

**THE EFFECT OF FRANCHISING RURAL PRIVATE PRACTITIONERS IN
INDIA ON QUALITY OF CARE—A SUSTAINABLE APPROACH?**

Thesis Proposal

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ABSTRACT

Background

While India's spending on public health is among the lowest in the world, it has one of the highest proportions of private health spending in the world, at over 80 percent of all health spending. The private sector is the main source of initial ambulatory care for the rural poor in India. In fact, private practitioners are often the first point of contact that the rural poor have with the health system, largely due to their extensive reach and coverage of the population. Therefore, private practitioners are in a unique position to impact the health status of the poor. However, studies have shown the care of both formally qualified as well as informal private practitioners to be of poor quality.

The concept of collaborating with rural private practitioners in the provision of healthcare first developed after independence. Many rural private practitioners have been known to practice an eclectic blend of allopathic and traditional medicine. Assessment of the technical quality of services provided for family planning and reproductive health and assessment of patient satisfaction remain critical issues that have not been sufficiently addressed in past studies. While there are a handful of evaluations of the quality of care of these practitioners; however, it is still unclear how quality of care in the private sector compares with care in the public sector, which has also been identified to be of poor quality. Past studies have compared private practitioner treatment practices with treatment protocols, and not with actual treatment patterns in the public sector. (Peters, 2002) In addition, no studies have compared the quality of care after a training intervention with the care provided by practitioners who were not trained.

Objectives

This study will assess the effect of a social franchise intervention on the technical quality of care of rural private practitioners (RPPs) providing family planning and reproductive health services in the rural areas of the state of Bihar in India. The intervention consisted of three components: training RPPs, franchising them with the *Titli* brand name, and social marketing. Technical quality among the following three groups will be compared: trained and franchised RPPs, untrained and un-franchised RPPs, and the government health providers. The goal of this research is to examine the impact of social franchising of RPPs on the technical quality of family planning and reproductive health care, and how this compares with patient perceptions of quality.

This proposed research and evaluation study will also assess the effect of differential socio-demographic characteristics of program beneficiaries as independent predictors of satisfaction; as well as the socio-demographic characteristics of the private providers as predictors of technical competence and retained knowledge.

Methods

Technical quality of care will be measured through the administration of a questionnaire designed to measure knowledge, and will be compared among trained and franchised RPPs, RPPs that have not been franchised, and physicians in the government health centers. The total sample size will be 150 providers, with 50 providers in each of the three groups. Assuming that scores are normally distributed and that the mean score for both government providers and RPPs is 50 with a standard deviation of 20, the sample size has been designed to detect sixty percent of a one standard deviation difference between the franchised RPPs and the unfranchised RPPs and the franchised RPPs and the government providers with a power of 85 percent and at a significance level of five percent.

Client satisfaction will be measured by data that has been collected through client exit interviews, and will also be compared among the three types of providers.

Use of Findings

Based on information regarding the quality of care delivered by trained and franchised RPPs, as compared with care provided by RPPs that have not been trained or franchised, and physicians in the government health centers, social franchising as a method of improving quality may be validated as a useful intervention. In addition, the role of differential characteristics (age, level of education, years in practice) of the rural private practitioners in influencing quality of care can be helpful in developing selection criteria for rural private practitioners for future training and franchising programs.

OBJECTIVES

This study will use both secondary data collected from Bihar, India as well as primary data to determine if an intervention of training and franchising informal health providers is able to improve quality of reproductive health care and family planning services.

From late 1997, with the start of a pilot, the NGO Janani began implementing two interventions, a provider intervention and a patient intervention, to improve the quality of reproductive health care and family planning services. The provider intervention consists of training and franchising RPPs in rural Bihar. Rural private provider who have been trained by Janani have added Janani's branded family planning and reproductive health products such as condoms and oral contraceptive pills to their existing services. As of April 2002, there were approximately 15,900 franchised RPPs. The patient intervention is an information, education, and communication (IEC) campaign with advertisements on billboards, posters, signs, the radio, and in newspapers to create awareness and demand among local communities for the services provided by the franchisee networks.

Objectives:

1. To determine the impact of an intervention of training and franchising rural private providers in India on **quality of care** for reproductive health and family planning services, using simulated clients.
2. To determine whether an intervention of training and franchising rural private providers in India results in an increase in **client satisfaction** for reproductive health and family planning services.

BACKGROUND AND LITERATURE REVIEW

This section reviews the relevant literature in order to demonstrate gaps in available information on franchising rural private practitioners, thereby creating a rationale for this study. The section begins with a presentation of basic background information on rural private practitioners in India and their defining characteristics. Information on outcomes of the proposed study, such as different measures of quality, is then presented in order to

identify the appropriate variables to measure. Finally, background information regarding the study setting is presented.

The evidence from a wide range of studies is thus quite compelling. The rural private practitioner provides more care, more often, and to more people than is readily acknowledged. His role in curative services is undeniable, and yet very little is known about his abilities, the appropriateness of the treatment he provides, or the opportunity of improving his treatment practices as well as gaining his actual support for public health programs. Virtually all government documents and most studies of the health system ignore this vital source of health care in rural India and thereby lose the opportunity to understand, use, upgrade this vast resource of potential allies in the major responsibility of public health care that the government has to bear. We must first understand who this rural practitioner is, what his qualifications are and why people choose to consult him so widely. From this we can develop a comprehensive approach to improve his practice, and effectively integrate this self-financing worker into the overall strategy of health care for the entire Indian population. (Rohde & Viswanathan)

1. Health Systems Framework—Public Sector

Since Independence, India has sought to develop a healthcare system for all. However, the historic urban-rural bias continues to persist until today. The public health care system that currently exists in rural India, where 75% of the population lives is largely dysfunctional. (Peters, et al, 2002) The majority of public spending on health has been spread too thin to be effective. Although the public delivery infrastructure and staff are enormous, they have been under-funded. (Peters, et al, 2002)

Total Indian government spending on health, as a percentage of gross domestic product (GDP), is among the lowest of any country in the world, at approximately one percent of GDP. (Peters, et al, 2002) Government primary health care (PHC) resources in the form of manpower and drugs and supplies are scarce, and as a result, quality suffers. Due to this poor quality as well as for reasons of poor access, patients avoid government health centers, and often resort to the private sector, or refer themselves to government hospitals at the district headquarters, where the perceived quality of care is higher. (Deolalikar and Vashishtha, 1990) This current pattern of care seeking is inefficient as it increases cost by directly utilizing higher levels of care for PHC. Whatever little the government spends on primary health care is “being wasted” due to improper planning, financing and organization of the health care delivery system. (Duggal, 2000)

The rural health care system is a four-tiered network consisting of facilities providing primary health care that are linked to hospitals providing secondary and tertiary care. The primary health care system is remarkably similar throughout the country and is characterized by district and Taluka hospitals at the top, serving two million people and half a million people respectively, one community health center (CHC) per 100,000

population, one primary health center (PHC) per 30,000 population, and one sub-center per 5,000 population. (World Bank, 1995; Chatterjee, 1997) The sub-centers mainly provide reproductive and child health services and are managed by auxiliary nurses and midwives (ANM). The primary and community health centers provide a combination of inpatient and outpatient care and are staffed by medical doctors and paramedical staff (nurses and physician attendants).

Trained doctors typically refuse to live in rural areas due to the lack of: educational opportunities for their children, transport, and recreational facilities. In addition, drugs and supplies in the government PHCs are often lacking. Several studies (Department of International Health, 1976; Taylor, 1983) showed that the coverage of PHCs was essentially limited to people living within a radius of about two miles. The government of India tried to address these problems by launching the community health volunteer scheme in 1977. However, these health workers could not meet the needs of rural populations that had increasingly begun to demand “proper medical care” characterized by access to “doctors” and “western medicines.” Consequently, unqualified private providers found a niche market and began to provide these services demanded by the rural population. (Prakasamma, 1993)

2. Private Sector

India has the largest private health sector in the world with over one million qualified doctors of various systems of medicine (CBHI in Peters, 2002) and approximately 1.25 million unqualified rural medical practitioners. (Rohde and Viswanathan, 1995) Available evidence suggests that private providers are a major source of care in rural areas of India. Surveys of health seeking behavior in India indicate that the poor increasingly prefer and use private providers of healthcare, as opposed to public providers. (Bennett, 1997) This preference is largely due to reasons of access and perceived quality-- high of private providers, low of primary health centers (PHCs), in spite of the fact that the services of public providers are free. Overall, high demand for unqualified private providers in rural India is attributable to a complex interaction of factors such as lower cost, accessibility, and the ability of these providers to combine traditional and allopathic medical systems to meet client demand/perceptions of quality care. (Khare, 1996)

The growth of informal private health providers in India, especially in rural areas is attributable to a complex set of factors such as the lack of alternative and affordable health services and the popularity of the care that they provide. Compared to their urban counterparts, rural populations in India have very limited choice in terms of health services. As the government health system in India is beset by problems of physical distance, long waiting times, unavailability of doctors, the rural private practitioner is by default, the *de facto* primary care provider. Unqualified private health providers are the primary sources of initial ambulatory care for the rural poor in India. In fact, they are often the first point of contact that the poor have with the health system. In four studies, rural private providers were found to be the mainstay of rural medical care, consulted first (and exclusively in most cases) for 60-80% of illness, especially for women and

children. (Rohde & Viswanathan) The existing network of rural practitioners is the *de facto* primary health care system of rural India. (Rohde & Viswanathan)

The private sector poses both threats and opportunities for provision of health care. The existing poor quality of private providers adds to the financial burden of already poor households. Because there is often a delay in correct diagnosis after help seeking and initial non-specific or incorrect treatment, patients often shop for treatment, sometimes visiting two or more providers in search of a cure. These additional provider visits add unnecessary costs to the diagnosis and treatment of common diseases. Therefore, the current pattern of poor quality care in the private sector is inefficient. Because private providers often do not provide correct diagnosis and treatment of common illness, many unnecessary consultations occur and many unnecessary drugs are prescribed before correct case-management is provided, if at all. The burden of unnecessary expenses falls disproportionately upon the rural poor.

Therefore, although the government spends very little on healthcare, overall health spending in India is quite substantial at approximately 5.4 percent of gross domestic product (GDP) as over 80 percent of all health spending in India occurs in the private sector. (Peters, 2002) As most of this private money is inefficiently spent, it could be captured and redirected to provide more effective health care for the rural poor.

Private providers have a comparative advantage because they are close to the community, both geographically, and socially. Private providers are also trusted by the community, so collaborating with them presents a unique opportunity to increase patient acceptance of care, such as family planning and reproductive health services. Past research has shown that clinic franchising programs that encourage providers to form ties with their local communities and promote family planning among existing clients may have better outcomes. (Field Briefings 1992 and Foreit 1998)

Private providers that have been trained can also be useful agents of change in the community, for example to improve the status of women. The private practitioner can empower local village women by providing health education to patients regarding disease prevention and health promotion behaviors. In addition, due to their current work, rural private practitioners possess the basic skills required to learn how to counsel and provide family planning services (as opposed to lay community volunteers who do not have experience in providing healthcare). Another strength of these providers is their responsiveness to client demands. For example, unqualified private providers understand the medical expectations of patients in India, which typically reflects a combination of traditional and allopathic medicine. (Nichter, 1980; Khare, 1996; Lambert, 1996) Consequently, client satisfaction is typically high. However, the responsiveness to client demands may also prove to be a weakness in that it may contribute to poor technical quality of care.

The major weakness of unqualified private providers is their poor technical quality of care. Because most of the private providers that are consulted in the rural areas are not formally trained or qualified, and due to the fact that they often respond directly to patient

demand, the treatment that they provide results in quick relief of symptoms, is usually temporary, and does not adequately treat the existing illness. Sometimes the treatment may even pose harm. Private providers often needlessly administer intravenous lines and misuse antibiotics (either by overuse or incomplete treatment) resulting in drug-resistance and other complications adding unnecessary costs to the health system. Good technical quality of care is closely related to health outcomes. **Therefore, if unqualified private providers are to be involved in helping India meet its family planning and reproductive health goals, their technical quality of care must be improved.**

NGO or governmental collaboration with informal private providers has the potential to improve access and quality of care, and lead to better health outcomes. Such collaboration is more likely to improve the technical quality of care; however, non-technical aspects of service delivery that can be measured by client satisfaction and are likely to improve as well. In sum, collaboration with private providers should prove to be a win-win situation for all by leveraging existing human capital in the community, mobilizing them to provide quality healthcare, and to act as a system of triage, appropriately referring cases to higher levels of care in the formal health system.

3. Quality

Quality of health care consists of the proper performance (according to standards) of interventions that are known to be safe, that are affordable to the society in question, and that have the ability to produce an impact on mortality, morbidity, disability, and malnutrition. (WHO definition; Roemer, 1988)

Quality is composed of two main components: the actual technical quality delivered by the health provider and perception of quality by the client, or client satisfaction. Each of these two measures of quality will be measured as outcomes in the proposed study. As such, background information is presented below in order to help in defining the outcome variables of interest for the proposed study.

3a. Technical Quality

In order to assess technical competence of providers, direct observation with “simulated clients” assessing consultations according to a checklist can be used. Client exit interviews can also be used to assess provider performance according to standards. Studies comparing observations of family planning and health consultations with client exit interviews have found that clients accurately report interpersonal relations as well as concrete actions by providers, such as displaying a flip chart or weighing a child. In a comparison of three monitoring methods in Malawi, observations proved to be more reliable than interviewing providers, and observations could collect information on a wider range of activities than client interviews. (Fraco, et al., 1996)

One of the most recent studies on technical quality of unqualified private practitioners was a study that examined unqualified private practitioners' technical quality of care for ARI, and its determinants. In a sample of 40 unqualified private providers in a rural area of India, this study found private providers to have poor technical quality of care. (Chakraborty, 1998)

Several medical anthropological studies in India have shown that one of the main expectations that patients have regarding quality of care is the ability of the doctor to combine Western and indigenous/Indian systems of medicine. For example, there is a big demand on the part of patients for injections and other allopathic treatments. However, patients also want to be told what food to avoid or to include in their diet. Food restrictions during illness conform to traditional Indian medical systems, such as *Ayurveda*. In addition, waiting time and good interpersonal communication are also considered to be signs of good quality care. (Nichter, 1980; Khare, 1996; Lambert, 1996; Rohde and Viswanathan, 1995)

The Janani program in India was included as part of a study of four reproductive health franchises in three countries. (Montagu, 2002c) The study measured provider technical quality of care through the use of one clinical vignette among 80 *Surya* providers and 77 *Titli* providers. Provider responses were scored using the WHO guidelines for provision of family planning services (WHO, 1999). Client exit interviews were conducted and community representatives who were married women and who were not necessarily clients of the franchise were also interviewed. (Montagu, 2002c)

This study showed that in no franchise was there any correlation between vignette scoring of provider skill and client ranking of provider skill, providing evidence for the theory that clients are poor judges of true provider skill/technical quality of services that they receive. Both clients and community representative rated technical quality/skill as the most important attribute of a provider (34 percent of *Titli* center clients). However, when asked why they had chosen the current provider, the majority of clients stated accessibility/proximity (76 percent for *Titli* center clients) The other most common reasons were: "know provider personally" (42 percent), "cost of service" (40 percent), and "high quality/reputation" (32 percent).

It is interesting to note that there was no correlation between client reporting that "skill was the most important attribute of a reproductive health provider" and the clients' reporting of why they chose their *current* provider in any of the four reproductive health franchises studied. Montagu hypothesizes that in the face of limited available information with which to judge provider skill, prior knowledge and personal recommendations are the only available proxies for technical quality. In addition, when adjusted for the type of service received, either clinical (IUD, injectible, Norplant, sterilization, abortion/menstrual) or non-clinical (oral contraceptives, condoms, natural family planning), the odds of a client saying that quality was one of the reasons they had chosen that provider increased more than twofold for those receiving clinical services in India. (Montagu, PAA, 2002)

This study found that assuring technical quality is the most important area of franchise activity, with the greatest potential to provide value to clients. Montagu asserts that if social franchises are able to improve and control the technical quality of providers and to communicate this quality improvement and assurance of skill level to all clients and potential clients, clients' demand for quality providers will increase, and they will be able to access quality care at a lower total cost (due to a decrease in transaction costs of seeking care).

The fact that this study evaluated the technical quality of care of the RPPs trained and franchised by the Janani project should have made it useful for evaluating the technical quality of family planning and reproductive health services provided by franchised RPPs. However, the method of data collection used by this study, a self-administered questionnaire regarding a clinical vignette, has not been validated. This creates the possibility of bias. Although the validity of clinical vignettes as a tool to measure the quality of care delivered by physicians has been established, little is known about the validity of clinical vignettes to evaluate informal, untrained providers. (Peabody, et al, 2000) Past research in decision-making has shown that intended actions expressed in surveys may not reflect the actual human behavior that is triggered in a real situation. Many human actions are often the result of multiple external factors present at the moment of the actual decision.

This study used the same vignette and questionnaire for both the trained physicians and informal, untrained RPPs. The validity of the clinical vignette that was used is also questionable due to the fact that providers were instructed to answer the questions in writing, and some of the RPPs are illiterate. As such, the information from this study is not a good measure of the actual technical quality of care of Franchised RPPs for family planning and reproductive health services.

In addition, although this study ascertained technical quality of the RPPs that had been trained and franchised by Janani, the information is not very useful there was no comparison group. It is not possible to collect data on the quality of care before the Janani franchising program for a pre-post study design as the program is already ongoing. However, the quality of care of Janani trained and franchised RPPs can be compared to the quality of care of RPPs that have not been trained and franchised. In addition, as the quality of care of the physicians in the government primary health centers is reported to be of low quality, the quality of care of the Janani trained and franchised RPPs will be compared to this group in this proposed study.

3b. Client Satisfaction

Client satisfaction may be a good predictor of compliance with care regimens and, for family planning, continuation of method use. (MacStravic, 1991) A growing body of research has found that in both developed and developing countries, clients share seven major concerns in judging quality of care. (Kols, 1998) These are:

1. **Respect.** Clients want to be treated with respect and friendliness. Clients interpret courtesy, confidentiality, and privacy as signs that providers are treating them as equals.
2. **Understanding.** Clients value individualized service and prefer providers who make the effort to understand their particular situation and needs. They want providers to listen to them and to explain options in terms that they understand.
3. **Complete and accurate information.** Clients value information. They worry that family planning providers are not telling them all the facts, especially negative information about contraceptive methods.
4. **Technical competence.** Clients can and do judge the technical competence of the services they receive, although they may not use the same criteria as providers and they may not be technically accurate. Ultimately, clients judge technical competence by whether their needs are met or their problems are resolved.
5. **Access.** Family planning clients want ready access to contraceptive services and supplies. A convenient location and prompt service are important, but access also means that services are reliable, affordable, and without other barriers.
6. **Fairness.** Clients want providers to offer thorough explanations and examinations to everyone alike. They complain that providers offer preferential treatment to friends, relatives, those from a higher social class or certain ethnic group, those with political connections, or those who offer bribes.
7. **Results.** Clients come for services for a specific purpose. They are dissatisfied when told to come back another day or to go to a different facility, or when providers dismiss their complaints as unimportant.

Clients' satisfaction is an important indicator of service quality. Client satisfaction is difficult to assess, however, when many clients express satisfaction regardless of technical quality. (Scott and Smith, 1994) Evidence on the association between client exit interviews regarding provider skill and technical quality evaluated from expert observation or an equivalent gold standard is mixed, but suggests that there would be little correlation. (Peabody 2000, Bernhart 1999). **Thus, client satisfaction may not be a good indicator of technical quality of care, when clients have low expectations or inaccurate perceptions of quality.**

Most clients lack the knowledge to judge technical quality in health care and family planning. Client satisfaction depends on *perceived* technical quality. When clients' perceptions of quality are inaccurate, their expectations can influence providers' behavior and actually lower the quality of care. Clients sometimes want inappropriate tests, procedures, or treatments in the mistaken belief that they constitute good quality. (Bennett, et al., 1994) In response to such demands, informal private providers often prescribe unnecessary medicines, including unnecessary injections to ill patients. Providers often fear that clients will switch to other providers if they do not receive the care they expect. This self-perpetuating phenomenon becomes very dangerous as the **poor quality care demanded stimulates more poor quality of care delivered.**

Client satisfaction depends not only on service quality but also on clients' expectations. Clients are satisfied when services meet or exceed their expectations. (Thompson &

Sunol, 1995) If clients' expectations are low or if they have limited access to any services, they may be satisfied with relatively poor services. Health care clients often expect poor-quality care, accept it without complaint, and even express satisfaction when surveyed. (Schuler & Hossain, 1998) Client satisfaction, as expressed in interviews or surveys, does not necessarily mean that quality is good; it may mean that expectations are low.

Most efforts to improve quality to date have focused on service delivery and other supply-side factors. However, it is equally important to create a demand for good-quality family planning providers and services by redefining perceptions of good quality and developing expectations among clients. As such, a public that is well educated regarding what constitutes good quality care will increase demand for such care and thus contribute to an overall increase in quality of care. The Institute of Medicine's recent "Quality Chasm" report that calls for a redesign of the U.S. health care system stresses that patients' experiences should be the fundamental source of the definition of quality, and the need for health care to be patient-centered. Such care should be responsive to individual patient's choices and preferences, provide patients with the necessary information and the opportunity to exercise the degree of control they choose over the health decisions that affect them, provide patients with access to clinical knowledge, and foster an environment of open communication between patients and providers. (Berwick, 2002)

The Bruce-Jain framework, for measuring and assessing quality from the clients' perspective, includes six elements of quality of care in family planning service delivery (Bruce, 1990):

- Choice of methods,
- Information given to clients,
- Technical competence,
- Interpersonal relations,
- Mechanisms to encourage continuity of use, and
- Appropriate constellation of services

For measuring sustainability of quality in family planning, the *drop-out ratio* is a good indicator because it takes account of clients' reasons for stopping a method. The drop-out ratio is the percentage of new users who are still at risk of pregnancy, do not want to become pregnant, and have quit using *any* family planning method. Thus it excludes clients whose reasons for discontinuation do not reflect on service quality—for example, women past menopause, who are no longer sexually active, whose pregnancies were planned, or who switched methods. (Bulatao, 1995)

To gauge clients' satisfaction, exit interviews, focus-group discussions, satisfaction surveys, and suggestion boxes can be used. Pathania hypothesizes that the relative importance of the various elements of quality perceptions from the clients' perspective varies with the SES of the patient. (1998)

Poor quality care adds unnecessary costs to the health care system by wasting resources during avoidable repeat visits to health care providers. Such avoidable repeat visits are costly both for programs and for clients, who may have to take time off from work and pay for transportation. (Ogunbekun, et al., 1996) By preventing injuries, infections, and unwanted pregnancies, good-quality care eliminates costly follow-ups to treat clients who have been harmed. As such, improvements in quality of care may also be cost-saving.

In an ongoing four-year project, the Clinic Franchising Project (CFP), the impact of franchising on both the service provider and the client was evaluated among four family planning and reproductive health franchises in three countries, Ethiopia, Pakistan, and India. For the service provider, the impact on client volumes, staffing levels, and range of services was examined. For the client, the impact of franchising on client satisfaction and perception of affordability was examined. Franchising was shown to have a significant positive association on the number of family planning clients attending a health facility, the number of staff working at the health facility, and the number of family planning brands available. Franchising was also shown to have a positive impact on client satisfaction, which was measured by the odds of clients attending franchised health facilities reporting an intention to return to the same health establishment and the odds of clients attending for family planning than for general health purposes. The study came to the conclusion that franchising for contraceptive service delivery offers apparent benefits for both the provider and the client and the opportunity to expand access to quality reproductive health services among poorer subgroups.

4. Rural Private Practitioner

a. Definition

There are essentially two types of rural private practitioners—those who have received formal medical training in any type of medicine (Allopathy, Ayurveda, Homeopathy, Siddha, or Unani) from a recognized college and those who have no formal training. (Rohde and Viswanathan, 1995, p.44)

Private providers are typically defined as individuals providing health care that operate outside the direct control of the government. Private providers in India are an extremely heterogeneous and complex group characterized by various types of providers and types of health care systems. The two main health systems operating in India are modern allopathy and the Indian Systems of Medicine (ISM); under which systems such as *ayurvedya, unani, siddha* are categorized; and homeopathy.

Various terms have been used to describe private health providers who have not been formally trained in any system of medicine. The general term *indigenous medical practitioner* has often been applied to such private health providers in India. The connotation of this term is that such practitioners employ traditional cultural approaches, herbal medicine, or spiritual means for diagnosis and treatment. In the rural areas, the term *rural private practitioner* has been used to describe providers with no formal training because past research has shown that most of the qualified private practitioners

practice in urban areas while most unqualified private practitioners practice in rural areas. Traditional birth attendants, or *dais*; faith healers; and witch doctors are not included in this definition of *rural private practitioner* (RPP) because rural populations usually consult these providers for specific ailments, viewing them as specialists, while rural villagers consider RPPs as general practitioners and consult them most frequently. (Rohde & Viswanathan, 1995)

Private providers are typically defined as individuals providing health care that operate outside the direct control of the government. Private providers in India are an extremely heterogeneous and complex group characterized by various types of providers and types of health care systems. The two main health systems operating in India are modern allopathy and the traditional Indian Systems of Medicine (ISM) under which systems such as *ayurvedya*, *unani*, *siddha*, and homeopathy are categorized.

With lack of any regulation of medical practice, the majority of rural private practitioners **with formal training** also engage in medical practice that is outside their field of formal training. The most common example of this is ISM trained doctors who engage in the practice of allopathy. In fact, it is an open secret that a non-allopathic qualification is a means to setting up a more profitable practice in modern medicine. (Duggal, 2000) **For the purpose of this study, term *rural private practitioner* (RPP) will be used to connote both the unqualified private providers in the rural areas, as well as private providers in the rural areas who have been formally trained in ISM**, as most of the formally trained ISM practitioners engage in whole scale cross-practice between allopathy and ISM. The practice that is without formal training equates to the practice of an unqualified practitioner. (Rohde and Viswanathan, 1995). In addition, in a 2002 study that surveyed 82 rural private providers trained and franchised by Janani, while the majority were unqualified, about 9% were trained and qualified in ISM—Ayurvedic, Homeopathic, or Unani medicine, with corresponding degrees/diplomas-- BUMS, BAMS, and DHMS. (CORT, 2002) The chart on the next page describes the various types of rural private providers.

b. Characteristics

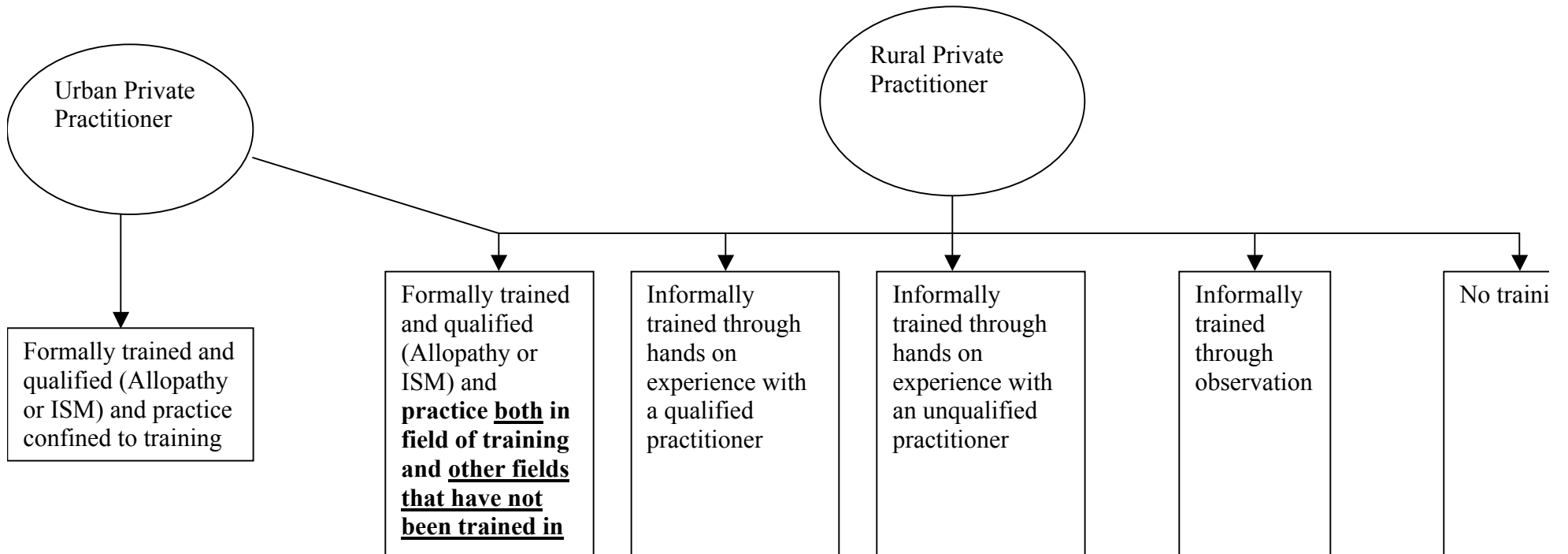
There have been a few studies that have looked at the characteristics of rural private practitioners in India. The first all-India study on rural private practitioners was conducted by Rohde and Viswanathan in 1988 and focused exclusively on childhood diarrhea in four geographically diverse states in India, Uttar Pradesh, West Bengal, Gujarat, and Karnataka. The study's main objective was to document rural mothers' and private providers' knowledge, attitudes, and practices (KAP) for diarrhea case management among children under five, and administered a KAP survey to approximately 10,000 mothers of children under five and 266 rural private practitioners. Due to its large size and geographic representation, this study is the most comprehensive source of information on the characteristics of unqualified private providers in India.

The study found that 83 percent of rural families sought help from private practitioners, and only 7.5 percent from government health centers. The majority (62%) of private providers had no medical qualifications and 61 percent practiced more than one type of medicine—typically a blend of allopathic and traditional/indigenous medicine.

Rohde and Viswanathan also conducted an extensive review of the available literature on rural private practitioners. This review identified two other studies on rural private practitioners. One study, which was sponsored by the Ford Foundation, was conducted in 1991 in three districts, Ganjam (Orissa), Faisabad (Uttar Pradesh), and Trichy (Tamil Nadu), and sampled 50 rural private practitioners. The second study, which was sponsored by the Options II project, Washington, D.C., was initially conducted in 1992 with a follow-up in 1993, and surveyed 488 RPPs in the state of Uttar Pradesh. (Rohde & Viswanathan, 1995)

This review of private providers highlighted the lack of data on their technical quality of care, but mentioned that the little information that was available indicated that technical quality of care was most likely extremely poor. In addition, the review was instrumental in identifying the factors potentially responsible for poor technical quality of care among unqualified private providers. For example, the following were identified as factors affecting technical quality of care: the untrained status of most informal private providers, the profit motive, and patient/community perceptions.

TYPES OF PRIVATE PROVIDERS



5. Past Work Regarding Interventions to Improve Rural Private Provider Quality in Family Planning

State Innovations in Family Planning Services Agency (SIFPSA), an autonomous Society created as a result of a partnership between the Government of India, Government of the state of Uttar Pradesh (UP) and United States Agency for International Development (USAID), planned and initiated in 1994, a program for training certified and licensed practitioners qualified in ISM as well as those rural practitioners with no formal training or qualifications but with large numbers of clients. A 4-6 day training that included the following counseling skills was provided to the practitioners:

- Counseling to assure client's informed choice of family planning methods
- Method specific counseling for pill and condom services
- Counseling for clients for referrals for IUDs and sterilization
- Counseling for HIV/STD prevention
- Gender sensitive counseling skills and awareness of the negative consequences of high fertility on the health and well being of families

A total of 5,500 private practitioners in 9 districts of UP were trained over two and a half years. The training was quite successful as 65% passed a post-training knowledge and skills test. Retention of knowledge and skills was also demonstrated by 60-70% of practitioners satisfactorily demonstrating counseling for informed family planning choice, condoms, and pills 3-6 months post-training.

It is important to note that differences were found in the performance and level of interest between the qualified ISM degree holders and those with no qualifications. The qualified ISM degree holders showed higher performance levels, but lower levels of interest.

In an analysis of data from 5 districts, 370 (22.3%) degree holders were found to have been trained as compared to 1289 (77.7%) non-degree holders. The non-degree holders showed greater eagerness and willingness to attend and benefit from the training and showed more interest in providing services post-training than the degree holders. No information was available on selection criteria for both the degree holders and the non-degree holders, as this may also contribute to the enthusiasm of the providers. Although both groups showed a similar gain in knowledge from pre-training to post-training assessments (22% for degree holders and 25% for non-degree holders), only 50% of the non-degree holders passed the training as compared to 62% of the degree holders. This is evidence of the higher knowledge base of the degree holders before the intervention. As a result of this, SIFPSA simplified the presentation of training information for non-degree holders. (Johri, et al, 1999)

5. Study Rationale

Despite the availability of free health services, utilization of government health facilities is low due to problems of accessibility, availability and poor quality. (Deolalikar and Vashishtha, 1992) For example, health care centers are only open for a few hours a week and at times inconvenient for users; most health centers are under-staffed and lack essential drugs. (ICMR, 1989) In contrast, private health providers are widely distributed throughout the population, close to the communities that they serve, and more accessible than the government PHCs. Thus, there is an opportunity for private health practitioners to fill an unmet need for healthcare. However, it is interesting to note that several studies have found that even when a government facility was available in a village or a neighboring village, people had repeatedly chosen the private sector.

Although historically, services rendered in government health centers have been provided free of charge, in recent years the government health services have selectively introduced fees for services at its health facilities. In addition, government general practitioners often operate private practices out of the government PHCs, and thus, government health providers may charge informal fees. Although private practitioners charge fees, they may be more affordable for the poor, rural population. Market forces result in a self-financing system with both fees and means of payment that are adjusted to the capacities of the rural public that it serves. Therefore, although prevailing theory suggests that growth of the private sector challenges concepts of equity, it can be argued that this private health system is a far more equitable system than the public primary health care system.

Private providers have a comparative advantage because they are close to the community, both geographically, and socially. Private providers are also trusted by the community, so collaborating with them presents a unique opportunity to increase patient acceptance of care, such as family planning and reproductive health services. Past research has shown that clinic franchising programs that encourage providers to form ties with their local communities and promote family planning among existing clients may have better outcomes. (Field Briefings 1992 and Foreit 1998)

Private providers that have been trained can also be useful agents of change in the community, for example to improve the status of women. The private practitioner can empower local village women by providing health education to patients regarding disease prevention and health promotion behaviors. In addition, due to their current work, rural private practitioners possess the basic skills required to learn how to counsel and provide family planning services (as opposed to lay community volunteers who do not have experience in providing healthcare). Another strength of these providers is their responsiveness to client demands. For example, unqualified private providers understand the medical expectations of patients in India, which typically reflects a combination of traditional and allopathic medicine. (Nichter, 1980; Khare, 1996; Lambert, 1996) Consequently, client satisfaction is typically high. However, the responsiveness to client demands may also prove to be a weakness in that it may contribute to poor technical quality of care.

The major weakness of unqualified private providers is their poor technical quality of care. Because most of the private providers that are consulted in the rural areas are not formally trained or qualified, and due to the fact that they often respond directly to patient demand, the treatment that they provide results in quick relief of symptoms, is usually temporary, and does not adequately treat the existing illness. Sometimes the treatment may even pose harm. Private providers often needlessly administer intravenous lines and misuse antibiotics (either by overuse or incomplete treatment) resulting in drug-resistance and other complications adding unnecessary costs to the health system. Good technical quality of care is closely related to health outcomes. **Therefore, if unqualified private providers are to be involved in helping India meet its family planning and reproductive health goals, their technical quality of care must be improved.**

Until recently, the government ignored unqualified private providers because of their unlicensed status. The only recommendation made concerning this group was to ban them from practicing. However, in the absence of alternative health care arrangements, banning private health providers will not contribute to improving India's health statistics. The only result of such policies will be to remove often the only source of medical care for low-income families in rural India. In addition, even if the government was to ban these providers from practicing, given its poor regulatory capacity, it is extremely doubtful that the government would be able to enforce this ban.

NGO or governmental collaboration with informal private providers has the potential to improve access and quality of care, and lead to better health outcomes. Such collaboration is more likely to improve the technical quality of care; however, non-technical aspects of service delivery that can be measured by client satisfaction and are likely to improve as well. In sum, collaboration with private providers should prove to be a win-win situation for all by leveraging existing human capital in the community, mobilizing them to provide quality healthcare, and to act as a system of triage, appropriately referring cases to higher levels of care in the formal health system.

6. Study Setting

Bihar is one of the poorest states in India where 53 percent of the population lives below the poverty line. (National Statistical Sample Survey, 1995-1996) Most of the 83 million people live in rural areas and the government health centers are largely inaccessible due to poor transport.¹ The situation in Bihar is accentuated by the state government's well-documented failure to deliver even the most basic health services outside of Patna and one or two major metropolitan areas. As a result, the approximately 200,000 rural private practitioners (RPPs) provide most of the outpatient care in the state, and are even more important than in the rest of the country.

¹ When the state of Jharkhand was created in 2000 from parts of Bihar and Orissa, the population of Bihar fell to 82,878,796 (based on provisional tables from the 2001 census).

Health Indicators (Peters, 2002)			
	India	Bihar	Rank of Bihar Among 16 Major States
Population, 2000	1,002,142	100,564	2
Per capita Income (Rs.) 1996	12,183	4,992	16
Persons Below Poverty Line (%), 1995-96	36	53	15
Total Fertility Rate, 1997	3.3	4.4	15
Contraceptive Prevalence (%), 1999	44	20	15

RESEARCH DESIGN AND METHODS

1. Conceptual Framework

The role of this framework is to help identify explanatory variables for inclusion in a model for studying the impact of a program that franchises rural private practitioners on quality of care. Two components of quality are technical quality and patient satisfaction.

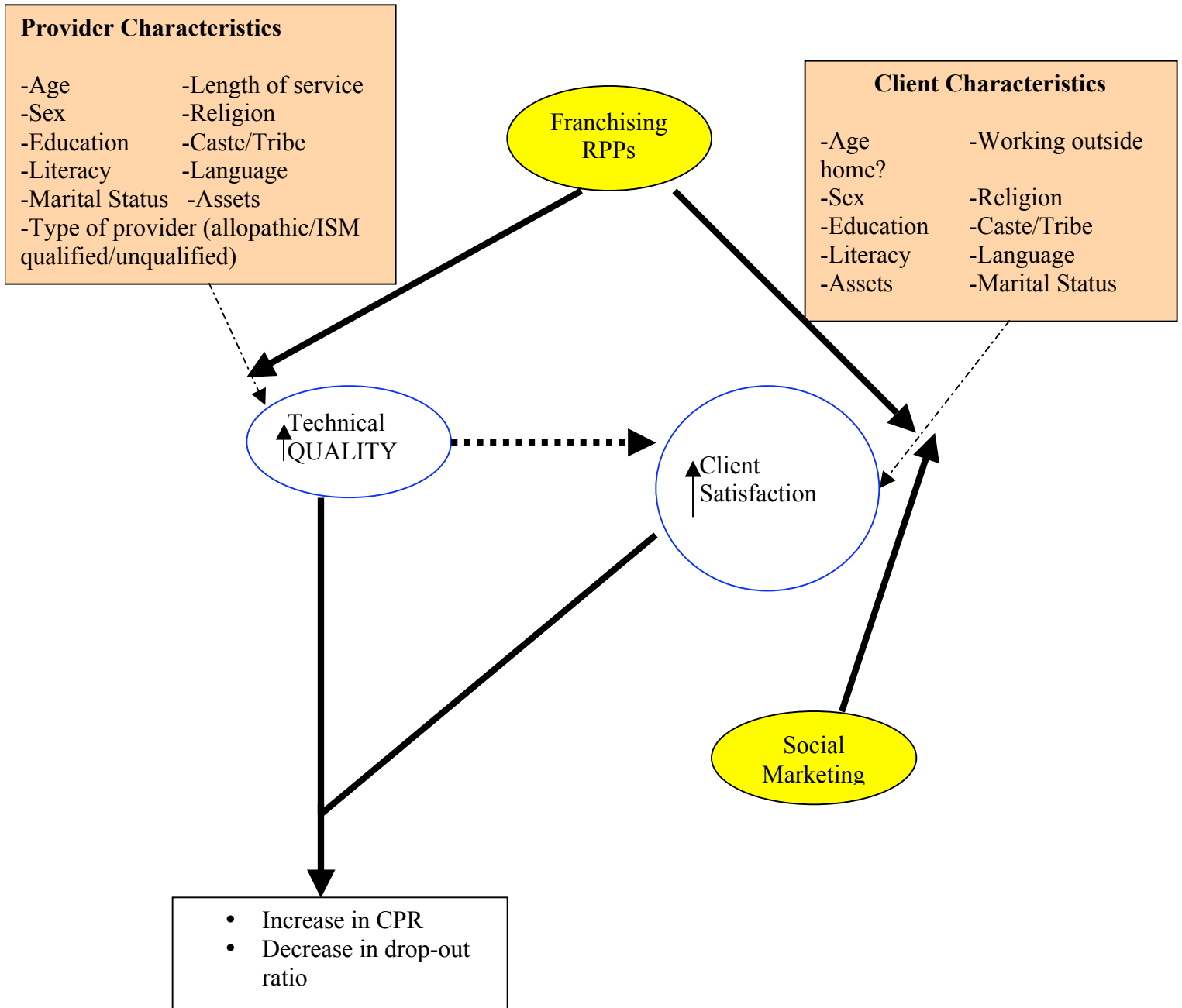
Patient satisfaction is an indicator of quality, and may be influenced by factors outside of the program's control, such as the socio-economic characteristics of the clientele. (Davies et al., 1995; Donabedian, 1988) Therefore, this research will also examine how the socio-demographic characteristics of a client predict client satisfaction. Technical quality can also be influenced by personal characteristics of the providers. As such, this research will also look at how the background characteristics of providers affect technical quality.

As mentioned in the literature review, improved quality of family planning counseling is likely to result in an increase in rates of contraceptive use, that can be measured by the contraceptive prevalence rate (CPR). (Bertrand et al., 1994). Improved client satisfaction is likely to result in higher rates of contraceptive continuation; which can be measured by the drop-out ratio (percentage of new users who are still at risk of pregnancy, do not want to become pregnant, and have quit using any family planning method), an indicator of sustainability of quality in family planning. Although changes in the CPR and the drop-out ratio are expected as a result of the intervention, these final outcomes will not be measured by this study. Instead, the intermediate outcomes of differences in quality between intervention and control groups will be measured.

The flowchart on the next page shows the predicted impact of the Janani program on quality of family planning counseling through both a top-down approach of training providers and increasing the supply of healthcare of a high technical quality, and the bottom-up approach of stimulating a demand for higher quality care from the patients, through social marketing and IEC.

The solid lines show the predicted pattern of causation between the provider and patient interventions and the outcomes of technical quality and patient satisfaction.

CONCEPTUAL FRAMEWORK



2. Study Design

2a. Data

The data to be used in this study comes from a survey that was conducted as part of a cross-national evaluation of selected reproductive health and family planning franchising programs supported by the David and Lucile Packard Foundation. The evaluation survey of Janani was conducted by the Carolina Population Center (CPC) of the University of North Carolina (UNC) at Chapel Hill, and the actual data collection was outsourced to Taylor Nelson Sofres (TNS) MODE Pvt. Ltd., a New Delhi-based research firm. Data was collected between March to July 2001² through the administration of three separate surveys: client exit interview, provider questionnaire, and service delivery point (SDP) questionnaire. The primary purpose of the survey was to evaluate the Janani program in improving the delivery of family planning services and increasing the use of contraception among individuals.

Separate sampling frameworks were designed for urban and rural areas. As 80 percent of the population of Bihar lives in the rural areas, and the focus of this research and evaluation study is on RPPs in the rural areas, only data from the rural parts of Bihar will be analyzed. As such, the sampling strategy that was used for health facilities in the rural districts is described below.

Janani has divided the state of Bihar into six regions, with regional centers set up in the cities of: Patna, Motihari, Darbhanga, Katihar, Ranchi, and Deoghar. A multi-stage sampling framework was used where the first stage entailed systematically randomly sampling with probability proportional to size, two districts in which Janani operates, from each of the six regions. Janani has categorized districts according to region; however, those districts that fell within more than one region were assigned to the region where the majority of the population of the district resides. The multistage cluster sample design was applied to the entire state of Bihar except for some southwest districts that had relatively little franchise activity due to heavy dacoit activity, and hence were also politically unsafe for fieldwork.

Each district was then divided into urban and rural strata. Within the rural areas, the 1991 census list of villages was used as a basis for the sampling frame. For each district, the villages were arranged in descending order of population, and villages with a population of less than 50 were discarded from the sampling frame. Nine villages were then selected from each district, using systematic random sampling with probability proportional to size (PPS). Each of the nine villages, respectively, then became the index village for the formation of a cluster composed of all of the adjacent/adjoining villages. Each cluster thus included an index village and four to five surrounding villages, each with a population of approximately 5,000. As such, each village cluster was approximately 25,000-30,000 in size. However, if the index village had more than five adjacent villages, then only five adjacent villages were selected by PPS. A total of 108

² Due to adverse weather, there was very little data collection during the month of May.

village clusters were created (nine village clusters from each of the two districts), based on the random selection of the initial index village.

Every health facility within each of the villages in a cluster was identified and mapped with name, address/location, and categorized by type of health facility. Based on this complete listing of health facilities, separate sampling frames were constructed for separate categories of health facilities. Listed below are the three health facility categories of interest for this study.

- **Public (government)**
- **Titli Center**
- **Unqualified doctor/clinic**

All health facilities in each cluster of villages were included in the respective sampling frames, based on category of health facility. Health facilities for each category were then selected systematically from the total number of health facilities in each of the respective sampling frames. A total of 946 health facilities of all types were sampled in the rural areas.

Every provider providing reproductive health and family planning services at each of the health facilities was also surveyed. For each of the *Titli* centers, both the RPP and his female associate were surveyed. A total of 1,408 providers were surveyed at the 757 health facilities in the sample, with an average of 1.9 providers per health facility sampled. This provider information was captured by a provider questionnaire.

A client exit interview survey was used to collect patient information. Four client exit interviews were conducted at each of the sampled health facilities. Eligible clients were women of reproductive age, or men whose wives were of reproductive age, presenting for any type of health service, and not just family planning or reproductive health. The sample selection procedure was based on the average daily client load. For example, if the average daily client load was 32, then every eighth client was selected. In order to protect against any possible section bias, the four clients at each provider were interviewed on the same day.

Appendix 1 shows the sample sizes for the three surveys (health facilities, providers, and patients) that TNS MODE carried out in the rural areas of Bihar in 2001.

2b. Study Sample

This proposed research will use the abovementioned data and analyze it in the form of a three-arm study, comparing the Janani program intervention to two control groups. The design of the proposed study will be cross-sectional and quasi-experimental, as there was no randomization between control and intervention groups in the original data. The lack

of randomization was due to the fact that the purpose of the original survey was evaluation of an existing program intervention, whose implementation was non-random to begin with. As the purpose of the Janani training and franchising intervention was purely programmatic, and not necessarily research oriented, the intervention group was not randomly selected. Selection bias may have resulted, and will be addressed in more detail under the section entitled, Study Limitations.

The unit of application of the intervention was the individual provider. The intervention consisted of training individual RPPs and franchising them in newly established *Titli* centers starting with a pilot in late 1997. Detailed information regarding the intervention is provided under the next section on the Intervention. The unit of analysis will also be the provider.

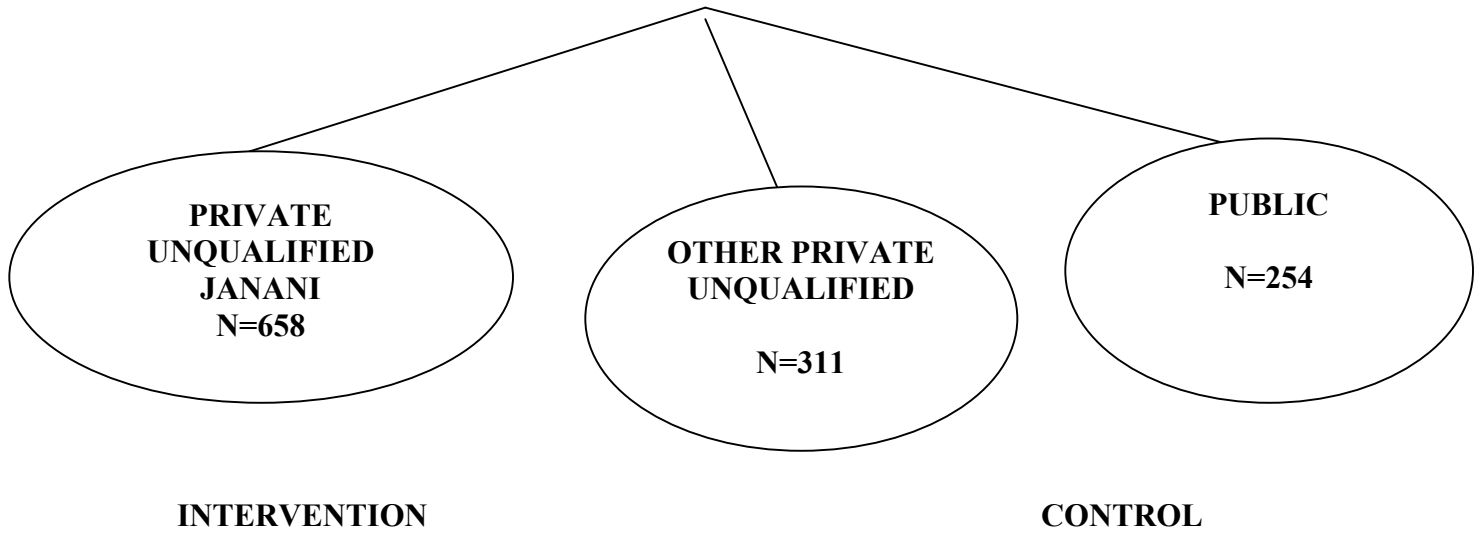
There are two control groups. The first is composed of the RPPs that were not selected by Janani for training and franchising. A second control group is composed of providers in government health centers. Listed below are the types of government health centers that were included in the study.

- Community health center (CHC)
- Primary Health Center (PHC)
- Additional PHC
- Family Welfare Center/Post-Partum Center (PPC)
- Sub center/Urban Health Post (UHP)

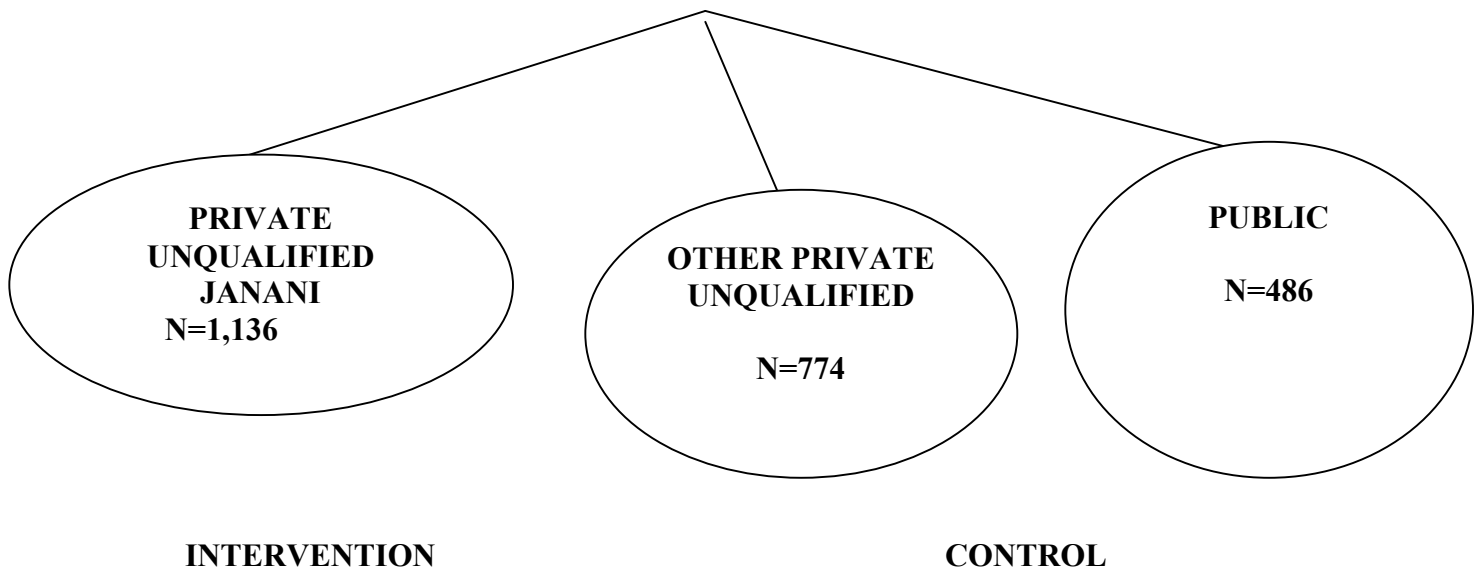
For this proposed study, a sub-sample of the rural data will be used. This sub-sample includes 351 Franchised RPP facilities, composing the intervention group; and two control groups composed of 278 untrained RPP facilities and 128 government facilities, respectively. There are a total of 757 health facilities in the sample for this proposed study. The health provider in charge of each health facility was interviewed regarding the staffing and services offered by the facility. This information was collected according to a health facility questionnaire.

Appendix 2 presents a breakdown of the sample for this study.

PROVIDER SAMPLE, N=1,223



CLIENT SAMPLE, N=2,396



3. Intervention

The study population consists of an intervention group of RPPs that have been trained and franchised and two control groups consisting of: 1) RPPs that have not been either formally trained or franchised and 2) government healthcare facilities. The study population includes patients as well as providers. The patient intervention is an information, education, and communication (IEC) campaign with advertisements on billboards, posters, signs, the radio, and in newspapers to create awareness and demand among local communities for the services provided by the franchisee networks. Detailed information on the provider intervention is provided below.

In late 1997, the NGO Janani started a pilot franchising program to improve access and quality of family planning and reproductive health services in state of Bihar. From early 1999, training and franchising RPPs in the majority of districts of Bihar started. A rural private provider who has been trained by Janani distributes non-clinical contraceptives such as condoms and oral contraceptive pills and refers appropriate cases to a formally trained physician in the Janani network, in addition to his usual provision of curative services.

Janani created the *Titli* Center brand and franchised selected RPPs as *Titli* providers. The standardization and identification of services with a franchise name or logo, combined with contractual arrangements between providers and the franchising organization, distinguish clinic franchising from other social marketing programs that include provider training. (Sulzbach, et al, 2002)

The Janani Program selected two RPPs in each village/*panchayat* area in 42 districts in Bihar for franchising and two as possible replacements. No RPPs from the remaining eight districts were selected due to heavy dacoit activity in these areas. Since the beginning of the program in early 1999, the selection criteria has evolved to include the following three main prerequisites: literacy of the RHP and his female partner, operation of the *Titli* center from the RPP's home, and regular links between the RPP and the market. According to the Program Director of Janani, operating the center from home is crucial because in the early phases of the project, even a distance of 100 feet from home was shown to reduce the participation of the woman member sharply. Some of the franchised RPPs may also maintain a clinic away from the home, if they this was how they operated before being franchised by Janani. The RPPs practice an eclectic range of medicines but almost all of them prescribe allopathic medicines.

As of April 2002, there were approximately 15,900 RPPs franchised with *Titli* Centers. (Montagu, 2002) *Titli* Center providers are required to pay an annual franchise fee, which is reduced for providers who perform well on quarterly evaluations. Janani provides *Titli* providers with signs and local wall painting advertisements. In addition, *Titli* providers are able to purchase supplies of condoms, pills, pregnancy test kits, and antibiotics to treat common STIs. The franchised *Titli* center providers are evaluated

every three months by monitors who rate overall quality according to a checklist of indicators. If an individual RPP fails to meet a predetermined minimum score twice consecutively, then he is replaced by one of the back-up RPPs.

As the majority of the RPPs are men, each practitioner that Janani franchises is required to work in partnership with a female member of his own family, usually the wife, in order to bring gender sensitivity to the network. One requirement of both the RPP and the associate is literacy. The trained female associate at the Titli Center is a crucial link with the local community as female patients are more comfortable to discuss their health problems with female providers. As such, the female associate at the center acts as an intermediary between the female patients and the RPP.

Training consists of a three-day course for RPPs and their female counterparts that Janani provides at one of its six regional training centers. The training course covers information on family planning methods, diagnosis and treatment of sexually transmitted infections (STIs) and reproductive tract infections (RTIs), and counseling on reproductive health, family planning, and HIV/AIDS. The course provides the RPPs with a simple to use protocol for diagnosis and management of STIs and RTIs.

The Janani program takes an innovative approach of collaborating with RPPs by implementing a referral network that links RPPs in the informal sector with physicians in the formal health system. In addition to the primary network of RPPs that are branded as *Titli* Centers, there is a smaller, secondary network of formally trained and qualified physicians that are branded as *Surya* Clinics. *Surya* providers are MD or MBBS physicians with existing private clinics in regional towns.

Before franchising them as *Surya* Clinic providers, Janani trains the physicians for three to five days in a range of clinical family planning and reproductive health services, including injectables, IUD insertion and removal, sterilization, first-trimester abortions using manual vacuum aspiration,³ as well as management of STIs and RTIs. Janani provides the *Surya* providers with franchise signs, and sells them branded supplies as well as clinical equipment at reduced prices. Each of the 250 *Surya* Clinics in the network is linked with a group of twenty to thirty *Titli* RPPs from the surrounding villages. Each *Surya* Clinic serves as a referral point for these associated RPPs. Janani pays the RPPs a small fee for each clinical family planning referral that is made to *Surya* Clinic providers.

All of the RPPs and doctors who have joined the *Titli* and *Surya* franchises added Janani's branded family planning and reproductive health services to their existing services. Therefore, although the Janani franchise services may not be very profitable, the increased provider reputation due to the franchise has spillover effects/positive externalities to the non-family planning services. As such, it is the mix of direct and indirect benefits that makes membership attractive to providers.

³ Also known as medical termination of pregnancy (MTP) in India.

4. Study Instruments

Listed below are brief overviews of the three data collection instruments that were used by the TNS MODE survey in 2001.

A. Client Questionnaire

Randomly selected female patients of reproductive age at each of the randomly selected providers were administered a survey after they received care from the providers (client exit interview). The questions assessed the following: reason for visit, access to provider (in travel time), user fees paid, overall satisfaction with provider services, intention to return to the provider, satisfaction with method counseling, what method of contraception/referral the woman is leaving with, and reason for nonuse. Past research has provided evidence as to the importance of the provider on contraceptive behavior. Validation studies of different methods of evaluating health providers' case management practices show that exit interviews are a good substitute for observations. Franco-Miller et al, 1998; Franco-Miller et al, 1997; Hermida et al, 1997) The role of client satisfaction will play an important role in the evaluation and research of this program.

B. Provider Questionnaire

Information regarding the length of time the provider has been providing health care services in general, and particularly family planning services; full-time or part-time status; hours worked per week; and volume of family planning clients are captured by this questionnaire. This survey also asks about any in-service training that the service provider has received in family planning, specific content of the training, when the last training occurred, who sponsored the training, and the providers' perceived quality of the training received. This questionnaire also asks questions regarding the level of services provided, for what services referrals are made, if at all, where referrals are made, and reasons for choice of referral site.

C. Health Facility Questionnaire

As the provider questionnaire captures limited information about the services that the provider offers, this questionnaire captures detailed information regarding the services available and the availability and/or stock-outs of particular essential supplies. This survey also asks about fees charged to clients for specific services. Information regarding whether the provider is a member of the Janani network and if so, the impact of membership on a variety of outcomes indicators—client volume, client satisfaction, income, profits, product supply, quality of products, range of services provided, and range of family planning products provided is also collected. Data from this survey and the provider survey will be used together.

6. Measurement of Outcome Variables

a. Technical Quality

Secondary Data

Technical quality of care will be measured by clinical practices of the rural private providers. The following clinical practices related to family planning were captured by the client exit interview done by TNS Mode:

Did provider inquire about desire for future children?
Family Planning discussed with provider?
Number of methods discussed
Did provider explain how methods work?
Did provider explain side effects?
Did provider ask if patient had questions about methods?
Contraceptive method dispensed and/or prescribed?
Did provider explain where re-supplies of family planning method could be obtained?
Did provider choose method for patient?
Referral made for family planning?

Because all client visits were included in the sample, regardless of reason for visit, when the sample was reduced to only those patients whose reason for visit was related to family planning and reproductive health, the sample size of patients decreased from 2,396 to 150. As this sample was deemed too small to analyze for the differences in technical quality of care for family planning and reproductive health, alternative methods for measuring quality care related to family planning were considered. Appendix 3 shows power calculations that were made for each quality of family planning variable, based on the sample sizes.

Primary Data Collection

Five main methods have been used to measure technical quality. These are: chart abstraction, vignettes, client exit interviews, direct observation, and standardized patients. Each of these methods for measuring quality is discussed briefly below.

According to Peabody, the most common method for measuring quality of care is chart abstraction. This method was briefly considered for this study, however, the fact that not all of the providers surveyed maintain client records would limit the sample size and possibly impose a selection bias. According to the SDP questionnaire, only 51% of providers surveyed maintain any type of client record. This figure increases to 77% when the question was asked as part of the provider survey. Public sector health facilities showed better performance regarding record keeping with 97% of facilities in the rural

areas reporting record maintenance. This was compared to 39% of Titli Centres and 24% of non-Janani RPPs. The use of chart abstraction is also limited due to the high level of skill and labor intensity required to review the charts and extract the relevant data.

Next, clinical vignettes were considered. Vignettes have been widely used to measure quality and were recently validated as an overall measure of technical quality by Peabody et al., especially among different providers with different populations of patients, due to their ability to control for case mix. (Peabody et al., 2000) However, there is still uncertainty and controversy about whether vignettes reflect actual clinical practice or merely provider competence (knowledge). A social desirability bias may influence providers to respond to vignettes based on how they perceive they should respond, and not based on their actual practices. (Peabody, 2000). Research into basic human psychology has shown that individuals often do not act as they predict or say that they will. As such, we would expect that providers would achieve higher scores that overestimate actual compliance with standards of technical quality when measured by vignettes. In his validation study, Peabody found that vignettes appeared to overestimate the quality of the physical examination, possibly due to the fact that correctly answering elements of the physical examination in a written format requires little time, but that actually carrying out a physical examination is a time consuming activity.

A 2001 study of the franchised RPPs used a clinical vignette to measure provider quality. The vignette consisted of one written case simulation that was divided into three parts. Providers were asked to provide written answers to the open-ended questions regarding history taking, physical examination, and case-management. However, the use of vignettes by this study provided a weak measure of true quality for individual providers, in part due to the fact that only case scenario was presented to the providers. To summarize the potential use of vignettes to measure technical quality among providers in rural Bihar, vignettes are likely to be adequate measures of provider knowledge, but not necessarily of compliance to quality standards or actual practice, and as such may underestimate true provider quality. In addition, as vignettes are simulations, they cannot take into account the various environmental factors influencing provider technical quality, such as patient expectations and demands and financial incentives for providing care of poor quality.

Client exit interviews were used to gather the data on technical quality mentioned above. Again, although the initial sample size was quite large, the volume of patients presenting for family planning and reproductive health services to the providers in the survey was rather small. As such, this data cannot be used to measure differences in technical quality of care between the three groups of providers.

Another method that has been used to measure technical quality of care is direct observation of the patient-provider interaction. This method has been used as the main technique for collecting information on quality of care in developing countries; however, biases are inherent in this method, as the providers are usually aware that they are being observed. Therefore, the use of standardized patients is considered a gold standard for measuring quality of care. However, due to the great resource intensiveness associated

with using standardized patients in general, and the difficulties associated with using standardized patients in the study area, it was decided to use observations in lieu of standardized patients.

This study proposes to use: 1) a short written questionnaire designed to measure provider knowledge through the use of vignettes and 2) observations to measure the true technical quality of family planning and reproductive health care as provided by the three groups of providers in the study. Information regarding provider knowledge will be gathered to ascertain if any lapses in quality are a result of poor competence (knowledge) or poor compliance to standards.

The total sample size for this original data collection will be 150 providers. Approximately 50 providers from each of the three groups will be randomly selected and aggregate quality scores will be calculated for each provider based on each providers' management of approximately 10 patients.

Assuming that scores are normally distributed and that the mean score for both government providers and RPPs is 50 with a standard deviation of 20, the sample size has been designed to detect sixty percent of one standard deviation difference between the franchised RPPs and the unfranchised RPPs and the franchised RPPs and the government providers with a power of 85 percent and at a significance level of five percent. The formula used for sample size calculation is given below.

$$N = \frac{(Z_{\alpha/2} + Z_{\beta})^2 * 2\sigma^2}{\Delta^2}$$

Here, $Z_{\alpha/2} = 1.96$ for two-sided study with a 95% confidence level and $Z_{\beta} = 1.04$ for a study with 85 percent power.

During the patient encounter, the observer will complete a checklist that will be used to score the provider's quality of care regarding history taking, physical examination, and case management. Aggregate quality scores for each of the providers will be calculated as an average of the individual scores for each of the 10 encounters. Since there is random variation in providers' practices, to reliably estimate providers' performance, it is necessary to collect data on at least ten cases per provider. (Erviti et al, 1980)

b. Patient Satisfaction

A preliminary analysis of the CPC survey data measured client satisfaction by the odds of clients attending franchised health facilities reporting an intention to return to the same

health establishment and the odds of clients attending for family planning than for general health purposes.

For the purpose of this study, a composite index variable will be created to measure client satisfaction. Another measure that should be included in an index of client satisfaction is whether or not the client is a repeat/usual client. This is concrete evidence that the patient has returned. Patients may say they will return to please the interviewer, but have not intention of returning. A social desirability bias may influence patients to respond based on how they perceive they should respond, and not based on what they think they will really do. Past research has shown that there is often a big disconnect between attitudes and behavioral intentions as expressed by individuals and actual their actual behavior patterns. (Fishbein and Ajzen, 1980) Essentially, individuals often do not act as they think and say that they will. As such, one cannot use individual attitudes or intentions as proxies for future behavior, and the attitudes or intentions may also not be good predictors of future behavior. The variables listed below will be included in the patient satisfaction composite index.

Waiting time (minutes)
Perception of provider politeness (5 point ordinal scale)
Perception of staff politeness (5 point ordinal scale)
Will return to this facility for family planning services? (Y/N)
Rating of services, compared with “other health establishments.” (5 point ordinal scale)
Overall rating of services received (3 point ordinal scale)

More detailed information regarding these variables is provided in Appendix 4. Also presented in Annex 4 is information regarding the variables that were used to measure client satisfaction from the other study that was done in the project area in 2001, for the comparison purposes. However, this other study only collected information on the franchised RPPs. Appendix 5 shows the different types of explanatory variables to be used for the regression of patient satisfaction, which is described in the next section.

The explanatory variables consist of the following types of variables:

- PATIENT SPECIFIC VARIABLES
 - “patient visit specific variables,” which provide information on the health seeking behavior of the patient,
 - patient demographic and socioeconomic background characteristics
 - patient knowledge and attitude

- PROVIDER SPECIFIC VARIABLES
 - Provider Practice Characteristics
 - Provider demographic and socioeconomic background characteristics

7. Data Analysis

All three data sets, the provider survey, client survey, and health facility will be linked and the unit of analysis will be the individual provider. Comparability of RPPs who have been trained and franchised as Titli providers with those RPPs who are not enrolled in the Janani program will be assessed by the X^2 test of homogeneity and analysis of variance (ANOVA) results. This will allow determination of potential selection or volunteer bias. The three groups will also be compared with a t test. Comparisons will be made based upon socio-economic and demographic information as shown in dummy tables one and two, contained in appendix 6.

As mentioned in the previous section on measurement of variables, composite index variables will be created for two outcomes of interest—technical quality and client satisfaction.

8. Hypotheses and Methods

Objective 1: To determine the impact of an intervention of franchising rural private providers in India on quality of care for reproductive health and family planning services.

Hypotheses:

Null hypothesis: There will be no differences in the technical quality of care between franchised RPPs, unfranchised RPPs, and government doctors.

- 1) The quality of care of franchised RPPs will be higher than unfranchised RPPs.
- 2) The quality of care of franchised RPPs will be at least as high as that of government doctors.
- 3) Provider characteristics (e.g. age, sex, education, experience, patient load) individually, and/or in combination interact with the effect of the training and franchising intervention on quality of care. For example, the quality of care of government doctors will depend, to a large extent upon their qualifications (MD, MBBS, or M.F.A.M⁴, etc.)

To test the first three hypotheses, an analysis of variance (ANOVA) multiple linear regression model will regress quality of care on type of provider as shown below.

⁴ Graduate degree in Ayurvedic Medicine

$$Y_i = \beta_0 + \beta_1 P_1 + \beta_2 P_2 + \epsilon_i$$

In the above equation, Y_i , the outcome, is a composite index of technical quality that was described in the measurement of variables section. The y-intercept, β_0 , represents a mean quality score for the reference category of non-Janani trained RPPs. P_1 and P_2 are dummy variables representing Franchised RPPs, and government healthcare providers, respectively. The coefficients, β_1 and β_2 , each represent the mean difference in quality scores between each of the respective types of providers, franchised RPPs, government healthcare providers, and non-franchised RPPs. The statistical significance of the differences in mean quality scores will be checked by a t-test.

Previous research has shown that provider personal characteristics may be determinants of private providers' technical quality of care. As such, the socio-demographic characteristics listed below will also be tested as both as independent predictors of technical quality of care, and together with the program intervention to see if there is any interaction between personal characteristics and the program.

To test hypotheses four and five, the above model will be extended with interaction terms for the modification of the effect of provider type by provider characteristics, where C is a vector of the provider characteristics listed in the tables below.

$$Y_i = \beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 C + \beta_4 P_1 C + \beta_5 P_2 C + \epsilon_i$$

Variable	Measured	Type
Qualifications/Training of Provider	-Allopathic qualified (MBBS) -ISM qualified -RPP	Categorical
Health care experience	Number of years providing health care services	Continuous
Family planning experience	Number of years providing family planning services	Continuous
Full-time provider?	Yes (1), No (0)	Categorical
Hours worked per week	Number of hours	Continuous
Patient volume	Monthly patient volume	Continuous
Family planning patient volume	Weekly family planning patient volume	Continuous
In-service training in family planning received?	Yes (1), No (0)	Categorical
Duration of training	Number of days	Continuous
Time-lapse since last training	Number of months	Continuous

Sex	Male (1), Female (0)	Categorical
Age	Age of provider in years	Continuous
Education	Ever Attended school—yes (1), no (0)	Categorical
Length of schooling	Number of years attended school	Continuous
Caste/Tribe	Scheduled Caste, Scheduled Tribe, Other Backward Class, Other Caste, No Caste	Categorical
Religion	Hindu (1), Muslim (0)	Categorical
Language Spoken	Hindi, Bhojpuri, Magahi, Maithili, Bengali	Categorical
Asset index	Score based on durable goods owned and main source of drinking water.	Continuous
Number of living children	Number of children provider has living	Continuous

However, before including the interaction terms in the model, preliminary exploratory data analysis will be carried out. Frequency distributions will be generated for each of the individual provider characteristic variables, and box and whisker plots will be created in order to identify any outliers. After looking at the data, basic summary statistics such as means/proportions and standard deviations (for continuous variables and binary categorical variables only) will be calculated. The outcome of interest, technical quality will be regressed on each of the provider characteristics variables individually in simple linear regression. Then each of the background characteristic variables will be regressed against each other and checked for co-linearity with scatter plots. Based on these exercises, decisions may be made to drop some of the variables or to create composite indices, combining variables that measure similar effects.

Objective 2: To determine whether an intervention of training and franchising rural private providers in India results in an increase in **client satisfaction** for reproductive health and family planning services.

Hypotheses:

Null Hypothesis: There will be no difference in **client satisfaction** among clients of franchised RPPs as compared to clients of RPPs that have not been franchised.

1) Socio-economic status of clients will modify the effect of franchised RPPs on patient satisfaction for family planning services.

2) Greater exposure to mass media (radio and/or television) will modify the effect of franchised RPPs on client satisfaction

To test the first hypothesis, a simple linear regression model will regress client satisfaction on type of provider as shown below.

$$Y_i = \beta_0 + \beta_1 P_1 + \beta_2 P_2 + \epsilon_i$$

In the above equation, Y_i , the outcome, is a composite index of client satisfaction that was described in the measurement of variables section. The y-intercept, β_0 , represents a mean client satisfaction score for non-Janani trained RPPs. P_1 and P_2 are dummy variables representing Franchised RPPs, and government healthcare providers, respectively. The coefficients, β_1 and β_2 , represent the difference in mean client satisfaction scores for each of the respective types of providers, P_1 and P_2 . The statistical significance of the differences in mean client satisfaction scores will be checked by a t-test.

The independent variables listed below will be used to derive a profile of program beneficiaries based on demographic and socioeconomic background characteristics. These variables will then be tested both as independent predictors of client satisfaction as well as for any interaction with the effect of the program intervention.

To test hypothesis two, the above model will be extended with interaction terms for the modification of the effect of provider type by client characteristics, where C is a vector of the client characteristics listed in the tables below.

$$Y_i = \beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 C + \beta_4 P_1 C + \beta_5 P_2 C + \epsilon_i$$

Sex	Male (1), Female (0)	Categorical
Age	Age of client in years	Continuous
Education	Ever Attended school—yes (1), no (0)	Categorical
Length of schooling	Number of years attended school	Continuous
Literacy	yes (1), no (0)	Categorical
Marital Status	Married (1) unmarried (0)	Categorical
Caste/Tribe	Scheduled Caste, Scheduled Tribe, Other Backward Class, Other Caste, No Caste	Categorical
Religion	Hindu (1), Muslim (0)	Categorical
Language Spoken	Hindi, Bhojpuri, Magahi, Maithili, Bengali	Categorical

Female Employment Status	Working outside the home (1) Not working (0)	Categorical
SES	Score based on composite index of assets owned, etc.	Continuous
Number of living children	Number of children client has living	Continuous
Listen to radio	Daily, Several times a week, Once a week, Several times a month, Once a month, Less than once a month, Never	Categorical
Watch television	Daily, Several times a week, Once a week, Several times a month, Once a month, Less than once a month, Never	Categorical
Current family planning user?	Yes (1), No (0)	Categorical
Family planning continuation	Months continuously using family planning	Continuous
Discussed family planning with spouse in past year?	Yes (1), No (0)	Categorical
Ever had MTP (Abortion)	Yes (1), No (0)	Categorical

It is thought that socioeconomic status (SES) would be associated with client satisfaction. A composite index to measure SES, based on relevant variables, will be constructed. Many of the variables captured by the surveys can be used as proxies to measure SES: client education, household income, type of house, main source of drinking water, assets owned, and occupation of the primary income-earner in the household. Each of these variables will be looked at individually, and will also be checked against all of the others for multi-collinearity. Based on the descriptive statistics, a decision will be made regarding which variables to include in the SES index and whether or not to weight the variables. Family income is a more direct measure of SES; however due to fear of taxes in India, underreporting of income is common. As such, the validity of family income will be checked by looking at its correlation with household assets. Based on the data, a decision will be made regarding how to incorporate household asset ownership into a composite index to measure SES, or whether to use household asset ownership as the sole measure of SES. If a decision is made to use household asset ownership as the sole measure of SES, the principal components analysis procedure, outlined by Filmer and Pritchett (2001) may be used.

However, before including the interaction terms in the model, preliminary exploratory data analysis will be carried out. Frequency distributions will be generated for each of the individual client characteristic variables, and box and whisker plots will be created in order to identify any outliers. After looking at the data, basic summary statistics such as means/proportions and standard deviations (for continuous variables and binary

categorical variables only) will be calculated. The outcome of interest, client satisfaction will be regressed on each of the client characteristics variables individually in simple linear regression. Then each of the background characteristic variables will be regressed against each other and checked for co-linearity with scatter plots. Based on these exercises, decisions may be made to drop some of the variables or to create composite indices, combining variables that measure similar effects.

To test hypothesis three, an index for exposure to mass media will be constructed based on the two variables measuring exposure to radio and television, respectively. The original model will be extended with interaction terms for the modification of the effect of provider type by client exposure to mass media, where M is exposure to mass media.

$$Y_i = \beta_0 + \beta_1 P_1 + \beta_2 P_2 + \beta_3 M + \beta_4 P_1 M + \beta_5 P_2 M + \beta_i$$

8. Study Limitations

The research area was not randomly selected. The NGO, Janani had already begun implementation of a program in the majority of districts in the state of Bihar. This reduces the generalizability of the research results to RPPs in other parts of India, as Bihar is one of the poorest and most backward of the Indian states.

Allocation of RPPs between control and intervention was non-random. The RPPs not already enrolled in the intervention serve as a control group by default, and not by random allocation. This quasi-experimental study design increases the level of uncertainty about the validity of the findings. Janani had already selected two RPPs in each panchayat area. As such, the control and intervention groups of RPPs may not be comparable with regard to all other factors, and a selection bias may be present. Therefore, we must be careful in attributing any change in effect to the intervention, as other spurious factors or confounders maybe present that could also be responsible for any observed change. For the purpose of this study, however, we will assume that the RPPs who were selected for participation are comparable to the RPPs not selected according to certain baseline socio-demographic characteristics. Descriptive statistics of selected RPPs and a sample of those not selected will confirm or deny this assumption.

Provider characteristics (age, sex, education, experience, patient load) individually, and/or in combination predict technical quality of care, and therefore are confounding variables in measuring the impact of a program intervention on technical quality of care. Therefore, in order to control for any differences between intervention and control groups, an analysis of groups that have been stratified according to potential confounding variables, such as provider background characteristics, may be undertaken.

In addition, because this proposed study is cross-sectional, it will not be possible to see a change over time due to the intervention.

9. Use of Results

If the two main null hypotheses are rejected, and there are in fact, differences in the technical quality of care and client satisfaction between the three groups, then regression analysis will be used to determine the cause of these differences. If it is shown that differences in quality of care and client satisfaction are due to franchising, and that the effect of franchising is to increase these two outcome variables, then franchising may present itself as one option for collaborating with RPPs. Because of the particular socio-economic characteristics of the state of Bihar, the study results may not be generalizable to the other states in India. To test the replicability of this study, it may be warranted that similar studies should be carried out in other of the poorer states such as Madhya Pradesh, Uttar Pradesh, and Rajasthan.

APPENDICES

APPENDIX 1-Original Sample

Type of Health Facility	Number of Health Facilities	Number of Providers	Average Number of Providers surveyed/facility	Number of Clients Surveyed
CHC	1	2	2	8
PHC	25	97	3.9	142
Additional PHC	22	54	2.5	97
Family Welfare Center/PPC	8	11	1.4	12
SC/UHP	72	90	1.3	227
Total Government	128	254	2	486
NGO Hospital/Clinic	7	8	1.1	22
Surya Clinic	22	64	2.9	116
Private Hospital	1	1	1	5
Other Private Qualified Doctor/Clinic	68	112	1.6	307
Titli Center	351	658	1.9	1136
Other Private Unqualified Doctor/Clinic	278	311	1.1	774
Medical Store/Chemist Shop	91	---		410
Total Sample Size	946	1,408	1.5	3256

APPENDIX 2-Study Sample

Type of Provider	Number of Health Facilities	Number of Providers	Number of Clients
CHC	1	2	8
PHC	25	97	142
Additional PHC	22	54	97
Family Welfare Center/PPC	8	11	12
SC/UHP	72	90	227
Total Government	128	254	486
Titli Center	351	658	1136
Other Private Unqualified Doctor/Clinic	278	311	774
Total Sample Size for Study	757	1,223	2,396

APPENDIX 3-POWER CALCULATIONS BASED ON ANALYSIS OF EXISTING DATA SET

Code	Type of Provider	N			
0	RPP	37			
1	Franchised RPP	67			
2	Government	46			
QUALITY OF [FAMILY PLANNING] COUNSELING, N=150 (for clients visiting for pregnancy termination, family planning, RTI/STI, and maternal health)					
Variable	Data Source	Type of Variable	Mean/Prop	SD	Power to detect a difference w. 95% signif, and 90% signif.
Did provider inquire about desire for future children?	Client Exit Interview	Binary Categorical	0: 0.3 1: 0.28 2: 0.41		0 &1: 3%, 6% 0 &2: 13%, 21% 1&2: 23%, 34%
Family Planning discussed with provider?	Client Exit Interview	Binary Categorical	0: 0.54 1: 0.40 2: 0.48		0 &1: 23%, 34% 0 &2: 5%, 10% 1&2: 9%, 15%

Code	Type of Provider	N			
0	RPP	20			
1	Franchised RPP	27			
2	Government	22			
QUALITY OF [FAMILY PLANNING] COUNSELING, N=69 (for clients for whom family planning was discussed with provider)					
Variable	Data Source	Type of Variable	Mean/Prop	SD	Power to detect a difference w/ 95% signif. & 90% signif.
Number of methods discussed	Client Exit Interview	Continuous	0: 1.15 1: 1.44 2: 1.36	0: 0.49 1: 0.85 2: 0.73	0 &1: 32%, 44% 0 &2: 20%, 30% 1&2: 5%, 10%
Did provider explain how methods work?	Client Exit Interview	Binary Categorical	0: 0.80 1: 0.85 2: 0.86		0 &1: 3%, 6% 0 &2: 3%, 7% 1&2: 5%, 9%
Did provider explain side effects?	Client Exit Interview	Binary Categorical	0: 0.50 1: 0.52 2: 0.36		0 &1: 4%, 7% 0 &2: 8%, 14% 1&2: 12%, 19%
Did provider ask if patient had questions about methods?	Client Exit Interview	Binary Categorical	0: 0.37 1: 0.30 2: 0.32		0 &1: 4%, 8% 0 &2: 3%, 5% 1&2: 3%, 6%
Did provider explain	Client Exit	Binary	Need to		

where re-supplies of fp method could be obtained?	Interview	Categorical	create composite variable for all fp methods; currently separate variables for each method dispensed		
Did provider choose method for patient?	Client Exit Interview	Binary Categorical	Need to create composite variable for all fp methods; currently separate variables for each method dispensed		

APPENDIX 4--INDIVIDUAL VARIABLES USED TO MEASURE CLIENT SATISFACTION IN A COMPOSITE INDEX (TNS MODE STUDY)

CLIENT SATISFACTION, N=2,396		
Variable	Data Source	Type of Variable
Waiting time (minutes)	Client Exit Interview	Continuous
Treatment by provider	Client Exit Interview	Ordinal Categorical: -Very Politely -Politely -Neutral -Impolitely -Very Impolitely
Treatment by other staff	Client Exit Interview	Ordinal Categorical: -Very Politely -Politely -Neutral -Impolitely -Very Impolitely
Will return to this facility for family planning services?	Client Exit Interview	Binary Categorical
Rating of services, compared with “other health establishments.”	Client Exit Interview	Ordinal Categorical -Much better -Somewhat better -Same -Worse -Much Worse
Overall rating of services received	Client Exit Interview	Ordinal Categorical -Very satisfactory -Dissatisfactory -Very Dissatisfactory

APPENDIX 4--INDIVIDUAL VARIABLES USED TO MEASURE CLIENT SATISFACTION IN A COMPOSITE INDEX (DOMINIQUE MONTAGUE STUDY OF FRANCHISED RPPs)

CLIENT SATISFACTION, N=78		
Variable	Data Source	Type of Variable
Perception of waiting time	Client Exit Interview	Binary Categorical: -Reasonable/short -Too long
Comfortable to ask questions	Client Exit Interview	Binary Categorical
Adequacy of information given during visit	Client Exit Interview	Ordinal Categorical: -Too little -Too much -About Right -No information given
Enough privacy during exam	Client Exit Interview	Binary Categorical

APPENDIX 5--EXPLANATORY VARIABLES

PATIENT VISIT-SPECIFIC VARIABLES, N=2,396		
Variable	Data Source	Type of Variable
Reason (primary) for visit	Client Exit Interview	Categorical: -Pregnancy termination -Family Planning -RTI/STI -Maternal Health -Child Health, -General Health, -Purchase medicine
Reason (primary) for selection of provider	Client Exit Interview	Categorical: -Accessible -Affordable -Provider available -Provider knowledgeable -Provider friendly -Facility clean -Medications in stock -Needed service only available here -Recommended by friends/relatives
Travel time (minutes) to health facility	Client Exit Interview	Continuous
Means of transport	Client Exit Interview	Categorical: -Walk -Bicycle -Rickshaw -Public Transport -Motorcycle -Private automobile
Outcome of visit	Client Exit Interview	Categorical: -Contraceptive method dispensed -Prescription for method -Both -Neither
Adopting family planning	Client Exit Interview	Binary Categorical

for the first time?		
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PATIENT BACKGROUND CHARACTERISTICS, N=2,396		
Variable	Data Source	Type of Variable
Sex	Client Exit Interview	Binary Categorical
Age (years)	Client Exit Interview	Continuous
Education--Ever attended school	Client Exit Interview	Binary Categorical
Years of schooling	Client Exit Interview	Continuous
Literacy	TBD	Binary Categorical
Marital Status	TBD	Binary Categorical
Caste/Tribe	Client Exit Interview	Categorical -Scheduled Caste -Scheduled Tribe -Other Backward Class -Other Caste -No Caste
Religion	Client Exit Interview-DM*	Categorical -Hindu -Muslim
Language Spoken	Client Exit Interview-DM	Categorical -Hindi -Bhojpuri -Magahi -Maithili -Bengali
Occupation—Main occupation of head of household	Client Exit Interview	Categorical -Cultivator -Agricultural laborer -Construction worker -Unskilled worker -Skilled worker -Small business/petty shop -Large scale business -Clerical services -Managerial service -Professionals -Not working
Female Employment Status (whether working outside the home or not)	TBD	Binary Categorical
Type of house	Client Exit Interview	Categorical -Pucca -Semi-pucca -Kachha
Main source of drinking water	Client Exit Interview-DM	Categorical -Tap (inside

		residence/yard/plot) -Tap (other) -Hand Pump -Well -River
Assets owned	Client Exit Interview	Categorical -Fan -Radio/Transistor -Sewing machine -Television -Bicycler -Motorcycle/scooter -Tractor/thresher -Car
Family Income	Client Exit Interview	Categorical -Up to Rs. 1499 -Rs. 1500-2499 -Rs. 2500-3499 -Rs. 3500-4999 -Rs. 5000+
Listen to radio	Client Exit Interview	Categorical -Daily -Several times a week -Once a week -Several times a month -Once a month -Less than once a month -Never
Watch television	Client Exit Interview	Categorical -Daily -Several times a week -Once a week -Several times a month -Once a month -Less than once a month -Never
Number of living children	Client Exit Interview	Continuous
Current family planning user?	Client Exit Interview	Binary Categorical
Months continuously using family planning	Client Exit Interview	Continuous
Discussed family planning with spouse in past year?	Client Exit Interview	Binary Categorical
Ever had MTP (Abortion)	Client Exit Interview	Binary Categorical
* DM—available from Dominic Montague’s survey of 78 Titli center clients.		

PATIENT KNOWLEDGE AND ATTITUDES		
Variable	Data Source	Type of Variable
Choice in family size: Agree, disagree, or no opinion regarding the following statement: “A couple can choose the exact number of children they want to have and stop after that”	Client Exit Interview	Categorical
Effectiveness of family-planning methods: Family planning method thought to be the most effective in preventing pregnancy	Client Exit Interview	Categorical -Pill -IUD -Injectible -Emergency Contraception -Female Sterilization -Male Sterilization -Condom -Foaming tablets -Periodic Abstinence or Rhythm method -Withdrawal -Not sure
Side-effect profile of family planning: Family planning method thought to have the least side effects.	Client Exit Interview	Categorical -Pill -IUD -Injectible -Emergency Contraception -Female Sterilization -Male Sterilization -Condom -Foaming tablets -Periodic Abstinence or Rhythm method -Withdrawal -Not sure
Child-limiting methods: Family planning method that should be adopted by couples wanting no more children		Categorical -Female Sterilization -IUD -Pill -Other female method -Male Sterilization -Condom -Other male method
Decision-making regarding family planning: Agree, Disagree, or No opinion regarding the following statement: “If my spouse doesn’t want to use family	Client Exit Interview	Categorical

planning, there is nothing I can do to change (his/her) mind.”		
Desire for children in the future	Client Exit Interview	Binary Categorical

PROVIDER CHARACTERISTICS		
Variable	Data Source	Type of Variable
Type of provider	Client Exit Interview	Categorical -Janani RPP -non-Janani RPP -Government
Qualifications/Training of Provider	Client Exit Interview-DM*	Categorical -Allopathic qualified (MBBS) -ISM qualified (BUMS, BAMS, DHMS) -RPP
Health care experience (number of years providing health care services)	Family Planning Provider/Staff Questionnaire/Provider Survey-DM	Continuous
Family planning experience (number of years providing family planning services)	Family Planning Provider/Staff Questionnaire	Continuous
Full-time provider?	Family Planning Provider/Staff Questionnaire	Binary Categorical
Hours worked per week	Family Planning Provider/Staff Questionnaire	Continuous
Monthly patient volume	Service Delivery Point Questionnaire	Continuous
Family planning patient volume (weekly)	Family Planning Provider/Staff Questionnaire	Continuous
In-service training in family planning received?	Family Planning Provider/Staff Questionnaire	Binary Categorical
Duration of training (days)	Family Planning Provider/Staff Questionnaire	Continuous
Time-lapse since last training (months)	Family Planning Provider/Staff Questionnaire	Continuous

* DM—available from Dominic Montague’s survey of 82 Titli center providers.

PROVIDER BACKGROUND CHARACTERISTICS		
Variable	Data Source	Type of Variable
Sex	Janani records/Provider survey (DM*)	Binary Categorical
Age (years)	Janani records/Provider survey (DM)	Continuous
Education--Ever attended school	Janani records?	Binary Categorical
Years of schooling	Janani records?	Continuous
Caste/Tribe	Janani records/Provider survey (DM)	Categorical -Scheduled Caste -Scheduled Tribe -Other Backward Class -Other Caste -No Caste
Religion	Janani records/Provider survey (DM)	Categorical -Hindu -Muslim
Language Spoken	Janani records/Provider survey (DM)	Categorical -Hindi -Bhojpuri -Magahi -Maithili -Bengali
Assets owned	Janani records/Provider survey (DM)	Categorical -Fan -Radio/Transistor -Sewing machine -Television -Bicycler -Motorcycle/scooter -Tractor/thresher -Car
Main source of drinking water	Provider Survey (DM)	Categorical -Tap (inside residence/yard/plot) -Tap (other) -Hand Pump -Well -River
Number of living children	Provider survey (DM)	Continuous
* DM—available from Dominic Montague’s survey of 82 Titli center providers.		

APPENDIX 6-Dummy Tables of Descriptive Statistics

Table 1: Socio-Economic Background Characteristics of Providers in Program Area			
	Intervention Group	Control Groups	
Characteristics	Franchised RPPs	Non- Janani RPPs	Government Providers
Age Less than 24 years 25-29 years 30-34 years 35-39 years 40-44 years 45+ years			
Sex Male Female			
Marital Status Married Single			
Language spoken at home Hindi Bhojpuri Magahi Maithili Bengali Saudri Others			
Religion Hindu Muslim			
Caste Scheduled caste/ Schedule tribe Other backward class High caste Hindus Other			
Household assets owned Fan Radio/Transistor Sewing machine Television Bicycle Motorcycle/Scooter Car			
Main source of drinking water Tap (inside residence/yard/plot) Hand pump Well			

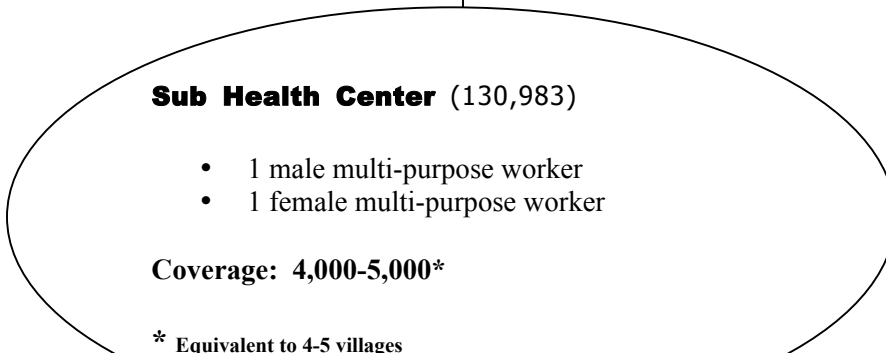
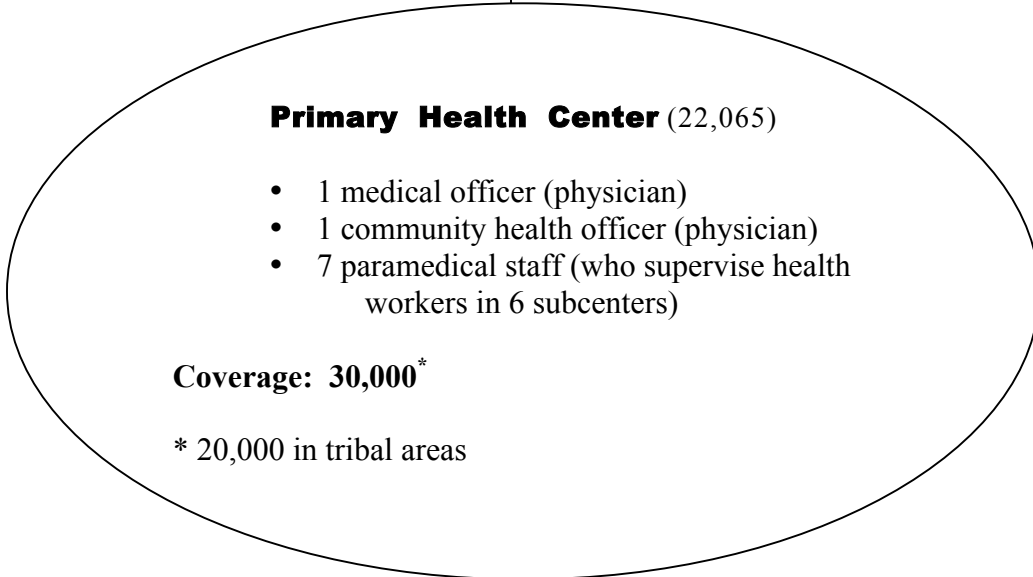
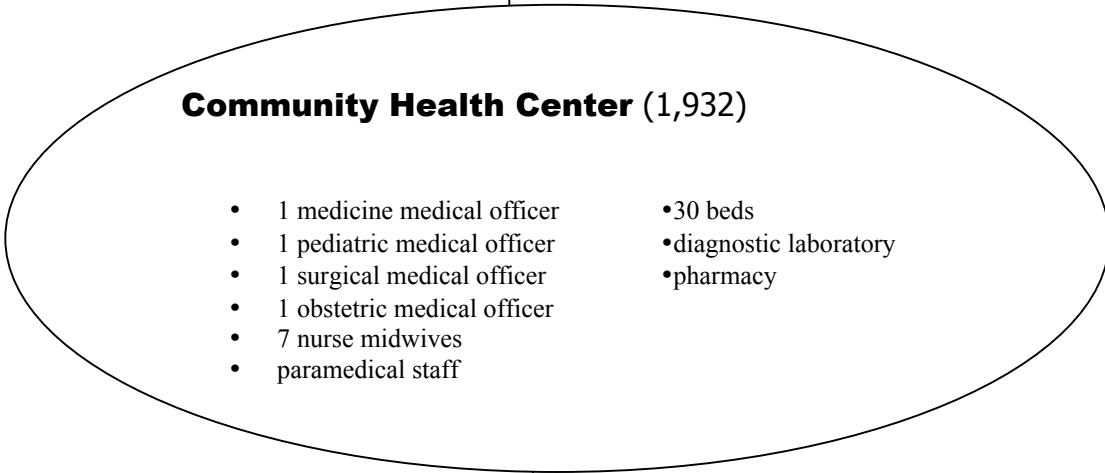
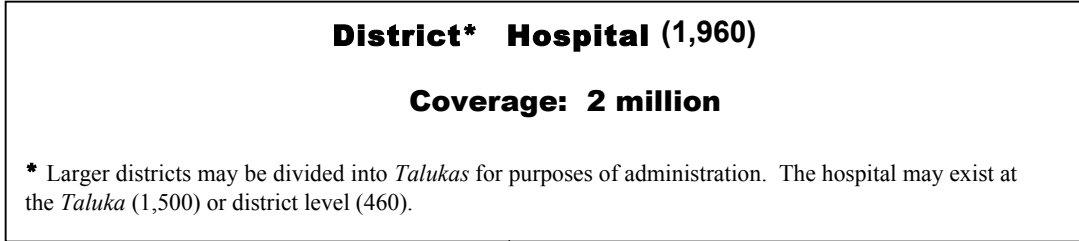
Table 2: Qualifications of Providers in Program Area			
	Intervention Group	Control Groups	
Characteristics	Janani Trained Rural Private Practitioners	Non- Janani Rural Private Practitioners	Government Providers
Type of private provider Allopathic general practitioner (MBBS) ISM physician (BUMS/ BAMS/ DHMS) RPP			
Education No Primary Secondary and Above			
Duration of Providing Health Services < 2 year 3-5 years 6-10 years 11-20 years 21+ years Can't say/No response			
Duration of Providing Family Planning Services < 2 year 3-5 years 6-10 years 11-20 years 21+ years Can't say/No response			

Table 3: Demographic Background of Clients

	Intervention Group		Control Groups	
Characteristics	Franchised RPPs	Non-Janani RPPs	Government Providers	
Current age of the respondents Less than 19 years 20-24 years 25-29 years 30-34 years 35-39 years 40-44 years				
Education Yes, formal education Only informal or religious education No formal or informal education				
Level of education None Up to primary (< 5 class) Middle (6-7 class) Secondary (8-10 class) Graduate				
Occupation Cultivator Agriculture laborer Petty shop Housewife Service Wage labor				
Language spoken at home Hindi Bhojpuri Magahi Maithili Bengali Others				
Religion Hindu Muslim				
Caste Scheduled caste Scheduled tribe Other backward caste Other caste Hindu Other (non Hindus)				
Total number of children 1 2 3 4+				

Table 4: Client Wealth Characteristics			
	Intervention Group	Control Groups	
Characteristics	Clients of Franchised RPPs	Clients of non-Janani RPPs	Clients of Government Providers
Type of house <i>Pucca</i> <i>Semi-pucca</i> <i>Kutcha</i>			
Source of drinking water Tap (inside residence/yard/plot) Tap (other) Hand pump Well River			
Assets owned by household Fan Radio/Transistor Sewing machine Television Bicycle Motor cycle/Scooter Car			

APPENDIX 7-- FOUR TIER RURAL PUBLIC HEALTH SYSTEM



APPENDIX 8 ---BACKGROUND ON INDIAN SYSTEMS OF MEDICINE

Ayurveda means “science of life.” The origin of ayurvedya was documented in the Vedas, ancient Indian texts, around 1000 B.C. In Ayurvedya, diagnosis is by questioning and eight examinations (pulse, urine, feces, tongue, eyes, examination of vision/senses, and inference). Ayurvedic medicine is both preventive (rejuvenative materials/drugs) and curative (drugs, diet modification, and exercises).

The term Siddha means achievement and “Siddhars” were saintly figures who achieved results in medicine through the practice of Yoga. The principles and doctrines of Siddha are very close to Ayurveda, however, the main difference lies in the language of documentation, (Siddha literature is in Tamil, and Ayurvedya literature is in Sanskrit) and the Siddha system is mostly curative. Diagnosis is similar to ayurveda (examination of pulse, urine, eye, study of voice, color of body, tongue, and the status of the digestive system.) Treatment in both Siddha and Ayurveda is very individualized as it takes into account patient characteristics such as: age, sex, work habits, sleep habits, diet, physiological constitution, etc.

Unani system of medicine originated in Greece (460 B.C.-377 B.C.) and was brought to India by Arabs and Persians. Treatment is both preventive and curative and consists mainly of drugs of herbal, animal, and mineral origin.

Unfortunately, by the end of the 19th century, due to the introduction of western medicine by the British in India, the indigenous systems had fallen into the hands of untrained persons without the competence to practice Ayurvedic medicine. Since then, there have been many arguments for and against integration of the Ayurvedic system of medicine with modern medicine, including through the formation of many committees by different states as well as the central government.

APPENDIX 9--History of Government Health Policy toward Indian Systems of Medicine (Taylor, 1987; Takulia, et al, 1977)

The **Bhore committee (1943)** was appointed by the Indian government develop a health infrastructure for the country. The health plan issued by the committee had a welfare-oriented approach, and although it acknowledged the presence of indigenous systems and their practitioners, did not consider their existing or potential role in the country's health system. The committee's report that was published in 1946 stated that "although both the Ayurvedic and Unani systems had become static, further investigation of these systems might lead to many valuable contributions to modern medical science."

The Indian government appointed the **Chopra Committee (1946)** to study indigenous systems of medicine. This committee proposed that modern and indigenous systems be combined to develop a single medical system specifically adapted to the needs of the Indian people, and that Ayurvedic medicine be strengthened by integrating its training with modern medicine.

The **Pandit Committee (1951)** subsequently recommended that a Central Research Institute of Indigenous Medicine be established, and that indigenous practitioners be given a uniform course of training, but opposed integration of indigenous and modern systems.

The **Dave Committee (1956)** was set up with the purpose of recommending standards in the education and practice of indigenous systems of medicine, and various state regulatory boards were established. The committee recommended that practitioners of modern and indigenous medicine employed by the government should be given similar privileges and salary. This recommendation has been made many times over the years, but has never been implemented.

The **Udupa Committee (1959)** was created to assess and evaluate the present status of ayurvedic system of medicine. This committee emphasized the need to do something about the tremendous variation in the quality of education in Ayurvedic and Unani schools.

The **Mudaliar Committee (1961)** was created to update the country's health plan. The committee chose to focus its efforts on improving the quality of health facilities, and to this end recommended greater funding for medical education, especially for paramedical staff. This committee recommended that the integrated form of training should be abolished, that pure Ayurvedic training be encouraged, and that synthesis of the two systems be accomplished only following adequate research into the scientific basis of Ayurvedic medicine.

The government of India established the **Central Council of Indian Medicine (1971)** whose main functions were to:

- Prescribe the minimum standards of education for courses in Indian Systems of Medicine (Ayurveda, Siddha, Unani)

- To advise the central government regarding recognition of medical qualifications of Indian medicine
- To maintain and revise the *Central Register of Indian Medicine* (a register containing the names of all persons who are currently enrolled on any State Register of Indian Medicine and who have any of the recognized medical qualifications)
- To regulate practice in Indian Medicine and prescribe standards of professional conduct to be observed by practitioners

The Council has established minimum standards of undergraduate education and prescribed a curriculum and syllabus for undergraduate and postgraduate education in the Indian Systems of medicine. To date, forty Ayurveda and three Unani colleges have been visited for assessing the standards of education, according to the minimum standards as set by the Council.

The **Kartar Singh Committee (1973)** recommended that the vertical disease control and health programs (e.g. malaria, TB, and family planning) should be integrated and male and female multipurpose workers be developed to provide basic primary health care services at subcenters.

The **Srivastava Committee (1975)** reviewed the education and support of PHC personnel and recommended training large numbers of village men and women selected by their local communities, to function as part-time CHWs, serving as a liaison between the villagers and the MPWs at subcenters. The committee considered employing indigenous practitioners as CHWs, but did not make this recommendation due to the diversity in their backgrounds. It was recommended that *dais*, the traditional birth attendants, should be trained to provide maternal and child health, and family planning services.

The **Ramalingaswami Committee (1980)** report stated “. . . an effort should be made to ultimately develop a national system of health care in which all the different systems can make their own unique contribution.”

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