Provision of DMPA by community health workers: what the evidence shows☆,☆☆

Shawn Malarcher⁎,1, Olav Meirikb, Elena Lebetkinc, Iqbal Shahd, Jeff Spielera, John Stanbackc

aOffice of Population and Reproductive Health, Bureau for Global Health, USAID, Washington, DC 20523-3600, USA
bInstituto Chileno de Medicina Reproductiva (ICMER), 8320164 Santiago, Chile
cFamily Health International, P.O. Box 13950, Research Triangle Park, NC 27709, USA
dDepartment of Reproductive Health and Research, World Health Organization, 1211, Geneva 27, Switzerland

Received 10 March 2010; revised 26 July 2010; accepted 23 August 2010

Abstract

Background: To reduce a large unmet need for family planning in many developing countries, governments are increasingly looking to community health workers (CHWs) as an effective service delivery option for health care and as a feasible option to increase access to family planning services. This article synthesizes evidence on the feasibility, safety and effectiveness of community-based delivery of the injectable contraceptive depot-medroxyprogesterone acetate (DMPA).

Study Design: Manual and electronic search and systematic review of published and unpublished documents on delivery of contraceptive injectables by CHWs.

Results: Of 600 identified documents, 19 had adequate information on injectables, almost exclusively intramuscular DMPA, provided by CHWs. The data showed that appropriately trained CHW demonstrate competency in screening clients, providing DMPA injections safely and counseling on side effects, although counseling appears equally suboptimal in both clinic and community settings. Clients and CHWs report high rates of satisfaction with community-based provision of DMPA. Provision of DMPA in community-based programs using CHWs expanded access to underserved clients and led to increased uptake of family planning services.

Conclusions: We conclude that DMPA can be provided safely by appropriately trained and supervised CHWs. The benefits of community-based provision of DMPA by CHWs outweigh any potential risks, and past experiences support increasing investments in and expansion of these programs.

Published by Elsevier Inc.

Keywords: Community-health worker; Family planning; DMPA; Injectable contraception; Systematic review

1. Introduction

Unmet need for family planning approaches 40% or higher in some countries and, consequently, many women are at risk of having an unintended pregnancy [1]. The consequences of a pregnancy that is unintended and unwanted can be dire, particularly in developing countries where access to safe abortion is restricted and an unwanted pregnancy is associated with considerable health risks. About 25–35% of maternal deaths, including abortion-related mortality, could be avoided if women who expressed the desire to space or limit births had access to a family planning method [2]. Increasing access to family planning services is a highly effective means of meeting the unmet need for family planning and thereby protecting the health and wellbeing of women and children [3,4].

A growing number of contraceptive users rely on injectable contraceptives for preventing unintended pregnancy. Injectable use doubled between 1995 and 2005 and is estimated to provide protection for more than 42 million women worldwide every year [1,5]. The 3-month injectable depot-medroxyprogesterone acetate (DMPA) is the fifth most commonly used contraceptive method worldwide [1,5].
DMPA is the most popular injectable contraceptive in Sub-Saharan Africa, used by more than one in two users of modern contraceptives and one out of every three users of any contraceptive [1,5]. In 2006, DMPA was registered for use in 179 countries [6]. The method has been extensively studied and is regarded as a safe and very effective contraceptive for most women [7–9].

Regulations in many countries allow CHWs to initiate use of combined oral contraceptives (COCs). Prevalence of conditions restricting eligibility for COC use is reported to be low, and effective screening for these conditions does not necessarily require a physician [10,11]. The medical eligibility for DMPA use is considerably less restrictive than that for COCs [8]; hence screening for eligibility for use of DMPA is a relatively uncomplicated task that can easily be learned and enhanced by use of checklists [8,12]. DMPA is a safe and highly effective contraceptive [7–9]. Past controversies [13] surrounding the method have been laid to rest [14,15]. The effect of DMPA on bone mass was reviewed in 2005 by a World Health Organization (WHO) expert panel [15] and by the American Committee of Obstetricians and Gynecologists (ACOG) in 2008 [14]. The WHO panel and ACOG concluded that women aged 18–45 years should be able to use DMPA without restrictions [14,15] and that for younger and older women, the “advantages of using DMPA generally outweigh the theoretical safety concerns regarding fracture risk” and that use should be reconsidered over time on an individual basis [15].

Although many countries have observed large increases in use of injectable contraception, currently almost all injectable use is supported through clinic-based provision. Use of injectables is constrained by policies limiting provision of injectables to nurses or physicians. In many countries, health workers with limited medical training are authorized to distribute oral contraceptives and condoms, but must refer clients to clinics for other contraceptive methods, including injectables. Such policies restrict access to injectable contraceptives to women in well-resourced areas with higher concentrations of doctors and nurses [16].

Increasingly, governments are seeking alternative means of delivering health interventions to rural, hard-to-reach and marginalized groups and are looking to community health workers (CHWs) as an effective service delivery option for expanding access to family planning. The definition for community-based worker varies according to context, specific needs and available resources. Generally, CHWs receive less training than other professional workers and are members of the communities where they work with links to a clinic-based health system.

Reviews and consultations have been conducted on the experience and impact on different aspects of health of CHW programs [3,17–20], but none has looked specifically at delivery of injectable contraception by CHWs. This article synthesizes more than three decades of program and research evidence on the feasibility, safety and effectiveness of community-based delivery of DMPA.

2. Materials and methods

2.1. Search strategy and selection criteria

Objectives and outcome measures for the review were developed by an advisory committee [21] consisting of representatives from health, aid and development organizations (World Health Organization, United States Agency for International Development, Family Health International) and technical consultants.

The objectives of the review were to examine evidence on the ability of CHWs to achieve competency in provision of DMPA and meet injection standards related to safety and quality, the acceptability among clients and providers of community-based provision of DMPA, and measures of impact of community-based DMPA services, including uptake of services and contraceptive continuation rates.

Both published and unpublished documents were considered for inclusion. Searches in bibliographic databases were conducted based on established criteria. Search strategies were adjusted as appropriate for each database including the Cochrane Library, MedlinePlus, Popline, PubMed, RAND Books and Publications, and ReproLine. The searches included common terms for CHW including community-based distributors (CBD), community health workers (CHWs), community volunteers, community promoters and village health workers (VHWs).2 No study filter was used during the search process. In addition, Internet searches of the websites of specific organizations known to support community-based reproductive health initiatives including CARE, Family Health International, PATH, Population Council, Save the Children and USAID were conducted. Experts in the area of community-based distribution and/or provision of contraceptive methods were contacted for identification of unpublished literature. A complete description of the search strategy is available elsewhere [22].

Inclusion and exclusion of documents were based on the project and/or intervention description. All documented experience of CHW provision of DMPA was included in the review regardless of data collection methods used. Programs or research that included provision of DMPA were considered. Outcome measures consisted of client screening (provider knowledge and provider proficiency), safety of injection (safe injection procedures, injection site morbidity), counseling on side effects, client and provider perspectives, uptake of services (utilization of services, utilization by new clients, utilization by underserved population groups) and contraceptive method-specific continuation rates.

2 The term community-health worker (CHW) is used throughout the article in reference to all categories of community workers.
2.2. Data collection, quality assessment and analysis

Over 600 documents were retrieved from the search of bibliographic databases, manual searches and informant interviews (Fig. 1). Five-hundred sixty-one documents were excluded based on abstract/title review due to duplicate article, irrelevance or not appropriate topic. Thirty-nine documents were selected for detailed review, including two interviews with project staff (Jean-Louis B., 2009, personal communication; Ehrlich L., 2009, personal communication). An additional 20 documents were further excluded from the review because the documents could not be located \((n=5)\) or the topic was not relevant to the review \((n=15)\). A total of 19 documents were identified for review.

Aspects of methodological quality were assessed by two independent\(^4\) reviewers who categorized evidence according to US Preventive Task Force (USPTF) reference criteria \([23]\). Altogether, 19 documents were reviewed; 12 were project reports or workshop proceedings \([24-35]\); three were from peer-reviewed publications \([36-38]\); two appeared in edited books \([39,40]\); and two projects provided information through personal communication (Jean-Louis B., 2009, personal communication; Ehrlich L., 2009, personal communication).

The outcome of the methodological quality assessment is shown in Table 1. Seven studies were graded as Level II\(^5\) \([27,30-32,36-38]\) and 11 were categorized as Level III\(^6\) \([24-26,28,29,33-35,40]\) (Jean-Louis B., 2009, personal communication; Ehrlich L., 2009, personal communication). Many of the studies were conducted as part of a larger program effort and results were reported in the context of program implementation rather than as part of an independent research project. Some of these latter studies lacked sufficient information regarding the study design and methodology resulting in a lower rating of the study’s internal validity. As noted by the USPTF, an exact correlation does not exist between the strength of the recommendation and the level of evidence \([23]\). No studies or reports were eliminated based on

\[^3\] Information for programs in Haiti and Uganda was collected through correspondence with project management due to the lack of written material.

\[^4\] Independent reviewers were defined as participants of the Technical Consultation on Expanding Access to Injectable Contraceptives outside the advisory committee and with no discernable bias regarding the review outcome.

\[^5\] Level II-1: Evidence obtained from well-designed controlled trials without randomization; Level II-2: evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.

\[^6\] Level III: Opinions of respected authorities, based on clinical experience, descriptive studies and case reports, or reports of expert committees.

\[^7\] Due to limitations of data retrieval, review of one document (Khuda et al. \([39]\)) was limited to sections which reported research finding with little or no information on data collection methods. Thus, reviewers had insufficient information and could not be categorized according to the established rating system.
conclusions of the quality assessment; the evidence table is available on-line [22].

Data extraction, conducted by the first author, included information relevant to the outcome measures of interest, program inputs and context of program implementation. A description of the data extraction process is available online [22].

2.3. Description of programs

The 19 documents originate from a total of 16 studies or programs conducted in nine countries and represent a wide range of social and development contexts (Table 1). Six distinct projects with multiple studies spanning three decades were implemented in Bangladesh [24,29,32,34–36,39,40]. There were two studies each in Guatemala [25,33] and Uganda [30,37] (Ehrlich L., 2009, personal communication).

Most studies were implemented in rural settings, except in Bolivia [28] and one in Bangladesh [35] which were done in peri-urban and urban areas, respectively. In programs comparing community-based to clinic-based services, clients self-selected the type of provider [23,29,30,33,36].

All programs and studies provided intramuscular DMPA. One program in Bangladesh also distributed norethindrone enanthate (NET-EN) initially, but dropped it after a few months due to operational difficulties [32]. Two programs used auto-disable syringes [26,37].

Thirteen of the programs were implemented by non-governmental organizations (NGOs) [24–26,28,31,33–38] (Jean-Louis B., 2009, personal communication; Ehrlich L., 2009, personal communication). In Peru, both government and NGO workers participated [27]. The Ministry of Health in Bangladesh implemented two programs — one replication program in Abhoynagar and Sirajgoni [32,40] and one expansion project in eight rural communities [29,39].

2.4. Recruitment and training of CHWs

All programs recruited existing CHWs for training in the provision of injectable contraceptives. In some programs all available community-based workers were eligible [23,29,30,33,36], while others selected CHWs based on their productivity, experience, literacy, ethnicity and sex [21,22,25,27,34]. At least three programs [25,26,37] included male and female CHWs, although the percentage of male CHWs was small and ranged between 15% and 26%.

Incorporating provision of DMPA into existing systems involved in-service training for CHWs and their supporting supervisors. The length of training ranged from 3 days in Peru [27] to 10 days in Ethiopia [31] and Guatemala [25], including a practicum to master safe injection technique. Another program in Guatemala [33] included a 1.5-day refresher training 6 months after the initial training course. Training content was similar among programs; the program in Madagascar, for example, included basic reproductive physiology, contraceptive technology, counseling, screening, safe injection technique, infection prevention, waste disposal, reporting, acquisition and management of commodities [26]. Several programs included checklists to facilitate assessment of eligibility to use DMPA [17,22,23,27,29,30,34,36].

Studies providing information on the assessment of CHW competencies after training reported satisfactory levels of knowledge [21–23].

---

Table 1

Summary of results from quality assessment

<table>
<thead>
<tr>
<th>Reference</th>
<th>Country</th>
<th>Publication type</th>
<th>Level of evidence</th>
<th>Internal validity rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azim, 1994 [24]</td>
<td>Bangladesh</td>
<td>Presentation</td>
<td>Level III</td>
<td>Fair</td>
</tr>
<tr>
<td>Ehrlich, 2009 (personal communication)</td>
<td>Bangladesh</td>
<td>Personal communication</td>
<td>Level III</td>
<td>Fair</td>
</tr>
<tr>
<td>Huber et al., 2009 [38]</td>
<td>Afghanistan</td>
<td>Journal</td>
<td>Level II-3</td>
<td>Good</td>
</tr>
<tr>
<td>Jean-Louis, 2009 (personal communication)</td>
<td>Haiti</td>
<td>Personal communication</td>
<td>Level III</td>
<td>Poor</td>
</tr>
<tr>
<td>Khuda et al., 1997 [39]</td>
<td>Bangladesh</td>
<td>Project report</td>
<td>Quality not assessed</td>
<td></td>
</tr>
<tr>
<td>León, 2000 [27]</td>
<td>Peru</td>
<td>Project report</td>
<td>Level II-1</td>
<td>Fair</td>
</tr>
<tr>
<td>McCarraher, 2000 [28]</td>
<td>Bolivia</td>
<td>Project report</td>
<td>Level III</td>
<td>Fair</td>
</tr>
<tr>
<td>Mirza et al., 1994 [29]</td>
<td>Bangladesh</td>
<td>Presentation</td>
<td>Level III</td>
<td>Good</td>
</tr>
<tr>
<td>Phillips et al., 1989 [40]</td>
<td>Bangladesh</td>
<td>Book</td>
<td>Level III</td>
<td>Fair</td>
</tr>
<tr>
<td>Poss et al., 2009 [30]</td>
<td>Uganda</td>
<td>Unpublished manuscript</td>
<td>Level II-1</td>
<td>Poor</td>
</tr>
<tr>
<td>Prata et al., 2009 [31]</td>
<td>Ethiopia</td>
<td>Preliminary report</td>
<td>Level II-1</td>
<td>Fair</td>
</tr>
<tr>
<td>Ramirez, 2008 [33]</td>
<td>Guatemala</td>
<td>Project report</td>
<td>Level III</td>
<td>Fair</td>
</tr>
<tr>
<td>Sadiq, 1994 [34]</td>
<td>Bangladesh</td>
<td>Presentation</td>
<td>Level III</td>
<td>Poor</td>
</tr>
<tr>
<td>Shahnaz and Hossain, 1994 [35]</td>
<td>Bangladesh</td>
<td>Presentation</td>
<td>Level III</td>
<td>Poor</td>
</tr>
<tr>
<td>Stanback et al., 2007 [37]</td>
<td>Uganda</td>
<td>Journal</td>
<td>Level II-1</td>
<td>Fair</td>
</tr>
</tbody>
</table>

8 In Peru, competencies after the first 3-day training were below satisfactory levels. A second training was implemented and CHW achieved competency.
3. Results

Nearly half of the documents originate from programs implemented in Asia (n=9) although this is heavily weighted with evidence from Bangladesh. Substantial evidence also comes from work conducted in Africa (n=5) and Latin America (n=5).

3.1. Client screening

DMPA is safe for use among a large majority of women; only few medical conditions make women ineligible to receive progestogen-only injectables [8]. In 10 of the 16 community-based interventions, CHWs conducted client screening and initiated use of DMPA [25–27,31–33,36–38] (Ehrlich L., 2009, personal communication). In four projects in Bangladesh [24,29,34,35,39] and one each in Bolivia [28] and Haiti (Jean-Louis B., 2009, personal communication), CHWs were only allowed to provide follow-up injections of DMPA, while initial screening and the first injection were done by a clinician or a CHW supervisor. In Guatemala, one study [25] changed procedures during the implementation to allow community-based providers to initiate DMPA use.

The studies assessed CHW's competency in the field through use of simulated or mystery clients in Peru [27], expert consensus in Bangladesh [39], and direct observation in Guatemala [25] and Madagascar [26]. Irrespective of method for competency assessment, it was found that trained CHWs had sufficient knowledge and skills for screening for eligibility of use of DMPA, although none of the studies compared community workers to other cadres of health professionals in this respect.

3.2. Injection safety

The ability of community-based workers to master safe injection technique was assessed in several ways: incidence of injection site morbidity based on clinic records and client reports [24–26,31,33,34,37] (Jean-Louis B., 2009, personal communication), supervisor assessments [26], direct observation [29,39] and expert consensus [39]. Three studies compared injection site morbidity in clinic and CHW clients [25,31,37].

Evaluations in Bangladesh [29,39], Madagascar [26] and Uganda [37] observed satisfactory levels of safe injection technique. Injection site morbidity reported during interviews with clients of CHWs was generally low. No abscesses or inflammation was reported among CHW clients in Bangladesh [34], Haiti (Jean-Louis B., 2009, personal communication) and Uganda [37].

Reports of pus at the injection site or ulceration were between 0.3% and 0.4% in Bangladesh [24], Ethiopia [31] and Guatemala [25]. Studies that compared CHW and clinic-based clients found equivalent injection site morbidity in Ethiopia [31], Guatemala [25] and Uganda [37].

3.3. Client counseling on side effects

Many women report stopping use of DMPA because of the perceived or actual side effects [41]. Studies show that counseling on side effects at the time of initiating use can improve method continuation rates [42,43].

Assessments of CHW counseling were based on client’s recall [26,28,37], reports of supervisors and direct observations [25,26,29]. In addition, comparative analysis of counseling practices of CHWs and clinic-based providers was conducted in two studies [29,37].

The percentage of clients receiving counseling on side effects ranged from a low of 70% in Madagascar [26] based on clients’ recall to over 80% in Uganda [37] and Bangladesh [29,39] based on direct observation. In Bangladesh [29] and Uganda [37], there was no difference in counseling on side effects between CHWs and clinic-based providers.

3.4. Client perspectives

Clients' perspectives on CHW provision of DMPA were captured through client interviews [25,26,29,31,33,34,37], provider reports of client satisfaction [33] and comparison of clients of CHWs and clinic-based providers [31,32,37].

Among clients interviewed more than 13 weeks after their first injection, more than 95% of CHW clients reported being satisfied or planned to continue with community-based provision of DMPA [25,26,28,31,33,37]. Studies in Ethiopia [31] and Uganda [37] found no difference in client-reported satisfaction among clients of CHWs and clinic-based providers. A study in Bangladesh found better client satisfaction, accessibility to services, confidence in DMPA and better counseling and side-effect management in the CHW area compared to the clinic-based area [32]. The same study in Bangladesh reported that women preferred community-based injectable services over clinic-based care and that 9% of married women of reproductive age were users of community-based injectable services, while only 1% of them received injectables from clinic-based providers [32].

3.5. Provider perspective

In Bangladesh, CHWs expressed “pride and satisfaction” at being able to deliver injectables [32]. In focus group discussions in Bolivia, CHWs expressed overall satisfaction with support and supervision and most providers said that they felt comfortable providing injectables [28]. All interviewed providers in Madagascar reported that they would like to continue providing injectables [26]. Researchers in Guatemala [33] found that CHW’s confidence improved over time; at baseline, 28% of CHWs said that they would be uncomfortable providing DMPA, 1% of CHWs at first follow-up and none at second follow-up reported similar discomfort.

---

9 Preliminary results from Ethiopia found a slightly higher rate of induration among CHW clients compared to clinic-based clients (2.7% vs. 0.4%, respectively). However, the difference in these rates was not statistically significant.
3.6. Uptake of services

In communities where delivery of DMPA by CHWs was initiated, use of injectables has increased (Table 2) [24,32,36,38]. It is impossible to know with certainty how much of the observed increase in uptake of injectables can be attributed to the introduction of DMPA provision by CHWs. Given the strength and consistency of the evidence, community-based provision of injectables clearly contributed to the rise in DMPA use in the experimental communities.

In two areas in Matlab, Bangladesh, where a program emphasizing offering a wide range of contraceptive methods, including DMPA, was introduced in 1977, the prevalence of injectable use increased more than 10-fold (2% to 26.8%) over 18 months [36]. Over an 8-year period, it rose from zero to 12% and 19% in two areas after government CHW DMPA distribution was introduced [32]. Even in programs which did not allow CHW to initiate DMPA demonstrated substantial increase in injectable use [29,35]. In one such program implemented in a small area of Bangladesh, use almost doubled from March 1993 to July 1994 after household CHW DMPA distribution started [29]. Gains in contraceptive use overall surpassed increases in injectable use in each of the intervention communities (Table 2). Increased injectable use was also evident in smaller NGO projects in Bangladesh: 9 months after starting CHW delivery of injectables, a 39% increase in use of DMPA was documented in rural areas and a doubling was documented in urban areas [35]. Also in Bangladesh, the relative share of injectables provided by fieldworkers increased from 5% in 1985 to 36% 1994 [39].

Based on data from Sirajgonj and Abhoynagar, Bangladesh, the relative increase of contraceptive use attributable to community-based provision of injectables was estimated using regression analysis and found that introduction of home-based DMPA delivery under optimal conditions would increase the contraceptive prevalence rate (CPR) by 8 percentage points in the first year [40]. Community-based projects in other areas of the country, initiated after the start of the Matlab project, involved less intensive interventions and had less quantitative impact on CPR [40]. A review of the Matlab project and subsequent attempts to adapt the model in the public sector identified operational constraints affecting the quality of care and the frequency of worker-client exchanges. These constraints involved shortages in the worker density needed to obtain optimal work cycles, lack of clarity and routine in household visitation, inefficiencies in support structures and inadequate supportive supervision [40].

3.7. Uptake of services among underserved population groups

An important feature of CHWs is their potential to reach new users and underserved populations. Studies in Bangladesh, Bolivia, Ethiopia, Guatemala, Madagascar, Peru and Uganda documented that CHWs reached new users of family planning [25–27,29–31,34,37]. “New contraceptive users” were defined by some studies as first-time contraceptive users and in other studies as non-users at time of initiation in the project or study. Among studies which reported data by type of provider, between 41% and 45% of CHW clients were not using contraceptives prior to program implementation [24,26,29]. Studies in Madagascar [26] and Ethiopia [31] documented 28% and 38% of CHW clients, respectively, had never used modern contraception prior to injectable use.

Underserved groups included indigenous women in Guatemala [25], women with limited education in Ethiopia [31] and Uganda [37], and also in Uganda, single women and women with husbands not supportive of contraceptive use [37]. Compared to clinic-based services, clients of CHW were more likely to be indigenous women in Guatemala [25] (17% vs. 83%, respectively), more likely to be single in Uganda [37] (9% vs. 16%, respectively) and less likely to have supportive husbands in Uganda (52% vs. 41%, respectively) [37]. Results on the potential of CHW to reach women with limited or no education were mixed. Compared to clinics, CHW served a lower proportion of women with no education in Uganda [37] (16% vs. 8%, respectively) and a higher proportion in Ethiopia [31] (78% vs. 90%, respectively).

3.8. Continuation

Eight studies reported continuation rates for DMPA from 13 weeks up to 3 years [25,26,29,30,32,37,39,40], and four reports from three study cohorts compared rates among clients of clinic- and community-based services [25,30,32,37] (Table 3)
Between 88% and 96% of women having a first injection of DMPA by a CHW also had a second injection after 3 months (Table 3) [25,26,37]. One-year continuation rates among women served by CHWs ranged from 35% in Sirajgani, Bangladesh, to 91% in Guatemala, while most were around 50% to 60%. In studies comparing continuation rates of clients of CHWs and clinics, clients of CHWs had similar or higher rates than those of clients of clinics [25,30,32,37].

4. Discussion

The results of this review provide consistent evidence that appropriately trained CHWs can screen DMPA clients effectively, provide injections safely and counsel on side effects appropriately. Clients of CHWs receiving DMPA had outcomes equivalent to those of clients of clinic-based providers of progestin-only injectables. Clients are satisfied with community-based provision of DMPA, and trained CHWs are comfortable in their ability to provide DMPA. The data also show that provision of DMPA by CHWs expands choice for underserved populations and indicate that community-based services lead to increased uptake of family planning, especially under conditions of low contraceptive prevalence, high unmet need, poor access to a range of methods and limited access to clinic-based services.

Uptake of community-based injectable services was significant in all the reviewed studies, indicating that provision of injectable contraception by CHWs is acceptable in a wide variety of settings. Moreover, trends in contraceptive use show that well-managed introduction of community-based injectable services is likely to contribute to increased contraceptive use overall rather than just a switch of provider or contraceptive method.

Ultimately, program impact will depend on the quality and intensity of implementation. In addition to the training of CHWs, many projects used a screening checklist to aid providers in the task of screening clients [26,27,31,33,37,39] (Jean-Louis B., 2009, personal communication). Studies show that checklists to exclude early pregnancy [44] and to assess eligibility for use of COCs and DMPA can be used effectively by CHWs [12,45].

Concern has been raised that use of syringes outside of clinic facilities, e.g., community-based DMPA provision, could contribute to the spread of infections such as HIV and hepatitis [46], but recent technical guidelines developed by WHO conclude that trained CHWs can safely provide intramuscular and subcutaneous injections [47,48].

Despite high levels of client satisfaction and provider confidence, studies found deficiencies in key indicators of comprehensive counseling, such as counseling on side effects among clinic- and community-based clients. These results demonstrate the need to strengthen counseling in both

Table 3
Continuation rates of DMPA at 3, 6, 12 and/or 18 months in areas of five countries by provision of DMPA by CHWs and, in some instances, in clinics

<table>
<thead>
<tr>
<th>Country, [reference] area, provider</th>
<th>No. of women, 1st injection</th>
<th>3 months</th>
<th>6 months</th>
<th>12 months</th>
<th>18 months</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh [40]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Matlab, CHWs</td>
<td><em>a</em></td>
<td>–</td>
<td>86%</td>
<td>69%</td>
<td>58%</td>
</tr>
<tr>
<td>Sirajgani, CHWs</td>
<td>1456</td>
<td>–</td>
<td>76%</td>
<td>35%</td>
<td>16%</td>
</tr>
<tr>
<td>Abhoynagar, CHWs</td>
<td>1350</td>
<td>–</td>
<td>82%</td>
<td>46%</td>
<td>26%</td>
</tr>
<tr>
<td>Bangladesh [32]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abhoynagar, CHWs</td>
<td><em>a</em></td>
<td>–</td>
<td>76%</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Clinic (comparison)</td>
<td><em>a</em></td>
<td>–</td>
<td>42%</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Bangladesh [29]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 communities, CHW</td>
<td>32,000f</td>
<td>–</td>
<td>79%</td>
<td>49%</td>
<td>–</td>
</tr>
<tr>
<td>Bangladesh [39]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sirajgani, CHWs</td>
<td><em>d</em></td>
<td>–</td>
<td>68%</td>
<td>49%</td>
<td>33%</td>
</tr>
<tr>
<td>Abhoynagar, CHWs</td>
<td><em>d</em></td>
<td>–</td>
<td>73%</td>
<td>58%</td>
<td>46%</td>
</tr>
<tr>
<td>Guatemala [25]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHW</td>
<td>622f</td>
<td>96%</td>
<td>92%</td>
<td>91%</td>
<td>–</td>
</tr>
<tr>
<td>Clinic</td>
<td>376f</td>
<td>95%</td>
<td>92%</td>
<td>91%</td>
<td>–</td>
</tr>
<tr>
<td>Uganda [30,37]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nakasongola, CHWs</td>
<td>449g</td>
<td>88%</td>
<td>–</td>
<td>55%</td>
<td>–</td>
</tr>
<tr>
<td>Nakasongola, Clinic</td>
<td>328g</td>
<td>85%</td>
<td>–</td>
<td>44%</td>
<td>–</td>
</tr>
<tr>
<td>Madagascar [26]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 communities, CHWs</td>
<td>1123</td>
<td>94%i</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

_a_ Number of women not reported.
_b_ Salway, 1991, as quoted by [32].
_c_ Estimated from Fig. 4 in Ref. [29].
_d_ Number of women not reported, estimated to be >1546 in Sirajgani and >1350 in Abhoynagar as projected from Ref. [40].
_e_ Huehuetenango, Sololá, Retalhuleu and Chimaltenango.
_f_ Women had varying duration of follow-up.
_g_ Twelve-month follow-up includes 307 CHW clients and 217 clinic clients.
_h_ Anosy and Alaotra Mangoro.
_i_ Calculated from numbers given in Ref. [26].
In addition to providing guidance on program and policy development for community-based provision of progestin-only injectables, this review also offers insight into the potential value of program research and experiences. Strict reliance on published randomized control trials or quasi-experimental designs in systematic reviews severely limits the pool of information used to inform program investments and developments [49]. Effective decision making must balance the type of evidence required with the policy question at hand.

Research continues to seek cost-effective means of expanding access to this popular method. A few small studies examining the feasibility of pharmacist- and self-expanding access to this popular method. Reported retention rates were generally higher in programs which selected CHWs based on past performance and personal characteristics [25,26,28].

In addition to providing guidance on program and policy development for community-based provision of progestin-only injectables, this review also offers insight into the potential value of program research and experiences. Strict reliance on published randomized control trials or quasi-experimental designs in systematic reviews severely limits the pool of information used to inform program investments and developments [49]. Effective decision making must balance the type of evidence required with the policy question at hand.

The evidence for the safety and efficacy of distribution of DMPA by CHWs comes from observational studies of varying quality. The consistency of outcomes across studies implemented in a wide variety of settings, together with inferences drawn from other studies examining the capabilities of CHWs, gave confidence about the validity of the outcomes [18,48,52]. Given that CHWs can reach women underserved by clinic-based services, we conclude that the benefits of community-based provision of DMPA by CHWs outweigh any potential risks and that more than 30 years of program experience support increasing investments in and expansion of these programs. Such investments must not come at the expense of clinical services. Rather, community-based programs should be seen as an extension of health care systems and are likely to be more effective when linked to and supported by a strong clinic-based system.

Acknowledgments

The authors thank Crystal Dreisbach, Kirsten Krueger, Baker Nduuga Maggwa, Shyam Thapa, and William Finger for all contributions to this work. For valuable advice on unpublished literature, we thank Amanda Abbott, Adrienne Allison, Heather Bergmann, Erinna Bowman, Alice Cartwright, Laura Ehrlich, Jim Foreit, Mia Foreman, Sandy Garcia, Douglas Huber, Jane Hutchings, Neeraj Kak, Dilruha Mahbuba, Noah Marwil, Lesly Michaud, Tanjina Mirza, Winnie Mwebesa, Steve Rubanga, Ruth Simmons, Ricardo Vernon, Chris Welch, Kay Willson, Gladys Kalema-Zikusoka and participants of the Technical Consultation: Expanding Access to Injectable Contraception.

References


[34] Sadiq N. Doorstep injectable service delivery project of The Asia Foundation. Presented at: Lessons Learned on Doorstep Delivery of Injectable Contraceptives, Workshop Proceedings; International Centre for Diarrhoeal Disease Research, Bangladesh, 28 September; 1994.


