was conducted in 2 villages, while another 2 villages		• Knowledge level for females: + • Knowledge level for males: +

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
	females and n=201 males aged 15-24		served as a control group. • One-way variance analysis • Strength of evidence: low		
Cabezon et al. 2005 (IPC - Instructor/ facilitator led)	• Santiago, Chile (peripheral community, San Bernardo) • N=1259 girls from an all-girls high school	TeenSTAR abstinence-centered sex education program consists of 14 units; each was developed in one or more 45-minute class, allows a full year course in a one class per week schedule. Each unit is interactive, comprised of group discussions, brainstorming, fertility awareness instruction, homework, videotapes, and skills building. Focuses on biological and physiological aspects of fertility - mentions contraceptive methods but stresses abstinence. No interventions were received by any of the cohorts during their 2nd, 3rd, or 4th years of high school.	• RCT: 3 cohorts: the 1996 cohort of 425 students (no intervention), the 1997 cohort (210 students received intervention; 213 did not), and 1998 cohort (328 received intervention; 83 did not). • Risk ratio; chi-square tests • Strength of evidence: high	4 years of observations	• Pregnancy rates: +
Eggleston et al. 2000 (IPC - Instructor/ facilitator led)	• Jamaica • n=945 female and male 7th grade students, age 11-14 from “new secondary” and “all age” schools	Specially developed family-life education curriculum. Content: Reproductive anatomy and physiology, benefits of sexual abstinence, negative consequences of sexual activity and pregnancy, transmission, symptoms and treatment of STI, FP, and peer pressure. Sessions once per week throughout the academic year (about 9 months). The sessions were coeducational and each lasted about 45 minutes.	• PS-C: 5 intervention school and 5 control schools (who received regular sex education program) • Chi-square tests; Student’s t-tests; logistic regression using generalized estimating equation methods • Strength of evidence: medium	9 months after baseline and 21 months after baseline (76% of baseline)	• Knowledge of pregnancy prevention and condom use: + (not sustained at follow-up 2) • Knowledge of when pregnancy occurs: - • Attitudes about sexual activity: + (not sustained at follow-up 2) • Attitudes about parenthood: + (not sustained at follow-up 2) • Sexual initiation: 0 • Use of contraception: 0
Magnani 2001 (IPC - Instructor/facilitator led)	• Salvador, Bahia, Brazil	Sexual reproductive health education program with the provision of adolescent-	• RCS-C: 6 intervention and 6 control sites	30 months after pretest	• Received SRH-related information from school

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
	• n=4777 male and female youth	appropriate RH services at linked public health facilities	• Logistic regression • Strength of evidence: medium		sources or health professional: + • SRH knowledge: 0 • Ever had sex: 0 • Condom use: 0 • Utilization of clinics: 0
Mbizvo et al. 1997 (IPC - Instructor/ facilitator led)	• Zimbabwe: selected urban and rural secondary schools (exact location not reported) • n=1689 males and females with a mean age of 14.5 at baseline; 1605 participants at 5-month follow-up	Health education program consisting of IEC materials (leaflets, pamphlets, posters) and lectures. Content: Male reproductive function, sexuality, HIV/AIDS, female reproductive function, anatomy, STIs, human sexuality, unwanted pregnancy, contraception, and career goals	• RCT: 5 intervention and 3 control schools; cross-sectional samples • Chi-square tests; Wilcoxon two-sample tests; trend analysis • Strength of evidence: medium	5 months after baseline	• Knowledge of menstruation: + • Knowledge of wet dreams: + • Knowledge of pregnancy: + • Knowledge of family planning: + • Ever had sex: 0
Murray et al. 2000 (IPC - Instructor/ facilitator led)	• Santiago, Chile (urban) • n=4238 male and female 7th-12th grade students	School and health facility education. Content: Healthy relationships, sexuality, STIs, gender, risk-taking behaviors. Information and referrals to clinic.	• PS-C: 2 intervention and 3 control sites • Life table techniques • Strength of evidence: medium	3 rounds of data collection: baseline, 8-month, and 20-month follow-up	• Knowledge on human reproduction & STIs (index): + • Knowledge about STIs: + • Knowledge on contraception: 0 • Attitudes (teen pregnancy, sexual relationships of youth): 0 • Sexual activity: 0 • Contraceptive use: Males: 0 Females: + • Method use at last sex: 0
Martiniuk et al. 2003 (IPC - Instructor/ facilitator led)	• Belize (urban) • n=399 adolescents between the ages of 13-19	Responsible Sexuality Education Program (RSP) based on Bandura's Social Learning Theory is a 3-hour scripted responsible sexuality education intervention which provides a framework for adolescents' decision-making in relationships and provides unbiased	• RCT: 8 classrooms were randomized to the intervention arm and 11 classrooms to the control arm • Regression analysis	No information	• Knowledge: + • Attitudes: 0 • Behavioral intent: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
		information about sex and sexuality.	• Strength of evidence: medium		
Mba et al. 2007 (IPC - Instructor/ facilitator led)	• Nigeria (rural) • n=360 students participated in both the pre- and post-tests; mean age was 14.3 years	Intervention consisted of a 3-hour workshop on STIs, HIV/ AIDS and FP.	• RCS-C: 1 intervention secondary school and one control secondary school • Chi-square tests • Strength of evidence: low	Same subjects interviewed 6 weeks after the workshop	• Knowledge about STIs, HIV/AIDS, and FP methods: + • Sexual activity: 0
Rusakaniko et al. 1997 (IPC - Instructor/facilitator led)	• Zimbabwe (rural and urban) • Baseline: n=1689 students, 5 month follow-up: n=1605; 9 month follow-up: n=1589	Intervention package included lectures, videos, and IEC materials in the form of leaflets and pamphlets which cover: male reproductive function, sexuality, STDs/AIDS; female reproductive function, anatomy and STDs; human sexuality and responsible sexual behavior; and unwanted/unplanned pregnancy and contraception.	• RCT: 8 secondary schools were randomized to receive a health education intervention and 3 (one urban and two rural) were chosen to serve as controls. • Chi-square tests • Strength of evidence: medium	5-months and 9-months after implementation	• Knowledge of reproductive biology: + • Knowledge of contraception: + • Knowledge of pregnancy risk: +
Shuey et al. 1999 (IPC - Instructor/ facilitator led)	• Soroti District, Uganda • n=400 males and females, average age 13-14	Activities: 1-day sensitivity training for local leaders and headmasters; supervision of school health program; meetings with parents, teachers, and community leaders, training for “senior women” and science teachers’ college in school health and AIDS curriculum.	• RCS-C: 10 students from each of 38 primary schools selected. • Chi-square tests; cross tabulation • Strength of evidence: low	2 years after pretest	• Knowledge of AIDS: 0 • Communication between peers & teachers about sex: + • Perceive peers are sexually active: 0 • Agree that abstinence is good: + • Sexual activity: + • Number of partners: 0
Stanton et al. 1998 (IPC - Instructor/ facilitator led)	• Omusati and Caprivi, Namibia • n=515 males and females age 15-18; 12 month follow-up	Adaptation of US-based “FOCUS on Kids” program, based on social cognitive theory; program called “My Future is My Choice.” 14 after-school sessions with groups of 15-20 students. Sessions were 2 hours a	• RCT: 10 schools with random assignment of individuals within school • Chi-square tests	2-month, 6-month, and 12 month follow-up (after baseline)	• Perceive could find condoms: Males: + (2&6 months) Females: + (12 mo) • Perceive could ask for condoms at clinic: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
	sample was 340 (66%)	week for 7 weeks. Content: emphasis on abstinence and safer sex practices. Facilitator training lasted 40 hours.	• Strength of evidence: medium		• Believe they can put condom on: Males: 0 Females: + (2, 6, & 12 mo.) • Intention to use condoms: Males 0 Females: + (2 mo.) • Delay of sexual initiation: Males 0 Females: + (12 mo.) • Condom use if sexually active: Males: + (2 mo.) Females: 0 • Discussed past sexual relationships and other HIV risk behaviors with partners: + (2 & 6 mo.) • Number of sex partners: 0 • Could refuse sex without a condom: 0
Walker et al. 2006 (IPC – Instructor/ facilitator led)	• Morelos, Mexico • n=10,954 students (at baseline), 9,371 (immediately after intervention), 7,308 (one year after); mean age 16.7	Schools were randomized to one of three arms: an HIV prevention course that promoted condom use, the same course with emergency contraception as back-up, or the existing sex education course. The curriculum was based on teaching life skills and followed the guidelines of the UN programme on HIV/AIDS for effective school based programmes.	• RCT: 15 schools randomly assigned to each of the intervention courses and 10 randomly assigned to control (existing course) • Logistic regressions • Strength of evidence: high	Baseline, four months, and 16 months after intervention began (which last 15 weeks)	• Knowledge on EC: + (condom promotion + EC group) (at 16 mo) • Attitudes about condom use: + (females at 16 mo) • Condom use at last sex: + (condom promotion + EC group but only at 4 mo, not at 16 mo) • Used EC: + (condom promotion + EC group but only for females at 16 mo)
FOCUS/ CARE International - Cambodia 2000 (IPC - Instructor/ facilitator led)	• Phnom Penh, Cambodia • 1072 mostly female (92%) factory workers with a mean age of 20 years	Reproductive health education provided to young garment factory workers using a Participatory Learning and Action (PLA) approach.	• PS-C • Chi-square tests • Strength of evidence: low	18 months after baseline	• Knowledge of STI/HIV/ AIDS: 0 • Knowledge of contraceptive method: + • Knowledge of the risks of pregnancy: + • Discussed condoms with friends: + • Worry about getting AIDS: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
					• Knowledge of modes of HIV/AIDS prevention: 0 • Knowledge of condom source: 0
Levitt-Dayal et al. 2001 (IPC - community)	• India: Peri-urban slums of New Delhi; rural Madhya Pradesh; and rural and urban slums of Gujarat • n=1693 unmarried and married women aged 15-26	Better Life Options (BLO) program that seeks to empower young women to make better choices for the future. Activities: income-generating activities, formal and non-formal education, FLE, vocational skills training, health education and services, public awareness creation and advocacy. Also works with parents, community leaders, and decision-makers to raise awareness about the need for girls' empowerment. Content: decision-making, mobility, self-esteem/ confidence/ empowerment, childbearing and spacing, contraceptive use and health seeking behavior.	• PT-C: 1 intervention and 1 control group • Risk-ratios generated from MV analyses • Strength of evidence: low	1-4 years after program participation	• Awareness of HIV: + • Age at marriage: + • Completion of secondary education: + • Employed and earning money: + • Contraceptive use: + • Utilization of ANC and PNC services: + • Utilization of hospital for delivery: + • Utilization of ORS for children's diarrhea: + • Number of children: + • Child mortality: + • Children vaccinated: +
Erulkar et al. 2004 (IPC - community)	• Nyeri Municipality, Kenya (treatment); Nyahururu Municipality, Kenya (control) • At baseline, unmarried young people aged 10-24: N=1544; at endline, young adults aged 10-26: N=1865 (only respondents aged 10-24 in this analysis)	Nyeri Youth Health Project, community based project that uses Kikuyu tradition and well-known and respected young parents as counselors who were trained for one month in the life skills curriculum "Life Planning Skills for Adolescents in Kenya." Used group discussions, role playing, drama, lectures, worked with adults, referred youth to trained service providers. Content: community, family and individual values, adolescent development, sexuality, gender roles, relationships, pregnancy, HIV/ STIs, harmful traditional practices, substance abuse, planning for the future, children's rights and advocacy.	• RCS-C: 1 intervention municipality and 1 control municipality • Logistic regression or Cox proportional hazard models • Strength of evidence: medium	36 months	• Sexual debut: Males: + (marginally significant .8) Females: 0 • Secondary abstinence: Males: 0 Females: + • Condom use: Males: + Females: 0 • Number of sex partners: Males: 0 Females: + • Communication with parents: Males: - Females: + • Communication with other adults: Males & Females: +

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
Lou et al. 2004 (IPC - community)	• Shanghai, China (suburban) • n=2227 unmarried young people (aged 15-24) were recruited at baseline (about 92% were successfully followed-up)	Three main activities: building awareness, disseminating educational materials, playing instructional videos, giving lectures, conducting small group activities; a youth health counseling center was set up and contraceptives were distributed free of charge; community activities	• PS-C: A nonrandomized community trial with one intervention group and one control group • Chi-square tests; logistic regression models; Generalized Estimating Equations (GEEs) • Strength of evidence: high	20 months after the intervention	• Used contraceptive at onset of sexual intercourse: + • Ever contraceptive use, regular contraceptive use, and condom use: + • Jointly decided on contraception: + (males only)
Tu et al. 2008 (IPC - community)	• Shanghai, China (suburban) • 2,227 unmarried youth aged 15-24 interviewed at baseline; 2,042 were interviewed immediately after the intervention (91.7% of baseline); 2,249 at long-term follow-up (28 mos. later) (32-34% of baseline and posttest samples)	Intervention was designed to increase knowledge and enhance access to services related to sexuality and reproduction among unmarried youth. Involved 3 activities: IEC - building awareness through dissemination of educational materials, instructional videos, lectures, and small group educational activities; provision of counseling - a youth health counseling center was set up; enhancing access to services specifically contraceptives through local FP units, youth counseling center, and educational activities	• RCS-C with a panel: A nonrandomized community trial with one intervention group and one control group • x^2; logistic regression • Strength of evidence: medium	First follow-up at 20 months; second follow-up 28 months after first follow-up (cross-sectional sample at second follow-up)	• Use of withdrawal method: + • Consistent contraceptive use: 0 • Contraceptive use ever, use of contraceptive at each intercourse combined with frequent use, condom use ever, and withdrawal use ever: 0
Ross et al. 2007 (IPC - community)	• Mwanza, Tanzania (rural) • Baseline cohort: n=9645 adolescents - all those aged 14 years and older in late 1998, who were in years 4-6 of primary school in 20 communities; Endline: n=7040 (73%)	*MEMA kwa Vijana* (Good things for young people) intervention - Four components: community activities; teacher-led, peer-assisted sexual health education in years 5-7 of primary school; training and supervision of the health workers to provide 'youth-friendly' sexual health services; and peer condom social marketing.	• RCT: Community randomized trial of 20 communities; panel sample • Biomarkers; two-way ANOVA; t-statistics; Logistic or Poisson regressions; random effects model • Strength of evidence: high	3 years	• Knowledge of pregnancy prevention: + • Attitudes to sex: + (males only) • More than one sexual partner: Males: + Females: 0 • Condom use: + • Condom use at last sex: Males: + (marginally at .06) Females: 0 • STI symptoms: 0 • HIV incidence: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
					• HSV2 seropositive: 0 • Protective effect of the intervention on syphilis, C. trachomatis, gonorrhea, vaginalis, and pregnancy: 0
Stecklov et al. 2007* (Development approaches - CCT) * Included as 3 separate studies	• Select poor communities in Mexico, Honduras, and Nicaragua • All women aged 12-47 in the baseline sample (1997 for PROGRESA and 2000 for PRAF and RPS), who would have been aged 14-49 in the follow-up (1999 PROGRESA and 2002 PRAF and RPS). • N=8,817 women for PROGRESA; n=6,456 for PRAF; n=2,409 for RPS	Households in the treatment group benefitted from the Conditional Cash Transfer programs and received transfers under the condition that their children enroll in and attend school and that family members obtain health care.	• RCT/PS-C: PROGRESA in Mexico, PRAF in Honduras, and RPS in Nicaragua. In each case, communities randomly assigned to treatment and control groups. For PROGRESA, 302 communities were randomly assigned to treatment and 186 to control. For PRAF, 40 eligible communities were assigned to treatment and 30 to control. For RSP, 21 treatment and 21 control communities. • Difference in difference models; probit models • Strength of evidence: high	2-year period under examination after each program was undertaken	• Fertility: Honduras - Nicaragua & Mexico 0 • Contraceptive use: Mexico: + Nicaragua 0
Signorini et al. unpublished (Development approaches - CCT)	• Brazil • In 2004, n = 24,338 (6.17% of the sample) households receiving Bolsa Familia benefits. In 2006, n = 87,800 (21.42% of the sample) households receiving Bolsa-Familia benefits.	The Bolsa Familia program began in 2003, uniting pre-existing social programs directed at poor families. In one component, families below the poverty line (which is R$50,00 per capita) would be provided a monthly minimum income of R $50.00 (US$21). Additional benefits given to each pregnant woman, infant or school-aged child. The program's conditionalities include children's school attendance and the fulfillment of basic health	• RCS-C: Using the Household Sample National Survey (PNAD) for the years 2004 and 2006 and estimate the first-differences for each year, to find the average treatment effect on treated (ATT). To find comparable groups of treatment and control, used	2 year comparison	• Fertility: 0

Reference	Location/Sample	Program Description	Design/Analytic Methods/Strength of Evidence	Period of Observation	Results: Change in Outcome
		care measures (immunization, going to the health clinic, prenatal care, and others). The most vulnerable families can receive up to R$172.00 monthly (about US$72). The transfer benefits vary by situation of family, household income per capita, children, pregnant women, and breastfeeding women.	Propensity Score Matching methods. • Regression model - first differences approach • Strength of evidence: medium		
Steele et al. 2001 (Development approaches - credit/ savings)	• Bangladesh (rural) • n=6,456 women in 1993; in 1995, n=5,695, of whom 4,333 were re-interviewed	SC-ASA credit groups: require an admission fee, mandatory weekly meetings are held, and members must save in a group fund from which they can withdraw only if they leave the group. SC savings groups: more autonomous than SC-ASA credit groups, set their own rules with regard to frequency of meetings, savings contributions by members, size of group, and how group savings are managed. 4 groups: (a) members of savings groups in old area; (b) poor women in the new area where Save the Children (SC) had not yet introduced a program, but who would be eligible for membership; (c) women in the same area who did not fulfill SC's eligibility criteria for group membership; and (d) the control group where no intervention was introduced.	• PS-C • Latent trait analysis; binary logit regression; multinomial logit regression; logistic regression; fixed-effects and random-effects models • Strength of evidence: high		• Contraceptive use: + (SC-ASA credit group only)

No significant difference 0; significant desirable difference +; significant undesirable difference - RCT=randomized cluster trial; PS-C=panel study with comparison group; PS=panel study; RCS-C=repeat cross-sectional study with comparison group; PT-C=posttest only with comparison group

A.2

Research on Effectiveness of Supply-side Interventions

Reference	Location/Sample	Program Description	Design/Analytic Methods	Period of Observation	Results: Change in Outcome
Agha et al. 2007 (Access - fractional social franchising)	• Nepal (rural): Rupandehi district (intervention); Nawalparsi district (comparison) • Providers=70 (at baseline) and 64 (at follow-up); Clients of 70% of interviewed providers' clinics were interviewed during a 2-day period; Married women 15-45 - 480 from intervention and 480 from comparison; and service delivery statistics	A pilot fractional franchise network of 64 nurses and paramedics was launched to improve quality of RH services under brand name *Sewa*. To join franchise, franchisees paid one-time registration fee and annual membership fee. They were given 7 days of training in FP service delivery training by EngenderHealth & JHPIEGO. Network was supported by marketing activities.	• RCS-C: 1 intervention and 1 control district • Random effects logit model • Strength of evidence: medium	Baseline surveys: April-May 2001; Follow-up surveys: December 2002-January 2003	• Overall client satisfaction: + • Returning clients: + • Current use of FP: + (marginally significant net effect at p=.067) • Use of ANC during last pregnancy: 0
Hennink et al. 2005 (Access - fractional social franchising)	• Pakistan (urban) • Ever married women aged 15-45 residing within 2-3 kilometer radius of each clinic (in study areas) or within a poor urban area of similar size in control sites. • Baseline N=5338; Endline N=5502	Four new FP clinics were opened as part of a national franchise of RH clinics. Each clinic was similar in size and located in its own building. All clinics adhere to the same service delivery protocols and provide identical services, including contraceptives (pill, condoms, injectables, IUD, female sterilization), pregnancy testing, pregnancy termination, and advice about sexual health. Each operates both clinic-based and outreach services. A fee is charged but less than private health facilities; subsidized treatment fund is available to poor clients.	• RCS-C: 4 study sites (urban secondary cities of Gujranwala, Hyderabad, Sargodha, and Shikarpur) and 2 control sites (urban secondary cities of Gujrat and Larkana) • Factor analysis; logistic regression • Strength of evidence: medium	18 months	• Knowledge: + • Sterilization: + • Condom: - • Overall CPR: 0 • Unmet need: +
Babalola et al. 2001 (Access - fractional social franchising)	• Cameroon (8 provinces - targeting urban residents) • Baseline - N=1,367 women. Follow-up N=1,150 of which 571 (42%) from baseline.	Gold Circle (GO) campaign rewarded and promoted FP quality improvements through a certification process and a quality of care diagnostic tool. On the supply side, the campaign attempted to increase the availability of FP methods, improve clinic management, client-provider interactions and infection prevention practices. The campaign also used mass media (TV and radio	• PS: using household survey, supplemented by service statistics from GO clinics and non-GO clinics • Interrupted time-series analytic method for service stats; conditional change model; logistic regression analysis;	1998-1999	• Ideation: + • Contraceptive use: +

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	• Service statistics from 8 of 12 GO sites and data from non-GO sites within same region.	jingles as well as print materials) and community activities to create demand.	Poisson regression analysis • Strength of evidence: low		
Rahman et al. 2001 (Access - community outreach/ distribution)	• Bangladesh (rural) • n=147,753 pregnancy outcomes between 1979 and 1998, including 4100 abortions.	Married women in the comparison group received standard visits every 2 months from FWA, including provision of pills and condoms. In treatment areas, community health workers visited married women of reproductive age every 2 weeks to provide counseling about FP services, deliver injectables, pills and condoms at the doorstep, and ICDDR, B subcenters provide integrated MCH and FP services.	• PS-C: longitudinal data from Matlab which includes data on pregnancy outcomes from two similar areas - treatment and comparison areas - since 1966. • Relative risks; Ω^2 • Strength of evidence: high	1979-1998	• Abortion rate: + • Unintended pregnancies: +
Sinha 2005 (Access - community outreach/ distribution)	• Bangladesh (rural) • n=4892 ever-married women and n=2520 boys & girls (10-16) in the children sample.	Married women in the comparison group received standard visits every 2 months from FWA, including provision of pills and condoms. In treatment areas, community health workers visited married women of reproductive age every 2 weeks to provide counseling about FP services, deliver injectables, pills and condoms at the doorstep, and ICDDR, B subcenters provide integrated MCH and FP services.	• PS-C: longitudinal data from Matlab covering 139 villages, with 70 villages in the treatment area and 69 in the control area. • Regression analysis • Strength of evidence: high	18 year period from start of program until the MHSS was fielded in 1996	• Fertility: + • Labor force participation: Boys: + Girls: 0 • Schooling: 0
Debpuur et al. 2002 (Access - community outreach/ distribution)	• Ghana (rural) • n=8998 currently married women gathered in an average of 2.4 panel years for each respondent over a maximum of 6 panel years.	Nurse outreach: Relocating nurses to villages trained, equipped with motorbikes, and provided with a management information system for monitoring doorstep service delivery. Services included doorstep and community-based curative care and supplies of oral contraceptive and condoms. *Zurugelu* community-based outreach: Community health volunteers, also called health aides, trained to provide basic health care services, RH education, outreach to men, and contraceptive supplies. Utilize community gatherings and other structures to get their messages and services across. Treatment areas included nurse outreach, *Zurugelu* community-based outreach targeting men, and a combination of both.	• PS-C: longitudinal register of all 139,000 individuals - augmented with an open-cohort of 1,900 compounds in which all married women of reproductive age have been interviewed annually since 1993 (analysis of six panel data sets) • Regression models; logit models; odds ratios • Strength of evidence: high	1993-1999	• Knowledge of contraceptive methods: + (separate txs & combined) • Knowledge of supply points: + • Fertility preference for limiting or spacing: + • Contraceptive use: 0 (for separate txs) + (for combined) • Fertility: +

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Douthwaite et al. 2005 (Access - community outreach/ distribution)	• Pakistan (rural) • n=4277 currently married rural women aged between 15-49 (931 from non-intervention control areas and 3346 from LHW areas)	LHW deliver a range of services related to maternal and child health including immunizations, growth monitoring, FP, health promotion and education. FP responsibilities include motivating women to practice FP, providing pills and condoms and referrals for injections, IUD, and sterilization. Each LHW is attached to a government health facility.	• PT-C: 1 intervention and 1 control group • Logistic regression • Strength of evidence: low	6 years after the program began	• Contraceptive use/ Ever-use of modern reversible methods: +
Kincaid 2000b (Access - community outreach/ distribution)	• Bangladesh • n=860 married women age 14-49 (65.5% of the original baseline survey)	Government field workers were trained to organize group discussions with women in the homes of opinion leaders (satisfied current adopters) who are geographically dispersed to cover the entire village network. The *jiggasha* meetings or network approach in which this discussion occurs provide an opportunity for social comparison, support, and influence. This approach was compared to home visits by FWA, and no visits.	• PS-C • Logistic regression • Strength of evidence: low	Follow-up of the same respondents from baseline was conducted 2.5 years after baseline.	• Elements of ideation: + • Contraceptive use/ Prevalence of modern method use: + • Continuation rate of FP use: +
Phillips et al. 1996 (Access - community outreach/ distribution)	• Bangladesh (rural) • A brief questionnaire was added to 2 rounds of SRS system in 1993 to elicit responses about exposure to the overall regimen of services.	In the MCH-FP Extension Project study areas, service-outreach encounters are routinely monitored by research workers who visit households in 90-day rounds and record respondents' recall of the dates of household visits from government and other outreach workers.	• PS – Results assess the contribution of outreach to contraceptive prevalence for successive 18-month periods at the beginning of the project period (1982-1984), at the middle (1986-1988), and in the most recent period (1990-1992). • Generalized logit regression; logit regression • Strength of evidence: medium	Data collected over an 8-year period	• Change in reproductive preferences: + • Contraceptive use: +
Khan et al. 2004 (Quality of care - method options)	• Bangladesh (two districts in the Dhaka division: Tangail and Mymensingh) • n=1,300 married women each from the 3 groups were chosen at random.	On-demand model provided all FP clients (except IUD, implant and sterilization acceptors) with counseling and a brochure on EC. Prophylactic group provided the same information services but in addition provided women with two packets of EC to use in case of an emergency. The control group received no EC services.	• PT-C: Two intervention groups - 4 clinics offered educational brochure plus prophylactic EC (prophylactic) and 4 other clinics just provided the brochure and a referral (on-demand) and 4 clinics served as controls. • Logistic regression		• EC use: +

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			• Strength of evidence: low		
Nawar et al. 2004 (Quality of care - provider / integrated services)	• Egypt (4 governorates were selected from Lower Egypt) • n=300 women in each study group (intervention and control) at 7 month follow-up and 295 in each for the 13 month follow-up	Intervention clinics received a comprehensive intervention package for 6 months. This included: system-related, provider-related, and client-related factors intended to increase providers' technical knowledge and attitudes about FP counseling as well as provider motivation.	• PS-C: A cohort of new FP acceptors was enrolled and follow-up for a 13 month period after the index visit. • Chi-square test; t-test; multiple regression analysis; life table analysis; multiple logistic regressions • Strength of evidence: low	Client outcomes were measured at 7 and 13 months through home interviews.	• Contraceptive use: 0 • Knowledge about FP: + (at 7 months)
Sanogo et al. 2003 (Quality of care - provider / integrated services)	• Senegal (5 regions) • n=1,320 women at baseline and n=1,110 at 16 months follow-up	The government of Senegal created reference centres for family planning based on notions of improving quality of care. The strategy included substantial inputs to improve infrastructure, equipment, supplies and personnel skills.	• PS-C: longitudinal survey of first time users of contraception, first time users of specific method, switchers, and those re-starting after hiatus; interviewed 16 months later • Two analyses - differences in care – chi-square & multivariate logistic model; outcomes at client level – multivariate logistic regression models • Strength of evidence: medium	Client outcomes were measured 16 months after initial interview/ visit.	• Quality of care: + • Contraceptive use: +
Bashour et al. 2008 (Quality of care - provider / integrated services)	• Damascus, Syria • n= 876 women	Registered midwives with special training made a home visit or series of home visits providing information, education, and support to women. Visits included postnatal care, physical exams, counseling on breastfeeding and family planning.	• RCT (individual-level randomization): 3 groups of new mothers were randomly allocated to either (group A) 4 postnatal home visits, (group B) one visit, or (group C) no visits. • Chi-square tests; ANOVA • Strength of evidence: high	4 months	• Current contraceptive use: 0 • Postpartum care uptake: 0 • Breastfeeding: + • Impressions about home visits: +

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Bolam et al. 1998 (Quality of care - provider / integrated services)	• Urban and periurban Kathmandu, Nepal • n=540 mothers, 135 to each of the four groups, and followed up 403 (75%) at 3 months and 393 (73%) at 6 months.	20 minute, one to one health education at birth and 3 months later. Key messages given by health educators included advantages of breastfeeding, dangers of diarrhea, symptoms and response to acute respiratory infection, and importance of restarting FP no later than 8 weeks after birth.	• RCT (individual-level randomization): 4 groups of new mothers were randomly allocated to (group A) health education just after birth and 3 months later, (group B) at birth only, (group C) at 3 months only, or (group D) none • Odds ratios; ANOVA • Strength of evidence: high	Women were followed up at 3 and 6 months postpartum at their homes.	• Contraceptive use/ Uptake of FP: + (at 6 months for groups A & B) • Exclusive breastfeeding: 0
Khan et al. 2008 (Quality of care - provider / integrated services)	• India (rural Meerut district) • Baseline n=605 experimental & 592 control; at 4 months n=554 experimental & 541 control; at 9 months n=570 experimental & 560 control	Educational campaign by 267 community workers (CWs) addressing pregnant women, their husbands, mothers-in-law, and community leaders; using IEC materials (leaflets, posters, wall paintings, and pocket booklet on HTSP. CWs (ANMs, ASHAs, and AWs) were trained on all educational topics. Coordination and support among the district authorities of the two departments and village level CWs was enhanced. A printed work register was given to CWs to ensure systematic coverage of all relevant topics.	• PS-C: The experimental (24 villages) and control (24 villages) groups recruited 600 women at 3 to 6 months pregnancy with parity of 0 or 1 • Logistic regression • Strength of evidence: medium	Interviewed at recruitment (3-6 months pregnant), 4 months postpartum, and 9 months postpartum	• Discussions on LAM, STIs and HIV/AIDS: + • Discussions on FP with husbands: + • Correct knowledge for all methods: + • Contraceptive use: + (at 9 months) • Pregnant: + (at 9 months)
Kunene et al. 2004 (Quality of care - provider / integrated services)	• South Africa (Ethekwini district) • Baseline n=2082 women (1087 control and 995 intervention) and 584 intervention male partners; at follow-up n=1423 women (694 control and 729 intervention) and 1166 male partners (558 control and 608 intervention)	Two components: improving existing ANC services including information, education, communication and dissemination of an information leaflet and a booklet for couples to read and discuss (“Ukuba umzali”) and introducing strengthened individual and group counseling for pregnant women and their partners. Men were invited to participate in 3 counseling sessions through the maternity period. Two were to take place during pregnancy and the other 6 weeks post delivery. Each clinic developed its own plan to conduct couple counseling.	• RCT: Randomized cluster matched paired design was used with 6 clinics implementing the intervention and another 6 control clinics •follow-up interview with woman and partner at 6 months • t-test • Strength of evidence: medium	6 months	• Contraceptive use at 6 months postpartum: 0 • Knowledge of dual protection provided by condoms: + • Discussed topics related to STI, sexual relations, immunizations, and breastfeeding: + • Discussed topics related to FP: 0
Varkey et al. 2004 (Quality of care - provider / integrated services)	• New Delhi, India • Baseline n=581 pregnant women (10-26 weeks pregnant) and 488	Intervention included training providers to conduct brief counseling sessions and behavior change communication (CBB), new IEC materials and some new clinical	• RCS-C: Non-equivalent control group study design in which six ESIC dispensaries with highest antenatal clinic	2 year intervention period; 6-9 month between baseline and follow-up of sample	• Knowledge of breastfeeding as pregnancy prevention: +

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	husbands at intervention and 486 women at control sites; 6-9 month follow-up n=327 women and their husbands from the intervention group and 302 women and their husbands from the control group	practices. Main components included: an individual or group counseling session in the antenatal clinic, separately for men and women; couple counseling sessions during antenatal and postnatal clinics; screening of all pregnant women for syphilis; and syndromic management of men reporting urethral discharge and men and women reporting genital ulcers as part of the individual counseling.	attendance were purposively selected - three assigned to the intervention and three acted as controls. • Analysis of variance; z-statistics • Strength of evidence: low		• Knowledge of dual protection provided by condoms: 0 • Intention to use FP: + Consistency of condom use: + • Contraceptive use at postpartum: + • Knowledge of STI/ HIV/AIDS: 0 • Knowledge that condoms protect against STI: + (men) 0 (women) • Spousal communication on FP and breastfeeding: + (women) • Spousal communication on HIV/AIDS: 0 (women) • Joint decision making: + • Levels of immunization: 0 • Spouse present at labor/delivery: + • Breastfeeding practices: - • Danger signs during pregnancy: +
Sherwood-Fabre et al. 2002 (Quality of care - provider / integrated services)	• Russia • n= 6000 women ages 15-44	Intervention goal was to reduce abortion-related maternal mortality by changing physicians' and women's knowledge and practices concerning FP. Components: Physician training - 2-day introductory contraceptive technology update seminar; IEC activities - brochures, mass media campaign, radio, TV, articles in regional newspaper; Contraceptive supplies - provided 6-month supply of	• RCS-C: Two project cities (Yekaterinburg and Ivanovo) and 1 control city (Perm) • Logistic regression • Strength of evidence: medium	3 years	• Discussing various methods with a provider: 0 • Women's attitudes about FP became more favorable: 0 • Contraceptive use: 0 • Abortions: +

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		contraceptives to participating facilities.			
Xiaoming et al. 2000 (Quality of care - provider / integrated services)	• China • n= 748 young adults at baseline; 710 at follow-up ages 18-30	Integrate AIDS prevention intervention at the community level into the existing family planning services. The experimental township received a multifaceted 12-month intervention that included written materials, videos, radio programs, small group discussions, home visits, individual counseling, and a free supply of condoms. The intervention providers included family planning workers, village doctors, and women's leaders.	• RCT: Two townships randomly assigned to experimental or control conditions – 2 villages in each randomly selected • Chi-square; t-test (no differences between groups) • Strength of evidence: high	12 month follow-up	• Using condoms as main contraceptive method: +
Speizer et al. 2004 (Quality of care - provider / integrated services)	• Lome, Togo • 2083 males and females aged 10-24 (817 of baseline found at follow-up 1; 893 of baseline found at follow-up 2)	Establishment of a youth center in March 1998, to offer ARH clinical services, recreational services, counseling, IEC, and vocational and literacy classes.	• PS-NC (reflexive controls) • Logistic regression • Strength of evidence: low	Follow-up 1: 16 months after baseline; Follow-up 2: 1 year after first follow-up	• Sexuality knowledge: 0 • Knowledge of condoms: + • Contraceptive or condom use at last sex: + • Utilization of health services: 0
Meuwissen et al. 2006 (Cost - vouchers)	• Managua, Nicaragua (urban) • n=3009 12-20 year old female adolescents (n=904 voucher receivers; n=2105 non-receivers)	Vouchers gave free access to SRH care in 20 health centers, were distributed to adolescents in 4 markets, outside 19 public schools, in clinics, and on streets and house to house in 221 poor neighborhoods. Vouchers were not bound to the person who originally received them and could be passed to another adolescent (voucher traveling). Also, vouchers were only valid for 3 months and could be used for 1 consultation and 1 follow-up visit.	• PT-C • Crude odds ratios; adjusted Mantel-Haenszel odds ratios; logistic regressions • Strength of evidence: low	3 to 15 months after the vouchers were distributed	• Utilization of services: + • Knowledge of contraceptives: + • Knowledge of STIs: + • Prevention through condom use: + • Condom use at last contact: + • Use of modern contraceptives: 0 (overall) + (for school receivers)

No significant difference 0; significant desirable difference +; significant undesirable difference - RCT=randomized cluster trial; PS-C=panel study with comparison group; PS=panel study; RCS-C=repeat cross-sectional study with comparison group; PT-C=posttest only with comparison group