

Comparing the Effectiveness and Costs of Alternative Strategies for Improving Access to Information and Services for the IUD in Ghana

Health Research Unit, Ghana Health Service

Ivy Osei
Gertrude Voetagbe
Moses Aikins
John Gyapong

Frontiers in Reproductive Health, Population Council

Philomena Nyarko
Harriet Birungi

Reproductive and Child Unit, Ghana Health Service

Gloria Quansah Asare
Henrietta Odoi-Agyarko

ACQUIRE Project, EngenderHealth

Olivia Aglah
Barbara Jones

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
CBD	Community-Based Distributor
CBSV	Community-Based Surveillance Volunteer
CHC	Community Health Compound
CHV	Community Health Volunteer
CHO	Community Health Officer
CHPS	Community-based Health Planning and Services
CYP	Couple Year of Protection
DHMT	District Health Management Team
DMPA	Depo Provera
FGD	Focus Group Discussion
FHI	Family Health International
FP	Family Planning
FRONTIERS	Frontiers in Reproductive Health Program
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
GSMF	Ghana Social Marketing Foundation
HIV	Human Immunodeficiency Virus
HRU	Health Research Unit
IEC	Information, Education, and Communication
IUD	Intrauterine Device
JSS	Junior Secondary School
LAM	Lactational Amenorrhea Method
MOH	Ministry of Health
NID	National Immunization Day
RCHU	Reproductive and Child Health Unit
RH	Reproductive Health
STI	Sexually Transmitted Infection
TA	Technical Assistance
TBA	Traditional Birth Assistant

EXECUTIVE SUMMARY

Ghana has a high unmet need for spacing (22 percent) and limiting (12 percent) births. According to the 2003 Ghana Demographic Health Survey, 25 percent of women 15-49 married and in union used a contraceptive method, but only four percent used long-acting methods such as female sterilization (1.9%), the IUD (0.9%) and implants (1%). The Ghana Health Service (GHS) was prompted to explore ways of increasing interest in the IUD through increasing awareness of this and other long-acting and permanent methods via interpersonal channels and by intensifying campaigns to dispel rumors about the method. The Health Research Unit (HRU) of the GHS, EngenderHealth's Quality Health Partners project and the Population Council's Frontiers in Reproductive Health (FRONTIERS) project, both funded by USAID, collaborated with the GHS to test innovative approaches to increase awareness of the IUD and to improve access to the method.

The study used a pre- and post-test quasi-experimental design with two intervention groups and one comparison group. The Intervention I group consisted of eight Community-based Health Planning and Services (CHPS) zones in which CHOs and Community Health Volunteers (CHVs) were given IUD updates and refresher training in counseling skills and encouraged to increase the awareness of the IUD among female and male community members of reproductive age through strategies that build on the community-based structures and processes developed as part of the CHPS initiative. The intervention II group consisted of four CHPS zones in which, in addition to information updates and refresher training in counseling skills, CHOs with training in midwifery (a requirement for providing IUD services in Ghana) were given refresher training in IUD insertion and removal procedures and given the necessary equipment and supplies to provide IUD services in their communities. Six CHPS zones served as the comparison group.

The eighteen CHPS zones from three districts in three regions were assigned to the three experimental groups. The interventions included: 1) training of Community Health Officers (CHOs) and community volunteers in conducting educational activities focused on creating awareness of, and interest in, the IUD and other long acting methods; and, 2) improving the CHO's IUD insertion and removal skills. Data were collected for both pre-intervention and post-intervention (one and a half years after baseline) assessments by household surveys, focus group discussions, provider interviews and facility inventories.

In general, CHOs exhibited adequate knowledge of and a positive attitude towards the IUD. Both male and female respondents had high levels of awareness about contraceptive methods and there were no statistically significant changes in the proportion of CHOs who knew of at least one method between the pre-intervention and end line surveys. Awareness of long acting methods among women in all groups, including the comparison group, showed significant improvements. At least twice as many women as men were aware of long-acting methods. For both men and women, the proportion using long-acting methods remained the same over time in the comparison sites but increased for the intervention groups I and II, with the intervention II group recording the highest increases.

The service statistics for new and continuing users of family planning methods served by CHOs showed increases in the number of new acceptors for all FP methods across all the study groups. Whereas injectables continued to be the most popular method among the clients, there was a five-fold increase in the uptake of the IUD and the implant in the intervention II group (where insertions were done by the CHO at the community level).

The total cost of the interventions in Intervention 1 group (US\$18,459) was about 2.2 times that of the Intervention 2 group (\$8,292), although the distribution across cost categories was similar. Recurrent costs were the largest share (i.e., more than 90 %) of the total cost, which shows that the intervention is heavily skewed toward regular supplies of consumable items with relatively little or no capital inputs. Training and personnel costs made up 57 percent of the total cost. The estimated CYPs were 270 for the Intervention group 1 and 207 for the Intervention group 2. The cost per CYP was lower in Intervention group 2 (US\$40.16) compared to Intervention group 1 (\$68.49).

The limitations of the study include (a) a short intervention period, (b) aggregated cost data, (c) the limitations of the reported CHO time spent on various activities, and (d) possibility of contamination between the intervention and comparison areas.

In conclusion, the possibility of contamination between the intervention and comparison groups makes it difficult to determine categorically the extent to which the interventions had an impact at the population level. However, the five-fold increases in the numbers of new IUD and implant users recorded by CHOs who undertook insertions at the community-level, together with the much lower cost per CYP for this model, suggest that training CHOs to educate communities about long-acting methods and enabling them to provide them at the community level should be considered.

I. BACKGROUND

The 2003 Ghana Demographic Health Survey highlights that only 25 percent of married women of reproductive age used a contraceptive method, with 19 percent using modern methods and 7 percent using traditional methods. The most popular methods were the pill (5.5%), injectables (5.4%), periodic abstinence (5.1%), and male condoms (3.1%). Only 3.8 percent used one of the long-acting methods—female sterilization (1.9 %), the Intrauterine Device (IUD) (0.9 %), and implants (1%).

The level of use of long-acting contraceptive methods has remained stagnant for several years. The proportion of women that use the IUD declined nationwide from 4.0 percent in 1988 to 2.8 percent in 1998, despite relatively high awareness of the method (49%) among married women of reproductive age (Gyapong et al., 2003; GSS and MI 1998; GSS and MI 1993; GSS and MI 1988). In 2003, the method was used by only 3.0 percent of current contraceptive users (GSS, HRU/MOH and ORC Macro 2003). Similarly, use of sterilization among current female contraceptive users dropped from 7.3 percent in 1988 to 5.1 percent in 1998 and then rose slightly to 6.2 percent in 2003 (GSS and MI 1988; GSS and MI 1998; HRU/MOH, and ORC Macro 2003). The exception has been the use of implants, which has increased from being negligible at the start of the 1990s (0.1%) and risen steadily to 0.7 percent in 1998 and to 3.2 percent in 2003. The unmet need for birth spacing (22%) or limiting births (12%) is relatively high in Ghana and thus increasing awareness and supply of long-acting methods is needed to enable adequate birth spacing and to improve maternal and child health.

Several programs have been launched in Ghana to inform and educate people about family planning (FP) and contraceptive methods, notably the *Life Choices program*, which is a USAID-funded multimedia campaign with FP messages. However, efforts to increase FP use have been hampered by: lack of sufficient trained personnel in the public sector; limited educational activities; and a lack of equipment, supplies and Information, Education, and Communication (IEC) materials. An assessment by the Ghana Health Service (GHS) and FRONTIERS of the acceptability of the IUD by clients and providers in the Greater Accra, Eastern, and Volta regions showed that these factors, as well as the fear of side effects, discouraged clients from using the IUD (Gyapong et al. 2003).

Given these findings, and the fact that the IUD is a safe, reversible, and cost-effective method¹ that requires little effort on the part of the user once inserted, the GHS decided to explore ways of increasing interest in its utilization. Key strategies identified included increasing awareness about the IUD via interpersonal channels and through enhanced marketing strategies, and intensifying campaigns to dispel rumors about the method. There was also a need to improve the confidence and competence of providers in IUD insertion and removal skills through a hands-on training approach. GHS also proposed that access to the method be increased by training a larger number of IUD providers that could be more accessible to users, especially in rural areas.

Drawing on this diagnosis and on experiences from other countries, the GHS, through its USAID Community-based Health Planning and Services (CHPS) program and in collaboration with

¹ The IUD has an effectiveness level of 98 to 99 percent. The per-unit commodity cost of an IUD is US\$1.60 and it lasts up to 10 years compared with Depo provera (DMPA), a 3-monthly injectable that costs \$1.30 per injection, or oral contraceptive pills that cost \$0.22 per cycle.

FRONTIERS and EngenderHealth, tested innovative approaches to increase awareness of the IUD and to improve access to the method. The interventions included: (1) training Community Health Officers (CHOs)² and community volunteers in conducting educational activities focused on creating awareness of, and interest in, the IUD and other long-acting methods; and (2) improving the CHOs' IUD insertion and removal skills. A key assumption was that interpersonal communication and messages tailored to address community beliefs and fears about the method were likely to stimulate the demand for this underutilized method and for other long-acting methods.

II. STUDY OBJECTIVES

1. To evaluate whether giving the CHO information updates on long-acting methods improved their knowledge of effective use, mode of application, mode of action, duration of use, and eligibility criteria for each method.
2. To assess whether training CHOs and community volunteers to educate community members about long-acting FP methods (including the IUD) improved the community members' knowledge and perceptions of long-acting methods, as well as their intention to use them in the future.
3. To measure the degree to which the educational activities changed contraceptive use and the share of long-acting methods in the method mix in CHO work zones.
4. To measure the incremental impact of training CHOs in IUD service delivery on the use of IUDs and other contraceptive methods where the educational intervention had already been implemented.
5. To assess the cost-effectiveness of the educational intervention and the training of CHOs in the delivery of IUD services.

III. DEVELOPMENT AND IMPLEMENTATION OF INTERVENTIONS

Intervention development and implementation involved several stages and activities, including forging partnerships, developing IEC materials, training CHOs and community volunteers, providing supplies, launching the intervention, conducting the IEC campaigns and service delivery, and monitoring the interventions at the community level. Two interventions were implemented in a sample of CHO zones (a zone comprises the communities served by one CHO) and their population-level outcomes compared to a comparison population:

- **Intervention 1** was implemented in eight CHPS zones, in which CHOs and Community Health Volunteers (CHVs) were given IUD updates and refresher training in counseling skills and encouraged to increase the awareness of the IUD among female and male community members of reproductive age through strategies that build on the community-based structures and processes developed as part of the CHPS initiative.

² CHOs are qualified nurses who have completed training in basic curative health services, public health, immunization, and FP. The CHOs undergo a six-week reorientation program of intensive in-service training in methods of community engagement, service outreach, and community health care planning.

- **Intervention 2** was implemented in four CHPS zones in which, in addition to the information updates and refresher training in counseling skills provided in intervention 1, the CHOs qualified in midwifery (a requirement for providing IUD services in Ghana) were given refresher training in IUD insertion and removal procedures and given the necessary equipment and supplies to provide IUD services in their communities.
- The **comparison group** consisted of six CHPS zones offering the regular FP services.

3.1 Partner Collaboration

Several partners collaborated in developing and implementing the interventions. In March 2005, a ten-member committee, comprising staff from FRONTIERS, the CHPS-Technical Assistance Project, EngenderHealth, and the Health Research Unit (HRU), Reproductive and Child Health Unit (RCHU), and Health Education Unit of the GHS, was set up to coordinate the intervention activities. These activities included pre-testing, printing, and distributing IEC materials, training CHOs and volunteers, providing IUD kits and devices, developing a monitoring tool, and coordinating activities with District and Regional Directors of Health.

3.2 IEC Material Development

A leaflet describing the IUD was developed to provide basic and accurate information on the IUD as one of the FP methods available that could serve as a reference for users and other relevant audiences. The leaflet describes the IUD, how it works, and its advantages and disadvantages. It also answers common questions about the IUD, presents points to remember, and explains the need for dual protection against HIV.

This material was developed through a consultative process. Subject matter specialists assessed the technical correctness and appropriateness of the text, and the material was amended as appropriate. The draft material was pre-tested in two peri-urban communities close to Accra by a five-member team from the Health Promotion Unit of the GHS to ensure that the leaflet was user-friendly and to determine the level of clarity and the cultural and contextual appropriateness of the material. A total of 5,000 leaflets were produced for the educational campaign.

3.3 CHO and CHV Training

Training of the CHOs was done in two phases between May 4 and June 4, 2005 at the Korle-Bu Public Health Nurse's School. During the first phase, all 23 CHOs in both intervention groups received training on IUD updates; in the second phase, the 12 CHOs in Intervention group 2 received training in IUD service delivery; these included providers from the referral facilities for those communities without CHOs. To ensure close supervision and interaction with participants, the training was held in three batches, one for all the CHOs from each district. For each batch of participants, the training on IUD updates lasted two working days, after which the CHOs group and referral clinics were retained for five more days for the refresher training on IUD insertion and removal skills.

Participants for the training on IUD updates were first assessed on their counseling skills and then taken through several topics, including verbal and nonverbal communication, client-provider interactions, types of counseling, factors affecting contraceptive use, general FP eligibility criteria, dual protection, and detailed information about the IUD (covering characteristics, mechanism of action, eligibility criteria, IUD-specific counseling, client

assessment, and side effects/problems and their management). A variety of teaching methods, including oral presentations, video shows, demonstrations, and role plays, were employed to facilitate teaching and learning. On day two, participants were attached to FP clinics at the Korle-Bu Hospital, Mamprobi Polyclinic and Ridge Hospital to gain some hands-on counseling experience. Participants in Intervention Group 2 stayed on in these facilities for a further five days to practice IUD insertions under the supervision of two master trainers from the National Family Planning Program.

One-day training sessions were held for the CHVs and some ‘satisfied clients’ (i.e. women already using the IUD) in the three districts; Table 1 presents the number of CHOs, volunteers, and satisfied clients trained in each district.

Table 1: Number of CHOs, CHVs and satisfied clients trained by district

District	IUD Update		Community sensitization		
	CHOs given refresher training on IUD counseling*	No. of CHOs given IUD skills update*	No. of volunteers	No. of satisfied clients	No. of CHOs
Abura-Asebu-Kwamankese	8	4	42	0	4
Birim North	9	6	38	4	4
Nkwanta	6	2	44	0	0
Total	23	12	124	4	8

*Includes sub-district supervisors.

The training sessions equipped the volunteers and satisfied clients with basic communication skills to enable them to undertake community education on the IUD and other long-acting FP methods. To ensure consistency in each training session, a consultant/facilitator’s manual and a one-page training guideline for the volunteers were prepared. Training was a participatory, interactive learning process that centered on the following issues:

- ✓ The aims of the project, the role of the CHVs and the support they were to give to the CHOs;
- ✓ An overview of basic communication principles (what is expected of the source of a message, the message content, the appropriate channel to use, and the importance of feedback);
- ✓ Interpersonal communication (stressing basic principles of presentation and preparation for presentations, public speaking, confidentiality and respect for the position of the would-be client, and referral of all clients to the CHOs when confronted with difficult questions);
- ✓ Event planning and community mobilization;
- ✓ Advantages of the IUD and other long-acting methods and known side effects;
- ✓ Common rumors and misconceptions about IUDs in their communities;
- ✓ Development of key messages.

3.4 Distribution of IEC materials, equipment and supplies

Eight hundred copies of the IUD leaflets, as well as FP flip charts, were distributed in each intervention group to the CHOs who had received the refresher training. In addition, CHOs in the Intervention 2 group were each given one IUD kit, while the referral clinics were given two kits each. The six remaining kits were given to the District Health Management Teams (DHMTs) for replacing faulty ones in the study sites. Each kit included three Sims uterine sounds, one IUD string retriever, three Mayo dissecting scissors, four Foerster sponge forceps, three Schroeder-Braun tenaculum, four iodine cups, four Graves vaginal speculum (medium), one Graves vaginal speculum (large), one Alligator forceps, and one Rochester pean curved forceps.

Accessories and expendable materials consisting of one liter of aqueous solution of iodine, 20 gallons of chlorine bleach, 200 pieces of examination gloves, and 10 rolls of cotton wool also were supplied to the Intervention 2 sites and referral sites to enhance their operations.

Replenishment of these supplies was done on demand.

3.5 Introduction of the interventions

Following the training of the CHOs, the CHPS-TA project hired a consultant to develop and manage the community education campaigns to be implemented in the Intervention 1 and 2 zones. During June and July 2005, the consultant visited the three districts to assess the traditional communication channels available through which the target population could be reached, review the CHPS structures and identify how best the interventions fit into them, and plan the volunteer training with health staff.

From interactions with the district health staff it was evident that the target groups could be reached through several means: (1) existing structures such as durbars, home visits, visits to churches and mosques; (2) interpersonal activities on market days; (3) using health vans, playing recorded cassettes of testimonials from satisfied clients; (4) playing a recorded endorsement of the method by chiefs at group meetings; (5) talking about the IUD during dawn broadcasts or on market days from the vans; (6) talking about the IUD to passengers waiting for buses; (7) distributing materials on market days and at child welfare clinics; and (8) talking to any person who visits the facility about the IUD and other long-acting methods.

Short plays were written in two common local languages and acted by satisfied clients to support the use of FP methods in general and long-acting methods in particular. These were recorded onto audio cassettes and distributed to all 12 intervention zones for playing on mobile vans and at the Community Health Compounds (CHCs) by providers. However, this strategy was not very effective for two reasons: (1) not all the tapes were audible and (2) some CHOs did not have power cassette players to play.

After these exploratory visits, the interventions were presented to chiefs, elders and members of the community health committees in the 12 intervention zones, who then gave their support to project activities. At least 191 chiefs, elders, opinion leaders, and health committee members from 54 communities participated in these meetings.

An IEC campaign was launched in all intervention zones (group 1 and 2) in the three districts in August 2005, followed immediately by service delivery activities in the Intervention group 2 zones. The launching activities were held in one of the Intervention 2 zones in each district and other communities were invited to attend. Each launch, which attracted about 600 community

members, began with a procession accompanied by brass band music from the CHC through the principal streets of the community to the durbar grounds. During the procession, some of the community members held placards that carried key messages about the IUD, implants and long-acting methods in general. At the durbar, several speeches were given by a number of dignitaries, including the District Chief Executive, the District Director of Health Services, the District Public Health Nurse, representatives of the regional health directorate, and the chiefs of the communities. The speeches mainly touched on the benefits of FP in general and long-acting methods in particular. Role plays on the IUD and other long-acting methods were dramatized by a local drama troupe, and songs composed with key messages about the IUD were sung. Testimonies about the IUD were given by satisfied clients, and an open forum was granted to allow the public ask questions about the IUD and FP methods in general.

3.6 IEC Campaigns and service provision

Several mobilization strategies were used during the IEC campaigns, including:

- Community meetings at the community level;
- Health talks at antenatal and postnatal sessions, outreach clinics, OPDs, churches, junior secondary schools, and women's and men's fellowship group meetings;
- Meetings with occupational groups such as hairdressers, drivers, tailors, seamstresses, fitters, and clients at drinking bars;
- One-on-one counseling of FP clients and individuals encountered at other places within the community;
- General counseling on FP during home visits.

Providers in all zones conducted an average of four mobilization activities per month. Each meeting attracted about 80 participants, with providers in the Intervention 2 group tending to reach more people on average (92 per meeting).

The Intervention 1 group had a total of five referral FP clinics serving the eight CHPS zones (one in Nkwanta and two each in Abura-Asebu-Kwamankese and Birim North districts). In the Intervention 2 group, IUD services were available from the four CHCs of the CHOs participating in the project. Family planning posters were displayed in all facilities (except one). In addition, the providers gave out the IUD leaflet and other FP leaflets and brochures. Other IEC materials used during counseling included samples of contraceptive devices, audio cassettes, flyers, and flip charts.

3.7 Activities conducted by CHVs

All the volunteers were expected to communicate messages about all FP methods available. More providers in the Intervention 1 and 2 groups (seven out of eight and three out of four, respectively) mentioned that they tended to discuss the IUD more than their counterparts in the comparison group (three out of seven) (see Table 8). The activities most commonly undertaken were group talks and drama; other activities less frequently undertaken were community durbars, house-to-house visits, and sale of some contraceptives. The content of these activities most often centered on the importance of FP in general and specific FP methods. The educational activities most often targeted teen and youth groups. Volunteers in the Intervention 1 and comparison groups also met with organized women's groups such as church fellowships and other similar

groups in the community. Other targeted audiences included pregnant women and mothers, married people or people in relationships, men's groups, and those perceived to be poor in the community. These sessions attracted, on average, about 55 participants in Intervention 1 group, 138 in Intervention 2 group, and 56 in the comparison group.

Volunteers in the Intervention 1 and 2 groups were more likely to talk about the IUD in their educational activities than those in the comparison group. Other methods that were frequently discussed were the injectable, male and female condom, and the pill. Female and male sterilization were rarely discussed. One of the major activities engaged in by the volunteers was home visits. All the volunteers in all the three study groups indicated that they routinely talked about FP during these home visits. Volunteers in the Intervention 1 and 2 groups made, on average, 16 visits a day; their counterparts in the comparison group made, on average, 12 visits a day.

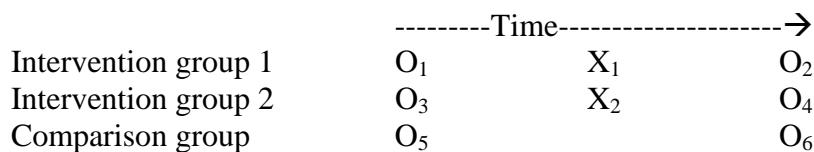
3.8 Intervention monitoring

The intervention activities were monitored through monthly visits to the CHCs and referral sites by district and sub-district supervisors. In total, 37 supervisory visits were made to the six CHPS zones in Intervention 1 group (an average of six visits per zone) and 40 visits were made to the six CHPS zones in Intervention 2 zones. Twenty-three supervisory visits were made to the five referral facilities.

IV. EVALUATION METHODOLOGY

4.1 Study Design

The study used a pre- and post-test quasi-experimental design, with two intervention groups and one comparison group, to evaluate the effectiveness of the interventions, as illustrated in the following diagram:



Where:

- X₁ = Community education campaign with referral to existing clinics that provide the IUD
- X₂ = Community education campaign with provision of the IUD by a CHO in a CHC
- O₁, O₃, O₅ = Pre-intervention measures of key outcome variables
- O₂, O₄, O₆ = Post-intervention measures of key outcome variables.

4.2 Study sites

Eighteen CHPS zones from three districts in three regions were assigned to the three experimental groups. To select the three regions, a secondary analysis of the 1988 and 2003 Ghana Demographic and Health Survey (GDHS) data sets was undertaken to determine trends in

IUD use. The analysis showed that increasing trend in the Greater Accra, Central, Brong Ahafo, and Upper West regions, and a decreasing trend in the Eastern, Ashanti, Upper East, and Northern regions. In the Volta and Western regions, use of the method was almost negligible. One region from each of these three groups of regions (Central, Eastern, and Volta) was selected randomly and then one district was selected in each region from among those districts with fully functioning CHPS zones and with CHO's who were well established in their communities. These districts were Abura-Asebu-Kwamankese in the Central region, Birim North in the Eastern region, and Nkwanta in the Volta region.

Ideally, each of the three study groups was to consist of six CHPS zones, by randomly assigning two zones from each of the three districts to each of the study groups. However, this was not possible in Nkwanta District because the midwives who had received the IUD skills training left for further education just before launching the study. Consequently, the assignment of zones had to be adjusted by moving the two CHPS zones in Nkwanta District that had been assigned to Intervention 2 group to Intervention 1 group (see Table 2).

Table 2: Selected CHPS zones by district

District	Study Groups		
	Intervention 1	Intervention 2	Comparison
Birim North	Adubiase Adausingen	Nkwarteng Adjobue	Adwafu Okaikrom
Abura-Asebu-Kwamankese	Putubiw Obohen	Gyabankrom Asomdwee	Ayeldu Kwamankese
Nkwanta	Obanda Bonakye Kecheibi* Keri*		Nyambong Bontibor

*Originally classified as Intervention 2 CHPS zones but re-assigned to Intervention 1 group.

4.3 Hypotheses

The study tested the following hypotheses:

- CHO's who received information updates about long-acting FP methods (including the IUD) will have significantly higher levels of knowledge and more positive attitudes toward these methods than CHO's who did not receive the training.
- Women and men living in communities where CHO's and community volunteers have been trained to educate community members about long-acting FP methods (including the IUD) will have significantly higher levels of knowledge and more positive perceptions about the methods, and they will be more likely to use or intend to use a long-acting method than women and men living in communities where CHO's and community volunteers have not been trained. They will also have higher levels of contraceptive use and a higher proportion of long-acting method use in the method mix.
- CHO zones with CHO's who have been strengthened in providing IUD services on site will have significantly higher proportions of old and new IUD users than CHO zones where CHO's have not been strengthened to provide IUD services on site.

- The cost per IUD client in CHO zones where CHOs have been strengthened in providing the IUD on site will be lower than the cost per IUD client in CHO zones in which CHOs refer IUD acceptors elsewhere for service. Similarly, the average cost per couple-year of protection will be lower in CHO zones where CHOs and community volunteers have been trained to educate community members about long-acting FP (including the IUD) than in those CHO zones where they have not.

4.4 Data collection methods

Data were collected both before and after introduction of the interventions. The pre-intervention assessment was carried out from March to April 2005 and the post-intervention assessment took place one and a half years later. Data were gathered through a range of methods, including household surveys, Focus Group Discussions (FGDs), provider interviews, and a facility inventory (see Table 3).

Table 3: Summary of data collection activities

	Pre	Post
Interviews in household surveys	4,296	3,742
FGDs (3 male and 3 female per group)	18	18
Facility inventories (6 in each group)	18	18
Interviews with service providers	18	16
Sub-district staff	11	8
In-depth interviews with community volunteers	0	19

Household Surveys:

The household surveys included 4,296 male and 3,742 female respondents aged 15 to 49 years, at pre-intervention and post-intervention respectively. These respondents were selected on the basis of a sampling frame drawn from the household listing developed as part of the National Immunization Day (NID) program, during which all housing structures in every community were listed. Depending on the total number of housing structures in each CHPS zone, a sampling interval was calculated and used to select the houses to be visited. First, the researchers generated a list of household members in the selected housing structure. All eligible men and women (i.e., those who fell in the reproductive age group) were then asked for their informed consent to participate, and only those who consented were interviewed.

Respondents were interviewed before and after intervention implementation using three sets of instruments: (1) a household guide, which provided a listing of household members to facilitate selection of eligible respondents for the individual interviews; (2) a male respondent questionnaire; and (3) a female respondent questionnaire. Both male and female questionnaires elicited information on knowledge, use, and perceptions about contraception and other issues around reproductive health.

Focus Group Discussions: Table 4 summarizes the composition and demographic characteristics of FGD participants. The FGDs were held in the intervention and comparison zones before and after the interventions to examine contraceptive choice determinants among potential users and their partners. Issues explored included:

- Opinions on fertility control
- General knowledge on contraceptives in general and the IUD in particular
- Perceptions of unwanted effects on health of contraceptives, including the IUD
- Personal experiences with contraceptives
- Communication about FP/child spacing
- Experience with the formal health system.

Table 4: Characteristics of FGD participants

Indicator		Intervention 1		Intervention 2		Comparison	
		Female	Male	Female	Male	Female	Male
Pre-intervention	Average number of participants per FGD	8	9	7	8	8	9
	Average age	28	30	29	30	31	28
	Age range	19-40	24-38	19-35	22-47	18-35	16-45
	Average number of children	2	2	2	1	3	2
	Range	0-5	0-6	0-5	0-4	0-6	0-7
	Communities	Adausena Putubiw Bonakye		Nkwarteng Gyabankrom Keri		Okaikrom Kwamankese Nyambong	
Post-intervention	Average number of participants per FGD	7	9	8	7	8	10
	Average age	30	33	34	29	33	32
	Age range	18-47	18-45	18-45	18-47	22-48	18-47
	Average number of children	3	3	4	2	4	4
	Range	0-9	0-10	1-8	0-7	1-8	0-25
	Communities	Adausena Putubiw Bonakye		Nkwarteng Gyabankrom Keri		Okaikrom Kwamankese Nyambong	

Facility inventory and CHO interviews: The facility inventory assessed the availability of FP services, essential equipment, commodities and supplies, IEC materials, and FP guidelines. FP service statistics for the year preceding the survey also were reviewed. The facility inventory targeted CHOs in charge of 18 Community Health Compounds (CHCs). The CHOs were subsequently interviewed for their knowledge, attitudes, perceptions, and practical experiences with various FP methods. Table 5 summarizes the characteristics of the CHOs interviewed.

Table 5: Characteristics of providers interviewed

	Intervention 1		Intervention 2		Comparison	
	Pre n=8	Post n=7	Pre n=5	Post n=4	Pre n=5	Post n=5
Mean age (years)	35.9	38.3	47.0	43.5	35.0	28.4
Range (years)	26 - 46	29 - 46	29 - 64	26 - 50	24 - 42	23 - 42
Type of staff						
Midwife	-	1	3	3	-	-
Professional Nurse	-	-	-	-	-	-
Community Health Nurse	8	6	2	1	5	5

Community volunteer interviews: Nineteen in-depth interviews were conducted with community volunteers at the post-intervention to assess their role in implementation of the community campaigns. Eight volunteers were from Intervention 1, four from Intervention 2, and seven from the comparison group. The average age of the volunteers was approximately 45 years, with the oldest volunteer being 70 years (in the comparison group). Most of the volunteers (68%) had a basic education level (primary to JSS), except for one volunteer in the Intervention 1 group who never had any education. Approximately half of them worked in the agricultural sector. The others reported that they worked in the sales, service, or production sectors. Their experience as volunteers with assisting in FP delivery services differed. The volunteers in the Intervention 1 and 2 groups had, on average, four years of experience with FP services, whereas those in the comparison group had only two years. A few of those in the Intervention 1 and comparison groups had worked in this capacity for less than one year. All except two volunteers in the comparison group indicated that they had some training in FP, which focused mainly on issues relating to FP and RH in general. Other areas covered included common communicable diseases and cross-cutting issues such as how to communicate with and advise people, how to educate Traditional Birth Attendants (TBAs), and how to complete referral cards in emergency situations.

Cost Analysis: Data on costs were collected at the CHO zone, district and national levels for the period of the intervention activities, September 2005 to September 2006.

National and district levels: Data were collected on the costs that were incurred in the intervention activities, namely: training CHOs, volunteers, and supervisors; preparing IEC materials; organizing orientation workshops for the Regional and District Directors of Health; organizing media campaigns; organizing community durbars to launch the study; supervising CHOs; and distributing IUD kits, minor equipment, and other supplies. Additional data were collected on the costs incurred for other items used in the training and workshops including: travel allowances and per diem for training participants; the cost of renting a training venue; and allowances for resource personnel, fuel, stationery, other training materials, communications, and photocopies. The information on cost (i.e., expenditures) was obtained from the Health Research Unit, GHS; FRONTIERS; and EngenderHealth.

Community level: A structured questionnaire was used to collect cost data from all the CHOs in July 2007. Staff interviews were conducted to estimate time used by CHOs. This method is,

however, prone to typical recall error and is impacted by the fact that CHOs might be reluctant to report their own unproductive time. It was, nonetheless, the most appropriate measurement technique for this study. The information collected ranged from the CHOs' gross salary, allowances, IUD activities undertaken, work schedule, supplies, utilities, and statistics on IUDs inserted and removed.

V. RESULTS

5.1 Characteristics of study populations

Appendix 1 describes the socio-demographic characteristics of the populations sampled. There were no significant differences between the pre-intervention and post-intervention samples, although there were a few minor differences between some of the groups. Women were, on average, aged 29 – 31 years and men were slightly older, being between 32 – 35 years. Women were more likely to be or have been married, with 12 – 15 percent reporting never being married compared with 22 – 29 percent of men. Women were, on average, less educated compared to the men; whereas about one third of women had no education and about three percent had secondary education, one quarter or less of men had no education and around 12-15 percent had secondary education. Those living in Intervention 1 communities tended to be less educated. Employment levels were fairly similar across all samples – only 9 – 15 percent reported no employment at all, with most working in agriculture or services and petty trading. Between 73 and 90 percent of the samples were Christians, with small proportions of Muslims, traditionalists or those with no religion.

5.2 Provider knowledge and perceptions of the IUD

Because of the small number of CHOs and CHVs that participated in the project, statistical tests cannot be used to test the hypothesis that these would improve after the interventions. In general terms, however, the post-intervention survey shows that the providers had adequate knowledge of the IUD and so the training seems to have been effective. With the exception of one or two CHOs, all correctly indicated that the copper T 380A is the IUD available in Ghana and knew that the IUD works by preventing fertilization of the egg. However, the manner in which fertilization is prevented was clearly understood. All CHOs correctly stated that the IUD is effective for ten years, although some of the CHVs did not know that the IUD could be effective for this long. All CHOs also knew that a client can check whether an inserted IUD is in place by regularly touching the thread. Two providers at the sub-district level and one in the Intervention 1 group stated that they would not recommend the IUD to a client who wanted to have more children.

All but three CHOs indicated that an IUD should be inserted during a woman's menstrual period, reasoning that during the menstrual period (or after delivery) the cervix slightly widens or becomes soft, thus making insertion easier; another reason cited was to rule out pregnancy.

Most CHOs indicated that they would not recommend the IUD to a client who has multiple sexual partners because of the risk of acquiring a Sexually Transmitted Infection (STI).

All providers reported that there were side effects associated with using the IUD. The most frequently mentioned across all groups at pre-intervention and post-intervention was irregular or heavy menstrual periods. There were few differences between groups in the knowledge of side effects. However, only nine out of the 19 volunteers considered that the IUD had side effects; again, the most frequently mentioned side effect was irregular or heavy menstrual periods.

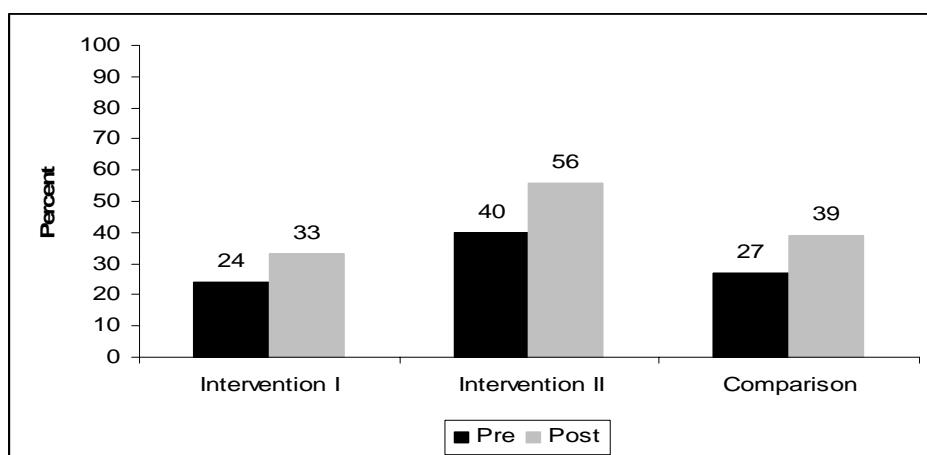
Four of the volunteers continued to hold a negative attitude toward the IUD after the training. Two said that they did not understand it and two did not like it and would advise clients to try another method because they felt that it creates a lot of problems for the clients. Only one volunteer thought that prior to the educational campaigns people appreciated the IUD; the others felt that there was generally a negative perception about the IUD, which they attributed to inadequate knowledge, rumors and the side effects. One volunteer cited high cost as a reason for the negative perception.

After the educational activities, opinion on the prevailing attitude toward the IUD varied among the volunteers interviewed. Not surprisingly, five out of the seven volunteers in the comparison group indicated that community attitudes toward the IUD continued to be negative, whereas half of the volunteers in the two intervention groups thought that there had been some improvement.

5.3 Knowledge of family planning at the community level

Both male and female respondents had high levels of awareness about contraceptive methods at pre-intervention (71 – 84%), there were slight but not significant increases in the proportions who knew of at least one method after the interventions. For the long-acting methods, however, (IUD, implant and male and female sterilization) there were statistically significant improvements after the interventions among women in all three groups (see Figure 1). Among the men, however, levels of knowledge were much lower at pre-intervention (11 – 18%) and remained low after the interventions (10 – 23%), with no significant changes.

Figure 1: Proportions of women who knew of at least one long-acting contraceptive method



There were significant improvements in awareness of the IUD and implants among women in all three groups, and also among men in the Intervention 2 group only (see Table 6). There were also some significant increases in awareness about the pill among women in the Intervention 1 group and about the injectable among men in the Intervention 2 group.

Table 6: Percentage of respondents who were aware of family planning methods

Method	Women						Men					
	Intervention 1		Intervention 2		Comparison		Intervention 1		Intervention 2		Comparison	
	Pre n=82	Post n=70	Pre n=47	Post n=45	Pre n=65	Post n=65	Pre n=61	Post n=51	Pre n=22	Post n=20	Pre n=435	Post n=341
	%	%	%	%	%	%	%	%	%	%	%	%
IUD	14	20**	20	40***	15	22**	7	8	8	17*	5	3
Implant	26	36***	41	56***	29	40**	9	12	14	24*	8	8
Male Sterilization	1	0	0	0	1	1	2	1	3	3	2	1
Female Sterilization	3	2	5	2	4	2	2	2	4	3	3	1
Injectable	78	79	76	79	75	82*	57	50	37	47*	54	53
Pill	58	65*	56	58	66	64	50	55	43	45	46	49
Male Condom	25	23	28	23	31	24	58	67	68	60	66	63
Female Condom	17	16	18	20	23	17	22	24	19	22	24	25

*P < 0.005

**P < 0.001

***P < 0.0001

During FGDs, despite being able to mention almost all methods available in the country, respondents were generally unable to explain how each method prevents pregnancy. The calendar method was quite popular among all the groups, but was described incorrectly. The commonest knowledge was that FP prevents pregnancy and thus makes the woman “look good”. This lack of detailed knowledge could be the reason why there are many rumors surrounding the methods. Women were, however, more able to talk about how the methods are to be used, presumably because many of them are users of methods.

Table 7: Proportion of respondents who obtained information about FP methods from the CHO and the CHV

Method	Female						Male					
	Intervention 1		Intervention 2		Comparison		Intervention 1		Intervention 2		Comparison	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
IUD	N=112	N=179	N=95	N=143	N=95	N=147	N=41	N=38	N=17	N=34	N=22	N=11
CHO	26	53***	34	57**	26	32	22	45*	18	47*	14	18
CHV ^{&}	5	7	3	3	5	5.	5	3	6	6	-	-
Implants	N=217	N=255	N=192	N=253	N=187	N=266	N=53	N=60	N=32	N=50	N=36	N=27
CHO	21	40***	27	40*	24	29	11	32*	28	34	25	19
CHV	4	5	5	2	5	6	4	8	3	8	11	7

* P < 0.005

**P < 0.001

***P < 0.0001

[&] CHV includes Community Health Volunteer, Community-Based Distributor and Community-Based Surveillance Volunteer

Among men and women in the Intervention 1 and 2 groups, there were significant increases in the proportion of respondents who indicated that the CHO was a source of information about each method, implying that the CHO awareness-raising activities had been effective (see Table 7).

Only a small proportion of respondents, during both the pre-intervention and post-intervention surveys, could state that certain conditions may prevent a woman from using the IUD; these included multiple partners, heavy menstrual cramps and an allergy to copper, pregnancy. However, even after the interventions, 43 percent of female respondents in Intervention 1 group, 30 percent in Intervention 2 group and 18 percent in the comparison group who knew that not all women could use the IUD could not provide a specific reason.

Before the intervention, there were a lot of misconceptions about the IUD among all respondents. For example, FGD participants described the IUD as a “*thread with a hand*” that needs to be inserted by a health professional, otherwise it could cause a lot of pain. They believed that the provider ties and fixes the IUD to the womb and so it is normally good for women who have finished giving birth. Some also reported that the IUD “*sucks the woman’s blood*”.

Attitudes towards the IUD seem to have improved in all the groups at post-intervention. FGD participants who knew of the IUD spoke favorably about it; they were of the opinion that it is convenient because the user does not need to go for check-ups as with other methods. They correctly stated that when inserted the IUD lasts for ten years and can be removed at any time the client feels ready for a child. Others believed that the ten-year duration may bring disharmony in relationships where one partner may want more children and the other does not. This information suggests that some people feel that because an IUD lasts for ten years the user has to wear it for the full ten years, which may put off some potential users.

It was evident from the FGDs that the use of herbal and other concoctions for birth control was also well known. The mode of administering these concoctions includes oral, rectal (in the form of enema or pessaries), vaginal, and sometimes preparations for external application particularly in the navel region. Postpartum abstinence is also very popular:

My friend does not sleep with his wife for two to three years after she’s had a child until they are ready for the next one (Male, Intervention 2).

They use the black water from cooked fante kenkey (a local maize meal) in enema (Male, Intervention 2).

Some too add and mix coke (coca cola) and sugar and drink before they sleep with a man (Male, Intervention 2).

Some insert salt in and on the vagina before sleeping with a man (Male, Intervention 2).

Weekly enema with the pawpaw seeds (Female, Intervention 2).

Survey respondents and FGD participants expressed concerns about the side effects of FP. Side effects attributed to the IUD included general ill health, irregular or heavier periods, weight loss or gain, and lower abdominal pain (see Table 13). Concerns were expressed about side effects of other methods also; for example, that the injectable can cause amenorrhea. Some of the men were concerned that FP, when used for a long time, can make returning to fertility difficult, which they believe can cause disharmony in a relationship.

My daughter has done some (injectable,) and she does not have her period. She has become very, very fat yet the period is not coming ... I am worried I am afraid that it might make her sick (Female, Intervention 2).

A friend of mine says when she uses the family planning she falls sick for a long time when she is about to get pregnant and when she gets pregnant too it might not go well (Female, Intervention 1).

As for me, when I used it I grew lean. I wasn't as I wanted to be so I went to remove it (IUD) and from then have not gone for it again (Female, Intervention 1).

The injectable also can make you feel dizzy (Female, comparison group).

Sometimes it (IUD) can tilt to the side and may result in pregnancy (Female, Intervention 2).

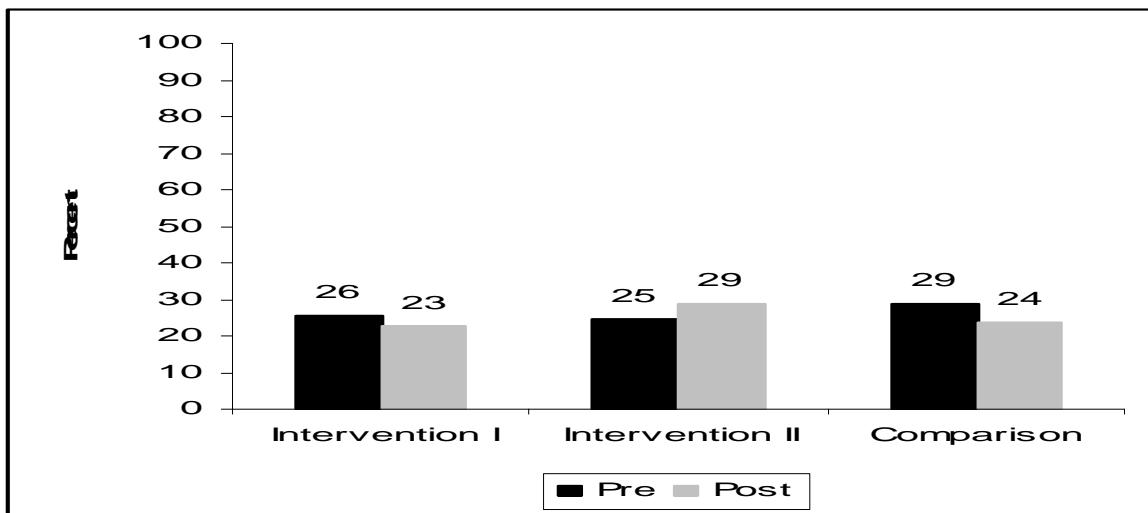
The IUD can make you menstruate five times in a month (Female, comparison group).

In conclusion, although increases in knowledge about long-acting methods did increase after the interventions, similar changes also occurred in the comparison groups, thus making it difficult to attribute the changes to the interventions.

5.4 Use of family planning

Prior to the intervention, over a quarter of the women who knew of FP methods were using a method (see Figure 2). After the interventions, there were no statistically significant changes in the proportions of women in these communities using any family planning method.

Figure 2: Current use of contraception among all women who knew of FP methods



The proportion of men who knew of FP methods and that reported using a method increased significantly in Intervention 2 group, and decreased slightly, but not significantly, for the Intervention 1 and comparison groups (see Figure 3).

Figure 3: Current use of contraceptives among all men who knew of FP methods

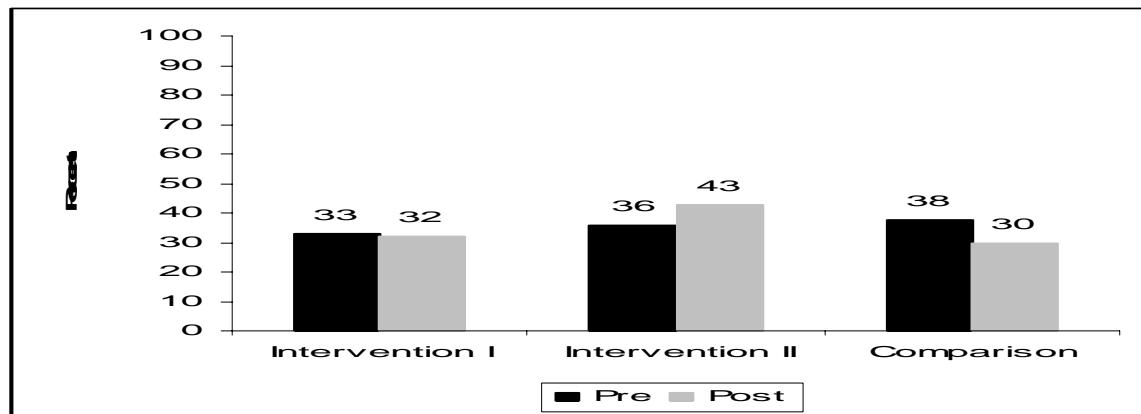


Table 8 shows that there were no statistically significant changes in the use of any particular contraceptive method, among all women and men. The most popular methods for women and the partners of men were injectables and pills. Use of the IUD and Norplant increased substantially in both intervention groups for women, but not in the comparison group, which may indicate some effect of the intervention; levels of use of these methods remained extremely low, however. After the interventions, there were some marginal changes in the reporting of use of some methods among the men – use of the male condom went down in the Intervention 2 and comparison groups, whereas use of NFP increased in all three groups.

Table 8: Proportions of all women and men using a specific contraceptive method

Method	Women				Men			
	Indicators		Intervention 1	Intervention 2	Comparison	Intervention 1	Intervention 2	Comparison
N	1147	964	563	541	847	808	862	697
	Pre %	Post %	Pre %	Post %	Pre %	Post %	Pre %	Post %
Pill	4.4	4.7	3.9	5.4	5.4	4.1	4.3	5.2
IUD	0.2	0.4	0.9	1.5	0.4	0.3	0.6	0.4
Injectable	6.7	5.4	8.7	9.2	8.3	8.0	6.4	4.7
Spermicide	0.3	0.2	-	-	0.1	-	3.5	-
Fem. condom	0.5	0.6	0.5	0.4	0.2	0.4	-	0.3
Male condom	1.0	1.6	0.4	0.6	1.8	1.1	7.6	8.2
Sterilization	0.4	0.3	0.9	0.6	0.5	0.6	0.5	0.6
Norplant	0.7	0.9	1.1	1.7	0.5	0.5	0.1	0.7
Natural FP	2.5	2.2	2.7	2.8	3.8	3.2	0.4	3.4
Withdrawal	0.2	0.5	-	0.4	0.0	0.5	0.4	1.4
LAM	0.9	-	0.4	0.6	0.7	0.1	0.4	-
Other	1.0	0.4	0.7	0.9	0.6	0.6	0.7	0.4

Table 9 describes the service statistics kept by the CHOs for the 12-month period before the intervention (pre) and the 12-month period of implementation of the intervention (post). Substantial increases in the numbers of new and continuing users can be seen, and for most FP methods across all three groups. Whereas the injectables continued to be the most popular method overall, there were substantial increases in the number of news users of the IUD and implant in Intervention 2 group, where insertions were done by the CHO at the community level. Substantial increases can also be seen in new users of LAM and male condoms, across all three groups. Indeed, the mean number of new clients per CHO doubled in all groups, including the comparison group. This suggests that either FP use has increased in all study areas for reasons not associated with these interventions, or there has been contamination from the intervention to the comparison groups.

Table 9: Numbers of clients served by CHOs

Method	New						Continuing users					
	Intervention 1		Intervention 2		Comparison		Intervention 1		Intervention 2		Comparison	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
All FP	871	2028	603	594	391	917	2532	3156	830	992	1007	1685
IUD	-	-	3	33	-	-	-	-	2	26	-	-
Implant	-	4	21	74	-	-	-	4	-	-	-	-
Injectable (3m)	411	438	474	154	215	145	1462	1160	554	639	752	876
Injectable (1m)	87	90	1	15	26	39	167	144	5	24	3	154
Combined Pill	109	250	39	86	23	46	298	776	59	63	61	135
Progest-pill	5	113	-	7	2	38	64	108	-	7	8	66
Male Condom	233	416	40	213	113	394	517	616	210	203	73	445
Condom	6	318	25	13	7	6	14	343	-	3	3	6
Spermicides	-	-	-	13	-	7	-	-	-	2	-	3
LAM	-	382	-	56	-	242	-	-	-	25	92	-
NFP	20	17	-	-	5	-	10	5	-	-	15	-
Mean: all methods	109	254	71	149	78	183	317	395	207	248	201	337

Current users were asked why they chose to use a particular method. They gave a variety of reasons, which did not vary much between groups, or before and after the interventions. Most respondents were likely to use a method if they felt or thought that the method was “good for them”.

5.5 Cost Analysis

The hypothesis that the cost per Couple Year of Protection (CYP) would be lower in work zones where CHOs had been trained in providing the IUD within the community than where they had been trained to refer clients to health facilities was also tested. The total cost of implementing Intervention 1 was slightly more than twice that of Intervention 2 (see Table 10), probably because the CHOs in Nkwanta were all grouped under this group because of the nature of the project in the district. In both cases, the recurrent costs were more than 90 percent of the total cost of the interventions. Training and personnel costs in both interventions made up about 57 percent of the total cost. The lowest expenditures were on the IUD products, about one percent of the total cost.

Table 10: Total cost of the IUD interventions

ITEM	Intervention 1 (GHC¢)	Profile (%)	Intervention 2 (GHC¢)	Profile (%)
Recurrent costs				
Cost of training CHOs, Supervisors, & Volunteers	5,139.73	30.8%	1,924.38	25.6%
Cost of organizing Community Durbars	3,075.10	18.4%	1,537.55	20.5%
Cost of Other Supplies	698.70	4.2%	387.80	5.2%
Cost of Monitoring	2,296.00	13.7%	1,128.00	15.0%
Cost of Personnel	4,391.38	26.3%	2,191.24	29.2%
IUD Cost	133.86	0.8%	88.74	1.2%
Subtotal (¢)	15,734.76	94.2%	7,257.70	96.7%
Capital costs				
IUD Kits	967.70	5.8%	245.63	3.3%
Subtotal (¢)	967.70	5.8%	245.63	3.3%
Total (¢)	16,702.46	100.0%	7,503.33	100.0%
USD Equivalent (\$) of Total	18,458.72		8,292.30	

Cost per CYP: The total number of CYPs is estimated as the total number of IUD insertions multiplied by 3.5 years³. This measure helps compare method costs by showing the cost of one year of protection for each method. The estimated CYPs provided were 270 for the Intervention 1 group and 207 for the Intervention 2 group. As hypothesized, the cost per CYP was lower in Intervention 2 group – GHC¢36.34 (US\$40.16) – compared with Intervention 1 group – GHC¢61.97 (\$68.49).

VI. DISCUSSION, CONCLUSION, AND RECOMMENDATIONS

The study interventions were intended to improve knowledge, perceptions and attitudes toward the IUD and other long-acting methods among service providers and community members. We examined the general and method-specific knowledge of long-acting FP methods among clients and providers, as well as the level of contraceptive use by method in the intervention and comparison communities in the pre- and post-intervention periods, using structured interviews, FGDs, and service statistics compiled by the CHOs.

Knowledge of long-acting methods (IUD, Norplant, and male and female sterilization) significantly increased among all women over the time of the study. Given that there were equal increases in the comparison group, it is not possible to attribute the increases in the two

³ Data from recent clinical trials suggest that continuation rates have increased, thereby raising the average number of CYPs provided by an IUD. The task force has recommended that each IUD user be credited with 3.5 CYPs because it was estimated that half of the acceptors would have stopped using the IUD at this time (Janowitz and Bratt 1994).

experimental groups to the project's interventions. There was also a significant increase in knowledge of both the IUD and implant among women from all the study groups, but only among men in the Intervention 2 group. This is probably because providers in the Intervention 1 and 2 groups put more emphasis on the IUD and Norplant during the intervention period. This is supported by the significant increase in the proportion of respondents who indicated that the CHO was a source of information for the IUD and implant at the post-intervention survey.

The effect of side effects on choice of method, whether perceived or otherwise, needs to be critically reviewed. Even when women indicated that the provider had told them to expect some side effects, users indicated that they were worried when they actually experienced them. Providers, however, were of the opinion that these concerns did not affect usage because they felt that they gave clients adequate information. Providers need to be more attentive to clients' concerns, whether perceived or real.

Although all the providers interviewed asserted that they do not have any problems with inserting or removing IUDs, some of them admitted they would not recommend the IUD to clients with multiple sexual partners because they increase the risk of acquiring an STI, which is a contradiction of the service instructions outlined in the National Reproductive Health protocols. Thus, providers may be misinterpreting this service instruction and therefore may be denying some women the IUD. This situation calls for continuous training and retraining of providers to ensure adequate understanding of the service instructions and policies.

Current contraceptive prevalence continues to be low in all the study groups. Post-intervention data show, however, an increase in prevalence from 25 to 29 percent among women and from 36 to 45 percent among men in the Intervention 2 group. Moreover, although the proportion of users using long-acting methods remained the same for the comparison group, it increased for Intervention groups 1 and 2, with Intervention 2 recording the highest increases. There were also slight increases in use of other methods within groups.

Furthermore, there was an almost five-fold increase in the numbers of new clients provided with an IUD and implants by CHOs in the Intervention 2 group – from 24 in the 12-months before the intervention to 107 during the intervention period. This compares with no IUD or implant clients pre-intervention in the intervention 1 and comparison groups and four clients (all in intervention group 1) during the intervention period.

Some reasons why use of the IUD and other long-acting methods could have been greater include:

- Because providers in Intervention 1 were not trained to insert the IUD themselves, the need to see another provider may have discouraged clients from accepting the IUD.
- Many IUD users referred from the Intervention 1 sites for IUD insertions did not actually go for an insertion. Long distances, lack of transportation, and the high cost of transportation to the referral facilities were all problems cited. The problem was most common in the Abura-Asebu-Kwamankese and Nkwanta districts, where such referred clients finally opted for other methods.
- Some clients who responded to the provider's referral advice opted for Norplant instead of the IUD after the pre-counseling sessions at the referral sites. There are two possible explanations for this. At the referral site in the Nkwanta district, for example, only two providers had been trained to provide long-acting methods. Of these, only one of the

providers could do both the Norplant and IUD insertions; the other was only able to perform Norplant insertions. As a result, when the former provider was not available, there was a tendency for the other provider to suggest the Norplant during counseling.

- Many providers also complained that participation in workshops takes up a substantial amount of their time, and they are not always available to provide services to clients who required them.
- Some of the study sites experienced a stock-out of the IUD devices for some time (notably those in the Birim North District) during the intervention period. This situation may have occurred as a result of poor coordination between the district and regional health administrations. Information gathered during the monitoring visits suggests that most of the clients in both the Intervention 1 and 2 groups in the affected communities who had originally opted for the IUD and who were scheduled for insertion at a later date pending a restocking of the device, had to choose other methods because they could no longer wait for fear of getting pregnant.

The total cost of the interventions in Intervention 1 group (US\$18,459) was about 2.2 times that of the Intervention 2 group (\$8,292), although the distribution across cost categories was similar. Recurrent costs were the largest share (i.e., more than 90 %) of the total cost, which shows that the intervention is heavily skewed toward regular supplies of consumable items with relatively little or no capital inputs. Training and personnel costs made up 57 percent of the total cost. The estimated CYPs were 270 for the Intervention group 1 and 207 for the Intervention group 2. The cost per CYP was lower in Intervention group 2 (US\$40.16) compared to Intervention group 1 (\$68.49).

The limitations of the study include (a) a short intervention period, (b) aggregated cost data, (c) the limitations of the reported CHO time spent on various activities, and (d) possibility of contamination between the intervention and comparison areas.

In conclusion, the possibility of contamination between the intervention and comparison groups makes it difficult to determine categorically the extent to which the interventions had an impact at the population level. However, the five-fold increases in the numbers of new IUD and implant users recorded by CHOs who undertook insertions at the community-level, together with the much lower cost per CYP for this model, suggest that training CHOs to educate communities about long-acting methods and enabling them to provide them at the community level should be considered.

VII. REFERENCES

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APPENDIX 1: CHARACTERISTICS OF SURVEY RESPONDENTS

Indicator	Female						Male					
	Intervention 1		Intervention 2		Comparison		Intervention 1		Intervention 2		Comparison	
	Pre n=1147	Post n=964	Pre n=563	Post n=541	Pre n=847	Post n=808	Pre n=862	Post n=697	Pre n=279	Post n=292	Pre n=590	Post n=440
Age												
Mean (years)	29	29	31	30	30	30	33	33	34	35	33	32
Marital status (percent)												
Never Married	15	12	12	13	14	14	28	24	29	22	28	24
Married	68	48	62	45	66	46	63	52	62	52	62	52
Cohabiting	12	30	16	29	13	28	6	20	5	21	6	19
Separated/Divorced/Widowed	6	10	9	13	7	13	3	5	4	6	4	5
Educational level (percent)												
None	38	34	27	23	30	24	27	26	9	11	19	15
Primary	26	25	34	31	27	26	18	17	17	23	18	19
Middle/JSS	33	37.	38	44	40	47	42	42	63	54	52	51
Secondary & above	3	3	2	2	4	3	13	14	12	12	11	15
Occupation (percent)												
None	15	12	12	9	12	14	10	10	12	12	10	11
Agricultural	50	49	51	52	47	42	66	68	60	63	63	61
Production	6	9	7	8	11	11	2	5	2	11	3	8
Prof./Tech/Admin/Man/Clerk	1	1	1	1	2	2	14	6	11	5	8	8
Sales/Service	26	29	26	30	26	30	1	8	7	5	26	7
Other	2	0	2	0	2	0	7	4	10	5	8	4
Religion (percent)												
No Religion	9	6	4	2	9	4	10	7	4	7	12	5
Christian	76	79	90	92	86	89	73	75	85	83	81	86
Muslim	7	8	5	4	2	3	9	9	9	8	4	3
Traditional	8	6	1	1	1	5	7	9	0	2	2	6
Other	2	1	1	1	2	0	1	0	3	1	2	0