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**Increasing Access to Family Planning
Services in Rural Campesino
Communities A Pilot Project**

FINAL REPORT

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INCREASING ACCESS TO
FAMILY PLANNING SERVICES IN RURAL CAMPESINO COMMUNITIES
A PILOT PROJECT

CCH (COMMUNITY AND CHILD HEALTH)

Contract Number CI93 56A

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EXECUTIVE SUMMARY

In February 1993, the Secretaria Regional de Salud/Cochabamba (SRSC) requested technical and financial support from INOPAL II to introduce family planning services into the primary health care program of one of its most populated and poorest districts -- District VII, a large, geographically diverse area encompassing the provinces of Capinota, Bolivar and Arque

Though the SRSC had already successfully introduced reproductive health into its urban hospitals, doing so within an exclusively rural context implied uncertainties and decisions for which there was no precedent in Cochabamba. Though aware of the strengths and weaknesses of rural health care delivery in general -- unknown medical barriers, cultural and ethnic biases, an absence of accurate cost data, and limited availability of relevant field experience -- effectively discouraged the SRSC from launching their first rural reproductive health program.

The ultimate goal of the present study, therefore, was to provide an empirical basis for assessing the feasibility, cost and quality of providing a full range of reproductive health services at rural community-based health posts. The project was carried out in two provinces of District VII -- Capinota and Arque and was implemented under the auspices of the Community and Child Health Program (CCH), a USAID sponsored project supporting primary health care and Chagas prevention in rural Cochabamba.

Over a 14 month period, the project undertook two demonstration interventions in District VII. One initiated family planning and related reproductive health services at community based health posts by trained nurse auxiliaries. The other intervention enabled physician-staffed hospitals to offer the same services. Demand for these services was created through activities to increase community awareness and acceptance of family planning services such as the use of appropriate information, education and communication (IEC) materials and the training of community based health promoters. By analyzing these interventions in terms of family planning acceptance, cost and quality of care, this project sought to provide an empirical basis for assessing the strengths and weaknesses of providing family planning services at each level of health care service delivery.

Between start-up of service delivery on 16 November 1993 and the termination of data collection activities on 16 June 1994, a total of 284 pap exams were performed in the project area, over 50 percent by auxiliary nurses alone. Auxiliary nurses were not only as equally competent technically as physicians in performing pap smears, but actually provided higher follow-up rates for paps than physicians.

More than half of all IUD insertions in the project were performed by nurse auxiliaries at their health posts. The impact of these services on overall method choice, however, was most evident in comparisons between method distribution at posts with auxiliaries trained to insert IUDs and those with auxiliaries who were not. The study results showed that while method distribution among the former clearly favored the IUD, such health posts were nevertheless extremely successful at distributing a full range of contraceptive methods. Where nurses were not trained to insert IUDs, by contrast, the method mix was not only devoid of IUDs, but heavily

biased towards less reliable methods such as condoms, and expensive resupply methods such as the pill

A major assumption of the study was that auxiliaries, by residing in and often coming from the communities in which they work, are more effective than physicians at reaching local women and maintaining contact with them. This assumption was clearly borne out in the case of follow-up rates among IUD users. Indeed, ninety-five percent of all such users, who received IUDs from auxiliaries returned within 90 days for their follow-up visit, compared to only 50 percent in the case of physicians

With respect to costs of introducing reproductive health services into rural areas, the study results showed that higher initial training costs for auxiliaries were compensated over time by the auxiliaries' permanence within their home communities. Physicians, on the other hand, because of their obligatory *año de provincia*, required constant retraining in reproductive health, thereby maintaining at an overall higher cost per family planning or IUD user. By June 1994, the cost per IUD insertion for auxiliaries was only slightly higher than that of physicians and is soon expected to drop below it with the next scheduled refresher training course for physicians

1. INTRODUCTION

Though the percentage of Bolivians living in rural areas has decreased by almost 28 percent in the last 16 years, more than 42 percent of the country still lives in settlements of 2 000 or less - the second highest percentage of rural inhabitants in all Spanish speaking Latin America

For Bolivia, the consequences of this distribution are evident in startling disparities between the quality of life in the nation's rural and urban areas. Bolivia's rural inhabitants are not only poorer and less literate than their urban counterparts, they also die earlier and at a much faster rate. Indeed, poverty, malnutrition and an absence of basic medical services contribute to an average rural life expectancy of only 36.7 years -- one of the lowest in the world (Urioste 1984: 83). Moreover, Bolivia's infant and maternal mortality rates -- already the highest in Latin America -- pale in comparison to the extremes found, for example, in the country's rural Valle region.¹

As Urioste (1984) has argued, the causes of rural poverty in Bolivia are both complex and pervasive. Yet there is ample evidence to support the argument that current levels of infant and maternal mortality could be reduced significantly by increased detection and avoidance of high risk pregnancies and by a reduction in the high abortion levels characteristic of the country as a whole. Unfortunately, the use of family planning, which could reduce both phenomena, remains alarmingly low.² According to the 1989 Demographic and Health Survey (INE 1990), only 12 percent of all Bolivian women of reproductive age practice some form of modern contraception, while in rural areas, modern contraceptive prevalence barely exceeds 5.2 percent. Even the awareness of modern contraception remains limited. The DHS showed that while 68 percent of Spanish-speaking married women could identify at least one modern method and its source, only 23 percent of non Spanish-speaking women could do the same (Schoemaker 1991).

Though the few last years have witnessed a burgeoning interest and acceptance of reproductive health in the nation's urban areas, there still remains much to be done in rural Bolivia. Unfortunately, not all of the strategies and interventions responsible for the success of urban

¹This region, which encompasses the Departments of Cochabamba, Tarija and Chuquisaca, evidences infant mortality rates of 238.3 per thousand births (Urioste 1984: 83-90). This contrasts with a national rate estimated in 1989 to be 96 per thousand (INE 1990: 5).

²It is widely acknowledged that clandestine abortions and high risk pregnancies contribute significantly to Bolivia's high rates of infant and maternal mortality. Archondo (1992) has estimated that at least 40,000 abortions take place each year in Bolivia -- all illegal and many, if not most, under poor medical conditions. Moreover, studies carried out at the German Urquidí Maternity Hospital in Cochabamba attribute nearly 45 percent of deaths during pregnancy to infections from induced abortions. Other studies suggest that induced abortions may contribute to up to one third of all maternal deaths nationwide. Research from the DHS also reveals the magnitude of high risk pregnancies attributable either to pregnancies among women whose last birth was less than two years previously (42 percent) or to those among women younger than 20 or older than 35 (AID 1990: 3).

reproductive health efforts are readily applicable to a rural context. The nation's recently developed reproductive health norms, for example, though they have certainly legitimized family planning within the national health care system, have nevertheless failed to provide more appropriate service delivery arrangements in rural areas -- this, despite the fact that the ratio of inhabitants per doctors in rural areas is but a fraction (1,156 vs 20,771 per 1) of that in urban areas (Urioste 1984: 83).

In February 1993, the Secretaria Regional de Salud/Cochabamba requested technical and financial support from INOPAL II to introduce family planning services into the primary health care program of one of its most populated and poorest districts -- District VII, a large, geographically diverse area encompassing the provinces of Capinota, Bolivar and Arque.

To the Secretaria, the incorporation of family planning services presupposed at the very least, interventions at the District hospital level. For it is at this level that the physical resources are most elaborate, that the needs for medical supervision and back-up are less acute, and -- equally important -- that the District's administrative and authority structures are centered. Nevertheless, the Secretaria also recognized that the ability of District hospitals to serve the day to day needs of more remote rural populations was limited. Although District centers are expected to serve as points of reference for those from surrounding areas, the reality is that such hospitals cannot consistently attend to the needs of those living beyond the immediate vicinity of the District seat. Rural referral systems, though they exist in theory, tend not to be implemented systematically. And even where they are, they tend to provide poor mechanisms for feedback by community health care providers.

A second major limitation of District or hospital-focussed health care is the lack of continuity among those charged with actually providing services. In Bolivia, the professional medical staff of most District hospitals consists of recent medical or nursing school graduates completing their one-year rural residencies (*año de provincia*). In terms of reproductive health, this arrangement has had a direct impact both on the cost and quality of services offered. Since training in reproductive health is only gradually being introduced into the national medical school curriculum, the annual turnover of hospital staff means that to maintain an ongoing reproductive health program at the District level, hospital staff must be retrained continuously. Of course, even with such ongoing training, service availability remains interrupted.

The primary objective of the present operations research study, therefore, was to test the feasibility, quality and cost of providing a full range of reproductive health services through nurse auxiliaries based at rural community-based health posts. This approach was viewed both by the SRSC and CCH as a potentially effective solution for getting services into inaccessible areas as well as for overcoming many of the limitations associated with physician-provided services at the District level. In contrast to rural physicians, for example, nurse auxiliaries usually come from the community itself and typically have little incentive to abandon their posts. In some instances they are actually paid by the community. Often, therefore, they have a strong personal commitment both to improving local health conditions and to maintaining long standing relations with those they serve. Furthermore, extensive experience in Latin America and Asia has shown

that the delivery of family planning services -- including IUD insertions -- by trained nurse auxiliaries can be carried out effectively and safely within a quality service delivery program³

Unfortunately, despite their accessibility, community involvement and desire to provide a full range of family planning services, National Reproductive Health Norms explicitly prohibit nurse auxiliaries from providing modern family planning methods (apart from condoms) offered by the SRSC. Under the current norms, auxiliaries are expected to refer all potential family planning users to the District hospitals for attention -- a practice that is known to result in a high loss of potential family planning users.

³The literature on IUD insertions by paramedical personnel is extensive and covers more than 25 years of experience. The following is but a selection of the more accessible publications and reports: Kwa-Siew-Kim et al 1987, WHO 1986, Uriza Gutierrez et al 1984, Eren, Ramos, and Gray 1983, Reame 1980, Atkin, Gray and Ramos 1980, Galich 1976, Rivera et al 1978, Ramos et al 1979, Kaul 1969, Hartfield 1968.

2. GEOGRAPHIC AND SOCIODEMOGRAPHIC CONTEXT

As the Departmental-level representative of the Bolivian Secretariat of Health, the *Secretaria Regional de Salud/Cochabamba* provides health services through nine administrative Districts. District VII, the focus of this research, corresponds geographically to the provinces of Arque, Bolivar and Capinota (see Figures 1-2)⁴. It serves fifteen Quechua speaking *Cantons* or subprovinces with a combined population of over 56,000 (INE 1992).

Within the District, the provision of health care services is carried out through five hospitals, seven health posts, and about 50 affiliated volunteer community health workers (*promotoras parteras* and *responsables*)⁵. As is customary throughout rural Bolivia, however, the SRSC also delegates responsibility for the delivery of certain health services to local NGOs or PVOs. District VII follows this practice in at least two areas encompassed by the present study. In Apillampampa, a community of about 2000 people, the local health post is operated by the Cochabamba-based NGO, FEPADE (Fundacion Ecumenica para el Desarrollo). Further away, in the Province of Arque, public sector health services are supported by PROSANA (Proyecto de Seguridad Alimentaria Nutricional en la Provincia de Arque), an integrated community health program funded by the German Development Organization, GTZ. Finally, the USAID funded CCH (Community and Child Health) project also operates within Capinota and neighboring Charamoco, providing technical and financial support in primary health care and Chagas prevention.

District VII is characterized by geographic inaccessibility and extreme poverty. Arque has an estimated infant mortality rate of 250/1000 live births (PROSANA), and similar rates are thought to be true of other areas in the District. Since 1992, Capinota has lead the country in cases of cholera while Chagas disease is endemic. In the 1993 Operative Plan for the District, high rates of maternal mortality were identified as a leading health priority, with induced abortions identified as a major cause. Lack of family planning services is recognized as a prime reason for women seeking clandestine abortions.

⁴The three provinces are served together with Capinota as the head of the District.

⁵By definition, hospitals are staffed by at least one physician and a nurse auxiliary, while health posts are staffed by nurse auxiliaries alone. All health posts receive medical backup by radio communication and monthly physician visits. Professional nurses, which are based at the District hospital in Capinota, supervise the health posts and have responsibilities in training and case follow-up.

FIGURE 1
MAP OF BOLIVIA

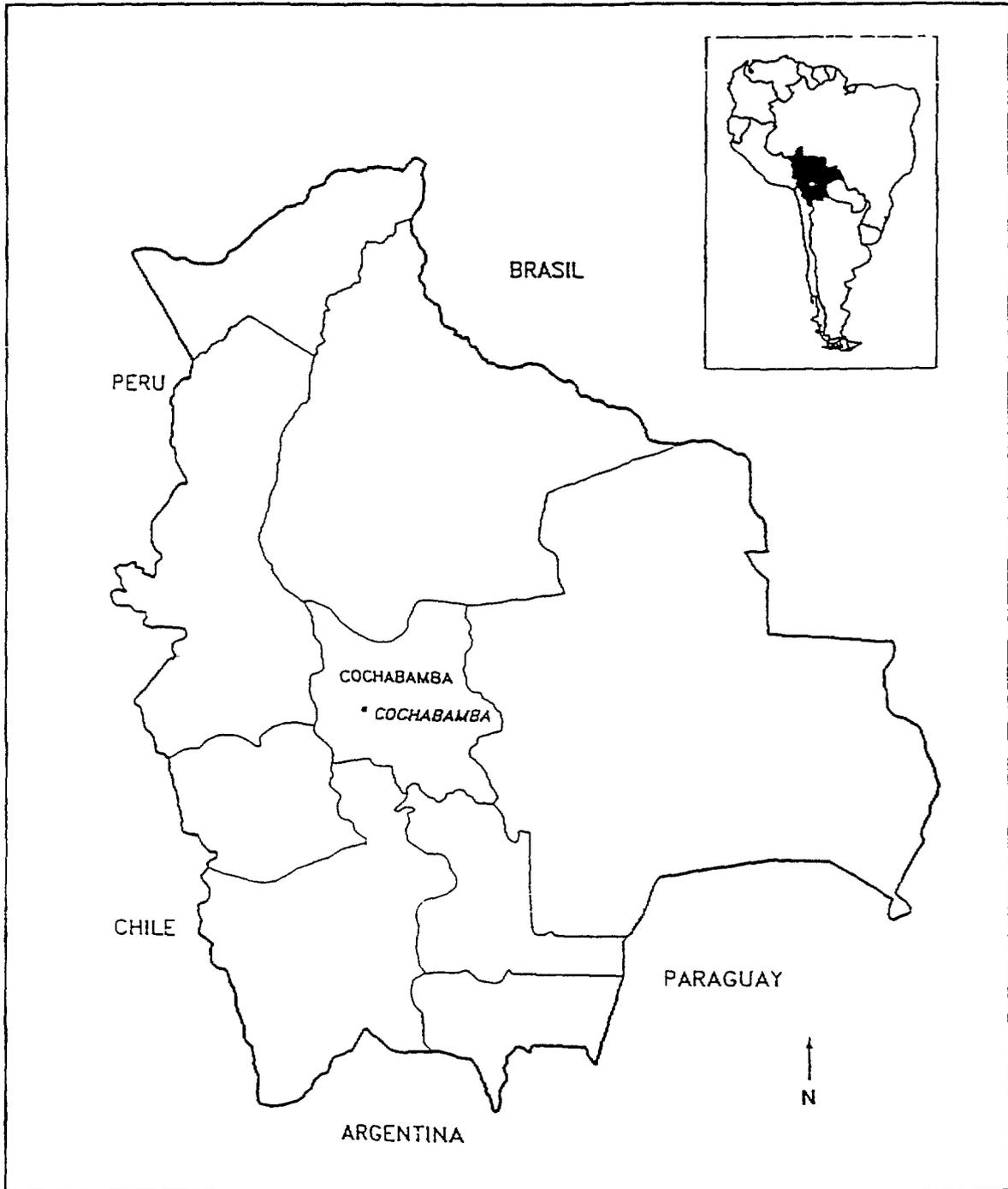
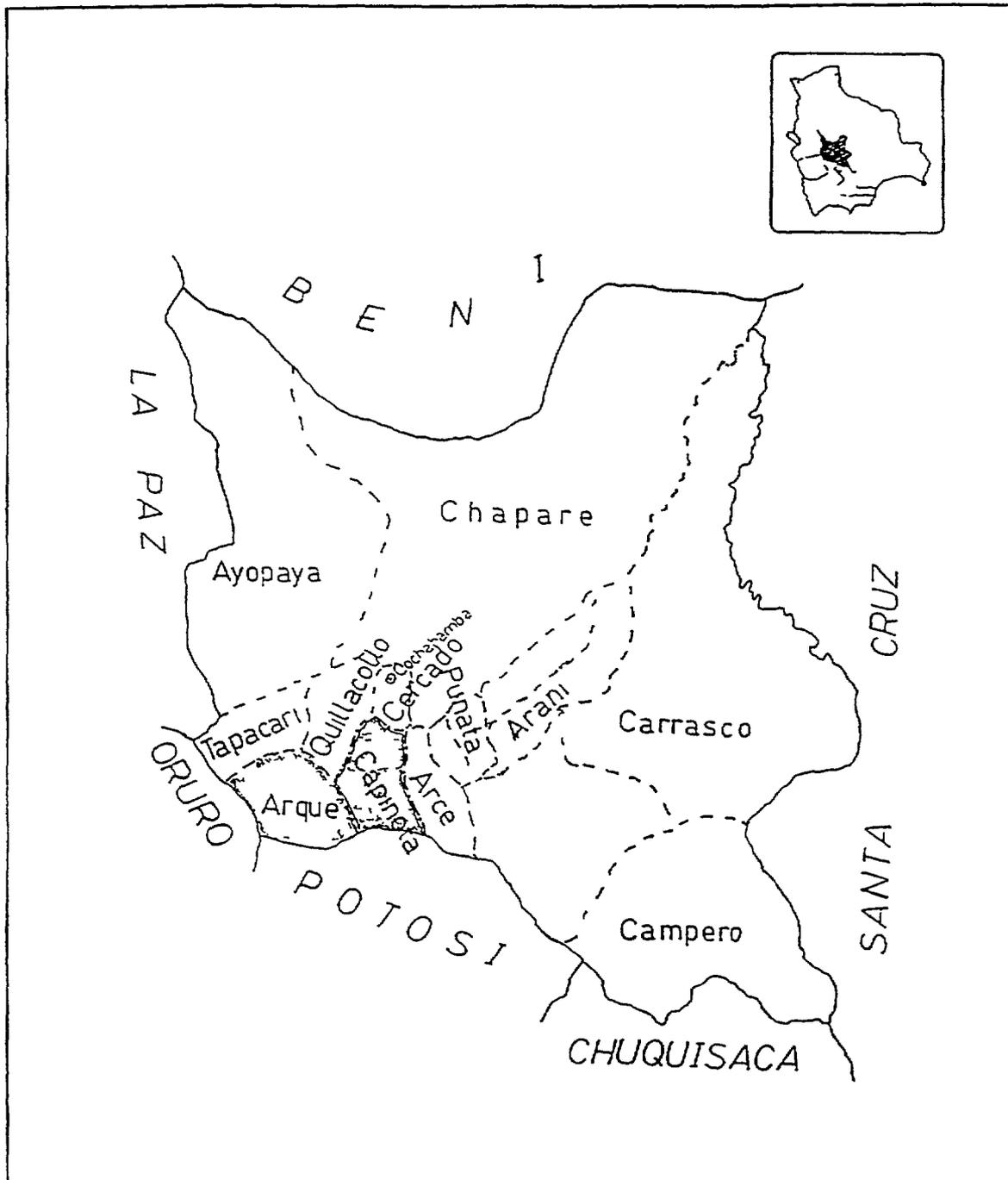


FIGURE 2
MAP OF COCHABAMBA
(Capinota and Arque Provinces Highlighted)

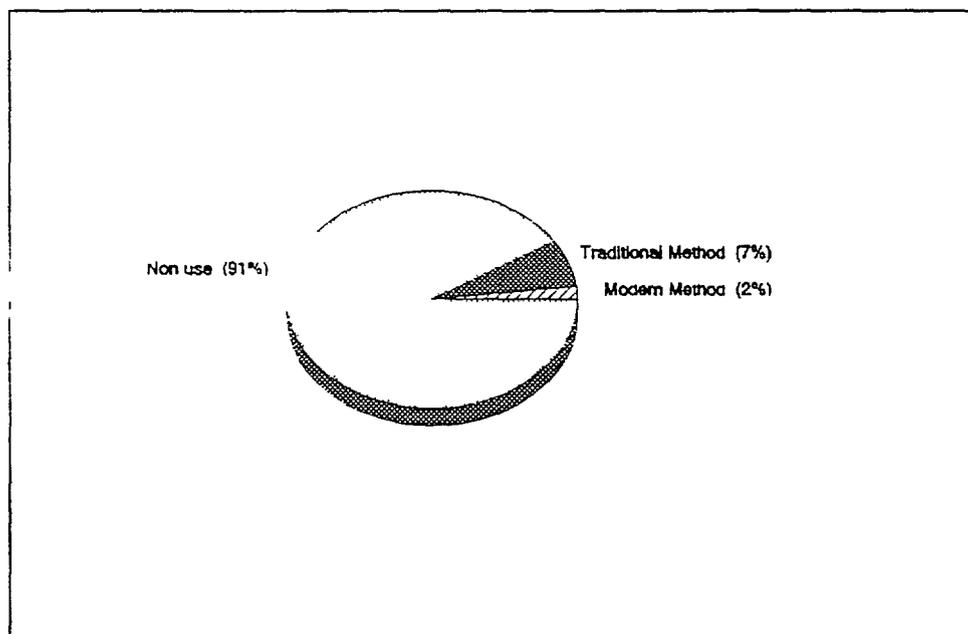


■ KAP STUDY

Prior to start-up of project activities in July 1993, a cross-sectional, population based survey was undertaken to collect baseline data on knowledge, attitudes and practices regarding family planning in the target area. Three hundred thirty-four women of reproductive age (15 to 49 years) were identified and interviewed from eight communities in the provinces of Capinota and Arque (McInerney 1993). The results of the study indicate that fertility rates in the target area are high with women between 45-49 having on average at least 6 live births. Moreover, there is no indication that this trend shows any sign of abating soon, since women between 30 and 34 are already averaging 5 children each.

The study also revealed that both knowledge and use of family planning methods is extremely low by national standards. Less than 13 percent of all women of reproductive age (WRA) interviewed were able to recognize a minimum of one modern family planning method. As illustrated in Figure 3, only nine percent of WRA were actually using a family planning method, even though nearly three-quarters of them indicated that they did not wish to have any more children.

FIGURE 3
CURRENT FAMILY PLANNING USE IN DISTRICT VII
WRA (N=334)



■ QUALITATIVE STUDY

Given the broad geographic range of District VII, a major challenge for the project has been to communicate accurate information on reproductive health to diversity of socially and culturally distinct populations. As a first step towards understanding more clearly the range of existing perceptions and attitudes towards reproductive health, in-depth interviews were carried out among campesino men and women of reproductive age from the project area. The study examined the cultural significance of such concepts as gender relations, reproductive choice, and family planning (Pereira and Rojas 1993). The study also examined local attitudes towards public sector health care services and their relationship to traditional healing systems.

As in other regions of extreme poverty and high infant mortality, local perceptions of family planning were found to be closely tied to strategies for securing the continuity and reproduction of the family itself. Only after this has been achieved does the determination of household size appear to become a major factor in decisions to regulate fertility. Recognition of this perception was found to be critical in the development and communication of appropriate information, particularly on issues relating to reproductive risk and birth spacing.

The interviews also demonstrated how the collective organization of political authority, agricultural production and individual socialization in the more remote areas of District VII frequently manifests itself in the subordination of women's reproductive interests to those of her male partners or elder family members. The study argued recognizing the community's influence on individual behavior was an important first step in incorporating both community and individual participation in the development and communication of information on reproductive health.

3. OPERATIONS RESEARCH

The objective of present operations research project was to assess the feasibility, quality and cost of introducing a full range of reproductive health care services, including pap tests and IUD insertions, at community based health posts by trained nurse auxiliaries. As a basis for comparison, the project also provided technical and financial assistance to enable physician-staffed hospitals to offer the same services.

Ultimately, the goal of the study was to highlight the extent to which current reproductive health norms effectively neglect the needs of rural women by restricting the provision of many family planning services to (primarily urban-based) ObGyns. Demonstrating that a full range of family planning methods could be safely provided by nurse auxiliaries serving in areas where there are no physicians, was intended to support efforts underway to bring Bolivia's reproductive health norms more into line with international standards.

■ STUDY DESIGN

Over a 14-month period, the project undertook two parallel demonstration interventions in District VII. One initiated family planning and related reproductive health services at community based health posts by trained nurse auxiliaries. The other responded to the programming requirements and directives of the SRSC by providing technical and financial assistance to enable physician-staffed hospitals to offer the same services through physician staffed district hospitals.

TABLE 1
DISTRIBUTION OF SERVICE DELIVERY POSTS

COMMUNITY HEALTH POSTS	HOSPITALS
Tacopaya Colcha Pongo Comuna Charamoco	Arque Capinota Sicaya

The study adopted a non-experimental design providing essentially descriptive data on service delivery interventions at ten sites. As indicated above in Table 1, the sites were divided between five auxiliary-staffed community health posts and three physician-staffed hospitals. In both groups, staff were trained to provide on request some or all of the family planning methods available through the Secretaria Nacional de Salud (IUD, pill, foaming tablets, condoms and natural methods - calendar rhythm, cervical mucous and lactational amenorrhea method)

■ DESCRIPTION OF INTERVENTIONS

Between start-up of project activities in July 1993 and the initiation of service delivery in November of the same year, the following activities were undertaken to ensure that all hospitals and at least three community-based health posts would be able to provide the full range of family planning methods normally offered within the SRSC's reproductive health program

Training

In October 1993 the project carried out two training courses in modern and natural contraceptive methods for all clinical staff working within District VII. In one course, six physicians and four professional nurses were trained, in the other, nine auxiliaries were trained. A competency based curriculum was developed which included an intense practical component. Special emphasis was also placed on the importance of counseling and quality of care issues such as understanding the client, completeness of information to clients, informed selection of methods by client. Based on these courses, three training manuals were prepared (see appendices)

The training program was developed and supervised by a training team consisting of specialists from Development Associates and Bolivian medical staff (both physicians and nurses). For nurse auxiliaries, the classroom portion of training activities was carried out over a two week period at the Escuela Tecnica de Salud Publica Boliviano Japonesa. Practical training took place for another two weeks at the Hospital Capinota. The training of physicians was carried out in the city of Cochabamba during a three day course at the Maternidad German Urquidí

Throughout the entire training program, special emphasis was placed on ensuring that the participants demonstrate competency in carrying out all pre-insertion physical assessment and infection prevention procedures. In addition to written exams taken prior to and following the course, all participants were required to demonstrate competency on anatomic models prior to clinical practice

For nurse auxiliaries, eligibility to perform IUD insertions depended on completion of the following five requirements

- Possession of a rural nurse auxiliary degree from the Escuela Tecnica de Salud Boliviano Japonesa

- Successful completion of both theoretical and practical components of the reproductive health training course
- Satisfactory completion of ten pelvic exams under supervision.
- Satisfactory completion of ten pap tests under supervision
- Satisfactory completion of ten IUD insertions under supervision

Of the nine auxiliaries enrolled in the training course, only four were graduated nurse auxiliaries, and therefore eligible to perform IUD insertions. Of these, three completed all the requirements indicated above.

In February 1994 a second course was offered for new physician and nursing staff arriving for their year of provincial service. Finally, in March, 1994 a refresher course was offered for nurse auxiliaries and rural health promoters.

Equipment and Supplies

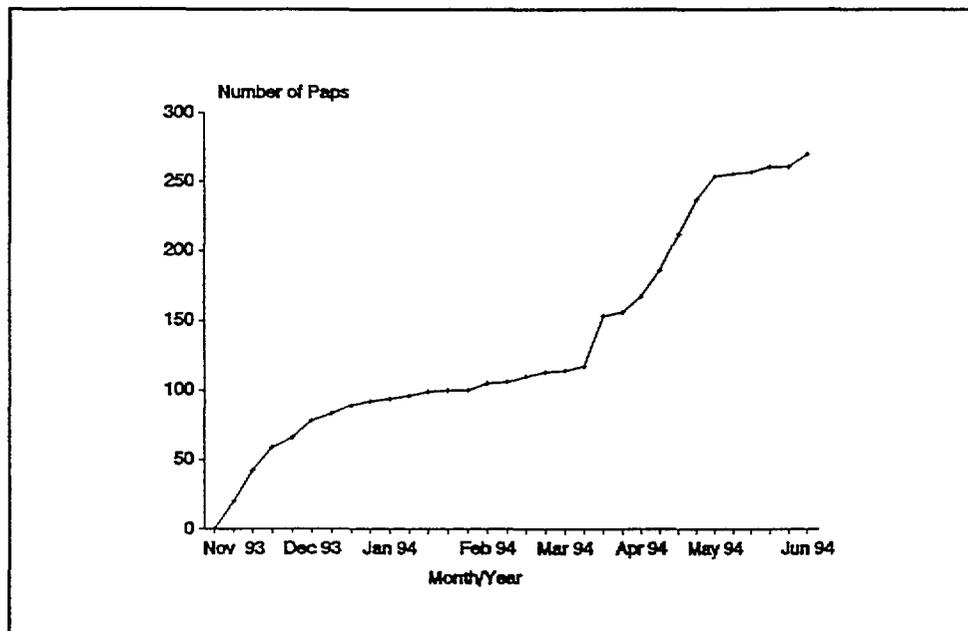
Given that the present study initiated reproductive health activities within the District, health posts and hospitals were equipped with all the furniture and supplies required to provide quality pap exams and IUD insertions. The project also provided supplies of foaming tablets, condoms, and IUDs (CuT 380A), and pills (Lo-Femenal).

■ STUDY RESULTS

Pap Exams

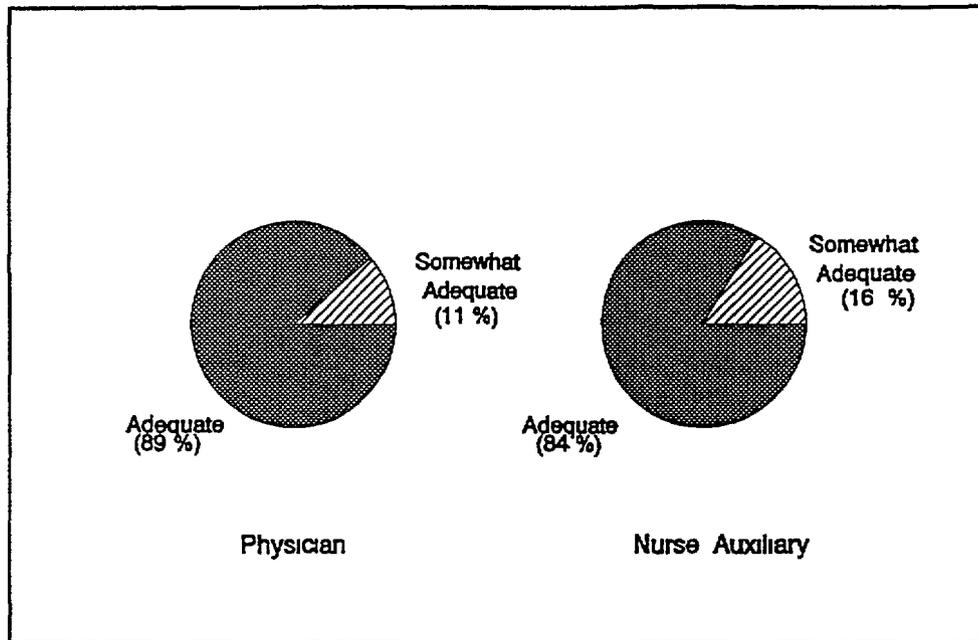
On November 16, 1993, Distrito VII initiated the delivery of reproductive health services by offering pap tests during the project's clinical training program at Capinota Hospital. Since that time the project has seen dramatic and consistent increases in the number of pap tests carried out throughout the District as a whole. As illustrated in Figure 4, from November 1993 until June 1994, a total of 284 pap exams were performed in the project area, 50.7 percent by auxiliary nurses, 28.5 percent by doctors, and 20.8 percent by graduated nurses. These numbers demonstrate the considerable demand for cancer screening services by rural women.

FIGURE 4
ACCUMULATIVE INCREASE IN PAP TESTS
CARRIED OUT IN DISTRICT VII



In terms of quality of care, auxiliaries showed themselves equally as competent as physicians in performing pap exams. Based on laboratory reports, 84 percent of all pap smears submitted by auxiliary nurses for analysis were classified as "adequate" -- virtually identical to the 89 percent rate for physicians.

FIGURE 5
QUALITY OF PAP SMEARS SUBMITTED FOR ANALYSIS



With respect to the pap results themselves, the study found a high incidence of both inflammation and infections. Indeed, only 33.5 percent of all women tested received a normal pap result. Sixty-one percent presented some type of infection and inflammation, 2 percent resulted in CIN I (mild dysplasia), and 1.2 percent CIN II (moderate dysplasia).

The high quality of services provided by auxiliaries was also evident in the comparative return rates of pap test clients. Overall, return to follow-up for paps was approximately 50 percent by the end of June 1994. The rate for women who received their pap from auxiliaries, however, was almost 60 percent higher than that of physicians (60.9 vs 38.4 percent), the difference being attributable in large part to the tendency for auxiliaries to make home visits in order to follow-up on their clients.

The age of women obtaining a pap exam ranged from 16 to 70 years old, with the median age being 30. Two thirds of these women had not even completed primary school (6 years), 27 percent had never attended school at all.

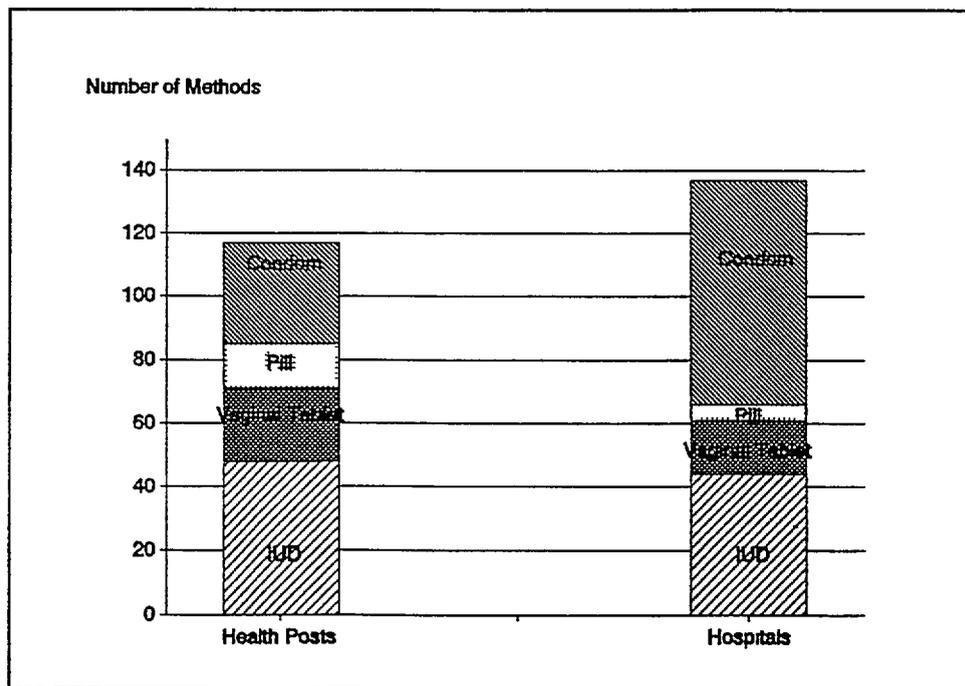
Finally, the study showed that the availability of pap services and the opportunity to discuss results with health personnel were instrumental in introducing women to the importance of reproductive health and family planning. Of all the women who had had a pap exam performed through the project, 72 percent eventually requested a family planning method, clearly demonstrating the acceptance of family planning by rural women.

Distribution of Family Planning Methods

Of the nine auxiliaries providing family planning services through the project, three (two men and one woman) were qualified to insert IUDs. The impact of such insertions on method distribution was evident both in the range of methods provided through the project as well as in the distribution of methods by service provider.

Fifty-two percent (N=48) of all IUD insertions in the project were performed by nurse auxiliaries at their health posts, as compared to 38 percent by physicians and 10 percent by nurses. Yet surprisingly, the overall distribution of methods by nurse auxiliaries turned out to be more evenly balanced than among hospital-based staff. The latter, for example, distributed more condoms than all other methods combined, while the pill was hardly distributed at all. This point is illustrated in Figure 6, which displays the distribution of methods by service delivery site.

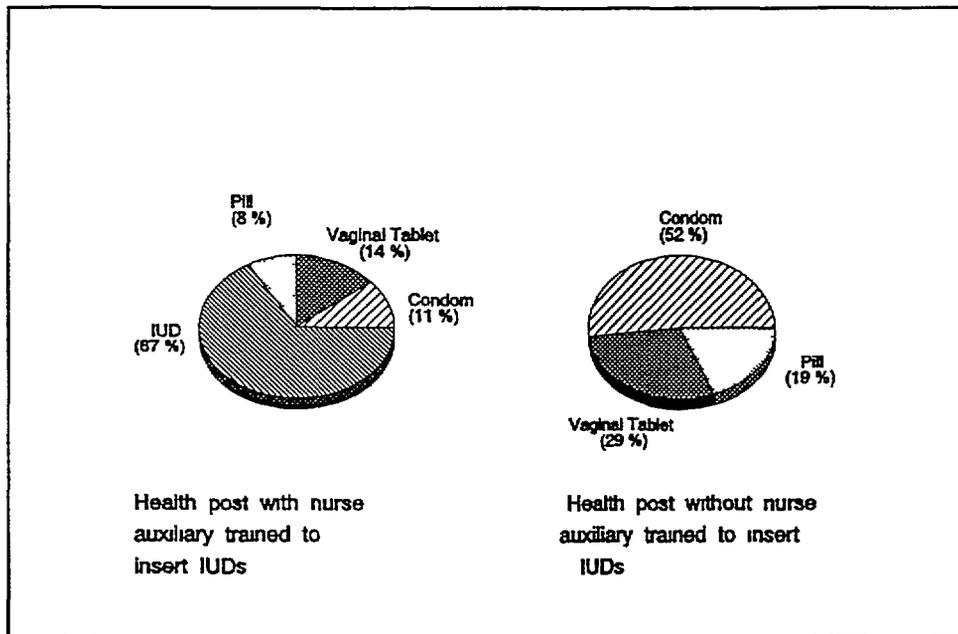
FIGURE 6
DISTRIBUTION OF FAMILY PLANNING METHODS
BY SERVICE PROVIDER



The impact of auxiliary provided services at the sub-District level is particularly evident, however, when, as in Figure 7, the distribution of methods by health post is differentiated between those posts staffed by auxiliaries trained to insert IUDs and those staffed by auxiliaries who were not. While method distribution among the former group clearly favored the IUD, such health posts nevertheless were successful at distributing a full range of contraceptive methods. Where nurses were not trained to insert IUDs, by contrast, the method mix is not only devoid of IUDs, but heavily biased towards less reliable methods such as condoms, and expensive resupply methods such as the pill.

What these figures also reveal is that despite the presumption, under the current reproductive health norms, that trained physicians are providing quality family planning services to all communities and health posts within their Districts, in reality a balanced range of services is not being provided at all. These findings support those of other rural family planning programs where the distribution of family planning methods at the sub-hospital level is a function of the range of methods the local health care provider can provide him- or herself (Skibiak et al 1994 19)

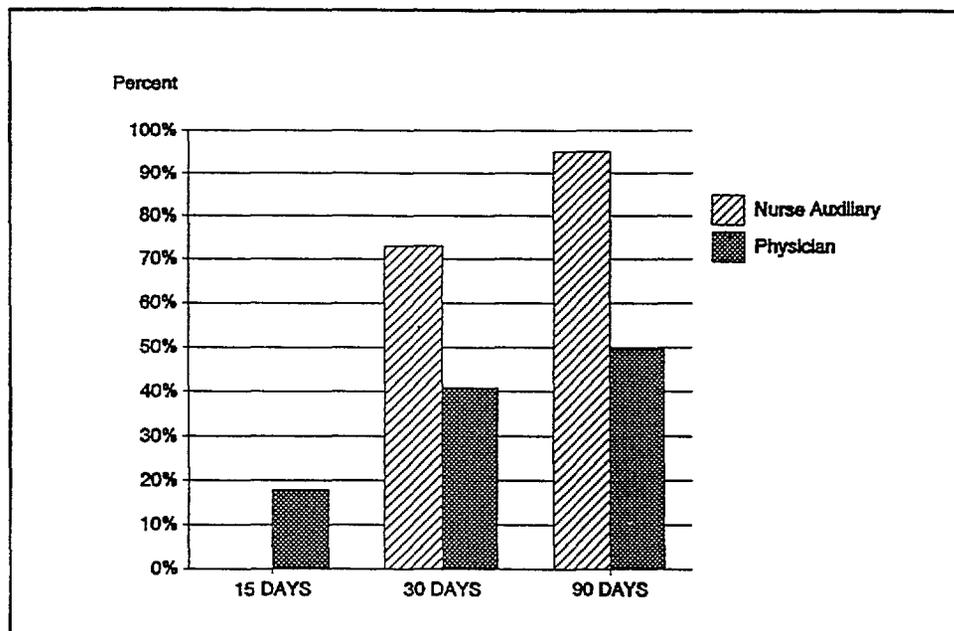
FIGURE 7
METHOD DISTRIBUTION BY HEALTH POST



Earlier it was noted that clients of auxiliaries maintained higher return to follow-up rates for paps than physicians. The same is even more true in the case of IUD users. As illustrated below in Figure 8, ninety-five percent of all IUD users who received their IUDs from auxiliaries returned within 90 days for their follow-up visit, compared to only 50 percent in the case of physicians.

The auxiliaries also demonstrated a technical competence in IUD insertion comparable to that of the physicians. Out of a total of 92 insertions, from start-up of service delivery in November 1993 to June 1994, there were no reported complications, no perforated uteruses, or expulsions. Moreover, not one woman asked for the IUD to be removed nor were there any pregnancies by women using the IUD. Clearly, nurse auxiliaries demonstrated their capacity to provide family planning services, including IUDs, as effectively and as efficiently as the physicians.

FIGURE 8
RETURN TO FOLLOW-UP BY IUD USERS



Cost Data

A major concern for the Secretaria Regional de Salud in introducing reproductive health services into District VII was the relative cost of doing so in rural areas, areas where population density is typically low and where basic health care infrastructure is such that the investment costs associated with such services are typically higher than in District centers.

An important goal of the present study, therefore, was to compare the incremental costs of

providing a full range of reproductive health care services by nurse auxiliaries with the costs of doing so exclusively by medical personnel at District hospitals

In both cases, the major incremental costs were associated with training and basic medical equipment and supplies. Other costs, such as those of contraceptive methods, support services (lab analysis for paps), and additional supervision of auxiliaries by medical staff did not figure prominently since none of these items represented additional or incremental expenses for the Secretaria, itself. In Cochabamba, for example, contraceptive methods and lab analysis are fully subsidized by donations from UNFPA. Clinical supervision of auxiliaries, meanwhile, took place entirely during the regular field visits of hospital based staff.

With respect to equipment and supplies, the costs per service delivery site were virtually identical. All sites, including hospitals, required a standard package of equipment including gynecological tables, IUD insertion kits, instrument tables, stethoscopes, sterilizing equipment, sphygmomanometers, and routine infection prevention materials such as gloves, bleach, buckets, iodine, etc. Both hospitals and health posts also required basic clinic and laboratory supplies such as glass slides and cover slips, saline, gram stain materials, etc. Together, the cost of these materials per site was approximately US\$930.

The greatest single cost differentiation between physicians and auxiliaries related to training in reproductive health. Given the longer duration and more intense supervision of the nurse auxiliary's initial four week course, the costs associated with it were considerably higher than in the case of the physicians. The costs of the auxiliary training were also elevated by the fact that, unlike the program for physicians and nurses, the auxiliary curriculum was designed and developed expressly for the present OR study.

As noted earlier, however, the financial justification for training nurse auxiliaries was based on the assumption that any higher initial training costs could effectively be compensated by the auxiliaries' permanence within their home communities, a permanence that would ultimately result in lower costs per IUD user⁶. Physicians, meanwhile, because of their obligatory *año de provincia*, require constant training in reproductive health, thereby maintaining an overall higher cost per family planning or IUD user.

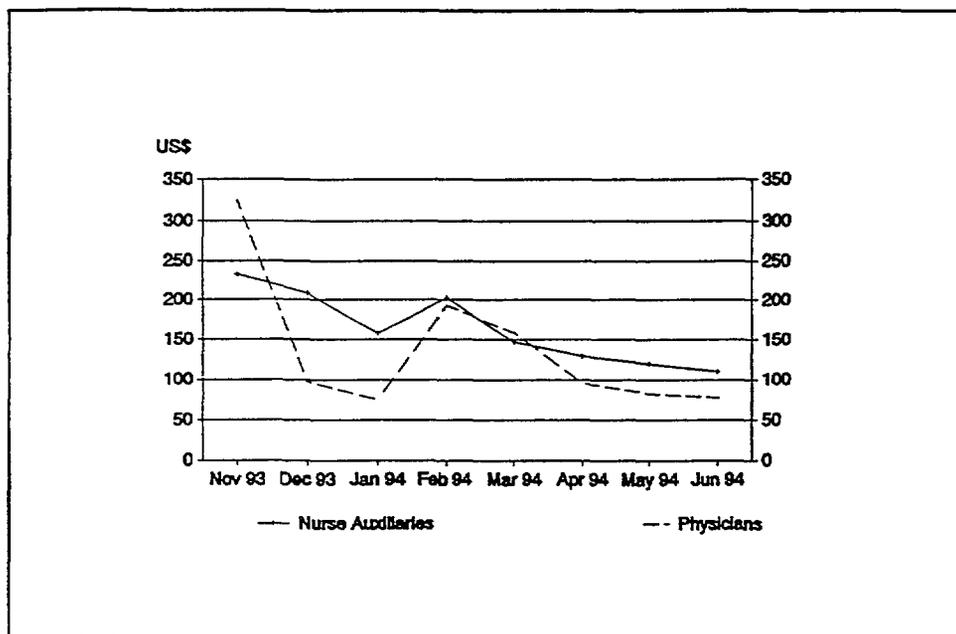
Data from the present study tend to support such an argument, particularly in the case of cost per IUD insertion. As indicated in Figure 9, for example, the limited number of IUD insertions carried out by physicians during the first month of their training resulted in a high cost per acceptor of US\$324, even though the training cost per physician (US\$195) was less than half that per auxiliary (US\$ 440). With increased numbers of insertions, unit costs dropped to the point where, by January 1994, they were half that of auxiliaries.

⁶Given that the IUD service component was responsible for largest proportion of the project's supply and training costs (additional days for clinical training use of pelvic models, etc), for the purposes of the present study, cost effectiveness has been measured in terms of cost per IUD insertion.

In February, however, the five physicians trained the previous November completed their *año de provincia*. The replacement team of new physicians once again required training in reproductive health, which again boosted the cost per IUD user by more than 100 percent.

In contrast to the physicians, nurse auxiliaries have seen a relatively constant decrease in costs per IUD insertion. Though the curve rose slightly in February as a result of the project's refresher course, the increase was nowhere comparable to that among physicians. Indeed, by June 1994, the cost per IUD insertion for auxiliaries was only 43 percent higher than that of physicians (US\$110 versus US\$77). With a third physician refresher training course scheduled for August 1994, costs per IUD insertion for auxiliaries are expected to drop even below those of physicians.

FIGURE 9
TRAINING COST PER IUD INSERTION



4. CONCLUSIONS

The results of this operations research study have demonstrated that adequately trained and supervised nurse auxiliaries can perform pap tests and provide a full range of family planning methods, including IUDs, both safely and cost-effectively. The results also show that when auxiliaries are able to provide such services, client follow-up is enhanced, the loss of potential family planning users is reduced, and a more balanced distribution of methods is ensured.

■ IMPACT ON PROGRAMMING

The problems addressed through this study are issues of concern throughout rural Bolivia. Limited accessibility to physician provider services, institutional patterns that ensure instability among medical staff, and medical norms that prohibit service delivery by those most closely in contact to rural populations characterize the delivery of rural health care services nationwide. The decision by District VII to undertake the present operations research study, however, was not one without its risks. Despite the extensive research worldwide showing that auxiliaries can provide reproductive health services effectively and safely, the implementation of such a program within Bolivia clashed with many established truths regarding the roles of auxiliaries in the national health care system. It also challenged the traditional and longstanding hierarchies among physicians, graduated nurses and auxiliaries.

In this sense, therefore, the true accomplishment of this project has been its ability to demonstrate to all within the public health care system that a more effective use of auxiliaries need not pose a threat either to the authority or to effectiveness of the system itself. In carrying out the present study, the physicians, nurses and auxiliaries of District VII worked together closely from the inception of the project to its implementation. They collaborated in the design of the training program, in its execution, and in its subsequent monitoring and supervision activities.

As a result of this collaboration, District VII has been perhaps the most effective and vocal spokesmen for a more expanded use of auxiliaries in rural settings. They have garnered both technical and financial support for an expansion of project activities within the District and throughout the Department. In public fora, the District's Director has discussed openly and candidly the problems confronting rural health care delivery and the effectiveness of the present strategy at overcoming many of them. As a result of these efforts, by June 1994, three other Districts within the Secretaria Regional de Salud/Cochabamba—Sacaba, Totora, and Santivañez, had requested technical and financial support to launch similar programs. Even beyond Cochabamba, the experience of the present operations research study is being viewed as a model for the design of future rural reproductive health programs.

Ultimately, the impact of the present study on future reproductive health programs will depend on the degree to which it is replicated on a broader scale. Fortunately, the basis for such replication has been already been established through the preparation of training manuals and through the formation of training personal able to replicate the program elsewhere

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