ELSEVIER

Contraception 72 (2005) 402–407

Contraception

Review article

Revisiting community-based distribution programs: are they still needed?

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Received 22 December 2004; revised 12 April 2005; accepted 3 June 2005

Abstract

Community-based distribution (CBD) programs are the optimum way of reaching people in rural areas of developing countries where conventional methods of delivery do not exist or fail. This paper reviews findings and experiences from over 30 years of efforts to implement CBD of family planning methods around the world. Although research suggests that community-based service delivery can contribute to contraceptive use, the magnitude of impact is often in doubt or its existence is questionable when compared to alternative family planning delivery services.

After the review of more than 30 years of CBD work, we found that these programs are still needed to meet the needs for contraception in rural communities and isolated city neighborhoods in developing countries. Integration with other health outreach programs, effective management, keeping training of agents brief and letting them distribute contraceptives and keeping all or part of the profits instead of paying them salaries are some of the strategies that can make CBD programs more efficient.

Keywords: Community-based distribution; Service delivery; Access; Demand; Cost-effectiveness

1. Introduction

Community-based distribution (CBD) programs were initiated in an attempt to bring family planning services to underserved populations in primarily rural areas of developing countries. Many rural villages lacked access to services provided by trained doctors and nurses in hospitals or health facilities, which are typically located in cities or larger towns [1]. Community-based distribution programs were first implemented in Latin America in the 1960s, in Asia in the 1970s and 1980s and in Africa during the 1980s and 1990s [2].

Community-based programs are implemented through various models. They include home visits, fixed and mobile CBD posts, as well as one-on-one and group education meetings. The services most commonly offered through CBD include distribution of contraceptives, health education (such as family planning, reproductive health and child health) and referrals for clinic-based services. Some of the first CBD programs were integrated with existing health infrastructures, and services were provided by incumbent health program staff members as a means of maintaining efficient service delivery. However, as community needs exceeded the abilities of national health programs and their staff, more lay health workers became necessary, and selected community members were trained to provide family planning services [3,4].

Over time, the family planning landscape in many developing countries has changed. Countries have seen their contraceptive use prevalence rates increase as a result of successful family planning programs, which included CBD and other modes of family planning service delivery. Communities have increased awareness of the benefits of family planning, such as birth spacing, limiting family size and protection against HIV and other sexually transmitted infections (STIs) through the use of barrier methods [5]. However, the question remains whether CBD programs are still as effective as they once were in expanding access to family planning, and if so, in what conditions they are equally or more effective than other family planning delivery modes. The following paper reviews the lessons learned from over 30 years of CBD programming

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doi:10.1016/j.contraception.2005.06.059

Table 1
Overview of selected CBD program evaluations

Author [reference no.]	Country and CBD program	Study design
Stoebenau and Valente [6]	Madagascar, village CBD program in highland Madagascar	Case study
Soares et al. [4]	Mexico, FEMAP	Descriptive
Routh et al. [7]	Bangladesh, domiciliary (door-to-door) distribution and site-based family planning services	Before-and-after analysis
Maggwa and Askew [8]	Zimbabwe, National Family Planning Council's (ZNFPC) CBD program	Descriptive
Janowitz et al. [9]	Tanzania, Planned Parenthood Federation's program (UMATI), Family planning Unit (FPU), and Seventh-Day Adventist (SDA)	Cost study
Katz et al. [3]	Mali, CBD program incorporated into a nongovernmental organization's primary health care (PHC) system in southern Mali	Pre-post test survey
Hossain and Phillips [10]	Bangladesh, female worker assistant (FWA) outreach program	Descriptive
Foreit et al. [11]	Peru, PROFAMILIA of Lima and CENPROF of Trujillo	Operations research
Vernon et al. [12]	Colombia, PROFAMILIA	Cost-effectiveness
Huber and Harvey [13]	Ten countries in Africa, Asia and Latin America	Cost-effectiveness
Bertrand et al. [14]	Guatemala, Asociacion ProBienestar de la Familia's (APROFAM) CBD program, one urban and six rural areas	Descriptive

worldwide and evaluates the need for their continuing services based on data from multiple countries.

2. Materials and methods

We searched major electronic databases for peer reviewed articles with the following keywords and terms: community-based distribution, family planning, source of contraception, field worker, mobile clinic, family planning service delivery, access to family planning, demand for family planning and cost-effectiveness of family planning services. We also included data from the Demographic and Health Surveys country reports, family planning program evaluation reports and other available reports from countries or agencies with CBD programs.

3. Characteristics of CBD programs and their impact

There are numerous elements unique to CBD programs that make them more effective than other family planning programs. Table 1 lists an overview of the studies, which evaluated or reviewed CBD programs in different countries.

3.1. Increased access and convenience

The most significant benefit of CBD programs are those associated with receiving counseling and care in or nearby one's own home. In low-income countries, where more than two thirds of the population live in rural areas, average ratio of physicians to population is less than 1 per 10,000 individuals, and only 41% of births are attended by a skilled health personnel [15,16]. A study from Morocco reported that rural clusters were less likely than urban clusters to be within 30 km of a private doctor, hospital or private clinic [17]. Further, rural facilities had fewer contraceptive methods in stock and fewer staff members trained to provide family planning than urban facilities [17]. Another study of women in Vietnam demonstrated that being within 1 km of a contraceptive source reduced nonuse of modern methods [odds ratio (OR)=0.6, $p \leq .001$] and current use of traditional methods (OR=0.6, $p \leq .01$) [18]. As a result of this limited access to medical practitioners and contraceptive methods, populations living in more remote areas are highly unlikely to obtain effective family planning methods [19]. Direct contact with CBD agents has resulted in 3 to 10 times increase in modern contraceptive use [6,7]. Additionally, some CBD programs conduct "town hall" style meetings in which health workers present information on family planning and prevention of STI, as well as other health information such as antenatal care, child health and well-woman health care. It should be noted that although these meetings allow CBD agents to access a large group at one sitting, they may not be as effective in meeting individuals' needs. Therefore, these meetings are usually followed by individual visits.

Community-based distribution programs allow clients to obtain necessary services without having to spend time or money on transportation [8,20]. In addition to being costly and time consuming, travel to family planning clinics may be virtually impossible due to cultural restrictions placed on women in certain traditional societies [2]. Bangladesh, for example, observes a tradition that prevents women from leaving home without being chaperoned by a brother or husband [21,22]. This practice makes it very difficult for women to get services if they cannot get permission to travel alone or a chaperone to accompany them to the clinic. However, it should be noted that bringing services at home could also serve to further seclude women from society [23].

3.2. Appropriate selection of CBD agent

The selection of health workers from within a given community is also somewhat unique to CBD programs and, undoubtedly, is one of the contributing factors to CBD programs' overall success.

Few other models send health workers to individuals' homes to provide family planning consultations, a strategy that not only increases access to family planning services but also allows men and women to enjoy one-on-one attention from a trusted provider in the comfort of their own

homes. A profile of a CBD program in Zimbabwe suggests that because of the highly sensitive nature of family planning and its historical link to forced sterilization in some colonized countries, the concept of contraception may be met with intense aversion unless provided by a trusted source [8,24]. According to an analysis of CBD agents in Peru, successful agents typically share commonalities (language, culture, education, religion and social class or sex) with their target populations, and those who differ greatly tend to have less success [11,25]. Many CBD agents are midwives or traditional birth attendants who are well respected in the community as health leaders [2]. Some CBD agents are individuals elected by a collaborating organization or the community itself to bring services directly into their clients' homes [11], while others provide services out of their homes [2].

Women who, despite efforts to the contrary, make the majority of family planning decisions typically prefer to receive reproductive health care from women, and women are more likely to provide care in CBD programs than in fixed-site clinics [26,27]. A study in Bangladesh showed that women who were visited by a female worker were more likely to use some method of family planning than those who spoke with a male agent (2.8 vs. 1.4%, $p<.1$) [28]. Another study in Tanzania determined that female CBD agents, perhaps due to gender issues surrounding contraception and family planning, make 8.2% more house visits than male workers [9]. It should be noted that the results of this study suggest that male agents could help increase male involvement in family planning decisions. This is an important attribute of CBD programs, as many family planning delivery models struggle to find ways to increase male participation [29].

3.3. Elimination of costly services

Personnel and training are the two most costly budget lines in CBD programs [9]. In general, low-income populations are more likely to be able to afford services provided by CBD agents than clinic-based services. Community-based distribution program costs can be lowered by employment of lay health workers to provide contraception at subsidized rates. As many CBD agents lack formal health training and typically take on their roles as a public service provider, rather than the only way to earn money, there is a considerable flexibility in the pay scales of CBD agents. For instance, although the Mexican Federation of Private Health and Community Development Associations (FEMAP) initially compensated its CBD agents, called *promotoras* (with salaries and transportation costs), in 1993, in order to reduce program costs, FEMAP began providing only commissions on contraceptive sales and bonuses for referrals [4]. This more cost-effective strategy rewards CBD agents who work exceptionally hard and is an ideal way to operate a CBD program at lower costs. Training costs can also be significantly lower by decreasing the training time without compromising the content [30].

3.4. Repeated messaging

Community-based distribution agents who provide home consultations frequent the same homes on a regular basis, especially if they are compensated through an incentive model and stand to gain from repeat condom or oral contraceptive sales. A CBD program in India illustrates how some agents interact with their communities casually, such as during daily chores or social gatherings [31]. Such agents use these frequent meetings and conversations as opportunities to encourage family planning. This continuous reinforcement of family planning messages increases a woman's likelihood of using contraception, an advantage over a more demand-based, static-site program model. Additionally, CBD agents may reassure women that side effects from contraceptives can be managed if they occur [20].

4. Current role of CBD programs in family planning delivery

4.1. At what point do CBD programs become less effective than other delivery models?

The ultimate goal of any family planning program is to increase contraceptive prevalence to a level that would not be reached without the program in place [2]. This is done by helping couples to attain their reproductive health goals (i.e., the ideal family size) as a result of informed decision making. Community-based distribution programs become ineffective once they no longer increase the use of family planning or improve women's status in their society to broaden family planning access. Factors contributing to the ineffectiveness of CBD programs include the demand for more clinical services or the saturation of the family planning market. Additionally, implementing CBD on a large scale prior to gauging community response, failure to build support with local organizations and political institutions, and overly restrictive financial schemes may also contribute to a program's ineffectiveness [2].

4.1.1. Increased demand for clinical services and market saturation

Community-based distribution agents could be successful gatekeepers for family planning clinic referrals, especially when receiving referral fees, and may actually increase the number and frequency of visits to the local family planning clinic [7,32]. Composition of client population and the need for reversible methods vs. long-term methods can determine the demand for clinical services. Community-based distribution programs are usually limited to delivery of resupply methods only.

Due to the nature of care required for the provision of contraceptive methods such as intrauterine devices (IUDs), diaphragms, injectables, and sterilization, in cases where CBD agents are not nurse midwives, such methods are only available in clinics [19]. As such, clients must be referred to

Table 2
Cost of program by mode of service delivery

Delivery mode	Cost/CYP[a] ($)	
	Average	Range
Social marketing	2	<1–6
Sterilization	2	1–5
Full-service clinic + CBD	9	1–17
Miniclinic + CBD	8	3–14
Full service clinic	13	1–30
CBD alone	14	5–19

Source, Ref. [13].
[a] CYP: cost per couple year protected.

the nearest health clinic when seeking these family planning methods, although some experts believe that CBD agents receiving commission for contraceptive sales may be hesitant to refer their clients to obtain a family planning method other than those they supply [32]. This problem can be surmounted by broadening the method choice provided by CBD agents, limiting family planning clinical services to sterilization and in some cases IUDs. Once a given community is committed to family planning, CBD programs can become an expensive option. A study of Profamilia clinics in Colombia showed that once a high level of knowledge and contraceptive prevalence (55%-65% among ever-married women) has been attained through CBD, contraceptive social marketing (CSM) programs are a more profitable and equally effective replacement [12].

4.2. How cost-effective are CBD programs compared to other delivery models?

While CBD programs may make contraception more affordable and accessible for users than do clinic-based programs, CBD programs may not necessarily be more cost-effective to provide. In a study of alternatives to CBD in Dhaka, Bangladesh, the cost per birth averted and cost per quality adjusted life year (QALY) gained were lower in clinic setting than in CBD: $13 and $17 vs. $18 and $42, respectively [7]. It should also be noted the most cost-effective methods of family planning, namely, sterilization and IUDs, are usually only provided in a clinic setting. Another study in Bangladesh reported that centrally located service delivery of contraceptive methods was not more cost-effective than home-based delivery [33].

In a study of three Profamilia clinics in Colombia, researchers showed that CSM was the most profitable program model compared to wage incentives for CBD workers, and a community-oriented information, education, communication (IEC) program, yielding a net profit of $1.18 per couple year protected (CYP) during a 2-year period [12]. Conversely, for the same period, the wage incentive and the IEC models yielded costs of $4.20 and $3.04, respectively. As shown in Table 2, another study of family planning programs in 10 developing countries (Bangladesh, Colombia, Egypt, El Salvador, Guatemala, Kenya, Mexico, Nigeria, Sri Lanka and Thailand) found CBD to be an effective method of expanding access to underserved populations when combined with another family planning delivery system [13].

5. Do the ends still justify the means?

5.1. Unmet need for family planning services

Table 3 shows selected countries with large rural populations. It is interesting to see differences in levels of modern contraceptive use and unmet need for family planning services in rural areas. High unmet need countries have small-scale CBD/outreach programs as seen by the percentage of women using modern methods that get their supply from CBD programs. In contrast, the two relatively

Table 3
Unmet need for family planning services and modern contraceptives provided by CBD agents/outreach programs in selected countries

	Rural population (%) (UNFPA, 2003)	Prevalence of modern contraceptive methods (%)	Unmet need for family planning services in rural areas (%)	Source of supply, contraception provided by CBD agent/outreach programs (%)[a]			
				All modern methods	Pills	Injectable	Condoms
High unmet need							
Ethiopia, 2000	84	3.3	37.3	6.9	6.8	6.0	0.5
Kenya, 1998	61	29.0	25.6	3.8	11.3	0.6	5.4
Malawi, 2000	84	24.1	30.7	6.7	15.3	7.0	10.2
Rwanda, 2000	82	3.9	35.9	7.7	16.1	10.0	2.3
Togo, 1998	65	5.5	34.2	6.1	4.1	4.3	6.6
Uganda, 2000/01	88	14.7	36.2	1.5	2.3	0.8	2.4
Haiti, 2000	62	23.0	40.6		8.4	10.3	1.1
Low unmet need							
Bangladesh, 1999/2000	76	42.7	16.0	34.9	49.9	36.5	17.9
Indonesia, 1994	54	50.5	10.8	19.4	14.5	38.4	6.5

Source: ORC Macro, 2004. MEASURE DHS STATcompiler. http://www.measuredhs.com.
[a] Source of contraception—Ethiopia: nongovernmental organization (NGO); Kenya: CBD worker, mobile clinic; Malawi: public/private mobile clinic, public/private CBD agent or field worker; Rwanda: CBD agent, NGO clinic; Togo: NGO, CBD agent; Uganda: public/private outreach, government/private CBD agent, mission mobile clinic; Haiti: mobile clinic, health promoter, traditional birth attendant; Bangladesh: satellite clinic, government field worker, NGO satellite clinic/depot holder/field worker; Indonesia: family planning field worker, mobile clinic, midwife, village delivery post, traditional birth attendant.

low rural unmet need countries have a much larger share of modern methods delivered by CBD programs. The countries presented in Table 3 are a clear example where CBD programs made and can make a difference in contraceptive prevalence increase.

5.2. What factors make CBD programs cost-effective?

There are several strategies for implementing and sustaining a CBD program that contribute to its cost-effectiveness, such as efficient management strategies, integrating a CBD program with an existing health program and controlling client volume and service quality.

Efficient program management strategies, specifically, adjusting the scheme used by a CBD program to compensate its agents, are one way of making CBD programs more cost-effective. Providing competitive compensation for CBD agents lowers overall program costs, as the increased salaries of agents will lead to a greater number of home visits and, therefore, better justified the costs of training [9]. Some studies show that salaried health workers are preferable to volunteer agents as they may be held accountable by the program and required to provide a wider range of services [26]. However, other programs have shown that an incentive-based program can produce similar results. It should also be noted that supervisors' compensation rates may also have an impact on program productivity, considering the possibility that better compensated supervisors may work harder to improve staff performance and productivity [9].

Offering incentives to CBD agents, such as providing commissions for contraceptive sales [9,11,12], incentives from referrals to local clinics [4] or offering a smaller salary that would be supplemented through the sale of contraceptives [8], may also increase staff productivity [9,30].

Another method of increasing CBD cost-effectiveness is optimizing supervisory visits to local posts. By limiting supervisory visits to quarterly visits, travel costs decrease significantly and supervisors are able to oversee more posts, thus, decreasing the number of supervisors needed. Reducing restocking visits from monthly to quarterly is more cost-effective, regardless of front-end costs of providing each post with adequate supply of contraceptives [12]. It should be noted, however, that decreased supervisory visits may compromise the quality of care provided by agents and/or agent motivation, and as such, it may be most effective to maximize supervisory visits as an opportunity for on-the-job training.

Integrating CBD programs with other existing programs serves to maximize resources. Community-based distribution programs could be an extension of the local health infrastructure to rural areas [3]. Conducting group IEC sessions at local schools, health posts and hospitals will consolidate staff, thus, requiring the employment of only one CBD agent to serve a large population in a given period [12]. Research has shown that providing multiple services in one health care visit, regardless of venue, decreases the cost of each service provided by reducing duplicated costs and, therefore, is a more cost-effective way of service provision [33,34].

One method of streamlining family planning service delivery is training CBD agents to perform basic clinical procedures [35]. Training CBD agents to perform clinical procedures (such as injectables and IUDs) limits the need for referrals, boosts consumer confidence in CBD agents and optimizes scarce resources.

5.3. Collaboration, integration and funding

Community-based distribution programs are usually organized and implemented by either the local or national government or not-for-profit organizations. Given the financial, social and political concerns that arise with family planning programs, establishing affiliations between the organizing body and local and international organizations can aid in program implementation and sustainability [26]. It should be noted that in addition to preventing political obstacles, government affiliations may also be an effective method of securing long-term funding sources.

Community-based distribution programs may also wish to partner with other organizations that provide related services or services complementary to family planning, such as well-woman health care, obstetrics services and family health care [1,26].

6. Summary and policy implications

The concept of CBD for family planning can be used in settings or countries where clinic- or hospital-based distribution are simply not adequate to meet the community needs. Community-based distribution programs are still needed to meet the needs for contraception in rural communities and isolated city neighborhoods in developing countries. They are the recommended delivery method in such settings because they offer accessibility, convenience and affordability (to the client) than other modes of service delivery. These characteristics contribute to CBD programs effectiveness in contraceptive adoption and method continuation rates. Nevertheless, without sufficient funding or efficient management strategies, CBD programs may not be a sustainable option for some communities. It is important for CBD program directors to determine the best CBD strategy for a given community and also to establish cost-recovery and cost-reduction schemes to ensure sustainability. Each program's strategy will vary depending upon financial constraints and other resources. A CBD program alone might not be the most cost-effective mode of delivery. However, efficiency can be reached when combined with other existing or new modes of service delivery in the community (such as IEC and social marketing) and when integrated with other maternal and child health services. Besides, the adverse results of an unwanted pregnancy (such as complications or death due to delivery or unsafe abortion) can cost more to families and to society. Increasing the

variety of methods offered by CBD programs, either directly or by referral, is also an important factor for increasing access to contraceptives. It is ultimately the responsibility of program leaders to determine if improvements can be made to strengthen a CBD program or if the program has reached a plateau and is no longer the most effective family planning delivery mode for a given community.

In summary, after reviewing results from more than 30 years of CBD work, we feel that the literature indicates the following formula for success: (1) keep training brief without compromising quality; (2) in preference to actually employing these workers, initiate incentives or profit-sharing plans that would allow CBD workers to keep all or part of the profits from contraceptive sales and distribution.

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