

ORIGINAL RESEARCH ARTICLE

The effectiveness of Community Based Distribution of Injectable Contraceptives using Community Health Extension Workers in Gombe State, Northern Nigeria

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Abstract

This study reports on findings of a pilot of community-based distribution (CBD) of injectable contraceptives in two local government areas (LGAs) of Gombe State, Nigeria. From August 2009 to January 2010, the project enrolled, trained and equipped community health extension workers (CHEWs) to distribute condoms, oral and injectable contraceptives in communities. The project mobilized communities and stakeholders to promote Family Planning (FP) services in the selected communities. Using anonymised unlinked routine service data, the mean couple years of protection (CYP) achieved through CBD was compared to that achieved in FP clinics. The CBD mean CYP for injectables- depo medroxy-progesterone acetate (DMPA) and norethisterone enantate was higher (27.72 & 18.16 respectively) than the facility CYP (7.21 & 5.08 respectively) ($p < 0.05$) with no injection related complications. The CBD's mean CYP for all methods was also found to be four times higher (11.65) than that generated in health facilities (2.86) ($p < 0.05$). This suggests that the CBD of injectable contraceptives is feasible and effective, even in a setting like northern Nigeria that has sensitivities about FP. (*Afr J Reprod Health* 2013; 17[2]: 80-88).

Résumé

Cette étude porte sur les résultats d'un projet pilote de distribution à base communautaire (DBC) des contraceptifs injectables dans deux Administrations Locales (AL) de l'Etat de Gombe, Nigeria. D'aout 2009 au janvier 2010, a inscrit, a formé et a équipé des membres de personnel de santé communautaire (MPSC) pour distribuer des préservatifs, des contraceptifs oraux et des injectables dans les communautés. Le projet a mobilisé les communautés et les parties prenantes pour promouvoir la planification familiale (PF) dans les communautés choisies. L'utilisation des données de service de routine anonyme et non corrélées, la moyenne de couple d'années de protection (CAP) obtenue par la CDB a été comparée à celle obtenue dans les cliniques de PF. La DBC de CAP pour les produits injectables Depomedroxy-acétate de progestérone (DMPA) et l'énanthate de noréthistérone était plus élevé (27,72 et 18,16 respectivement) que l'installation (7,21 et 5,08 respectivement) CYP ($p < 0,05$), sans des complications liées à l'injection. On a trouvé que la CAP moyenne de la DB pour toutes les méthodes a également était quatre fois plus élevée (11,65) que celles générées dans les établissements de santé (2,86) ($p < 0,05$). Ceci suggère que la DBC des contraceptifs injectables est réalisable et efficace, même dans un milieu tel que le nord du Nigeria qui a des sensibilités de la PF. (*Afr J Reprod Health* 2013; 17[2]: 80-88).

Keywords: Community-based provision, contraceptives, injectable, PHC

Introduction

Access to modern methods of contraception (female sterilisation, intrauterine device, hormonal contraceptives and condoms) in least developed countries is very limited. The global unmet need for family planning (FP), estimated at 200 million women in 2008, disproportionately affects women

in remote and underserved areas¹. In sub-Saharan Africa for example, about 63% of women are at risk of unintended pregnancy and 25% of women married or in a union have an unmet need for FP². Factors associated with this unmet need are varied, ranging from the unavailability of services to cultural or religious barriers, rural residence, and lack of knowledge about family planning^{3,4}. The

shortage of skilled health care workers and a weak distribution chain for health commodities further limits access to FP service.

In Nigeria, estimates of unmet need for FP grew from 17% to 20% between 2003 and 2008³. Despite the fact that 72% of Nigerian women know of at least one contraceptive method, the proportion of women of reproductive age who are using (or whose partner is using) a contraceptive method at any given time, known as the contraceptive prevalence rate (CPR) for any method was only 15% (and 10% for modern methods), one of the lowest in Sub-Saharan Africa. As a consequence, fertility rate remains high in Nigeria with a total fertility rate (TFR) of 5.7 births per woman. About 11% of all pregnancies are unintended (unwanted or mistimed)³. Since FP can directly or indirectly contribute to the achievement of all eight Millennium Development Goals (MDGs), addressing FP needs in Nigeria becomes even more important⁴⁻⁷.

Although the use of modern contraception in Nigeria remains low, CPR has increased modestly over the last 18 years (from 4% in 1990 to 10% in 2008), mainly in the use of injectables (from 1% to 3%). DMPA (63%) and norethisterone enantate (21%) are the most commonly used injectable contraceptives³. For most women in rural areas, oral contraceptive pills and injectable contraceptives are the methods of choice for FP. This is mostly because of their effectiveness and ease of use, particularly for injectables due to the fact that they can be used discreetly⁸.

Injectable contraception in Nigeria is provided almost exclusively in health facilities; mostly public sector hospitals (25.5%) and health centres (21.0%)³. However, FP clinic utilization in Nigeria is low with one in three women experiencing a difficulty with transportation and distance to health facility as a major barrier to accessing health care³. Community based distribution of injectable contraceptives has been used successfully in other countries to promote FP uptake. In rural Afghanistan, within eight months of introduction of a CBD to FP program, contraception increased by 24 - 27%; with injectables contributing the most to the increase⁹.

In a rural district of Uganda, contraceptive prevalence increased by about 5% after a community-based provision of DMPA was introduced¹⁰. A study in Bangladesh demonstrated a 25% decline in fertility rates in areas that utilized the community-based provision of DMPA model when compared with areas where the use of DMPA was rare⁸. Community based provision of injectable was also found to increase contraceptive uptake in rural Madagascar with 41% of clients reported as being new FP users¹¹. Despite evidence elsewhere showing that CBD of injectable contraceptives can be successfully implemented, community based channels of provision of injectable contraception remain largely unexplored in Nigeria^{12, 13}.

CHEWs are a low cadre of trained medical professionals working in primary health care (PHC) facilities and are also the main health workforce in rural areas. The CHEW was introduced into the Nigerian health care system in the 1970s to alleviate shortages of medical personnel at the PHC level particularly in the rural areas¹⁴. CHEWs are expected to spend half of their time in the communities, and the other half in their assigned clinic. However, because of shortages of higher cadre medical personnel in many rural parts of the country, CHEWs spend most of their time in the clinics with very little time for community activities.

The United Nation Fund for Population Activities (UNFPA) since 2003 has supported the community reproductive health project in selected LGAs in Nigeria, using trained community volunteers, to distribute condoms and re-supply of oral pills only. Little is known of the feasibility and effectiveness of CBD for injectables in Nigeria, particularly in the predominantly Moslem northern states. Family Health International (FHI) in collaboration with the Association for Reproductive and Family Health (ARFH), the Federal and the State Ministries of Health, supported a project to use pre-existing CHEWs in two LGAs in Gombe State, on CBD to injectable contraceptives from October 2009 to February 2010. This paper describes the results of a secondary analysis of routine data which demonstrate the effectiveness of adding injectable

contraceptives to the mix of community-based family planning methods provided in northern Nigeria.

Methods

Setting

The study was conducted in northern Nigeria, a region with the worst maternal and reproductive health indicators. The maternal mortality rate (MMR) in Gombe State is estimated at 1,002/100,000 live births, two times higher than the national average¹³. Gombe's population was estimated at 2,353,879 people in 2006, with two dominant ethnic groups — Hausa and Fulani. Women of childbearing age account for 22% of the population.

Gombe has 11 predominantly rural local government areas (LGAs) and 554 health facilities, 110 of which provide FP services. Gombe State has an established CBD program consisting of trained male and female community volunteers who distribute condoms and provide resupply of oral pills. The federal ministry did not however approve of the provision of injectable contraceptive by non-medical professionals based on safety concerns. Five wards each, in Funakaye and Yamaltu/Deba LGAs, were selected in conjunction with stakeholders at the federal, state and local government level as sites for the CBA for injectable project. Since the purpose of the project was to add injectables to the method mix already available in the existing CBD for oral pills, the selection of sites was based on five factors: (1) an established community-based contraceptives program for oral contraceptive, with linkages to the health facilities; (2) an established commodities logistics system; (3) a functioning supervisory system with identified supervisors; (4) scheduled and effected supervisory visits to oversee community volunteers; and (5) an informal data collection and data flow process.

The Intervention

The project trained 30 CHEWs employed by government in the study sites to provide injectable contraceptives in the community setting. Prior to

the intervention, the CHEWs provided health services including FP services in PHCs within selected LGAs and were not previously involved in CBD of FP methods. In the preparatory phase, FHI identified and engaged stakeholders at all levels; federal, state and community. At the community level, FP uptake was promoted through community meetings and outreaches where FP information was shared and misconceptions on FP were clarified. Advocacy visits to community gate keepers — traditional rulers, religious leaders, ward heads and opinion leaders within the project communities paved way for larger community gatherings to promote male involvement and generate demand. CHEWs were introduced to the communities they served during community sensitization meetings. Clients were able to identify the CHEWs and schedule appointments with them by direct contact or via phone calls. Clients either visited the CHEWs at home or invited the CHEWs to their homes after scheduling appointments. Social gatherings such as weddings and naming ceremonies were also used to reach clients.

Cultural sensitivities in this predominantly Moslem community guided the selection criteria of CHEWs, final selection was done by the local authorities. All the 30 selected CHEWs were female aged 28-40 years, and resident in the community they served. The CHEWs were trained for forty hours over five days as community-based providers of FP counselling, and a mix of contraceptives which included DMPA and norethisterone enantate injectables. The training involved both theory and practical sessions based on an adapted curriculum from the Federal Ministry of Health. It included modules on reproductive anatomy and physiology, contraceptive technology, counselling, client screening using job aids and checklists, injection techniques, infection control and waste disposal, HIV, managing supplies, referrals, and data collection. The CHEWs were expected to pass a post training evaluation test, and also demonstrate proficiency in administering injections. CHEWs who met these criteria received a certificate of participation; all 30 CHEWs met the criteria. Safety was addressed by training the CHEWs on universal safety precautions and providing sharps

disposal boxes which were incinerated at the referral health facilities.

The 30 trained CHEWs were deployed in the two LGAs (15 per LGA) to provide community based FP services and link eligible clients through referrals to health facilities for clinic-based methods – IUD, implant, and sterilization – or for other medical conditions. Each CHEW received job-aids, checklists, and a seed stock of contraceptive commodities which was replenished from state MOH stores using the user-fees charged for the service. Clients were charged the following; 80 Naira (\$0.6) for DMPA and norethisterone enantate injectables, 15 Naira (\$0.1) for a cycle of oral pills, 20 Naira (\$0.13) for each female condom and 1 Naira (\$0.01) for a unit of male condoms (at an exchange rate of 150 Naira to 1USD). The CHEWs kept records of each service encounter using daily activity sheets (described below). Seven CBA supervisors were selected among officers-in-charge of PHC facilities in line with the existing supervisory structure of the health system. CHEWs were linked to the CBA supervisor in the health facility located within the community served. These facilities served as the referral centres for clinic-based FP methods. At the time of the intervention, there were five facilities that provided FP services in each of the two LGAs.

Data collection

The data on community-based activities used a collection tool adapted from the Nigerian national FP register by adding three columns that captured information on i) clients who switched over from clinic provision to community-based provision, ii) reported complications, and iii) referrals. At each encounter with a client in the community, the CHEWs recorded client age, sex, and type of FP commodity provided, and referrals on these daily activity sheets. To monitor safety, during encounters with revisit clients for injectables, the CHEWS also recorded cases of injection abscesses or very painful injections. Each supervisor collated data monthly from the CHEWs she supervised and filled in the monthly summary forms to aggregate the community-based activities. The data on facility-based uptake during the study period were

derived from the routine FP service statistics in the public health facilities (primary and secondary health facilities) located in the two pilot LGAs. Prior to the intervention, the facility M&E system was weak, no data capturing tools and lack of M&E supervision. For this reason, pre-intervention data is unavailable.

Analysis

The main measurement of outcome was the couple-years of protection (CYP), which was calculated by dividing the total uptake of each FP commodity by the duration of the protection provided, assuming an average of 10 acts per month. The number of each commodity required to make up one CYP are as follows: 120 units for condoms; 4 doses of DMPA injectable; 6 doses of Norethisterone enantate injectable; 15 cycles of oral contraceptives. The CYP for each method was summed for all methods to obtain a total CYP.

Data were analyzed using *Stata* 10 (Stata Corp, 2007). Frequencies were calculated and cross-tabulated to compare contraceptive uptake in the community-based service to routine facility-based provision of contraceptives. A paired *t* test of difference in means was used to compare mean CYP (all FP methods) from facility-based provision to mean CYP (all FP methods) from community-based FP service provision. Further analysis was done to compare the difference in the mean CYP of facility-based provision to community-based provision by each FP method. Statistical significance for all tests was defined as $p < 0.05$.

Results

Socio-demographic characteristics of CBA acceptors

Health facilities in Gombe do not keep client level data in the registers. The socio-demographic characteristics of clients attending health facilities were not available. A total of 2,363 clients accessed the community-based FP service (injectables, oral pills and condoms) in the two LGAs during the study period (October 2009 to February 2010). Funakaye reported 1,066 (45%) acceptors, slightly less than Yamaltu/Deba's 1,297

(55%). This translates to an average of 12 and 14 clients per CHEW per month for Funakaye and Yamaltu/Deba LGA respectively. Only 82 (8%) and 247 (19%) of the clients in Funakaye and Yamaltu/Deba LGAs respectively were males. The majority of FP clients reached in the two LGAs were between the ages of 25 – 34 years (55%), followed by the age group 15 – 24 years (25%), and the 35 and 44 years age group (18%). The age distribution was similar across the two LGAs. (Table 1)

CBA FP uptake and couple-years of protection (CYP)

In total, 1,216 cycles of oral contraceptive pills, 1,076 doses of Norethisterone enantate and 1,022 doses of DMPA were dispensed through the community-based system during the study period. FP uptake in the health facility was found to be lower, with a total of 289 cycles of oral pills, 306 doses of Norethisterone enantate, and 299 doses of DMPA dispensed through facility based provision (Table 2).

Table 3 shows the comparison of mean CYP from CBA and facilities; the CBA yielded a significantly higher mean CYP for all methods (11.65) compared to facility-based service (2.86) ($p<0.01$). Mean CYP by each FP method for facility and community-based services respectively were: male condom 0.01 and 5.91 ($p<0.01$), female condom 0.03 and 0.15 ($p=0.06$), DMPA 7.21 and 25.72 ($p<0.01$), Norethisterone

enantate 5.08 and 18.16 ($p<0.01$) and oral pills 1.98 and 8.29 ($p<0.01$)

Table 4 shows the comparison of the mean CYP in the two LGAs for each FP method provided through CBA and facility-based provision. Both LGAs recorded a significantly higher CYP for all contraceptive methods except the female condom from CBA compared to the facility-based service. In Funakaye LGA, a mean CYP of 11.32 from all contraceptive methods was provided via CBA compared to 4.50 mean CYP provided by the facility-based provision in the corresponding wards ($p<0.05$). Similarly, in Yamaltu/Deba LGA, a mean CYP of 11.97 was provided by the CBA while the facility-based provision yielded a mean CYP of 1.22 ($p<0.01$).

DMPA provided the highest contribution to the total CYP in both facility-based and CBA in both LGAs. However, the difference in mean CYP from CBA and facility-based provision was found to be more statistically significant in Yamaltu/Deba ($p=0.029$) than in Funakaye LGA ($p=0.099$). Norethisterone enantate also had good uptake in both LGAs through the CBA and Yamaltu/Deba again had a more statistically significant mean CYP difference ($p=0.026$) compared to Funakaye ($p=0.047$).

From a total of 2,363 clients served during the observation period, 721 (30.5%) reported a switch from using services in fixed facilities to enrolling in the CBD project. The highest proportion of clients who switched to CBD was recorded among those using Norethisterone enantate (38.6%) and DMPA (30.8%). (See table 5)

Table 1: Demographic Characteristics of CBA Acceptors by LGA, August 2009 to January 2010

	Funakaye LGA (n=1066)	Yamaltu/Deba LGA (n=1297)	p
	n (%)	n (%)	
Sex			
Male	82 (7.7)	247 (19.1)	<0.01
Female	984 (92.3)	1050 (80.9)	
*Age group (years)			
15 – 24	255 (26.2)	308 (25.3)	0.357
25 – 34	545 (55.9)	653 (53.7)	
35 – 44	164 (16.8)	235 (19.3)	
> 45	11 (1.1)	19 (1.6)	

* n= 2190

Table 2: FP commodity uptake in LGA by type of commodity and service delivery from August 2009 to January 2010

FP commodity	Funakaye LGA		Yamaltu/Deba LGA	
	CBD n (%)	Facility n (%)	CBD n (%)	Facility n (%)
DMPA	465 (12%)	232 (30%)	557 (9%)	67 (37%)
Norethisterone enantate	551 (15%)	241 (32%)	525 (9%)	65 (36%)
Oral Pills	685 (18%)	250 (33%)	531 (9%)	39 (22%)
Male Condom	2,050 (54%)	0 (0%)	4,326 (71%)	10 (5%)
Female Condom	34 (1%)	40 (5%)	139 (2%)	0 (0%)
Total	3,785 (100%)	763 (100%)	6,078 (100%)	181 (100%)

Table 3: Comparison of mean CYP achieved by type of FP methods between facility-based and CBA services, August 2009 to January 2010

	Mean CYP (C I), both LGAs combined		<i>p</i>
	Facility	Community	
All methods	2.86 (1.37-4.34)	11.65 (8.54-14.75)	<0.001
DMPA	7.21 (1.11-13.30)	25.72 (18.46-32.98)	<0.001
Norethisterone enantate	5.08 (1.47-8.69)	18.16 (12.29-24.03)	<0.001
Oral Pills	1.98 (0.34-3.61)	8.29 (5.95-10.62)	<0.001
Male condom	0.01(-0.01-0.03)	5.91 (3.97-7.85)	<0.001
Female condom	0.03 (-0.04-0.11)	0.15 (0.05-0.26)	0.060

Table 4: Comparison of mean CYP achieved from facility-based and CBA services by LGA, August 2009 to January 2010

	Funakaye LGA			Yamaltu/Deba		
	Mean CYP (C I)		<i>p</i>	Mean CYP (C I)		<i>p</i>
	Facility	Community		Facility	Community	
All methods	4.50 (1.87-7.13)	11.32 (7.11-15.53)	0.018	1.22 (-0.06-2.50)	11.97 (7.09-16.86)	<0.001
DMPA	11.06 (-1.02-23.14)	23.58 (11.76-35.40)	0.099	3.35 (-3.65-10.35)	27.86 (13.73-41.99)	0.029
Norethisterone enantate	8.00 (2.12-13.88)	18.84 (10.57-27.11)	0.047	2.16 (-2.41-6.73)	17.48 (4.68-30.28)	0.026
Oral Pills	3.36 (0.41-6.31)	9.50 (6.50-12.50)	0.018	0.59 (-0.82-1.10)	7.07 (2.34-11.80)	0.028
Male condom	0.00	4.6 (1.53-7.67)	0.014	0.02 (-0.03-0.06)	7.22 (4.14-10.30)	0.003
Female condom	0.07 (-0.12-0.25)	0.07 (-0.12-0.16)	0.935	0.00	0.24 (0.03-0.45)	0.033

Table 5: Reported switch in service utilization from fixed health facility to CBD during observation period

Method	Total number of clients	No. clients reported switch from fixed facility to CBD	%
DMPA	689	212	30.8
Norethisterone enantate	713	275	38.6
Oral Pills	561	135	24.1
Condoms	400	99	24.8
Total	2363	721	30.5

Injection Safety

During the course of the study, no needle stick injury or any other any injection related adverse event such as injection abscess was reported. Safety boxes were filled appropriately, and disposed according to facility protocol.

Discussion

The CBA pilot project expanded access to FP in rural northern Nigeria by complementing fixed facility-based service provision with the flexible and culture-sensitive approach of community-based access. The mean CYP of all methods in this CBA pilot project was 4 times higher than that from facility-based provision, a significant difference observed in the two LGAs. The ability to promote FP depends on the use of effective and innovative strategies to deliver these services to rural populations¹⁵.

Policy in Nigeria limits the provision of injectable contraception to health facilities. The findings of this study suggest the provision of injectables beyond health facilities to include mobile community-based provision by trained low cadre health workers is feasible and safe. For the observed increase in CYP, the workload (12 to 14 clients per CHEW per month) remained manageable. This is critical since CHEWs play an important role in the operation of PHCs in Nigeria, and are expected to share their time almost equally between facility and community tasks. An increase in community workload might have negative impact on the facility workload.

It is important to note that the financial barrier to access was not removed entirely in the pilot project. The government prescribed fees for FP methods was applicable. The only savings that

might have occurred was in client transportation costs – clients did not incur transportation costs. The removal of user fee will further increase the uptake of FP in Nigeria. Factors other than cost that may have played a role in increased uptake of FP in the community, these may include convenience – injections do not have to be administered during clinic hours which often times conflict with domestic or commercial priorities of women; relaxed setting of homes; professional providers who were part of the communities and could be trusted; endorsement by traditional rulers and key gatekeepers as well as other demand creation activities engaged in by the CBA project. Mekonnen et al argue that awareness of the community-based service amongst other factors could predict the success of a community-based family planning program¹⁶.

The findings are even more significant when the location of the project, the predominantly Moslem Northern Nigeria, is considered. FP is perceived as ‘foreign’ and ‘western’ and organisations promoting FP are frequently regarded with suspicion and as such gaining access to communities and developing trust has usually been a challenge¹⁷. Hence the low CPR for modern methods (3.5%), and injectables in particular (0.9%).³ Despite the socio-cultural and religious barriers to FP access that characterize northern Nigeria, the pilot project has demonstrated that it is possible to (1) gain the support of traditional and religious leaders, (2) increase use of contraceptives through community-based service systems.

Women are expected to secure consent of male partners before accessing FP services. This project however found that although male acceptors were in the minority (8% to 19%), male condom uptake

was relatively high, representing 54 and 71% of total FP commodity units dispensed in Funakaye and Yamaltu respectively. In Nigeria, motivating men to attend FP clinics is difficult¹⁸. The findings therefore suggest that despite the prevailing belief and religious influences, it is possible to reach men through community-based provision of FP services.

The higher CYP of the CBA pilot corroborates the high-unmet need for FP services in Nigeria, where unmet need for contraception is 20% (15% for spacing and 5% for limiting). The prevalence is even higher among rural dwellers.³ Our findings of a significantly high CYP contribution by injectable contraceptives support the evidence of high injectable contraceptive use elsewhere when community-based FP programs are introduced, including in Muslim countries^{8,9,10,11}.

A major limitation to this study is the absence of a control; it is therefore not possible to exclude the influence of confounders on the findings of our study. The unavailability of pre-intervention community or facility data further limits the study, as we are unable to tell if the observed improvement would be significant compared to the pre-intervention period. The pilot was conducted for a period of six months, we are unable to demonstrate that our findings could be sustained; it is possible that the FP uptake via CBD would wane over time. Our study is also limited in generalizability, as the pilot was carried out in only five wards each in the two local governments.

Conclusion

Our study demonstrates the feasibility of community-based provision of injectable contraceptives in Nigeria using low cadre of health workers. Facility-based provision of FP services can be effectively and safely complemented with community-based service. Policy guidelines to address human resources at PHC level, monitoring and supportive supervision of CHEWs and commodities supply chain issues will need to be addressed to allow for scale up of CBA in Nigeria and optimal impact.

Acknowledgment

The community-based project received funding

from the Contraceptive and Reproductive Health Technologies Research and Utilization (CRTU) program, USAID-sponsored assistance agreement (2005-2010) with Family Health International through the Cooperative Agreement No. 620-A-00-04-00122-00.

Contribution of Authors

Rabiatu Abdul-hadi, Moyosola Abass, Bolatito Aiyenigba, Lolade Oseni, Christoph Hamelmann, and Otto Chabikuli contributed to study conception, design, analysis and interpretation of data. Moyosola Abass, Bolatito Aiyenigba and Lolade Oseni conducted the statistical tests. Rabiatu Abdul-hadi, Moyosola Abass, Bolatito Aiyenigba and Lolade Oseni wrote the drafts of the publication. Mohammed Ibrahim, Solomon Odafe, Oladapo A. Ladipo and Otto Chabikuli contributed to the critical revision of the article.

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