

Medication Abortion Provision in Bihar and Jharkhand, India:
Health Facility Level and Provider Level Influences

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ABSTRACT

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Medication Abortion Provision in Bihar and Jharkhand, India:
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(Under the direction of Dr. Trude Bennett)

Approximately 9-20% of all maternal deaths in India are attributed to unsafe abortion. Researchers have suggested that medication abortion has the potential to expand women's access to abortion services. This dissertation aimed to: describe the availability of early abortion services in Bihar and Jharkhand, India and the health care provider and health facility level factors that may influence the provision of these services; gain a better understanding of the intentions of obstetrician-gynecologists and general physicians to provide abortion using mifepristone-misoprostol; and establish an understanding of the potential participation of mid-level providers in medication abortion provision. Data utilized in this study came from a project that applied a multistage cluster sample design to the former state of Bihar to achieve a sample of 1346 health facilities and 2039 family planning providers. Surveys were conducted in 2004. Multivariate logistic regression procedures were used to investigate the dissertation aims. Findings indicate that government health facilities have a negligible role in abortion provision in Bihar and Jharkhand. A significant percentage of ob-gyns and general physicians intend to provide mifepristone-misoprostol abortion. Male ob-gyns were significantly less likely to intend to provide medication abortion. Rural health facilities and facilities with three or more family planning providers were more likely to have general physicians intending to provide medication abortion. The majority of mid-level providers were interested in medication abortion training. Mid-level providers who were male, held more permissive abortion attitudes and those that provided abortions

using pharmacological drugs were more likely to intend to participate in medication abortion training. More than half of general physicians and over a third of ob-gyns in the study held supportive attitudes towards non-physician participation in early medication abortion provision. Given that the majority of government health facilities in Bihar and Jharkhand are located in rural areas and that most of these facilities are staffed with at least one mid-level provider, great potential exists for public facilities to serve as important access points for poor and rural women to obtain safe abortion services if policies in India are adjusted to allow mid-level provider participation in abortion provision, especially medication abortion provision.

DEDICATION

To my mother who is my inspiration

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CHAPTER 1

Introduction

Background

Unsafe induced abortion is a global health problem

Unsafe abortion is one of the leading causes of maternal mortality and morbidity in the developing world: approximately 13% of maternal deaths worldwide are due to complications of unsafe abortions (1-3). Most of these deaths are caused by hemorrhage, infection and poisoning from substances used to induce abortion (4). Maternal mortality is the most extreme consequence of unsafe abortion. Unsafe abortions may also lead to short and long term complications such as hemorrhage, pelvic inflammatory disease, chronic pelvic pain, damage to reproductive organs, reproductive tract infection and infertility (4, 5).

Recognizing unsafe abortion as a major public health problem, the 1994 International Conference on Population and Development (ICPD) recommended that governments and other relevant organizations around the world work together to reduce the need for abortion by improving family planning services and access to such services, provide access to safe abortion services where abortion is legal, and under all

circumstances offer quality services to manage complications that may arise from abortion (6). In 1999, governments from around the world agreed at the Special Session of the UN General Assembly that “in circumstances where abortion is not against the law, health systems should train and equip health-service providers and should take other measures to ensure that abortion is safe and accessible” (7). In 2000, the United Nations declared the reduction of maternal mortality as one of its eight major Millennium Development Goals (MDGs) (8). In many parts of the world, reduction of unsafe abortion may be a significant way to achieve the MDGs’ mandate to reduce maternal mortality. These international declarations have recognized that unsafe abortion is an important public health issue, safe abortions should be available to women to the full extent of the law and that health systems have a crucial responsibility to provide such services.

Induced abortion is a very safe procedure when performed by a properly trained professional. However, in many parts of the world, women must resort to unsafe abortions and consequently risk their health and lives. The legal status of abortion is an important factor that can determine the extent to which an abortion procedure is safe, affordable and accessible. In those countries where abortion is legal, abortions are more likely to be performed by trained health professionals, to be more accessible and to cost less. In these countries, maternal mortality and morbidity tend to be lower. Unsafe abortion rates are highest in the countries with the most restrictive abortion laws (4). In areas of the world where abortion is prohibited due to legal restrictions or where abortion is legal but difficult to access or of poor quality (as in countries like India and Zambia), unsafe abortion rates and the associated mortality and morbidity are high (9, 10). In such nations, women from higher socioeconomic backgrounds can often access safe abortion care with ease; however, vulnerable populations are at particular risk for seeking out abortions from substandard sources and consequently putting their lives and

health at risk (11-13). Populations susceptible to unsafe abortion, depending on geographic location and cultural context include: adolescents, unmarried women, poor women, refugees and women living in remote areas (11).

International experiences with unsafe abortion have demonstrated that the best way to reduce the numbers of women resorting to unsafe abortion is through access to a wide range of effective contraceptive options; to prevent unintended pregnancies in the first place; and to assure that abortion is legal, safe and easily accessible. To decrease unsafe abortion rates, women and their communities need: awareness about the danger of unsafe abortions; the promotion of women's rights, status and health; knowledge of the abortion law; awareness of where and how to find services; ability to demand better quality and more affordable services; and open and frank discussion about abortion (14). For abortions to be safe and accessible, the requirements are basic. Legalization of abortion is necessary but not sufficient; also needed are trained health care providers familiar with abortion related laws and regulations and skilled in the most up-to-date and safe techniques of abortion provision; adequate equipment and supplies; and creation of policies and regulations that ensure easy access to safe abortion care (10, 11, 15). Thus, many of the barriers to accessing safe abortion can exist at the health facility and health care provider levels.

A better understanding of the characteristics of the health facilities and health care providers in relation to abortion services provision is necessary as both levels of the health care system have a significant role in easing or impeding the access women have to safe abortion services. The factors influencing provider behavior are currently poorly understood. Understanding patterns of health care provider behavior is complex; however, research and theory suggest that health care provider decisions and practices are influenced by characteristics of the larger external environment, characteristics of

the health care organization and health care practice, characteristics of the individual provider, characteristics of the patients and characteristics of the provider-patient encounter (16).

Unsafe abortion is a problem in India

India is an example of a country where abortion is legal on paper but difficult to implement in practice due to a variety of barriers related to the country's abortion legislation, the health system and the sociocultural and economic status of women (9). Results from the National Family Health Survey for 1998-1999 yielded an annual estimate of 540 maternal deaths per 100,000 live births in the country compared to around 5 maternal deaths per 100,000 live births in the United States in 1996-97 (17, 18). Approximately 9-20% of all maternal deaths in India are attributed to unsafe abortion (19-22).

No precise estimates on the annual incidence of induced abortion exist for India. The government reported about 700,000 legal abortions were performed in the country in 2000-01 (20); however, the statistics that the government publishes pertain only to reported abortion cases conducted in government-approved centers (23). Over the past few decades various researchers and a government appointed committee have provided unofficial estimates of abortion in India. In 1966, the Shah Committee organized by the Government of India (GOI) surveyed a variety of stakeholders in the medical community, examined data from various studies and arrived at an experts' estimate of about 4 million induced abortions occurring in the country per year (23). Chhabra and Nuna estimated 6.7 million induced abortions taking place in India in 1991 using similar assumptions (19). The difference in estimates between the official government numbers and other estimates could indicate the extent of unsafe abortions. Researchers have

suggested anywhere from 3 to 10 illegal abortions taking place in India for every legal one (19, 24).

Motivated by the high prevalence of unsafe abortions and the resultant morbidities and mortality, the GOI passed the Medical Termination of Pregnancy (MTP) Act in 1971. The MTP liberalized the Indian Penal Code of 1860, which considered abortion a criminal offense except in instances of saving the life of a woman (19). However more than three decades since this legislation was passed, morbidity and mortality due to unsafe abortions continue to be a major public health challenge for India.

The MTP Act of 1971 did not give a fundamental right to abortion to women in India. Rather, the Act greatly liberalized the conditions under which women may have access to abortion services. The legislation was relatively progressive at the time; very few other countries had more liberal abortion policies compared to India, for example, the USSR, Hungary and parts of the USA (19). The MTP Act created two major restrictions to the accessibility of abortion services based on the length and type of pregnancy. Under the MTP Act of 1971, the termination of pregnancy up to 12 weeks necessitates the authorization of one physician while those between 12 to 20 weeks require the opinion of two physicians (19, 25). In addition, the MTP Act instructs physicians to take a “pregnant woman’s actual or reasonable foreseeable environment” (25) into account in determining whether the continuance of pregnancy would involve risk of injury to her physical or mental health. A pregnancy following rape (not including marital rape) or the failure of contraception (for married women) are mentioned as specific conditions under which a woman may terminate her pregnancy (25). A pregnancy also may be terminated if “there is a substantial risk that if the child was born, it would suffer physical or mental abnormalities as to be seriously handicapped”

(25). The MTP Act also stipulates that an abortion can be induced only by a registered medical practitioner meeting stipulated training and experience requirements in gynecology and at a government hospital or facility approved by the government for meeting the required standards (25). No spousal consent is required, however for unmarried women under 18 years of age, guardians must provide consent (25). The MTP Act does not allow mid-level paramedical healthcare providers to provide abortions.

The MTP Act was first framed in 1971 and went into effect in April of 1972. In 1975, Rules and Regulations governing the Act were amended to specify the training and/or experience required for a medical practitioner to qualify for registration to provide MTP services and the criteria necessary for a facility to attain approval to provide abortions. The MTP Rules and Regulations of 1975 also lay out clear procedures for obtaining consent, keeping records, reporting terminations and ensuring confidentiality (19, 26). All government facilities above the primary healthcare center level can provide abortion services and these facilities do not need to be certified or have certain minimum infrastructure to provide abortion care. Private facilities however must apply to be certified to provide abortion services. States can modify the national guidelines for certification of a facility stipulated in the MTP Act.

Government figures suggest that the annual number of abortions increased steadily from around 300,000 in the 1970s to stabilize at close to 600,000 in the mid 1980s and 1990s (23). Unsafe abortions however continue to be a problem in India; given the legislative restrictions that make it difficult for providers and facilities to get training and register, access to safe abortion services is difficult for women. In recent years the GOI has acknowledged the need to increase access to safe abortion care and has undertaken several efforts to do so. India was a signatory to the ICPD Plan of Action and the policies in the country are consistent with protecting the reproductive

rights of individuals as conceived by the ICPD Plan of Action and other international agreements. The GOI's National Population Policy of 2000 suggested a shift from the use of electric vacuum aspiration to manual vacuum aspiration and authorized the introduction of medication abortion (27). In April 2002, the Drug Controller of India approved medication abortion provision using mifepristone coupled with misoprostol in gestations of 49 days or less only under the supervision of a gynecologist (26). To better facilitate women's access to safe abortion by decreasing bureaucratic hurdles in registering clinics, the Indian Parliament after consulting with various governmental and non-governmental agencies and other stakeholders passed the MTP Amendment Act of 2002 and the amended Rules and Regulations of 2003 (26, 28, 29). Under the amended rules the regulation of abortion facilities is decentralized from the state to the district level. For first trimester abortions, facilities do not have to have on-site emergency complications management capabilities as long as personnel are present that can recognize complications and refer women to facilities that can provide emergency care; furthermore, medication abortion methods are recognized and allow any registered physician to provide mifepristone and misoprostol in a clinical setting for termination of pregnancies up to seven weeks gestation if the physician has the capability or access to a facility that can provide back up surgical abortion care (26). The GOI has endorsed guidelines on the appropriate use of mifepristone and misoprostol for medication abortion developed jointly in 2004 by the WHO and the All India Institute of Medical Sciences, in collaboration with India's Ministry of Health and Family Welfare and the ICMR (30). The government has not yet introduced the drugs for abortion purposes in public clinics and hospitals.

Few researchers have tried to describe the characteristics of women who seek out illegal abortions in India. A handful of studies have described the characteristics of women who obtain legal abortions in India. According to official statistics, hospital

based studies and community based research (31), most women seeking abortions in India are married women in their twenties with children who do not want any more children or are desiring to better space their pregnancies. Studies also indicate that the need for abortion in India cuts across communities, class, religious and cultural backgrounds (19). Most women who seek legal abortions in India do so during their first trimester of pregnancy. The prevalence of abortions among unmarried women (including those who are adolescents, divorced or widowed) in India is not well documented; however women who are not married are at a greater risk for abortion related complications as these women tend to wait until the second trimester and/or seek abortions from unauthorized providers (19, 31-34). Poor and rural women are also susceptible to seeking out unsafe abortions (35).

Methods of abortion

Studies in India have documented repeatedly that the most common method used for first trimester abortions in India is dilation and curettage (D&C), despite WHO recommendations against using this method if other methods are available. The Abortion Assessment Project, a study of abortion facilities and providers across six states in India, found that 73% of abortions occurred within the first trimester and D&C was the method used for 89% of the first trimester abortions (36).

To select the most appropriate method of abortion, determining the length of pregnancy is critical. As duration of pregnancy increases, the risks associated with induced abortion also increase. The WHO recommends that all healthcare delivery sites offering abortion care should have staff who are trained and competent to take a woman's history, perform a bimanual pelvic examination and offer counseling (11). The WHO's preferred methods to safely and effectively terminate pregnancy during the first

trimester of pregnancy are vacuum aspiration and medication abortion (11, 37). Vacuum aspiration can include manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA). Medication abortion using mifepristone and a prostaglandin is recommended for the early part of the first trimester – up to 63 days (nine weeks) since first day of last menstrual period (LMP) (11, 38). Dilation and curettage (D&C) is another method used in early (first trimester) abortions; the WHO recommends that D&C should only be used when neither aspiration nor medication abortion is available (11). D&C involves dilation of the cervix with mechanical dilators or pharmacological agents and uses sharp metal curettes to scrape the walls of the uterus. D&C generally requires heavy sedation or general anesthesia, is more painful for women and carries an increased risk of complications compared to aspiration abortion (11). Aspiration abortion using an electric vacuum pump or a manual hand-held and activated plastic syringe are equally effective (11). Aspiration abortion evacuates the contents of the uterus through a plastic or metal cannula attached to a vacuum source. Other terms for aspiration abortion may include: suction abortion, vacuum curettage, suction curettage, menstrual regulation (MR) and minisuction. Medication abortion occurs when pharmacological agents are administered vaginally or orally to bring about expulsion of uterine contents.

After the first trimester of pregnancy, the WHO recommends dilatation and evacuation (D&E) or medication abortion for women seeking to terminate their pregnancies (11). D&E is an abortion procedure in which the cervix is dilated and then the uterine contents are removed using a combination of suction and instruments. D&E abortion is a safe and effective method when performed by trained, experienced providers. The use of medication abortion after 12 weeks since LMP involves the administration of one or more medications to cause uterine contractions (similar to those of a late miscarriage) to expel the products of pregnancy. Appropriate regimens depend

upon the gestation and the agents used. Medication abortion protocols used in early abortion are not appropriate for later gestations. Several medications may be used in medication abortion after 12 weeks which typically include one or more of the following: misoprostol, mifepristone and gemeprost. Medications to induce abortion after 12 weeks are most commonly administered orally or vaginally, though other routes are possible. Multiple doses are generally required.

Medication abortion

Despite the safety and effectiveness of aspiration and surgical abortion, women around the world continue to have difficulty accessing safe abortion services and continue to obtain procedures under unsafe conditions. Researchers have suggested that medication abortion – abortion induced using pharmacological agents to terminate pregnancy- has the potential to expand both women’s access to abortion services and choice among abortion methods. Recent international studies show that medication abortions offer a safe, effective and acceptable option in addition to aspiration and surgical methods of abortion (39-44). The World Health Organization (WHO) recommends a regimen of 200 mg of mifepristone given orally, followed 36–48 hours later by a prostaglandin (either 0.8 mg of misoprostol or 1 mg of gemeprost) given vaginally up to 63 days of gestation (38).

Only in the past two decades have evidence-based regimens for the use of pharmacological drugs in terminating first trimester pregnancies come into existence. Few countries have developed guidelines for medication abortion provision as the regimen has undergone several modifications based on the most recent research evidence, often leaving clinicians confused regarding contraindications to medication abortion, appropriate counseling, the use of ultrasound to confirm complete abortion and

the most appropriate dose and route of administration (45). In many countries, the licensed regimen is 600 mg of mifepristone followed two days later by two .2mg misoprostol tablets taken orally for pregnancies up to 49 days LMP (45). Most recently, researchers have found that 200 mg of mifepristone is as effective as the previously recommended 600 mg dose for early abortions. The smaller dose is less expensive and avoids giving women more medication than necessary.

The WHO recommended regimen for early first trimester abortion is: 200 mg of mifepristone given orally followed 36-48 hours later by a prostaglandin (either 0.8 mg of misoprostol or 1mg of gemeprost) given vaginally (45). The recommended combination of drugs results in complete abortion in 96% of cases in gestations up to 63 days LMP (46). Mifepristone is an antiprogestin that blocks progesterone activity in the uterus, which leads to detachment of the pregnancy. Mifepristone also causes the cervix to soften and the uterus to contract and increases the sensitivity of the uterus to prostaglandins such as misoprostol or gemeprost. Prostaglandins help in softening the cervix and stimulating uterine contractions. In settings where mifepristone is not available or too expensive, misoprostol alone may also be useful for early abortion and studies to identify ideal regimens are ongoing (47). Misoprostol is widely available, inexpensive and easy to administer. Current evidence on the efficacy of different regimens for early abortion, however, is hard to decipher and often contradictory. The combination of methotrexate and misoprostol has been used as an abortifacient, but due to the potential teratogenic effects of methotrexate, it is not recommended by the WHO. Women and providers have cited advantages and disadvantages of medication abortion for early abortion in comparison with surgical/aspiration abortion. These are summarized in the table below.

	Medication Abortion	Surgical Abortion
Advantages	<ul style="list-style-type: none"> -Avoids surgery, anesthesia and the associated risks. -More natural, like menses -Less painful to some women -Easier emotionally for some women -Can be provided by mid-level staff -Woman can be more in control, involved 	<ul style="list-style-type: none"> -Quicker -More certain -Less painful to some women -Easier emotionally for some women -Can be provided by mid-level staff -Provider controlled (provider perspective) -Woman can be less involved
Disadvantages	<ul style="list-style-type: none"> -Bleeding, cramping, nausea (actual or feared) -Waiting, uncertainty -Depending on protocol, more or longer clinic visits -Cost 	<ul style="list-style-type: none"> -Invasive -Small risk of uterine or cervical injury -Risk of infection -Loss of privacy, autonomy -Provider controlled (from women's perspective)

Table 1.1: Advantages and disadvantages of medication and surgical abortion. Adapted from Gynuity Health Projects. Providing medical abortion in developing countries: an introductory guidebook; 2004.

Studies of women and health care providers in France, Great Britain and Sweden where medication abortion with mifepristone has been in use for more than a decade provide sufficient evidence that the abortion regimen is safe, effective and accepted by women (48). Recent estimates show that more than half of all abortions conducted within approved gestational limits are performed using medication abortion in France, Sweden and Scotland (49). The proportion of early abortions conducted using mifepristone has increased steadily in each of the countries since medication abortion was introduced (49). Health care staff support is seen as key to whether the option is offered and women choose the method (49). Jones and Henshaw state that positive

experiences of health care providers with the method can result in a medical culture that supports early medication abortion and encourages other area providers to offer this option, while factors such as limited funding for abortion services and bureaucratic barriers may discourage providers from adopting such new techniques (49).

Research suggests that a regimen of mifepristone followed by a suitable prostaglandin is feasible to deliver in a developing country setting in a manner that is safe, effective and acceptable for women (50, 51). The most basic requirements include: the appropriate medication, qualified staff (trained in protocols for medication abortion, counseling, dating gestational age, identifying rare pregnancy abnormalities, determining abortion success and values clarification regarding abortion provision) and the capacity to provide or refer for back-up/emergency services (51) . A study conducted in India and the US found that the majority of women seeking first-trimester abortions in the study could accurately calculate pregnancy duration within a margin of error for safe use of unsupervised medication abortion (52). Medication abortion trials suggest that medication abortions can be delivered safely, effectively and acceptably in both urban and rural settings in India (44, 53). One study was conducted to see whether medication abortion could be offered safely and effectively in urban family clinics rather than hospitals and in rural areas as well as urban areas (53). The study took place in two urban sites and one rural setting. Over 90% of women at each of the sites had successful abortions and did not require curettage. At each of the sites, more than 97% of women with successful abortions said that they would choose the method again or recommend it to others. In a country like India where abortion morbidity and mortality are high and the health infrastructure does not allow for easy access to safe surgical abortions, medication abortion has the potential to improve abortion safety and access. Abortion experts in India have stated that medication abortion can be phased into the existing health care infrastructure in India (44). Ideally medication abortion should be

available in medical settings with adequate backup facilities and a physician trained to do vacuum aspiration. Medication abortions can be made available in the existing health system with appropriate training and without the need to increase staff (44). Given the current health system situation and lower sociocultural and economic status of women in relation to men in India, medication abortion offers great potential for improving access to safe abortions as it does not require extensive infrastructure, is non-invasive and provides women with greater control and privacy. Women in India have reported the fear of instruments and the invasiveness of surgical abortion as reasons for not seeking abortions in health care facilities; young unmarried women in India have been reported to be especially fearful of D&C (54, 55). However, there is potential for misuse; even though medication abortion is required to be sold by medical prescription and taken under medical supervision, Indian newspapers have reported wide availability of the medication abortion drugs over-the-counter and unsupervised consumption.

India's healthcare system and abortion provision

The health needs of India's one billion people are met by a healthcare system made up of health services provided by four main sectors: the public sector, the organized private sector, the not-for-profit sector and the informal private sector (56). Public sector health care is provided by government hospitals, dispensaries and health centers. Providers in the organized private sector may range from individual practitioners and groups of practitioners to larger health facilities (e.g. clinics, hospitals or other institutions). Nongovernmental organizations (NGOs) comprised of private voluntary organizations and charitable institutions make up the not-for-profit sector. An important and unique feature of the Indian healthcare system is that in addition to providing allopathic care, it has a widespread tradition of indigenous systems of

medicine. The informal private sector encompasses healthcare providers without allopathic medical training in addition to others such as faith healers.

India's public spending on healthcare is about .9% of GDP, which is significantly lower than an average of 2.8% for low and middle income countries and a global average of 5.5% of GDP (57). In the past few decades, the private sector has been playing an increasingly significant role in the delivery of primary healthcare among both the urban and rural populations of India (58, 59). Over 80% of healthcare expenses are paid for by individuals out-of-pocket (60).

The responsibility of providing healthcare by the public sector is shared by the central, state and local governments although states are primarily in charge of healthcare delivery. About 75-90% of government health spending is made by states (57). The public health system consists of subcenters (staffed usually by one male multipurpose worker and one female auxiliary nurse midwife), Primary Health Centers (PHCs-serving populations of 30,000 and staffed by one medical officer and various facility staff), urban family welfare facilities, Community Health Centers (CHCs-serving populations of about 100,000 and staffed by specialists in pediatrics, surgery and obstetrics and gynecology) and secondary and tertiary hospitals (57). A large number of dispensaries, medical colleges, training institutions and laboratories are also part of the public health system. Access to and utilization of the public sector varies by state as well as by urban versus rural areas and by income group. The majority of staff members working in the public sector include physicians, nurse midwives, auxiliary nurse midwives (ANMs), lady health visitors (LHVs), male multipurpose workers, pharmacists, paramedical and non-technical workers. The public healthcare system accounts for 20% of outpatient curative care, 50-55% of hospitalization care, 60% of antenatal care and 90% of immunizations (57). Public facilities are not supposed to

charge patients for professional services, but the patients must often pay for the facility and supply costs associated with treatment (for example, drugs, diagnostics and inpatient accommodation).

Both the government and private sectors of the health system are largely unregulated. The public sector is faced with problems related to weak management, poor quality of services and limited financial resources. The quality of services in rural areas is especially poor. Studies have documented that those using the public sector often face longer waiting times, may experience a lack of confidentiality, courtesy and compassionate communication and often patients must pay bribes to get care; most people have the perception that better quality of care is offered in the private sector (19, 58).

Data on India's health workforce are inadequate. About 73-85% of allopathic doctors practice in the private sector (59-61). A significant number of doctors working in the public sector also work in the private sector either after their work hours at their own clinics or as consultants to private hospitals and clinics (62). Reliable data are not available on the numbers that do so. Information on the numbers of other medical and paramedical healthcare providers practicing in India or the numbers of informal providers providing healthcare in India are not available either. Allopathic treatment is the most dominant form of care provided in both urban and rural areas. However studies show that the majority of trained medical professionals practice in urban areas (63). Studies in India have also shown that it is not uncommon for individuals to seek the advice of pharmacists and medicine shops rather than trained physicians for the treatment of common ailments; it has also been observed that having a valid prescription is not necessary to obtain medications (64). Compounders are a cadre that is often turned to for medical advice and assistance in rural or poor areas.

Compounders have little or no formal training and usually assist physicians and pharmacists dispense drugs to patients (65, 66). Rural Medical Practitioners (RMPs) also provide a variety of healthcare services in India. RMPs usually have no medical degree or any systematic training, yet provide medical advice and usually dispense allopathic medicine. Some of them may have worked under a physician or pharmacist before. In Bihar and Jharkhand, the majority of the population lives in rural villages. Janani, a large NGO engaged in social marketing of reproductive healthcare in Bihar and Jharkhand, estimates that 85% of non-hospitalized care in the two states is provided by RMPs (67).

India's abortion policies have been often criticized as being too medically biased and highly restrictive. According to many in the abortion field, the restrictions in terms of who can provide abortions and where they can be provided have been counterproductive to making abortions widely accessible to women in India. Research suggests that access to safe abortion is limited in India because of the uneven distribution of approved abortion sites among the different states in the country and among urban-rural areas within states, poor monitoring and regulation by the government of both public and private sector services and a national policy which only allows physicians meeting stipulated training and experience requirements in gynecology to provide abortions. A shortage of licensed facilities and practitioners that provide abortions exists throughout India. This undersupply is especially pronounced in rural areas. Despite the fact that close to three-quarters of the population in India live in rural areas, the majority of MTP facilities are located in urban areas (19). India has only 10 registered abortion facilities per million people (24). With a limited number of recognized abortion training centers in the nation, opportunities to be certified to provide abortion services are not easily available for physicians who are not obstetrician-gynecologists. Data from 1991-92 show that the former state of Bihar (separated into

Bihar and Jharkhand in 2000) where 10% of India's population lived and where about 90% of its inhabitants resided in rural areas had only 1.62% of India's licensed abortion facilities. In comparison the state of Gujarat, which was 37% urban and made up only 5% of the population of the country had close to 10% of the country's abortion facilities (19, 68). In 2000, The Abortion Assessment Project in India conducted by CEHAT, an NGO, surveyed 380 abortion facilities across the six states of Kerala, Madhya Pradesh, Orissa, Rajasthan, Haryana and Mizoram and found an average of 4 medically qualified (but not always certified) abortion care facilities per 100,000 population across these states; each facility had an average of 1.2 healthcare providers (69).

Safe abortion services are offered in India through a network of institutions in rural and urban areas of the country including government health facilities such as teaching hospitals, district hospitals, CHCs, PHCs and private health facilities such as hospitals, clinics and nursing homes. A few non-governmental organizations in the country also provide safe abortion services. Even where licensed facilities exist, they may not provide abortions because of inadequate equipment or supplies or the providers are unavailable, inadequately trained or not confident in performing abortions (19, 24). A 1996 four-state study of private and public sector abortion facilities found: only 54-78% of government CHCs provided abortion services even though all are expected to do so; despite the government's intention to equip all PHC level (and higher) facilities to provide abortion services, only 24-58% of PHCs were providing abortion services; and in all four states 70-92% of approved clinics were not providing abortions because they did not have a trained physician (24). As the government is not available to meet the demand for abortion services, the private sector provides the majority of legal abortions. In Maharashtra for example, about 67% of all approved abortion centers are in the private sector. Medication abortion has not been officially introduced into government health facilities (55, 70).

Studies have shown that the abortion providers most accessible to women in India tend to be unauthorized, untrained or both. Some safe (yet illegal) abortions are provided by physicians who are trained and have the proper equipment to carry out abortions, but fail to follow the proper procedures for recording and reporting abortions as stipulated by the government. However, up to 80% of illegal abortions are provided by untrained providers who may put the health and lives of women in danger. A 1989 Indian Council of Medical Research (ICMR) study on illegal abortions in rural areas in India revealed that most illegal abortions were carried out using indigenous methods by local practitioners such as traditional birth attendants and government multipurpose health workers (19). The ICMR study further found that in the state of Rajasthan, the number of abortions carried out by indigenous providers was greater than for those carried out by physicians at government facilities and private physicians combined (19).

In India, obstetrician-gynecologists account for the majority of legal abortion providers. According to the 2003 amended MTP rules, a registered general practitioner (MBBS doctor) may offer medication abortion if the doctor is certified as having completed MTP training and has either on-site capability or access to a facility capable of performing surgical abortion in case of a failed or incomplete medication abortion (26). Obstetrician-gynecologists and trained physicians can legally provide safe abortion services, but they can often act as barriers to safe abortion care in India. Medical doctors providing abortions in India have been documented to have a poor awareness of abortion related laws, to unnecessarily require women to have consent from their husband or other family members before providing abortions, express a lack of confidence in providing abortion care due to inadequate training and experience, show a lack of common courtesy and charge unofficial or unreasonably high fees (19, 31). Limited research exists exploring whether mid-level providers would be interested in

providing medication abortion services and whether physicians would be supportive. No published studies have explored this in India. Understanding the potential role of mid-level providers in medication abortion provision in India is necessary in a context where rates of unsafe abortion are high.

Mid-level providers

One common recommendation to help solve the problem of maternal mortality and morbidity caused by unsafe abortion is to increase women's access to abortion through properly trained and adequately equipped personnel using methods that have been proved safe. The WHO recommends that abortion services be provided at the lowest appropriate level of the health care system (11). Around the world, interest in involving mid-level health care providers in a variety of medical roles including early abortion provision has been increasing. The term 'mid-level provider' refers to a wide range of non-physician health care providers (physician assistants, nurses, midwives and others) who differ in training and responsibilities from country to country but have the training to provide basic clinical procedures including those related to reproductive health (11). Experts in the field and health organizations support expanding the role of mid-level providers in abortion care provision (11, 71-74). Training mid-level providers can be an important step in increasing access to safe abortion services, as these providers are more numerous than doctors in most regions, they live and work in closer proximity to where most women live and can usually offer more affordable services compared to physicians (11, 71, 75). A randomized trial comparing the safety of first-trimester abortions by physicians and non-physicians (mid-level providers who were physician assistants or midwives with standardized and government-accredited abortion training) carried out in outpatient clinics in South Africa and Vietnam found that out of 2789 abortions done by manual vacuum aspiration in the first trimester, the

complication rate was less than 1% (there were 27 complications and none was fatal) (76). Non-physicians carried out half the abortion procedures. Researchers suggest that the main barrier preventing mid-level providers from participating in safe abortion care provision is that in most countries the training and authorization to perform abortions and related procedures are restricted to physicians (73). Legal provisions have allowed physician's assistants to provide surgical abortion in Vietnam since 1945, in the state of Vermont in the US since 1975, and in South Africa since 1996 (74). Successful attempts to train mid-level providers in abortion care have been carried out in Peru and Ghana, for example (73).

Medication abortion has the potential to expand not only abortion method choice, but also women's access to safe abortion services by increasing the number, types and geographic distribution of abortion providers (77, 78). In contrast to surgical abortion, medication abortion has the potential to offer clear opportunities for trained and supervised mid-level providers to perform early induced abortion (77). In addition to the necessary policy changes, for mid-level providers to participate in medication abortion provision, an enabling environment, which includes the support of physicians, is very critical. Mid-level providers also need to be offered training in appropriate clinical skills (73). Clinical skills needed to provide medication abortion include: physical and psychological evaluation of the patient, pregnancy diagnosis and dating, informing and counseling the woman about her options, administering drugs, monitoring the woman's recovery, counseling her about postabortion contraceptive options, seeing her for follow-up care and performing/referring for surgical evacuation of the uterus in cases of method failure (73).

Health facility and provider characteristics and health care provider practices

Research suggests that many of the barriers to accessing safe abortions are at the health facility and individual health care provider levels. Understanding the characteristics of health facilities and health providers in relation to their facilitating or hindering abortion services provision is needed as both levels of the health care system have a significant role in easing or impeding the access women have to safe abortion services.

Medical decision-making is a complex phenomenon and the most important factors influencing provider behavior with regards to clinical decisions currently remain poorly understood (79, 80). Studies show that there is variation in medical practice, but researchers have made little progress in explaining these variations (81). Little if any work has been conducted to try to understand medical decision-making in the developing world. Understanding patterns of health care provider behavior is complicated; research and theory suggest that health care provider decisions and practices are influenced by characteristics of the larger external environment, the health care organization and health care practice, the individual provider, the patients and characteristics of the provider-patient encounter (16, 79, 82-84). Characteristics of the external environment, which can influence the care provided by clinicians, can include government policies as well as market characteristics within which the provider practices such as competition from other providers, the supply of hospitals and local practice norms (16, 85). Characteristics of the health care organization and practice which may influence provider behavior may include whether the provider works in a solo practice or a group setting, the use of financial incentives in the organization, staffing, referral mechanisms and the internal physical environment (16, 86). Individual characteristics of the health care provider may include age, sex, education, training, knowledge,

attitudes and psychological traits and can influence a provider's approach to health care. Furthermore the patient-provider encounter characteristics such as the type of visit, location of the encounter and the clinician-patient dyad match (e.g., ethnicity, sex) may also affect provider practice (16). The extent to which each of these factors influences health care providers' practices remains unclear (79). Conducting research to identify determinants of provider intentions and behaviors may help explain variations in health care provision across providers and health care organizations. Identifying such determinants may help detect particular approaches for changing behavior or point to relatively unchangeable factors that should be taken into account when designing or evaluating health care.

Health facility and provider characteristics and provider abortion practices

Although the factors influencing providers' decisions to offer surgical abortion versus medical abortion may differ, past research on health facility level characteristics and provider characteristics and behavior in relation to surgical abortion provision help guide the current study.

Studies conducted in North America on abortion provision have found several factors important to consider when trying to understand whether or not a physician will provide abortion services in general. Abortion attitudes have been found to be one of the strongest predictors of a physician's decision to perform abortions; as one might expect, favorable personal attitudes are associated with abortion provision (87-90). Research conducted in the United States among nurse practitioners, physician assistants and certified nurse-midwives found that favorable personal abortion attitudes were associated with desiring medication abortion training (91). The attitude norms within a health facility are also important. One study found that obstetricians were more likely to

perform abortions and to demonstrate high levels of commitment to abortion services if they were in a favorable, in contrast to an unfavorable, normative climate (88). Very little research has been conducted on provider attitudes and abortion provision in India. Abortion is not as political a topic in India as it is in the US; although abortion attitudes among providers in India may differ compared to providers in the West, due to a variety of cultural differences, abortion related attitude may still be an important factor to consider when trying to understand provider medication abortion provision intentions in India.

Research in the US and Canada shows gender to be an important factor in trying to understand health care provision for gender related health needs and conditions (79). Female physicians are more likely to have favorable attitudes towards abortion (87), intend to provide and provide surgical abortion (87), intend to provide medical abortion (92, 93) and provide a correct prescription for emergency contraception (94). A study in Pakistan found female general physicians were more likely to provide reproductive health services in their clinics compared to male physicians (95). A study conducted among nurse practitioners, physician assistants and nurse-midwives in California found that the proportion of respondents desiring medication abortion training did not differ significantly by mean age, mean years in clinical practice (not shown), or by gender. Such studies among non-physician health care providers have not been carried out in South Asia. Training and experience can influence provider willingness to consider providing abortions. Training has been found to be positively associated with abortion provision among physicians in North America (89, 96, 97). Health facility level characteristics such as type of practice, staff support, resources and policies have been found to influence abortion provision by health care providers in North America (87, 97-99).

Studies conducted around the world have found medication abortions highly acceptable by women (50, 100-102), but only a handful of published studies have attempted to explore the possible influence of different characteristics of the health care providers and health care facilities on medication abortion provision (55, 70, 92, 93, 103-109). Most of these are descriptive studies. Interviews with US providers of surgical abortion who have had experience with mifepristone or methotrexate medication abortions (often in clinical trials) found that overall providers were satisfied with the process, would prescribe medication abortion, and believed mid-level providers have the capacity and should be allowed to perform medical abortions (106, 108, 110). Past experience with abortion provision and provider interest in offering medication abortion shows mixed results. A nationally representative telephone survey of US obstetrician-gynecologists, family practice physicians, nurse practitioners and physician assistants found that the providers most likely to show interest in offering medication abortions were obstetrician-gynecologists who had reported having performed surgical abortions in the past. This study also found that approximately half the surveyed family practice physicians, nurse practitioners and physician assistants who do not provide surgical abortions showed interest in providing medication abortions in the future (109). Another survey of family physicians, obstetrician-gynecologists and general surgeons practicing in rural Idaho in 1994 found that less than 4% performed abortions, yet 26% of the respondents indicated interest in providing medication abortion when it became available (111).

A recent study by Seelig and colleagues explored data from a survey of US obstetrician-gynecologists and primary care physicians to identify factors associated with intention to offer medication abortion with mifepristone among physicians not opposed to it (98). Determinants of not intending to offer mifepristone for medication abortion included being a primary care physician vs. an ob-gyn, being in a private vs. a hospital

based practice and being less concerned about FDA regulations or violence and protests as barriers to offering mifepristone.

A few descriptive studies on medication abortion provision by health care providers have been conducted in India. A study conducted by Ipas, New Delhi collected data from ob-gyns, MBBS doctors, indigenous medicine practitioners and pharmacists in Bihar and Jharkhand India around the same time data for the current study were collected. The Ipas study found that two-thirds of obstetrician-gynecologists had provided one or both medication abortion drugs, but less than ten percent of MBBS physicians had. Only about half of the pharmacists polled stocked misoprostol and a little over a third stocked mifepristone. A Population Council study sent out self-administered questionnaires to assess the knowledge, attitudes and practices related to mifepristone-misoprostol among members of the Federation of Obstetric and Gynecological Societies of India (17). The descriptive analyses found that the majority reported some familiarity with mifepristone-misoprostol and 69% reported using the regimen in their practices.

A qualitative study from south India examined the attitudes and practices among qualified abortion providers concerning medication abortion in a rural area of Tamil Nadu, India since the drugs mifepristone and misoprostol are widely available there. Interviews were carried out with a purposive sample of 40 doctors, 15 informants at chemist shops and 10 village health nurses. Twelve of the 37 private physicians, who provided abortions, were providing medication abortion to 70-80% of their patients and 12 others to a selected minority. Eleven still used D&C and rejected medication abortion and two had never heard of it. Wide variations in attitudes and beliefs were found among physicians with regards to their thoughts on their patients' ability to handle medication abortion and whether the women would return for follow-up services. The study also found wide variations in dosage and administration among physicians who did

provide medication abortion. The village health nurses had no knowledge about medication abortion. With regards to health facilities and medication abortion provision, a recent study in Maharashtra, India assessed the feasibility of medication abortion provision in a rural government primary health center which had not provided abortion services previously and did not have on site surgical services for backup (112). Pregnant women with less than or equal to 56 days amenorrhea who were seeking pregnancy termination and consented to the procedure, received 200 milligrams mifepristone followed by 400 micrograms sublingual misoprostol 48 hours later. The woman returned to the health center 12 days later for abortion confirmation. Out of 144 women in the study, 142 had successful medication abortions and the two who did not were successfully referred to the Community Health Center for surgical backup. The study found that medication abortion was feasible and acceptable in such a setting and the researchers suggested that introduction of medication abortion should be considered at lower levels of the health care system in India.

Research gaps

A dearth of research on medication abortion provision in general currently exists. Especially lacking are studies trying to understand what factors influence physician intentions to offer medication abortion services particularly in the developing country context. Critically needed are studies on the views of non-physician health care providers with regards to medication abortion provision. No studies in India have explicitly explored the attitudes of non-physician providers regarding abortion and whether such providers and physicians in India believe non-physicians should be involved in medication abortion provision.

Dissertation Aims and Theoretical Context

The research in this dissertation is informed by M. Fishbein's Integrative Model (IM) of Behavioral Prediction (see figure 1.1 below) (113, 114). The IM incorporates key variables from several psychosocial behavior change theories including the Theory of Reasoned Action, the Theory of Planned Behavior, Social Cognitive Theory and the Health Belief Model and (115-120). Psychosocial behavioral theorists have identified attitudes, perceived norms and self-efficacy as important determinants of people's intentions to engage in a particular behavior. Intentions are found to predict future behavior. Fishbein's IM shows that a given behavior is most likely to occur if one has a strong intention to perform the behavior, if one has the necessary skills and abilities required to perform the behavior and if there are no environmental constraints preventing the performance of that behavior. The model suggests that if one has formed a strong intention to perform a given behavior and all the other factors mentioned above hold true, then the probability is close to one that the behavior will be performed (119).

Alternatively, if strong intentions to perform the behavior of interest have not been formed, the IM suggests that there are three primary determinants of intention: "the attitude toward performing the behavior (i.e. the person's overall feelings of favorableness or unfavorableness toward performing the behavior), perceived norms concerning performance of the behavior (including both perceptions of what others think one should do as well as perceptions of what others are doing) and one's self-efficacy with respect to performing the behavior (i.e. one's belief that one can perform the behavior even under a number of difficult circumstances)" (113). Fishbein states that the relative importance of these three psychosocial variables as determinants of intention will depend upon both the behavior and the population being considered. For

example, some behaviors may be driven mostly by attitudinal considerations, while others may be influenced primarily by feelings of self-efficacy. In the same way, a behavior that is attitudinally driven in one population may be normatively driven in another. The IM also recognizes that “attitudes, perceived norms and self-efficacy are all, themselves, functions of underlying beliefs—about the outcomes of performing the behavior in question, about the normative proscriptions and/or behaviors of specific referents and about specific barriers to behavioral performance” (113). Finally, the IM also illustrates the role played by demographic, personality and other individual difference variables. According to the IM, these distal variables have an indirect role in influencing intentions or behaviors; the model suggests that the effects of distal variables on intention are mediated by more proximal variables.

Fishbein states that the IM can be used to understand behavior in any culture or population (113). He dismisses the argument made by those who contend that such theoretical models can only apply to the West or the United States and not to other cultures or nations. He argues that when such models are properly applied they require us to understand the behavior from the perspective of the culture or population being considered. The theoretical variables in the model have been tested over the years in various countries in both the developing and developed world (113). Thus, this model is appropriate for guiding research examining health care providers and their abortion related intentions and behavior in India.

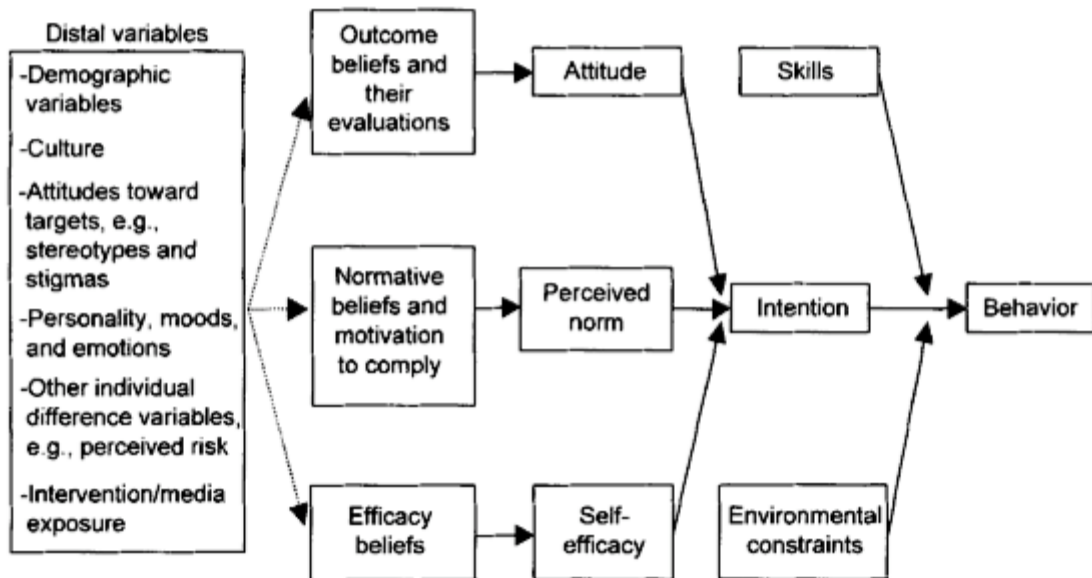


Figure 1.1: An Integrative Model of Behavioral Prediction. Source: Yzer MC, Cappella JN, Fishbein M, Hornik R, Sayeed S, Ahern RK. The role of distal variables in behavior change: Effects of adolescents' risk for marijuana use on intention to use marijuana. *Journal of Applied Social Psychology* 2004;34(6):1229-1250.

The specific aims and hypotheses for this dissertation are presented below and are explored more thoroughly in the chapters that follow. Aim 1 seeks to provide a descriptive picture to start understanding medication abortion provision in Bihar and Jharkhand by describing the health facility level characteristics and health care provider characteristics related to abortion provision by health care providers there. Aim 2 and Aim 3 of this study, which are informed by Fishbein's IM, attempt to understand the determinants of attitudes and intentions related to medication abortion provision among physicians and mid-level providers.

Specific Aims and Hypotheses

Aim 1

To describe the availability of early abortion services (surgical, aspiration and medication) in Bihar and Jharkhand and the health facility level factors and health care provider level factors that may potentially affect the provision of these services based on variables identified in the literature and behavioral theory. This will be accomplished by describing:

- the types of health facilities located in Bihar and Jharkhand and the abortion related services provided by the health facilities
- the characteristics of health facilities that are associated with early abortion provision by those facilities
- the sociodemographic characteristics and abortion related knowledge, attitudes, intentions and practices of different cadres of family planning providers practicing in Bihar and Jharkhand
- the characteristics of health care providers that are associated with their provision of early abortion services

Aim 2

To gain a better understanding of the intentions of obstetrician-gynecologists and general physicians in Bihar and Jharkhand to provide medication abortion using mifepristone-misoprostol by:

- describing potential provider level and health facility level characteristics of the physicians that may influence their intention to provide medication abortion in the future
- describing the abortion related attitudes of physicians
- examining what health care provider level and health facility level factors are associated with ob-gyns and general physicians in Bihar and Jharkhand expressing an intention to offer medication abortion using mifepristone-misoprostol.

H2a: Physicians with more permissive attitudes about who should be able to have an abortion will be more likely to say they are very likely or somewhat likely to offer medication abortion compared to physicians with less permissive attitudes.

H2b: Physicians with greater number of years providing family planning services will be more likely to say they are very likely or somewhat likely to offer medication abortion compared to physicians with fewer years of experience providing family planning services.

H2c: Female physicians will be more likely to say they are very likely or somewhat likely to offer medication abortion compared to male physicians.

H2d: Health facilities that are private will be more likely to have physicians who say they are very likely or somewhat likely to intend to offer medication abortion compared to other health facilities.

H2e: Health facilities located in urban areas will be more likely to have physicians who are very likely or somewhat likely to intend to offer medication abortion compared to facilities located in rural areas.

H2f: Health facilities with three or more family planning providers on staff will be more likely to have physicians who are very likely or somewhat likely to intend to offer medication abortion compared to facilities with fewer numbers of such staff.

Aim 3

To establish an understanding of the potential participation of mid-level providers in medication abortion provision in Bihar and Jharkhand by:

- investigating and identifying provider level and health facility level factors associated with the intention of mid-level providers to participate in medication abortion training for early abortion

H3a: Female mid-level providers will be more likely to show an interest in attending a seminar or training on mifepristone- misoprostol for early abortion compared to male mid-level providers.

H3b: Mid-level providers with more permissive attitudes towards abortion will be more likely to show an interest in attending a seminar or training on mifepristone- misoprostol for early abortion compared to providers with less permissive attitudes.

H3c: Mid-level providers who use pharmacological drugs to provide abortion services will be more likely to show an interest in attending a seminar or training on mifepristone- misoprostol for early abortion compared to providers who do not use pharmacological drugs to provide abortions.

H3d: Private health facilities will be less likely to have mid-level providers who are interested in taking part in mifepristone-misoprostol training compared to government facilities.

H3e: Health facilities with ob-gyns or general physicians on staff will be less likely to have mid-level providers who are interested in taking part in mifepristone-misoprostol training compared to health facilities with no physicians on staff.

- examining whether obstetrician-gynecologists and general physicians have supportive attitudes towards non-physicians participating in early medication abortion provision and what health care provider level and health facility level factors influence these attitudes.

H3f: Physicians with more permissive attitudes towards abortion will be more likely to be supportive of non-physicians being eligible to be trained and to provide early medication abortion compared to physicians with less permissive attitudes.

H3g: Physicians providing abortions using mifepristone-misoprostol will be less likely to be supportive of non-physicians being eligible to be trained and to provide early medication abortion compared to physicians not providing abortion services using mifepristone-misoprostol

H3h: Private health facilities will be less likely to have physicians who are supportive of non-physicians being eligible to be trained and to provide early medication abortion compared to government health facilities.

H3i: Health facilities with mid-level providers on staff will be less likely to have physicians who are supportive of non-physicians being eligible to be trained and to provide early medication abortion compared to health facilities with no mid-level providers on staff.

Aim 2 seeks to identify variables that serve as determinants of *intention to provide medication abortion* among ob-gyns and general physicians. Fishbein's IM informs the hypotheses explored in this aim. The main outcome of interest in Aim 2 is *intention to provide medication abortion*. As the data for the proposed study are cross-sectional, the relationship leading from *intention to provide medication abortion* to actual provision cannot be examined. The more proximal determinant of *intention to provide medication abortion* that will be examined is the *abortion attitude* of physicians. Due to data limitations, no measures of perceived norms concerning medication abortion provision or self-efficacy in relation to medication abortion provision are available in this study. *Sex* and *years providing family planning services* may be important determinants of provider intentions to provide abortion services as according to the IM, demographic and other individual difference variables can influence intention. The IM recognizes environmental constraints as important determinants of behavior in addition to intention and skills. We argue that characteristics of the health facility where one works such as *location of the facility* and *the number of family planning providers on staff at the facility*

may act as an environmental constraint to influence not only one's behavior, but one's intentions also. Also, culture is a variable recognized by the IM as influencing intention also. The culture of a health facility may be largely determined by the *type of health facility* where a provider works, hence *type of health facility* is a health facility characteristic that can influence the intentions of physicians.

Aim 3 of this dissertation attempts to establish an understanding of the potential participation of mid-level providers in legal medication abortion provision. Two main outcomes of interest are *intentions of mid-level providers in attending mifepristone-misoprostol training for early abortion* and *obstetrician-gynecologist and general physician attitude towards non-physicians being eligible to be trained to provide early medication abortion services*. Similar to Aim 2, Fishbein's IM informs the research hypotheses that will be examined.

Abortion attitude is hypothesized to be an important determinant of mid-level provider *intention to attend mifepristone-misoprostol for early abortion training*. Also, similar to Aim 2, *sex of provider and abortion provision experience using pharmacological drugs* are treated as demographic and other individual difference variables, which the IM suggests, can influence intention. The culture and the environmental constraints of the health facility where one works may influence one's intention also. Thus, the health facility level characteristics: *type of health facility* and *number of physicians on staff* are hypothesized to influence the intentions of mid-level provider to participate in medication abortion training. *Attitude towards non-physicians being eligible to be trained to provide early medication abortion* is another outcome of interest in Aim 3. This attitude is different from a general abortion attitude. A provider's attitude towards which types of providers should or should not be trained to provide abortion services can be influenced by the culture of the facility where one

works along with one's own attitudes about abortion and other personal characteristics. The provider characteristics *abortion attitude* and *current abortion provision using mifepristone-misoprostol* which are individual difference variables can influence their *attitude towards non-physicians being trained to provide early medication abortion*. The health facility level characteristics: *type of facility* and *whether the health facility has mid-level providers on staff* are seen as culture variables that can influence the attitude of providers also.

CHAPTER 2

Abortion Services in Bihar and Jharkhand: Health Facility Level and Provider Level Influences

INTRODUCTION

Unsafe abortion is a significant cause of maternal morbidity and mortality in India even though abortion is legally available for broad indications. Licensed facilities and practitioners that provide abortions are in short supply throughout India and disparities exist between and within states in terms of the availability and distribution of abortion services. This paper describes the health facility level and provider level factors that may help explain the availability of abortion services in the economically disadvantaged states of Bihar and Jharkhand. The paper especially aims to understand the dynamics of current and future medication abortion provision in the area. Understanding what factors may influence health care facilities and providers in Bihar and Jharkhand to provide abortion services can help policymakers and family planning program managers better plan strategies to ensure the availability of safe abortion services for women. Such information is currently lacking.

Abortion in India

Unsafe abortion is a significant cause of maternal mortality in India, accounting for about 9% to 20% of the total number of deaths (19-22, 44). Past research suggests

that women's access to safe abortion care is limited in India due to a variety of factors which include the uneven distribution of approved abortion sites among the different states in the country and among urban-rural areas within states, poor monitoring and regulation by the government of both public and private sector services and a national policy which allows only physicians meeting stipulated training and experience requirements in gynecology to provide abortions (19, 26). Unsafe abortions persist in India also due to a lack of awareness among women and their families and communities about the legal status of abortion and facilities where legal abortions are available, gender roles and norms in the country and low levels of awareness about pregnancy and reproductive health among women and their partners (27, 31, 33).

Despite the fact that close to three-quarters of the population in India live in rural areas, the majority of abortion facilities are located in urban areas (19). India has only 10 registered facilities providing abortion services per million people (24). Data from 1991-92 show that the former state of Bihar (separated into Bihar and Jharkhand in 2000) where 10% of India's population lived had less than 2% of India's licensed abortion facilities. In comparison the state of Gujarat, which made up only 5% of the population of the country had close to 10% of the country's abortion facilities (19, 68). India has a limited number of recognized abortion training centers overall and opportunities to be certified to provide abortion services are not easily available for physicians who are not obstetrician/gynecologists. Most general practitioners (MBBS doctors) are not trained in abortion skills in medical school.

In recent years the Government of India (GOI) has acknowledged the need to increase access to safe abortion care and has undertaken several efforts to do so. India was a signatory to the ICPD Plan of Action and the policies in the country are consistent with protecting the reproductive rights of individuals as conceived by the ICPD Plan of

Action and other international agreements. The GOI's National Population Policy of 2000 suggested a shift from the use of electric vacuum aspiration to manual vacuum aspiration and authorized the introduction of medication abortion (27). In April 2002, the Drug Controller of India approved medication abortion provision using mifepristone coupled with misoprostol in gestations of 49 days or less only under the supervision of a gynecologist (26). To better facilitate women's access to safe abortion by decreasing bureaucratic hurdles in registering clinics, the Indian Parliament after consulting with various governmental and non-governmental agencies and other stakeholders passed the MTP Amendment Act of 2002 and the amended Rules and Regulations of 2003 (26, 28, 29). Under the amended rules the regulation of abortion facilities is decentralized from the state to the district level. For first trimester (early) abortions, facilities do not have to have on-site emergency complications management capabilities as long as personnel are present who can recognize complications and refer women to facilities that can provide emergency care. Furthermore, medication abortion methods are recognized and allow any registered physician to provide mifepristone and misoprostol in a clinical setting for termination of pregnancies up to seven weeks gestation if the physician has the capability or access to a facility that can provide back up surgical abortion care (26). The GOI has endorsed guidelines developed jointly in 2004 by the World Health Organization (WHO), the All India Institute of Medical Sciences, India's Ministry of Health and Family Welfare and the ICMR on the appropriate use of mifepristone and misoprostol for medication abortion (30). The government has not yet introduced the drugs for abortion purposes in public clinics and hospitals.

Methods of abortion

Studies in India have documented repeatedly that the most common method used for first trimester abortions in India is dilation and curettage (D&C), despite WHO

recommendations against using this procedure if other methods are available. The Abortion Assessment Project, a large study of abortion facilities and providers across six states in India, found that 73% of abortions occurred within the first trimester and D&C was the method used in 89% of the first trimester abortions (36). The WHO's preferred methods to safely and effectively terminate pregnancy during the first trimester of pregnancy are vacuum aspiration and medication abortion (11). Vacuum aspiration can include manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA). Medication abortion using mifepristone and a prostaglandin is recommended for the early part of the first trimester – up to 63 days (nine weeks) since first day of last menstrual period (LMP) (11, 38). Dilation and curettage (D&C) is another method used in first trimester abortions; the WHO recommends that D&C should only be used when neither aspiration nor medication abortion is available (11). After the first trimester of pregnancy, the WHO recommends dilatation and evacuation (D&E) or medication abortion (with appropriate regimens depending on the duration of the pregnancy and the types of drugs used) for women seeking to terminate their pregnancies (11).

Researchers have suggested that medication abortion – abortion induced using pharmacological agents to terminate pregnancy- has the potential to expand both women's access to abortion services and choice among abortion methods. International studies conducted within the past decade show that medication abortions offer a safe, effective and acceptable option in addition to aspiration and surgical methods of abortion (39-44).

India's healthcare system and abortion provision

Safe abortion services are offered in India through a network of institutions in rural and urban areas of the country including government health facilities such as

teaching hospitals, district hospitals, Community Health Centers (CHCs) and Primary Health Centers (PHCs) and private health facilities such as hospitals, clinics and nursing homes. A few non-governmental organizations (NGOs) in the country also provide safe abortion services. Even where licensed facilities exist, they may not provide abortions because of inadequate equipment or supplies or the providers are unavailable, not willing, inadequately trained or not confident in performing abortions (19, 24). A 1996 four-state study of private and public sector abortion facilities found: only 54-78% of government CHCs provided abortion services even though all are expected to do so; despite the government's intention to equip all PHC level (and higher) facilities to provide abortion services, only 24-58% of PHCs were providing abortion services; and in all four states 70-92% of approved clinics were not providing abortions because they did not have a trained physician (24). As the government is not able to meet the demand for abortion services, the private sector provides the majority of legal abortions in the country. Medication abortion has not been introduced officially in government facilities (55, 70).

Data on India's health workforce are inadequate. About 73-85% of allopathic doctors in India practice in the private sector (59, 61, 62). A significant number of doctors working in the public sector also work in the private sector. Information on the numbers of other medical and paramedical healthcare providers practicing in India is not available. Also unavailable are the numbers of informal providers providing healthcare in India. Allopathic treatment is the most dominant form of care provided in both urban and rural areas. However studies show that the majority of trained medical professionals practice in urban areas (63). A significant number of practitioners of Indian Systems of Medicine (ISM) also provide health care services in India. ISMs include Ayurveda, Unani and Hakimi. Homeopathic providers are also common. Studies in India have also shown that it is not uncommon for individuals to seek the advice of

pharmacists and medicine shops rather than trained physicians for the treatment of common ailments; it has also been observed that having a valid prescription is not necessary to obtain medication (64). Compounders are a cadre that is often utilized for medical advice and assistance in rural or poor areas. Compounders have little or no formal training and usually their job is to assist physicians and pharmacists dispense medication to patients (65, 66). Rural Medical Practitioners (RMPs) also provide a variety of healthcare services in India. RMPs usually have no medical degree or any systematic training, yet they provide medical advice and usually dispense allopathic medicine. Some of them may have worked under a physician or pharmacist before as a compounder. Bihar and Jharkhand are both highly rural states. Janani, a large NGO engaged in social marketing of reproductive healthcare in Bihar and Jharkhand and working to train RMPs, estimates that 85% of non-hospitalized care in the two states is provided by RMPs (67).

In India, obstetrician-gynecologists account for the majority of legal abortion providers. Ob-gyns and registered general physicians can provide abortions only in licensed facilities. However according to the 2003 amended MTP rules, ob-gyns and general practitioner certified as having completed MTP training can offer *medication* abortion in any facility if they can adequately refer to a certified facility capable of performing surgical abortion in case of a failed or incomplete medication abortion (26).

Rural areas are largely served by untrained abortion providers (60). Studies have shown that the abortion providers most accessible to women in India tend to be unauthorized, untrained or both. Some safe (yet illegal) abortions are provided by physicians, who are trained and have the proper equipment to carry out abortions, but are not registered with the government and fail to follow the proper procedures for recording and reporting abortions as stipulated by the government.

A common recommendation in the abortion field is that women's access to safe abortion care can be increased by increasing the number of properly trained and suitably equipped cadres of health care providers. The WHO has recommended that abortion services be provided at the lowest appropriate level of the health care system (11). Mid-level providers such as nurses, physician's assistants and midwives can be trained to provide safe and cost-effective medication and aspiration abortions and may offer the safest solution for areas of the world like India where abortion is legal but difficult to access (73, 76).

Access to safe abortion is especially problematic in the states of Bihar and Jharkhand. The former state of Bihar in India was divided into the states of Bihar and Jharkhand in 2000. Nearly 85% of the population in Bihar and 75% of those residing in Jharkhand live in rural areas (121, 122). Bihar and Jharkhand have high rates of poverty, illiteracy and poor health indicators compared to other states in India. Bihar and Jharkhand have some of the highest estimated rates of abortions, yet have limited facilities offering abortion services (19, 70, 123).

This study aims to describe the availability of early abortion services (surgical, aspiration and medication) in Bihar and Jharkhand and the health facility level factors and health care provider level factors that may potentially affect the provision of these services based on variables identified in the literature and behavioral theory. This will be accomplished by describing: 1) the types of health facilities located in Bihar and Jharkhand and the abortion related services provided by the health facilities; 2) the characteristics of health facilities that are associated with early abortion provision by those facilities; 3) the sociodemographic characteristics and abortion related knowledge, attitudes, intentions and practices of different cadres of family planning providers practicing in Bihar and Jharkhand and 4) the characteristics of health care providers that are associated with their provision of early abortion services.

METHODS

Study design and data collection procedures

Data utilized in this study come from the second phase of an evaluation study, Evaluating Alternative Business Models for Family Planning Service Delivery (ABM) (124). The ABM project was designed as evaluation research of clinic franchising programs in four international organizations located in Ethiopia, Pakistan and India. The objective of the evaluation project was to assess the overall level of effectiveness and cost-effectiveness of clinic franchising programs in improving the delivery of family planning services and increasing the use of contraception. The surveys consisted of three separate questionnaires aimed at health facilities, staff eligible to provide family planning services and clients of the facilities.

The ABM study applied a multistage cluster sample design to the state of Bihar (before the state was split into the two states of Bihar and Jharkhand) to obtain samples of health facilities, their health staff and their clients. Bihar and Jharkhand are located in North India. The targets of evaluation in Bihar and Jharkhand were franchised health care clinics and shops that were part of the Janani (NGO working in both states) network. Janani's franchising program supports STI treatment and abortion care as well as family planning services. More than 11,000 providers participate in the Janani network throughout the two states .

The first round of surveys was conducted in 2001 and the same survey design was used for the second phase in 2004. In 2001, a multistage cluster sample design

was applied to the entire area making up the former state of Bihar except for some southwest districts that were politically unsafe for fieldwork. Districts within the state's six regions were listed and two were selected with probability proportional to size (PPS) for each region. The district was then divided into urban and rural strata and, within the rural strata, into villages. Villages were selected with PPS, and all contiguous villages surrounding the selected index village were identified. All health facilities in the cluster of villages were selected into the sample. In the urban stratum, the ward containing the district capital was selected and two other wards were randomly selected. Ward clusters were formed with the selected ward and the surrounding contiguous wards. All health facilities within the ward clusters were selected and asked to participate. Large hospitals with more than fifty beds were excluded. Health facility managers were approached by a pair of male and female field interviewers to consent to the interview. All health staff members in the facilities were enumerated and all authorized to provide family planning services were interviewed if present. Male field staff interviewed male health care providers and female field personnel interviewed female providers (124). The 2004 sample of health facilities is composed of three subsamples: 864 health facilities from the 2001 sample that were successfully followed up (panel sample); 304 health facilities newly selected from the 12 original 2001 districts; and 178 health facilities selected from 3 new districts in Jharkhand to provide representation for the new state for a final total sample of 1346 health facilities. All health staff members present, authorized to provide family planning services and consenting to participate, were interviewed for an achieved sample of 2039 staff. The response rate for family planning providers was 84%.

The surveys of health facilities and their health staff were piloted and then carried out in the field in Bihar and Jharkhand between May and August 2004. Health facilities surveyed included clinics and hospitals in the government, private, franchised NGO and NGO sectors, medical stores and unqualified private facilities (clinics run by

unlicensed medical practitioners). At the health facility level, the questionnaire aimed to measure service activity and features, commodity availability and physical characteristics of the facility. Heads of health facilities were personally interviewed about the types of reproductive health services and commodities acquired and provided, client load, number, type and service capacity of the staff on hand, and experience from and perceptions of franchise participation for those facilities that were part of the franchise. Family planning providers interviewed included ob-gyns, general practitioners, other physicians, ISM practitioners, nurses, paramedics, auxiliary nurse midwives (ANMs), lady health visitors (LHVs), male health workers (MHWs), pharmacists, compounders, RMPs and a few others such as medical store workers, family planning counselors and lab technicians. The health staff questionnaire documented family planning providers' sociodemographic characteristics, provider training experience, training quality, client loads and referral behaviors. A module on abortion and a separate module on medication abortion collected information on provider knowledge of abortion legislation and the safety and effectiveness of medication abortion, abortion training, attitudes towards abortion, preferences for who should be providing abortions, and abortion related practices.

Measurement

Dependent variables:

- At the health facility level, the dependent variable of interest is: *First trimester abortion services available at health facility*. All facilities that answered that they administered clinical methods or dispensed nonclinical methods were asked "Is elective or medically indicated first trimester surgical abortion usually available at this facility?" The head of the health facility could answer yes/no. Facilities were also asked "During

the last 30 days, how many clients did you provide/dispense the following family planning methods?" with first trimester abortion being one of the choices. All facilities that answered yes to the question about first trimester surgical abortion usually being available at the facility or those that reported at least one first trimester abortion client in the past thirty days (to capture non-surgical first trimester abortion services) were coded as yes for "First trimester abortion services available at health facility" and no otherwise.

- At the family planning provider level, the dependent variable of interest is: *Health care provider provides or helps provide abortion services*. All providers were asked "Do you provide or help provide any kind of abortion service?" The providers could respond yes/no to answer whether they currently provide or help provide abortion services.

Independent variables:

While a variety of characteristics of health facilities and health care providers are described, the main independent variables of interest are listed below.

- At the health facility level: location, ob-gyns on staff, general physicians on staff and mid-level providers on staff. The mid-level provider subpopulation was created by combining the providers who self identified themselves as: nurses, paramedics, ANMs, LHVs and MHWs.
- At the family planning provider level: sex, age, years of experience providing health care, education, location of practice, type of health facility where staffed (each provider was assigned as staffed at the facility where they were interviewed and the twelve different types of facilities marked by each interviewer were categorized into

six health facility types: government, private, franchised NGO, NGO, medical store or unqualified private), location of health facility where staffed and a variety of factors related to the knowledge, attitudes, intentions and practices in relation to abortion services provision. Specifically, a measure of abortion attitude was created by making an additive index. The index was constructed by assigning a score of 1 for each yes and a score of 0 for each no to the question 'Under which of the following (ten) conditions or situations do you personally believe a woman should be able to have an induced abortion.' The index ranges from 0 to 10 with higher numbers indicating a more permissive attitude towards abortion as the respondent has said yes to more situations in which a woman should be able to have an abortion. A similar knowledge index was created from answers to the question "According to what you know about the MTP Act, under which of the following conditions or situation is induced abortion permitted in India?". This index also ranges from 0 to 10 with lower numbers indicating fewer correct answers and higher numbers indicating more correct answers.

Analysis

Two datasets were used in the analyses: a dataset with just health facility level data and a dataset created by merging family planning provider data with health facility data. The merged dataset had 2020 total observations that matched (family planning providers matching to health facilities).

Univariate analyses of health facility and family planning provider level characteristics were conducted to present unweighted frequencies and weighted percentages for the total sample of 1346 health facilities and 2020 family planning providers. A variety of factors thought to influence the delivery of abortion services at the health facility and provider level were examined. Bivariate associations between

potential variables of interest and the dependent variables *health facility offers first trimester abortion services* and *family planning provider provides/helps provide abortion services* were examined using the corrected design-based F statistic for different types of health care facilities and family planning providers, respectively. When no observations appeared in a particular row category (row total is 0) or a particular column category (column total is 0), the F statistic could not be calculated. Simple logistic regression was used to test if continuous variables of interest had statistically significant relationships with the dependent variables of interest. All data analyses were weighted and adjusted to take into account the clustered sampling design using Stata's (Stata 9.2; Stata Corporation, College Station, Texas) survey analysis commands.

RESULTS

Health facilities in Bihar and Jharkhand

Descriptive information on the different types of health facilities surveyed in Bihar and Jharkhand is described below (Table 2.1). Unweighted frequencies and weighted percentages are presented. Out of the total sample of health facilities surveyed, 190 (14%) were government facilities, 203 (14%) private, 333 (25%) franchised NGOs, 33 (4%) NGOs, 223 (17%) medical stores and 364 (27%) were private unqualified health facilities. Only 26% of all the health facilities surveyed offered first trimester abortion services.

Location

Overall, the majority of health facilities in the combined territory of the two states Bihar and Jharkhand are located in rural areas. Over 90% of government health

facilities, franchised NGO facilities and private unqualified health facilities are rural. Private health facilities were almost evenly distributed between urban (51%) and rural (49%) settings. Non-franchised NGOs made up a relatively small part of the sample of health facilities in Bihar and Jharkhand. About two-thirds of these were located in rural areas. Fifty-eight percent of medical stores were located in rural areas. Private health facilities with unqualified providers were also surveyed. Ninety-eight percent of these health care facilities were located in rural areas.

Staff

The different types of health facilities vary greatly in their staff make-up. Only 10% of government facilities had one or more ob-gyn provider on staff. About 9% of government facilities reported having one general physician working at the facility and 12% reported having two or more such physicians on staff. The majority of government facilities had mid-level providers on staff; 40% of government health centers reported having one mid-level provider on staff and 25% of government facilities reported two or more mid-level providers working there. One-third of private health facilities had one or more obstetrician-gynecologists on staff and 54% had one or more general physician on staff. Slightly more than one-fourth of private facilities staffed mid-level providers. Approximately 7% of franchised NGO facilities had one or more ob-gyns working at the facility, 9% had one or more general physicians and about 10% had one or more mid-level provider on staff. The majority (60%) of NGOs were staffed with general practitioners and only 3% staffed at least one ob-gyn. About 25% of NGOs had mid-level providers working at their health facility.

Services offered and number of clients seen

Government facilities surveyed included subcenters, PHCs, family welfare centers and CHCs. Approximately 21% of government health facilities reported providing clinical procedures related to family planning. However, only 3% of the government facilities reported offering first trimester abortions. None of the government facilities reported offering second trimester abortion services. D&C was the only reported method of abortion offered at government facilities surveyed. About 98% of the government health facilities reported seeing no abortion clients in the month prior to the survey. Only 12% of government health facilities reported offering post abortion care services.

About half of the private facilities surveyed provided clinical care with 43% of the facilities offering first trimester abortion services. First trimester surgical abortion services (MVA/EVA/D&C) were offered at 29% of the facilities and 16% provided second trimester surgical abortion services. Eighteen percent of private facilities reported 10 or more abortion clients in the 30 days prior to the survey. The majority of private health facilities offered D&C (28%), followed by vacuum aspiration (16%) and then medication abortion (12%).

Family planning related clinical care was provided at approximately 21% of franchised NGOs. First trimester abortion services were available at 36% of the facilities. Only 14% provided first trimester surgical abortion services and 6% reported availability of second trimester abortions at their health facility. In the one month prior to the survey, about 12% of facilities reported 10 or more first trimester abortion clients and 9% reported one or more second trimester abortion clients. D&C is offered at 10% of franchised NGO health facilities followed by medication abortion (8%) and aspiration

abortion (7%). About 47% of the franchised NGO facilities offered post abortion care services.

Clinical procedures were provided by 42% of NGOs. A little less than half of all NGO health facilities offered first trimester abortion services, with about a third offering first trimester surgical abortion services and only 3% having second trimester surgical abortion services available. D&C was provided at 29% of the NGO facilities, medication abortion at 15% of the facilities and aspiration abortion was available at 6% of the NGO clinics. Thirty-nine percent of NGO health facilities reported providing post abortion care.

Only 4% of medical stores reported having medication abortion available regularly. About 17% did report counseling clients. About 28% of the unqualified health facilities reported offering first trimester abortions; first trimester surgical abortion services were provided by 5% of unqualified facilities and 2% reported providing second trimester surgical abortion services. About 30% of unqualified health facilities offered post abortion care.

Overall 80% of government health facilities do not have pregnancy tests regularly available even though 29% of government facilities reported at least one client coming in for a pregnancy test in the past 30 days prior to the survey. Only 34% of medical stores have pregnancy tests available. The majority of franchised NGOs and non-franchised NGOs reported at least one woman coming in for a pregnancy test in the month prior to the survey. Emergency contraception is not available at any of the government health facilities surveyed. Only 8% of private health facilities and 6% of medical stores reported emergency contraception being regularly available for their clients.

Health facility type and first trimester abortion provision

Table 2.2 shows the results of bivariate analyses examining the presence of different types of family planning staff at the different types of health facilities and urban/rural location of the health facility and whether the health facility provides first trimester abortion services. Only 3% of rural and 1% of urban government health facilities offer first trimester abortion services. First trimester abortion services are offered by about 57% of private health facilities in rural areas and 53% of private health facilities in urban locations.

Government and unqualified private health facilities did not differ significantly on whether or not they offered first trimester abortions when looking at urban/rural location or having obstetrician-gynecologists, general physicians or mid-level providers on staff. The provision of first trimester abortion services by franchised NGOs and non-franchised NGOs is significantly associated with urban/rural location of the health facility. The two types of health facilities show opposite relationships with regards to location and abortion provision. Franchised NGOs located in urban areas (77%) are more likely to offer first trimester abortions whereas the majority (69%) of NGO health facilities located in rural areas provide first trimester abortions.

The presence of mid-level providers is significantly associated with the provision of first trimester abortion services at franchised NGO and NGO health facilities. About 63% of franchised NGOs and 97% of NGOs with at least one mid-level provider on staff offer first trimester abortion services. Private health facilities and franchised NGOs with ob-gyns on staff are significantly more likely to offer abortion services compared to those with no ob-gyns on staff. Private health facilities with general physicians on staff are significantly less likely to offer abortion services compared to those with no general physician on staff.

Family planning providers in Bihar and Jharkhand

Table 2.3 presents selected characteristics of family planning providers in Bihar and Jharkhand. Family planning providers surveyed included ob-gyns (4%), general physicians (6%), ISM practitioners (3%), mid-level providers (13%), pharmacists (3%), compounders (11%), rural medical practitioners (RMPs) (37%), and others (22%), which included sonologists, surgeons, lab technicians, health educators, medical store workers and medical storeowners. Results for 'other' health care providers are presented in the tables, but will not be discussed in this paper.

Sociodemographic and work characteristics

The majority of general physicians, ISM Practitioners, pharmacists, compounders and RMPs are male. Ob-gyns and mid-level providers on the other hand are mostly female. All ob-gyns and general physicians have college educations. Only 43% of those self-reporting as pharmacists have attended some college or more. Close to 30% of pharmacists report only having completed grade 10. Among mid-level providers, 50% had completed grade 10 and 25% had completed grade 12. Only 11% had attended college. The majority of all providers except ob-gyns practice in rural settings. Only 38% of ob-gyns work in rural locations. About 52% of ob-gyns and 40% of general physicians work in private settings. Low percentages of ob-gyns (16%) and general physicians (20%) work at government facilities. A little over half of all mid-level providers work at government health facilities; 15% work at private clinics and 18% at franchised NGOs. Most RMPs work at a franchised NGO facility (54%) or at an unqualified health facility (42%). The majority of all providers work fulltime at the health facility where they were surveyed.

Abortion provision

With regards to abortion provision, high percentages of ob-gyns (74%), general physicians (92%), ISM practitioners (84%), mid-level providers (54%), compounders (58%) and RMPs (64%) reported providing or helping to provide abortion services. Approximately 59% of mid-level providers, 56% of compounders and 83% of RMPs surveyed said they referred clients elsewhere for abortion services. About 43% of general physicians reported that they refer clients somewhere else for abortion services whereas only 22% of ob-gyns provided referrals. The majority of referrals are made to a district hospital, followed by franchised NGO clinics, private hospitals, private doctors/clinics and then government CHCs/PHCs/PPCs.

About 40% of ob-gyns in Bihar and Jharkhand provide abortion services using vacuum aspiration or D&C; 16% use D&C only. Among general physicians, 34% use MVA/EVA or D&C and 21% use only D&C to provide abortion services. About 14% of mid-level providers reported providing surgical or aspiration abortions. Also, 4% of compounders and 3% of RMPs surveyed reported providing abortions using surgical or aspiration methods. Low percentages of providers have received in-service safe abortion care training. Very few providers reported receiving in-service medication abortion training. Relatively high percentages of different providers reported using pharmacological drugs in their practice to provide abortions: 46% of ob-gyns, 30% of general physicians, 37% of ISM practitioners, 12% of mid-level providers, 25% of pharmacists, 15% of compounders, and 28% of RMPs. As of the time of the survey, about 30% of ob-gyns and 17% of general practitioners reported using mifepristone-misoprostol in their practice for abortion services. When asked whether they intend to provide abortions in the next year using mifepristone-misoprostol, only 28% of ob-gyns stated they were very or somewhat likely to do so. However 50% of general physicians

said they were very likely or somewhat likely to provide medication abortions using mifepristone-misoprostol. Very low percentages of other providers reported using mifepristone-misoprostol. Only 1% of pharmacists reported offering mifepristone-misoprostol for abortion. The majority of all non-physician providers said they were not likely to provide mifepristone-misoprostol abortions in the next year. However, high percentages of providers, especially non-physicians reported interest in participating in mifepristone-misoprostol for early abortion training.

Family planning provider type and abortion services provision

Tables 2.4 through 2.7 show the results of bivariate analyses examining demographic characteristics and a variety of knowledge, attitude, intention and practice related characteristics of family planning staff at the different types of health facilities and whether they provide or help provide abortion services.

Sociodemographic and work characteristics

Whether a health care provider is male or female is not significantly related to whether they provide or help provide abortion services among ob-gyns, general physicians, ISM Practitioners, mid-level providers and pharmacists (See Table 2.4). Age in years and years providing health care services are significantly related to whether or not ob-gyns provide or help provide abortion services. Older and more experienced ob-gyns are more likely to provide abortion services. Number of years providing health care is significantly associated with whether or not mid-level providers currently provide or help provide abortion services; mid-level providers with fewer years of experience are more likely to provide/help provide abortion services. Ob-gyns and mid-level providers in urban settings are significantly more likely to provide or help/provide abortion

services compared to those working in rural locations. Mid-level providers who worked in non- government health facilities were significantly more likely to provide or help provide abortion services.

Abortion related knowledge and attitudes

Knowledge of the MTP Act is not associated with whether or not any of the different types of family planning providers were providing/helping to provide abortion services (see Table 2.5). However, mid-level providers who knew a husband's consent is not required to offer a woman abortion services under the MTP Act were significantly more likely to provide/help provide abortion services. Medication abortion safety and effectiveness knowledge is not significantly associated with whether or not ob-gyns, ISM practitioners, pharmacists and RMPs provided or helped provide abortion services. Among general physicians, more than 80% of providers who stated medication abortion is very safe, somewhat safe or don't know provided or helped provide abortion services. Of the general physicians who stated medication abortion is not safe, 44% provided or helped provide abortion services.

Table 2.6 presents results related to the abortion attitudes of providers and whether they provided/helped provide abortion services. Bivariate analyses indicate that those ob-gyns who supported the statement "abortion should be permitted if a husband has not provided consent" were significantly more likely to provide/help provide abortion care compared to those who were not supportive. A similar relationship was seen among compounders. Abortion attitude towards who should be permitted to access abortion services (measured using the abortion attitude index) was found to be significantly related to whether or not ob-gyns, general physicians, ISM practitioners or mid-level providers provided or helped provide abortion services; not surprising, those

with more permissive attitudes were found to be more likely to provide/help provide abortions compared to those with less permissive attitudes. Bivariate results also show that ob-gyns who were supportive of non-physicians being eligible to be trained to provide early *surgical* abortions were more likely to not provide/help provide abortions themselves. Attitude towards non-physicians being eligible to be trained to provide early *medication* abortions were not significantly related to whether or not ob-gyns, general physicians, ISM practitioners, mid-level providers, pharmacists or compounders provided/helped provide abortion care.

Abortion related intentions and practices

Bivariate results show (Table 2.7) past safe abortion care training is not associated with whether ob-gyns, general physicians, ISM practitioners, pharmacists or compounders provided or helped provide abortion services. A significantly higher percentage (87%) of mid-level providers who had received in-service safe abortion care training reported providing/helping to provide abortion care compared to those who have not had such training (50%). Intention to provide medication abortion in the next year was significantly associated with providing/helping to provide abortion services at the time of the survey for general physicians, mid-level providers and RMPs. Among both ob-gyns and general physicians, among those reporting they were not likely to provide medication abortion, high percentages reported providing abortion services at the time the survey was administered. A little more than a fourth of mid-level providers and one fourth of RMPs that reported being somewhat likely to provide medication abortion in the next year were not providing or helping to provide any abortion services.

DISCUSSION

The results of this study contribute essential descriptive information on the availability of abortion services in Bihar and Jharkhand and the health facility level and family planning provider level factors that could influence the provision of these services two years after the Drug Controller of India approved the use of mifepristone-misoprostol for early medication abortion.

One of the most critical findings in this study is that government health facilities have a negligible role in abortion provision in Bihar and Jharkhand. Private health facilities, both franchised and non-franchised NGOs and unqualified private clinics were the main providers of abortion care in the two states. Only 3% of government health facilities reported providing first trimester abortion services and no government facilities offered second trimester abortions. These findings have to be interpreted given the limitation that facilities with more than fifty beds were excluded in this study due to the design of the larger evaluation project. However, it must also be understood that every government facility that is at the primary health center (PHC) level and higher is required to provide abortion services under the MTP Act; 28% of the government facilities surveyed in this study were at the PHC level and higher. Given that the majority of government health facilities are located in rural areas and that most of these facilities are staffed with at least one mid-level provider - there is great potential for public facilities to serve as important access points for poor and rural women to obtain safe abortion services if policies in India can be adjusted to allow mid-level provider participation in abortion provision, especially medication abortion provision. Further research needs to be conducted to determine why government health facilities have such a minimal role in abortion provision in these two states and what can be done to

better their involvement in abortion provision.

Despite WHO recommendations, D&C is the most widely available method of abortion at the majority of health facilities in Bihar and Jharkhand. No government facilities reported the availability of MVA/EVA or medication abortion. Small numbers of private, franchised NGO, and NGO facilities reported aspiration and medication abortion being offered. Health facilities that offer or can offer abortion services need to incorporate MVA/EVA and medication abortion services to offer women more choice for safe abortion care and be in accordance with WHO recommendations.

Only 4% of medical stores in this study reported having mifepristone-misoprostol usually available. This number is much lower than what an Ipas study of 209 chemists in twelve cities and towns conducted in Bihar and Jharkhand around the same time as the current one reported (125); thirty-four percent of the chemists they interviewed stocked mifepristone and misoprostol. The findings of this study also show that 57% of providers that self-reported as being pharmacists by profession reported having only a 12th standard or lower education. These individuals do not have pharmacy degrees and hence cannot provide the quality of service necessary for women seeking information on abortion drugs like mifepristone and misoprostol. The GOI needs to work to better regulate medical stores and chemist shops.

In Bihar and Jharkhand, 80% of government health facilities and 60% of private facilities reported not having pregnancy tests available even though 29% and 34% of these facilities respectively reported having at least one patient request a pregnancy test in the month prior to the survey. Only one-third of medical stores surveyed stated they had pregnancy tests usually available. For women to have the most options available with regards to method of abortion, early detection of pregnancy is necessary.

Furthermore, as duration of pregnancy increases, the risks associated with induced abortion also increase. Pregnancy tests need to be promoted by family planning providers in Bihar and Jharkhand and health facilities need to do a better job in ensuring such tests are available. Additionally, to minimize rates of unwanted pregnancy and women having to thus resort to abortion, health facilities and health care providers need to do a better job promoting family planning services including encouraging the use of and making emergency contraception available to their patients. None of the government facilities surveyed in Bihar and Jharkhand offered emergency contraception. Only 6% of medical stores reported having emergency contraception usually available.

This study's findings indicate that 28% of unqualified health facilities reported providing first trimester abortion services, but only 4% of these facilities overall reported using D&C, 5% used mifepristone-misoprostol and none offered aspiration abortion. Further research needs to be conducted to see what other techniques are being used to provide abortions in clinics run by unlicensed medical practitioners. The Ipas study conducted in Bihar and Jharkhand found that chemists sold a variety of Ayurvedic and allopathic preparations as abortifacients (125) and perhaps these unqualified facilities may be doing the same. These drugs are most likely not unsafe but also not effective as abortifacients (125); more research needs to be undertaken to explore how safe and effective these drugs really are.

Gender was not found to be associated with whether or not ob-gyns or general physicians provided or helped provide abortion services in this study. This was an unexpected finding as we anticipated female physicians to be more likely to participate in abortion provision compared to male physicians. Older ob-gyns were more likely to provide/help provide abortion services compared to their younger colleagues. This finding is most likely due to older ob-gyns usually having more experience and more

confidence in providing abortion services. The majority of ob-gyns in Bihar and Jharkhand practiced in urban settings, while most general practitioners worked in rural areas. Mid-level providers also worked mostly in rural locations. Ob-gyns staffed at rural facilities were less likely to provide abortion services compared to ob-gyns practicing in urban areas. The lack of adequate equipment and supplies in rural health facilities compared to those in urban areas may help explain this finding. The majority of obstetrician-gynecologists and general practitioners in Bihar and Jharkhand worked at clinics that were not government health facilities. The Indian government needs to ensure that adequately trained providers and essential supplies and equipment are available at public facilities to provide abortion services at the lowest levels.

A substantial percentage of non-physician family planning providers were interested in attending seminars/trainings on the use of mifepristone-misoprostol for medication abortion. A decent number of non-physicians also said they were very/somewhat likely to provide medication abortions in the next year. Legally these providers cannot provide abortions. Due to the limitations of the survey data one cannot separate those who said they are not likely to provide because they know they cannot legally provide such care from those who truly are not interested. This suggests that the percentages of non-physicians reporting being very/somewhat likely to provide medication abortion in this study is most likely a conservative estimate.

A crucial finding of this study is that the majority of all providers did not know that under the MTP Act, a husband's consent is not necessary for an adult woman to obtain an abortion. Also, the majority of providers were not supportive of a woman being able to have an abortion if her husband had not provided consent. Additionally, the majority of physician and non-physician providers did not know if medication abortion is safe or effective. Such low levels of knowledge and non-supportive

attitudes among health care providers can act as barriers to women being able to access safe abortion care. The knowledge of all family planning providers with regards to medication abortion and the MTP Act may be important targets for interventions designed to increase women's access to safe abortion services in India. Heads of health facilities and program managers must address attitudinal barriers among family planning providers to improve women's access to safe and quality abortion care. Respectful and non-judgmental care needs to be especially emphasized.

Limitations

Findings of this study should be viewed taking into account various limitations. Some limitations are inherent to using survey data. Employing face to face interviews to elicit information on provider attitudes and behavior may lead to social desirability bias (126); health care providers may feel pressured to give a socially desirable answer which may not be the true situation. For example, providers may try to answer the abortion attitude, referral behavior, and intentions related to medication abortion questions in a way they may think is what the interviewer wants to hear or what they think is the norm for the area where they practice. Health facility managers (who answered the questions for the health facility surveys) may also try to answer in a way that makes their facility stand out compared to other facilities. The proposed study also has limitations in terms of the variables that could be included in the analyses as the measures that could be constructed are limited by the data collected. Nonetheless, this study has several strengths. Using surveys to elicit data has advantages which include: surveys have standardized questions which make measurement more precise; very large populations can be representatively sampled making the results statistically significant; this study also examines a topic, medication abortion provision, which has not been well explored in India. The results of this study are important to understand. The findings

have implications for health care providers, program managers and policymakers. The study results can help to better target the various stakeholders with regards to medication abortion training and information dissemination.

Conclusions

In a country like India where abortion morbidity and mortality are high and the health infrastructure does not allow for easy access to safe surgical abortions, medication abortion has the potential to greatly improve abortion safety and access. The most important recommendation of this study is that given the majority of general physicians and mid-level providers in Bihar and Jharkhand are interested in medication abortion training, have permissive attitudes towards abortion and work in rural areas and that the majority of the populations of both states are based in rural settings, these two cadres of health care providers, particularly those working in government facilities should be targeted for abortion training, especially medication abortion training. This training should not only cover clinical skills, but also should discuss abortion policy in the country and confront attitudinal barriers that may come in the way of providing quality care to women seeking abortion services.

Table 2.1 Selected characteristics of health facilities in Bihar and Jharkhand												
	Government (n=190)		Private (n=203)		Franchised NGO (n=333)		NGO (n=33)		Medical Store (n=223)		Private Unqualified (n=364)	
	n	%	n	%	n	%	n	%	n	%	n	%
Health facility location												
rural	173	95%	72	51%	307	94%	19	67%	107	58%	353	98%
urban	16	5%	130	49%	26	6%	14	33%	116	42%	11	2%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Health facility number of ob/gyns												
0	173	90%	138	67%	307	93%	30	97%	222	100%	363	100%
1	10	9%	61	32%	24	7%	3	3%	0	0%	1	0%
2 or more	6	1%	3	1%	2	0%	0	0%	1	0%	0	0%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Health facility number of general practitioners (MBBS)												
0	150	79%	115	45%	306	91%	19	40%	220	100%	353	97%
1	24	9%	83	53%	26	9%	14	60%	2	0%	11	3%
2 or more	15	12%	4	1%	1	0%	0	0%	1	0%	0	0%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Health facility number of mid-level providers												
0	72	36%	146	73%	290	90%	27	76%	218	97%	338	92%
1	71	40%	28	16%	24	5%	4	24%	2	3%	23	7%
2-3	29	17%	22	9%	10	4%	2	1%	2	0%	3	1%
4 or more	17	8%	6	2%	9	1%	0	0%	1	0%	0	0%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Administer clinical methods												
no	148	79%	112	50%	268	79%	20	58%	218	100%	338	93%
yes	38	21%	87	50%	64	21%	11	42%	0	0%	23	7%
Total	186	100%	199	100%	332	100%	31	100%	218	100%	361	100%
Administer clinical and/or nonclinical methods												
no	20	16%	76	31%	18	4%	14	27%	10	4%	87	21%
yes	170	84%	127	69%	315	96%	19	73%	213	96%	277	79%
Total	190	100%	203	100%	333	100%	33	100%	223	100%	364	100%
Health facility offers first trimester abortions												
no	181	97%	118	57%	214	64%	20	53%	200	93%	283	72%
yes	9	3%	85	43%	119	36%	13	47%	23	7%	81	28%
Total	190	100%	203	100%	333	100%	33	100%	223	100%	364	100%
Health facility offers first trimester surgical abortions												
no	181	98%	139	71%	283	86%	24	68%	223	100%	346	95%
yes	8	2%	63	29%	50	14%	9	32%	0	0%	18	5%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
First trimester abortions in past 30 days at health facility												
0	182	98%	129	60%	220	65%	23	59%	200	93%	286	73%
1-4	2	0%	22	6%	49	16%	3	15%	8	3%	46	17%
5-9	1	0%	17	15%	27	7%	2	6%	5	0%	18	5%
10-20	1	0%	23	15%	24	8%	3	4%	5	3%	8	3%
21 or more	3	1%	11	3%	13	4%	2	14%	5	1%	6	2%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Health facility offers second trimester surgical abortions												
no	189	100%	167	84%	309	94%	31	97%	223	100%	357	98%
yes	0	0%	35	16%	24	6%	2	3%	0	0%	7	2%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Second trimester abortions in past 30 days at health facility												
0	185	99%	170	85%	295	91%	27	79%	216	98%	345	95%
1-3	0	0%	12	4%	17	4%	1	1%	1	1%	12	3%
4-6	0	0%	7	7%	14	4%	3	5%	1	0%	4	2%
7 or more	4	1%	13	4%	7	1%	2	14%	5	1%	3	1%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Mife-miso medication abortion available at health facility												
no	189	100%	176	88%	305	92%	32	85%	213	96%	350	95%
yes	0	0%	26	12%	28	8%	1	15%	10	4%	14	5%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
MVA or EVA available at health facility												
no	189	100%	164	84%	310	93%	30	94%	223	100%	363	100%
yes	0	0%	38	16%	23	7%	3	6%	0	0%	1	0%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
D&C available at health facility												
no	187	99%	144	72%	296	90%	27	71%	223	100%	349	96%
yes	2	1%	58	28%	37	10%	6	29%	0	0%	15	4%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Postabortion care available at health facility												
no	154	88%	128	52%	164	53%	23	61%	217	97%	260	70%
yes	35	12%	74	48%	169	47%	10	39%	6	3%	104	30%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Counseling available at health facility												
no	103	61%	55	31%	104	31%	10	11%	184	83%	142	39%
yes	84	39%	144	69%	228	69%	21	89%	34	17%	219	61%
Total	187	100%	199	100%	332	100%	31	100%	218	100%	361	100%
Pregnancy test available at health facility												
no	155	80%	128	60%	77	22%	23	61%	133	66%	201	54%
yes	34	20%	74	40%	256	78%	10	39%	90	34%	163	46%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Pregnancy test clients in the past 30 days at health facility												
0	138	71%	110	66%	81	26%	15	40%	169	80%	201	57%
1-10	26	13%	50	14%	172	52%	10	13%	31	13%	137	36%
11-25	15	11%	27	13%	48	11%	5	27%	12	4%	17	6%
26-50	7	5%	9	6%	19	6%	1	6%	6	2%	6	1%
51 or more	3	1%	6	0%	13	5%	2	14%	5	0%	3	1%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
Emergency contraception available at health facility												
no	189	100%	184	92%	285	89%	32	98%	197	94%	347	95%
yes	0	0%	18	8%	48	11%	1	2%	26	6%	17	5%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%
STI testing available at health facility												
no	178	96%	182	89%	304	89%	3	98%	214	94%	348	95%
yes	11	4%	20	11%	29	11%	2	2%	9	6%	16	5%
Total	189	100%	202	100%	333	100%	33	100%	223	100%	364	100%

Unweighted n and weighted percentages are presented.

Table 2.3 Selected characteristics of family planning providers in Bihar and Jharkhand

	Ob-gyns (n=55)		General Physician (n=89)		ISM Practitioner (n=76)		Midlevel Providers (n=273)		Pharmacist (n=70)		Compounder (n=235)		RMP (n=756)		Others (n=466)	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Sex																
female	45	69%	10	20%	5	6%	234	82%	0	0%	3	0%	215	28%	95	20%
male	10	31%	79	80%	71	94%	39	16%	70	100%	232	100%	541	72%	371	80%
Age in years	43.57 (2.45)		47.30 (1.98)		47.01 (2.02)		38.27 (1.05)		38.40 (2.00)		29.37 (1.67)		35.41 (.64)		36.59 (1.27)	
Years providing health care	14.19 (2.41)		19.26 (2.30)		17.31 (2.74)		12.27 (.84)		9.42 (1.50)		7.30 (1.32)		10.17 (.51)		11.04 (.77)	
Education																
none-5	0	0%	0	0%	0	0%	9	2%	0	0%	1	0%	40	8%	7	2%
6 to 9	0	0%	0	0%	1	1%	26	12%	1	3%	11	5%	79	10%	49	7%
10 complete	0	0%	0	0%	7	4%	138	50%	10	29%	83	39%	257	32%	118	36%
12 complete	0	0%	0	0%	24	42%	71	25%	20	25%	75	37%	176	25%	83	17%
some college or more	55	100%	89	100%	28	53%	26	11%	38	43%	60	18%	192	25%	200	39%
Health facility location																
rural	13	38%	53	73%	49	61%	191	72%	30	54%	135	75%	751	100%	274	67%
urban	42	62%	36	27%	27	39%	82	28%	40	46%	100	25%	5	0%	192	33%
Health facility where staffed																
govt	7	16%	18	20%	2	0%	153	56%	4	2%	16	9%	3	1%	100	19%
private	35	52%	44	40%	48	69%	46	15%	2	3%	105	44%	11	1%	44	8%
franchised ngo	13	32%	19	21%	5	4%	52	18%	1	2%	68	27%	410	54%	36	6%
ngo	0	0%	6	19%	6	8%	1	1%	0	0%	17	7%	3	1%	12	3%
medical store	0	0%	0	0%	1	0%	5	2%	62	92%	3	1%	6	1%	232	54%
private unqualified	0	0%	2	0%	14	18%	16	8%	1	1%	26	12%	323	42%	42	11%
Work fulltime at facility																
no	14	27%	36	17%	9	8%	35	14%	4	5%	15	5%	185	26%	70	17%
yes	41	73%	53	83%	67	92%	238	86%	66	95%	220	95%	571	74%	396	83%
Interested in ma training																
no	26	58%	34	41%	24	32%	71	25%	23	27%	48	21%	119	16%	154	39%
yes	29	42%	55	59%	52	68%	201	75%	47	73%	187	79%	637	84%	312	61%
Refer clients elsewhere for abortion																
no	44	78%	36	57%	11	14%	115	41%	12	13%	111	44%	121	17%	102	16%
yes	11	22%	53	43%	65	86%	158	59%	58	87%	124	56%	635	83%	364	84%
Provide/help provide abortions																
no	6	26%	23	8%	24	16%	108	46%	30	51%	92	42%	269	36%	197	43%
yes	49	74%	66	92%	52	84%	165	54%	40	49%	143	58%	487	64%	269	57%
Provide surgical/aspiration abortion																
Do not provide MVA/EVA/D&C	15	40%	61	44%	66	85%	227	86%	70	100%	202	83%	716	94%	435	92%
MVA or EVA only	4	4%	3	1%	2	2%	11	6%	0	0%	5	2%	10	1%	9	4%
D&C only	7	16%	9	21%	5	8%	16	6%	0	0%	21	11%	21	4%	8	2%
MVA or EVA and D&C	29	40%	16	34%	3	5%	19	2%	0	0%	7	4%	9	1%	14	3%
Use mife-miso for early abortion																
no	31	70%	76	83%	73	98%	259	96%	68	99%	225	96%	721	97%	445	91%
yes	24	30%	13	17%	3	2%	14	4%	2	1%	10	4%	35	3%	21	9%
Use pharma drugs for abortion																
no	29	54%	67	70%	57	63%	247	88%	54	75%	196	85%	539	72%	362	68%
yes	26	46%	22	30%	19	37%	26	12%	16	25%	39	15%	217	28%	104	32%
Intend to provide ma in next year																
not likely	27	72%	64	50%	59	67%	209	72%	42	69%	190	80%	571	77%	378	79%
somewhat likely	15	14%	15	16%	15	31%	49	20%	25	30%	38	17%	136	18%	65	14%
very likely	13	14%	10	34%	2	2%	14	8%	3	1%	7	3%	49	6%	23	8%
Safe abortion care training																
no	36	80%	69	61%	69	90%	242	91%	67	98%	225	97%	630	86%	439	95%
yes	19	20%	20	39%	7	10%	31	9%	3	2%	10	3%	126	14%	27	5%
Medication abortion training																
no	48	92%	83	89%	74	98%	266	98%	69	99%	232	99%	720	97%	460	98%
yes	7	8%	6	11%	2	2%	7	2%	1	1%	3	1%	36	3%	6	2%
Abortion law knowledge																
Abortion permitted if:																
Husband has not provided consent																
not correct	43	78%	85	99%	74	98%	254	94%	67	95%	228	97%	714	96%	434	93%
correct	12	22%	4	1%	2	2%	19	6%	3	5%	7	3%	42	4%	32	7%
Abortion law attitude																
Abortion should be permitted if:																
Husband has not provided consent																
not supportive	40	63%	82	97%	66	87%	241	92%	60	92%	205	85%	666	90%	411	83%
supportive	15	37%	7	3%	10	13%	32	8%	10	8%	30	15%	90	10%	55	17%

For categorical variables, unweighted n and weighted percentages are presented.
For continuous variables, average values are presented with standard deviations in parentheses.

Table 2.4. Demographic information on family planning providers in Bihar and Jharkhand and whether they provide/help provide abortion services																																		
Provide/help provide abortion services	Ob-syn (n=55)			General Physician (n=89)			ISM Practitioners (n=76)			Midlevel Providers (n=273)			Pharmacist (n=70)			Compounder (n=235)			RMP (n=756)			Others (n=466)												
	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%							
Sex																																		
female	4	25%	41	75%	2	2%	8	98%	0	0%	5	100%	86	42%	148	58%	0	0%	0	0%	1	8%	2	92%	92	45%	123	55%	41	47%	54	58%		
male	2	28%	8	72%	21	10%	58	90%	24	17%	47	83%	22	65%	17	35%	30	51%	40	49%	91	42%	141	58%	177	33%	364	67%	156	42%	215	58%		
Total	6	26%	49	74%	23	8%	66	92%	24	16%	52	84%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%		
Age in years																																		
	35.62 (1.71)	46.32 (2.13)	45.64 (2.75)	47.45 (2.15)	44.77 (3.20)	47.43 (2.06)	39.59 (1.96)	37.15 (1.23)	14.57 (1.41)	10.30 (0.81)	9.95 (2.52)	8.85 (1.47)	27.79 (2.22)	30.51 (2.12)	34.57 (96)	35.88 (79)	37.58 (1.76)	35.85 (1.29)	11.09 (.97)	11.01 (.96)	9.31 (.64)	10.66 (.71)	9.31 (.64)	10.66 (.71)	34.57 (96)	35.88 (79)	37.58 (1.76)	35.85 (1.29)	11.09 (.97)	11.01 (.96)	9.31 (.64)	10.66 (.71)		
Years providing health care																																		
	4.68 (.31)	17.48 (1.85)	15.50 (2.74)	19.61 (2.50)	17.91 (3.64)	17.20 (3.11)	14.57 (1.41)	10.30 (0.81)	9.95 (2.52)	8.85 (1.47)	27.79 (2.22)	30.51 (2.12)	34.57 (96)	35.88 (79)	37.58 (1.76)	35.85 (1.29)	11.09 (.97)	11.01 (.96)	9.31 (.64)	10.66 (.71)	9.31 (.64)	10.66 (.71)	9.31 (.64)	10.66 (.71)	34.57 (96)	35.88 (79)	37.58 (1.76)	35.85 (1.29)	11.09 (.97)	11.01 (.96)	9.31 (.64)	10.66 (.71)		
Education																																		
none-5	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	2	45%	7	55%	0	0%	0	0%	0	0%	1	100%	0	0%	24	61%	16	39%	3	40%	4	60%
6 to 9	0	0%	0	0%	0	0%	0	0%	0	0%	1	100%	6	24%	20	76%	1	100%	0	0%	8	31%	3	69%	8	31%	30	39%	49	61%	25	57%	24	43%
10 complete	0	0%	0	0%	0	0%	3	55%	4	45%	57	50%	81	50%	32	52%	39	48%	6	65%	4	35%	37	45%	46	55%	91	35%	166	65%	49	34%	69	66%
12 complete	0	0%	0	0%	0	0%	5	7%	19	93%	9	36%	17	64%	3	37%	23	63%	15	37%	23	63%	21	31%	39	69%	58	34%	118	66%	30	34%	53	66%
some college or more	6	26%	49	74%	23	8%	66	92%	9	17%	19	83%	9	36%	17	64%	3	37%	23	63%	21	31%	39	69%	62	31%	130	69%	86	54%	114	46%	114	46%
Total	6	26%	49	74%	23	8%	66	92%	17	15%	43	85%	106	46%	164	54%	30	52%	39	48%	92	42%	138	58%	265	36%	479	64%	193	43%	264	57%		
Location																																		
rural	2	56%	11	44%	11	8%	42	92%	18	20%	31	80%	78	55%	113	45%	14	52%	16	48%	49	38%	86	62%	268	36%	483	64%	106	39%	168	61%		
urban	4	7%	38	93%	12	10%	24	90%	6	10%	21	90%	30	25%	52	75%	16	51%	24	49%	43	53%	57	47%	1	10%	4	90%	91	51%	101	49%		
Total	6	26%	49	74%	23	8%	66	92%	24	16%	52	84%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%		
Health facility																																		
govt	0	0%	7	100%	8	16%	10	84%	0	0%	2	100%	77	66%	76	34%	3	87%	1	13%	8	29%	8	71%	2	96%	1	4%	50	65%	50	35%		
private	4	19%	31	81%	13	10%	31	90%	18	18%	30	82%	15	25%	31	75%	1	73%	1	27%	43	58%	62	42%	7	89%	1	4%	18	26%	26	74%		
franchised ngo	2	49%	11	51%	0	0%	19	100%	0	0%	5	100%	9	16%	43	84%	0	0%	0	0%	22	28%	46	72%	128	31%	282	69%	4	12%	32	88%		
ngo	0	0%	0	0%	1	5%	5	95%	1	4%	5	96%	0	0%	1	100%	0	0%	0	0%	7	32%	10	68%	1	16%	2	84%	3	9%	9	91%		
medical store	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	4	25%	1	75%	26	51%	36	49%	2	15%	1	85%	3	77%	3	77%	105	45%	127	55%		
private unqualified	0	0%	0	0%	0	0%	0	0%	5	16%	9	84%	3	24%	13	76%	0	0%	1	100%	10	30%	16	70%	128	39%	195	61%	17	30%	25	70%		
Total	6	26%	49	74%	23	8%	66	92%	24	16%	52	84%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%		
Work fulltime at facility																																		
no	3	15%	11	85%	14	27%	22	73%	3	26%	6	74%	11	18%	24	82%	3	96%	1	4%	8	71%	7	29%	78	50%	107	50%	20	42%	50	58%		
yes	3	30%	38	70%	9	5%	44	95%	21	15%	46	85%	97	51%	141	49%	27	49%	39	51%	84	40%	136	60%	191	31%	380	69%	177	43%	219	57%		
Total	6	26%	49	74%	23	8%	66	92%	24	16%	52	84%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%		

*p < .05, **p < .01, ***p < .001. Standard deviations in parentheses

Provide/help provide abortion services	Ob-gyn (n=55)		General Physician (n=89)		ISM Practitioner (n=76)		Midlevel Providers (n=273)		Pharmacist (n=70)		Compounder (n=235)		RMP (n=756)		Others (n=466)	
	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
Med abortion safety knowledge																
very safe	0	11	1	8	0	2	0	8	0	2	2	2	0	8	1	16
somewhat safe	0	13	1	11	1	2	0	2	1	2	1	3	2	11	2	11
not safe	1	6	2	5	0	1	0	2	1	1	0	0	1	5	0	6
don't know	5	38	19	15	23	16	105	49	28	52	36	131	265	37	192	233
Total	6	26	23	8	24	16	105	46	30	51	40	141	268	48	195	266
Med ab effectiveness knowledge																
very effective	0	16	1	10	0	4	0	8	1	17	2	3	0	7	0	18
somewhat effective	0	9	2	7	1	1	1	1	0	0	0	4	1	12	3	10
not effective	1	35	0	0	23	0	0	2	0	0	0	0	0	0	0	2
don't know	5	38	20	14	24	16	105	49	29	52	37	130	267	37	193	235
Total	6	26	23	8	24	16	106	46	30	51	40	141	268	48	196	265
Abortion law knowledge index																
average score (1-10)	7.19 (-.57)	7.21 (-.49)	6.33 (.24)	6.71 (.15)	6.16 (.24)	6.00 (.51)	4.38 (.60)	4.85 (.46)	4.82 (.87)	4.48 (.96)	3.92 (1.27)	5.38 (.46)	5.35 (.36)	5.21 (.20)	4.26 (.42)	5.20 (4.61)
Abortion law knowledge																
Abortion permitted if:																
not correct	6	33	23	8	24	16	105	49	29	50	38	137	253	36	191	243
correct	0	0	0	0	0	0	3	11	1	73	2	6	16	28	6	19
Total	6	26	23	8	24	16	108	46	30	51	40	143	269	36	197	269

p value *p <.05, **p<.01, ***p<.001 Standard deviations in parentheses

Provide/help provide abortion services		Table 2.6. Abortion related attitudes of family planning providers in Bihar and Jharkhand and whether they provide/help provide abortion services															
		Op-dvt (n=55)		General Physician (n=89)		ISM Practitioners (n=76)		Midlevel Providers (n=273)		Pharmacist (n=70)		Compounder (n=235)		RMP (n=756)		Others (n=466)	
		no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes	no	yes
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Attitude towards non-phy prov ma	not supportive	3	20%	15	10%	10	12%	54	47%	15	53%	37	39%	136	45%	109	55%
	supportive	3	50%	8	7%	14	18%	54	46%	15	50%	55	43%	133	28%	88	32%
	Total	6	26%	23	8%	24	16%	108	46%	30	51%	92	42%	269	36%	197	43%
Attitude towards non-phy prov sa	not supportive	2	1%	11	7%	8	12%	49	48%	12	28%	27	45%	102	48%	79	51%
	supportive	4	77%	12	9%	16	17%	59	45%	18	66%	65	40%	167	31%	118	38%
	Total	6	26%	23	8%	24	16%	108	46%	30	52%	92	42%	269	36%	197	43%
Abortion law attitude index average score (1-10)		5.38 (.31)	7.87 (.33)	6.08 (.29)	6.90 (.18)	5.81 (.56)	7.50 (.22)	6.02 (.53)	6.90 (.12)	6.85 (.21)	6.54 (.23)	7.16 (.46)	7.15 (.22)	6.77 (.12)	6.81 (.10)	6.59 (.42)	6.77 (.15)
		***	***	*	*	*	*	*	*	*	*	*	*	*	*	*	*
Abortion law attitude Abortion should be permitted if: Husband has not provided consent not supportive	not supportive	5	40%	22	9%	21	22%	97	47%	25	53%	85	46%	236	35%	174	39%
	supportive	1	1%	1	5%	3	8%	10	33%	5	42%	6	15%	32	44%	22	62%
	Total	6	26%	23	8%	24	16%	107	46%	30	52%	91	42%	268	36%	196	43%

p value *p < .05, **p < .01, ***p < .001 Standard deviations in parentheses

Table 2.7 Abortion related intentions and practices of family planning providers in Bihar and Jharkhand and whether they provide/help provide abortion services																													
Provide/help provide abortion services	Ob-gyn (n=55)			General Physician (n=89)			ISM Practitioner (n=76)			Midlevel Providers (n=273)			Pharmacist (n=70)			Compounder (n=235)			RMP (n=756)			Others (n=466)							
	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%	no	yes	%		
Intend to provide ma in next year	very likely	0	13	100%	1	0%	2	100%	3	3%	11	97%	0	0%	3	100%	2	15%	5	85%	7	11%	42	89%	3	2%	20	98%	
	somewhat likely	1	9%	91%	1	6%	13	94%	12	27%	37	73%	5	4%	20	96%	3	4%	35	96%	31	25%	105	75%	19	25%	46	75%	
	not likely	5	34%	66%	21	13%	22	20%	53	36%	116	44%	25	73%	17	27%	87	51%	103	49%	231	40%	340	60%	175	50%	203	50%	
Total	6	26%	49	74%	23	8%	24	16%	108	46%	164	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%	
Interested in ma training	no	3	25%	23	75%	13	12%	10	21%	31	47%	40	53%	11	78%	12	23%	24	50%	24	50%	67	56%	52	44%	76	49%	78	51%
	yes	3	26%	26	74%	10	16%	28	87%	77	46%	124	54%	19	41%	28	59%	68	40%	119	60%	202	32%	435	68%	121	38%	181	62%
	Total	6	26%	49	74%	23	8%	38	24%	108	46%	164	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
Refer clients elsewhere for abortion	no	2	20%	42	80%	5	5%	2	5%	41	37%	74	63%	7	81%	5	19%	29	21%	82	79%	39	31%	82	69%	50	36%	52	64%
	yes	4	45%	7	55%	18	13%	22	17%	67	52%	91	48%	23	47%	35	53%	63	58%	61	42%	230	37%	405	63%	147	44%	217	56%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
Pregnancy test training	no	4	19%	40	81%	22	9%	24	16%	100	46%	148	54%	30	52%	39	48%	89	43%	140	57%	233	41%	365	59%	194	44%	251	56%
	yes	2	69%	9	31%	1	4%	6	100%	8	50%	17	50%	0	0%	1	100%	3	15%	3	85%	36	20%	122	80%	3	27%	18	73%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
Referral procedures training	no	6	26%	48	74%	23	8%	24	16%	107	46%	161	54%	30	51%	40	49%	92	42%	143	58%	259	38%	456	62%	196	43%	264	57%
	yes	0	0%	1	100%	0	0%	0	0%	1	29%	4	71%	0	0%	0	0%	0	0%	0	0%	10	13%	31	87%	1	2%	5	98%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
Post abortion care training	no	6	27%	40	73%	23	11%	23	16%	100	46%	144	54%	30	52%	38	48%	90	42%	139	58%	245	37%	421	63%	192	43%	255	57%
	yes	0	0%	9	100%	0	0%	1	5%	8	48%	21	52%	0	0%	2	100%	2	27%	4	73%	24	26%	66	74%	5	45%	14	55%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
Safe abortion care training	no	5	29%	31	71%	23	14%	24	17%	103	50%	139	50%	29	52%	38	48%	92	43%	133	57%	255	40%	375	60%	195	45%	244	55%
	yes	1	13%	18	87%	0	0%	7	100%	5	13%	26	87%	1	17%	2	83%	0	0%	10	100%	14	11%	112	89%	2	2%	25	98%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
FP counseling training	no	6	27%	39	73%	23	9%	24	17%	105	47%	153	53%	30	52%	38	48%	92	43%	137	57%	260	38%	418	62%	197	44%	255	56%
	yes	0	0%	10	100%	0	0%	3	100%	3	25%	12	75%	0	0%	2	100%	0	0%	6	100%	9	14%	69	86%	0	0%	14	100%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%
Medication abortion training	no	6	28%	42	72%	23	9%	24	16%	108	47%	158	53%	30	52%	39	48%	92	42%	140	58%	267	37%	453	63%	197	43%	263	57%
	yes	0	0%	7	100%	0	0%	2	100%	0	0%	7	100%	0	0%	1	100%	0	0%	3	100%	2	5%	34	95%	0	0%	6	100%
	Total	6	26%	49	74%	23	8%	24	16%	108	46%	165	54%	30	51%	40	49%	92	42%	143	58%	269	36%	487	64%	197	43%	269	57%

p value *p < .05, **p < .01, ***p < .001 Standard deviations in parentheses

CHAPTER 3

Characteristics associated with the intentions of obstetrician-gynecologists and general physicians to provide medication abortion in Bihar and Jharkhand, India

INTRODUCTION

Even close to four decades after the 1971 Medical Termination of Pregnancy (MTP) Act significantly liberalized abortion policies in the country, women in India find access to safe abortion services difficult. (31). Maternal mortality and morbidity rates resulting from unsafe abortions are high in India due to the limited availability and uneven distribution of trained abortion providers (31, 36). Studies conducted in various countries, including in India, show that medication abortion offers a safe, effective and acceptable option in addition to aspiration and surgical methods (39-44). The Drugs Controller of India approved medication abortion using a regimen of mifepristone and misoprostol in April 2002 for pregnancies up to 49 days gestation (127). Approval of the medication abortion regimen provides an opportunity to expand women's service options for safe abortions in India. Given the country's poor health infrastructure, medication abortion has the potential to greatly improve abortion access, in view of the fact that in contrast to other methods of abortion, medication abortion requires little infrastructure. Under current law only ob-gyns and general physicians who have been trained and certified can provide abortions. Without changes in policies that prevent other cadres of providers to offer abortion services, women's access to medication

abortion depends heavily at this time on the willingness of obstetrician-gynecologists and general physicians (doctors with MBBS degrees) to offer it. Very little is understood with regards to influences on physician intentions to provide abortion services. This study examines the association between health facility level and physician level characteristics of interest and the intentions of obstetrician-gynecologists and general physicians to provide medication abortion in Bihar and Jharkhand, India.

Abortion in India

An estimated 540 maternal deaths occur per 100,000 live births per year in India (128). Unsafe abortion is estimated to account for about 9 - 20% of total maternal deaths in the country (19-22, 44). Approximately six million induced abortions are carried out in India every year, with as many as eight illegal abortions for every legal procedure (19, 24). Although the MTP Act, passed in India in 1971, legalized abortion under broadly defined social and medical conditions, morbidity and mortality related to unsafe abortions remain major public health challenges for India even today. Women in India find safe abortion care offered by trained healthcare providers difficult to access due to a variety of barriers related to the country's abortion legislation, the health system and the sociocultural and economic status of women (19, 31).

Safe abortion services are offered in rural and urban areas of India through a variety of health facilities, which include different types of public health facilities, private hospitals, clinics and nursing homes and a few health facilities run by non-governmental organizations. Shortages of licensed facilities and practitioners who can provide safe abortion services exist throughout India, and the scarcity is especially pronounced in rural areas where the majority of the population of India lives (19, 128). India has only 10 registered abortion facilities per million people (24). Even where licensed facilities exist, they may not provide abortions because of inadequate equipment or supplies or

lack of providers on staff who are sufficiently trained or confident in performing abortions (19, 24). With a limited number of recognized abortion training centers in the nation, opportunities to be certified to provide abortion services are not easily available for physicians who are not obstetrician-gynecologists.

A four-state study of private and public sector abortion facilities in India found: only 54-78% of government Community Health Centers provided abortion services even though all are expected to do so; despite the government's intention to equip all Primary Health Center level (and higher) facilities to provide abortion services, only 24-58% of Primary Health Centers were providing abortion services; and in all four states 70-92% of approved clinics were not providing abortions because they did not have a trained physician (7). Because the government is not able to meet the demand for abortion services, the private sector provides the majority of legal abortions. In India, legally only obstetrician-gynecologists and registered general physicians can provide abortions in facilities that have been certified by the government. About 73-85% of allopathic doctors in India practice in the private sector (59, 61, 62). A significant number of doctors working in the public sector also work in the private sector.

Medication abortion

The World Health Organization (WHO) recommends vacuum aspiration and medication abortion to safely and effectively terminate pregnancy during the first trimester of pregnancy (11, 37). Vacuum aspiration can include manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA). If medication abortion is used, a combination of mifepristone and a prostaglandin is recommended for up to 63 days since first day of last menstrual period (LMP) (11, 38). The WHO recommends that dilation

and curettage (D&C) should only be used when neither aspiration nor medication abortion is available (11).

Despite the safety and effectiveness of aspiration and surgical abortion, women around the world continue to have difficulty accessing safe abortion services and continue to obtain procedures under unsafe conditions. Medication abortion has been shown to offer a safe, effective and acceptable option in addition to aspiration and surgical methods (39-44). The government of India has endorsed guidelines on the appropriate use of mifepristone and misoprostol for medication abortion developed jointly in 2004 by the WHO and the All India Institute of Medical Sciences, in collaboration with India's Ministry of Health and Family Welfare and the ICMR (30). The government has not yet introduced the drugs for abortion purposes in public clinics and hospitals.

In a country like India where abortion related morbidity and mortality are high and the health infrastructure does not allow for easy access to safe surgical abortions, medication abortion has the potential to greatly improve abortion safety and access. Medication abortion provision does not require extensive infrastructure and can be offered in settings where surgical or aspiration methods are not widely available. Women in India have reported the fear of instruments and the invasiveness of surgical abortion as reasons for not seeking abortions in health care facilities; young unmarried women in India have reported being especially fearful of D&C (60, 61). Studies in India have shown that medication abortions are feasible and acceptable to women living in both urban and rural settings (44, 53). Medication abortion is non-invasive and women have greater control and privacy compared to other methods of abortion.

Understanding physician abortion provision intentions

Researchers suggest that many of the barriers individuals face in accessing health care services are at the health facility and individual health care provider levels (16, 129). To better understand how to improve women's access to safe abortion care, examining the characteristics of health facilities and health providers in relation to facilitating or hindering abortion services provision is needed; both levels of the health care system may have a significant role in easing or impeding the access women have to abortion care. Conducting research to identify determinants of provider intentions and behaviors may help explain variations in health care provision across providers and health care organizations. Identifying such determinants may help detect particular approaches for changing behavior or point to relatively immutable factors that should be taken into account when designing policies and programs to expand women's access to safe abortion services.

Few researchers have attempted to understand what factors influence provider intentions to participate in abortion services provision. Behavioral theorists have identified attitudes, perceived norms and self-efficacy as important determinants of people's intentions to engage in a particular behavior (119). Fishbein's integrative model (IM) of behavioral prediction suggests that a given behavior is most likely to occur if one has a strong intention to perform the behavior, if one has the necessary skills and abilities required to perform the behavior, and if there are no environmental constraints preventing the performance of that behavior. The IM further suggests that if one has formed a strong intention to perform a given behavior and all the other factors mentioned also hold true, then the probability is close to one that the behavior will be performed (119). According to the IM, there are three primary determinants of intention: the attitude toward performing the behavior, perceived norms concerning

performance of the behavior and one's self-efficacy with respect to performing the behavior (113). The behavior prediction model also recognizes demographic, personality and other individual difference as distal variables that can influence intention.

The main outcome of interest in this study is *intention to provide medication abortion*. As the data for the proposed study are cross-sectional, the relationship leading from *intention to provide medication abortion* to actual provision cannot be examined. The more proximal determinant of *intention to provide medication abortion* that will be examined is the *abortion attitude* of physicians. Due to data limitations, no measures of perceived norms concerning medication abortion provision or self-efficacy in relation to medication abortion provision are available in this study. Sex and years providing family planning services may be an important determinants of provider intentions to provide abortion services as according to the IM demographic and other individual differences can influence intention. The IM recognizes environmental constraints as important determinants of behavior in addition to intention and skills. We argue that characteristics of the health facility where one works may act as an environmental constraint to influence not only one's behavior, but one's intentions also. Thus, health facility level characteristics such as the type of health facility, location of the facility and the number of family planning providers on staff at the facility are hypothesized to influence the medication abortion provision intentions of physicians.

This study aims to gain a better understanding of the intentions of obstetrician-gynecologist and general physician in Bihar and Jharkhand to provide medication abortion using mifepristone-misoprostol by 1) describing potential provider level and health facility level characteristics of the physicians that may influence their intention to provide medication abortion in the future; 2) describing their abortion related attitudes; and 3) examining whether provider abortion attitudes, years of experience providing

family planning services, sex, health facility type, health facility location and health facility family planning staff numbers are associated with obstetrician-gynecologists and general physicians in Bihar and Jharkhand expressing an intention to offer medication abortion using mifepristone-misoprostol.

Study setting

The former state of Bihar in India was divided into the two separate states of Bihar and Jharkhand in 2000. Nearly 85% of the population in Bihar and 75% of those residing in Jharkhand live in rural areas (130, 131). Bihar and Jharkhand have relatively poor socioeconomic and health indicators compared to other states in India including high rates of poverty, illiteracy and infant and child mortality (130, 131). Bihar and Jharkhand also have relatively high total fertility rates (TFR), high unmet need for family planning and low numbers of deliveries in medical facilities (130). The area making up the current states of Bihar and Jharkhand has high rates of induced abortion, yet has limited facilities offering abortion services (19, 70, 123). Data from 1991-92 show that the former state of Bihar, where 10% of India's population lived, had about 2% of the country's licensed abortion facilities. In comparison the state of Gujarat, which made up only 5 % of the population of India, had close to 10% of the country's abortion facilities (19, 68).

METHODS

Study Design and Data Collection Procedures

The data utilized in this study come from the second phase of a larger evaluation project which applied a multistage cluster sample design to the entire area making up

the former state of Bihar (except for some districts that were politically unsafe for fieldwork) to obtain samples of health facilities and their health staff in areas that are a part of the current states of Bihar and Jharkhand.(124). Surveys of health facilities and their health staff were piloted and then carried out in the two states between May and August 2004.

As part of the sampling strategy, districts in the former state of Bihar's six regions were first listed and two were selected probability proportional to size for each region. The district was then divided into urban and rural strata and within the rural strata, into villages and within the urban strata into wards. Villages were selected with probability proportional to size, and all contiguous villages surrounding the selected village were identified. All health facilities in the cluster of villages were selected into the sample. In the urban stratum, the ward containing the district capital was selected and two other wards were randomly selected. Ward clusters were formed with the selected ward and the surrounding contiguous ones. All health facilities within the ward clusters were selected and asked to participate. Due to the design of the larger project, hospitals with more than fifty beds were excluded. Health facility managers were approached by a pair of male and female field interviewers to consent to the interview. All health staff members in the facilities were enumerated and all who were authorized to provide family planning services and who consented to participate were interviewed if present. Male field staff interviewed male health care providers and female field personnel interviewed female providers. A total sample of 1,346 health facilities was achieved. All authorized family planning providers who were present were interviewed for an achieved sample of 2,039 staff. The response rate for family planning providers was 84%.

Measurement

The larger investigation from which this study's data come was primarily concerned with evaluating franchised health services in Bihar and Jharkhand. The project was designed as evaluation research of clinic franchising programs located in Ethiopia, Pakistan and India. The objective of the evaluation project was to assess the overall level of effectiveness and cost-effectiveness of clinic franchising programs in improving the delivery of family planning services and increasing the use of contraception. The health facility survey questionnaire aimed to measure service activity and features. Heads of health facilities were personally interviewed about the types of reproductive health services and commodities acquired and provided, client load and the number, type and service capacity of the staff on hand. The health staff questionnaire documented family planning providers' sociodemographic characteristics, provider training experience and abortion related knowledge, attitudes, intentions and practices.

Dependent variable

The primary outcome of interest in this study is *intention to provide medication abortion using mifepristone –misoprostol* in the next year. This variable was created by using the question, "How likely are you to provide mifepristone-misoprostol for MTP in the next year? Would you say you are very likely, somewhat likely, or not likely?" from the family planning provider questionnaire. The three answer categories were collapsed and coded dichotomously as: "yes, very or somewhat likely to provide" or "no, not likely to provide" medication abortion.

Independent variables

At the family planning provider level, independent variables of interest were:

Attitude towards abortion: This continuous measure was created by first making an additive index. The index was constructed by assigning a score of 1 for each yes and a score of 0 for each no answer to the question "Under which of the following (ten) conditions or situations do you personally believe a woman should be able to have an induced abortion" (see Appendix 1). The index ranges from 0 to 10 with higher numbers indicating a more permissive attitude towards abortion as the respondent has responded yes to more situations in which a woman should be able to have an abortion.

Sex: Interviewers marked the sex of the physicians as male or female.

Number of years providing family planning services: All of the family planning providers were asked how many years they have been providing family planning services.

Number of years providing family planning services is a continuous variable.

Health facility level independent variables of interest in this study include:

Type of health facility where staffed: This measure is created by combining twelve different types of health facilities (Community Health Center, Primary Health Center, Private hospital, Private qualified doctor/clinic, NGO hospital/clinic, etc) marked by the interviewer on the health facility questionnaire. The two-category measure for *type of health facility* where the physician worked is coded as: private facility or other (which is made up of government, franchised NGO and NGO health facilities).

Health facility location: The interviewer marked the *health facility location* as rural or urban as directed by the sampling team.

Number of family planning providers on staff at health facility: This variable is created from the question asked of all heads of health facilities, "Could you please tell me the names of all staff who provide family planning/reproductive health services"? These family planning providers included physicians, nurses, paramedics, auxiliary nurse midwives, counselors and others. The responses to this question were used to create the three-category measure, which was coded to represent the number of family planning staff members at the health facility as "one", "two" or "three or more". Due to small cell sizes for the ob-gyn sample, the three categories were further collapsed to create another two-category variable coded as "one or two" family planning providers or "three or more" (used in the ob-gyn model).

Current provision of surgical/aspiration abortion is a control variable in the ob-gyn model. Each provider was asked, "Do you provide (or help provide) any kind of abortion services?"; [If yes] "Which services do you provide?" The providers could choose from any or all of the following abortion methods: MVA, D&C, EVA and medical abortion (mifepristone-misoprostol). A two-category measure for *current provision of surgical/aspiration abortion* was created from this question and coded as yes if the provider indicated they provided MVA, EVA or D&C at the time of the survey or no if they did not.

Currently provide/help provide abortion services is a control variable for the general physicians model. All providers were asked, "Do you provide or help provide any kind of abortion service?" The providers could respond yes or no to indicate whether they provided or helped provide abortion services at the time of the survey.

Data Analyses

All data analyses were weighted and adjusted to take into account the clustered sampling design of the study using Stata 9.2 statistical software's survey analysis commands. The 2004 health facility data were merged with the 2004 family planning provider level data to create a merged dataset for analysis purposes. Two subpopulations were created for analysis purposes: obstetrician-gynecologists and general physicians. Obstetrician-gynecologists included physicians who stated their position was obstetrician-gynecologist and they had a MD/MS/DNB in Obstetrics and Gynecology or a Postgraduate Diploma in Obstetrics and Gynecology (unweighted n=54). General physicians are those doctors who self-reported they were general physicians and stated they had an MBBS degree (n=88).

Descriptive statistics including unweighted frequencies, weighted percentages, means and standard deviations are used to describe and compare obstetrician-gynecologists and general physicians in terms of different physician level and health facility level characteristics in Bihar and Jharkhand. These procedures along with simple logistic regression methods were used to examine potential bivariate relationships between different physician level and health facility level characteristics and the intention of obstetrician-gynecologists and general physicians to provide medication abortion. Multivariate logistic regression procedures were used to examine simultaneously the relative impact of the independent variables of interest on the outcome physician intention to provide medication abortion separately for obstetrician-gynecologists and general physicians. Both models control for abortion provision at the time of the survey.

RESULTS

Characteristics of obstetrician-gynecologists and general physicians

The overall characteristics of obstetrician-gynecologists and general physicians practicing in Bihar and Jharkhand are presented in Table 3.1. The univariate results show that most obstetrician-gynecologists were female (68%) and had on average around 14 years of family planning provision experience. The average abortion attitude score for ob-gyns was 7.20 on a scale of 0 (least permissive attitude) to 10 (most permissive). With regards to providing abortion care, 58% provide surgical and/or aspiration abortion with 41% offering MVA/EVA or D&C, 13% offering D&C only and 4% offering MVA/EVA only. Thirty-one percent of the ob-gyns reported providing medication abortions using mifepristone-misoprostol at the time of the survey. Forty percent of obstetrician-gynecologists reported being interested in attending training on mifepristone-misoprostol for early abortion. Out of all the ob-gyns surveyed 29% said they were very likely or somewhat likely to provide mifepristone-misoprostol to their patients in the next year. Among obstetrician-gynecologists not providing mifepristone-misoprostol at the time of the survey, 27% reported being interested in medication abortion training and 5% reported being very or somewhat likely to provide mifepristone-misoprostol for abortion in the next year (not shown in tables). Only 5% of ob-gyns who provided medication abortion using mifepristone-misoprostol reported being not likely to offer this method in the next year (not shown in tables). Also, 99% of ob-gyns that provided medication abortions using mifepristone-misoprostol also provided surgical and/or aspiration abortion methods (not shown). Furthermore, 90% of ob-gyns intending to provide medication abortion using mifepristone-misoprostol provided surgical and/or aspiration abortion methods when surveyed (not shown). Half

of the ob-gyns in the survey reported working for private facilities and half for other facilities (government or franchised NGO) and the majority (60%) of obstetrician-gynecologists worked at facilities based in urban areas. Seventy-nine percent of obstetrician-gynecologists worked in facilities that staffed three or more family planning providers.

Descriptive results show that the majority of general physicians were male and had an average of 16.41 years of family planning provision experience. The average attitude score for general physicians was 6.83 on a scale ranging from 0 to 10. A similar percentage (57%) of general physicians as compared to obstetrician-gynecologists reported providing surgical or aspiration abortions. However, a higher percentage of general physicians (21%) compared to ob-gyns reported using only D&C to provide abortions to their patients. Seventeen percent of general physicians reported using mifepristone-misoprostol to provide medication abortion and of these general physicians who provided mifepristone-misoprostol, 86% provided surgical and/or aspiration abortion methods also (not shown in tables). The majority (59%) of general physicians were interested in participating in mifepristone-misoprostol for early abortion training and half of all general physicians reported being very or somewhat likely to provide medication abortion using mifepristone-misoprostol in the coming year. Among those general physicians who did not provide medication abortion using mifepristone-misoprostol at the time of the survey, 56% wanted to participate in future mifepristone-misoprostol for early abortion training and 47% reported that they were very or somewhat likely to provide mifepristone-misoprostol for abortion in the next year (not shown). Also, 81% of those intending to provide medication abortion using mifepristone-misoprostol, provided surgical and/or aspiration abortion at the time of the survey (not shown). Slightly fewer than 40% of general physicians worked for private

health facilities and unlike ob-gyns, the majority were staffed at facilities located in rural areas. A little less than half of all general physicians worked in facilities that have only one or two family planning providers on staff.

Abortion attitudes of obstetrician-gynecologists and general physicians

Overall, large majorities of both obstetrician-gynecologists and general physicians have supportive attitudes towards women in a variety of situations being able to have access to induced abortions (Table 3.2). For all situations except one where abortion is allowed in India under the MTP Act, 97-100% of ob-gyns and general physicians were supportive of women being able to have an abortion. The one exception is the situation: "The woman's husband has not provided consent". Only 38% of ob-gyns and 3% of general physicians held a supportive attitude towards a woman being able to obtain an induced abortion if her husband has not provided consent.

In line with the MTP Act, the majority of both types of physicians were against a woman being able to obtain an induced abortion if the "woman is more than 20 weeks pregnant" and a large majority of ob-gyns and general physicians held unsupportive attitudes towards a woman who "knows the sex of the fetus" being able to obtain an induced abortion. Seventy-two percent of ob-gyns and 88% of general physicians were supportive of a woman who "does not want another child" being able to obtain an induced abortion.

Medication abortion provision intentions of obstetrician-gynecologists

Bivariate analyses (Table 3.3) found that among obstetrician-gynecologists, intention to provide medication abortion using mifepristone-misoprostol varied

significantly according to only one of the characteristics examined, sex of the provider. Forty-one percent of female obstetrician-gynecologists reported being very or somewhat likely to intend to provide medication abortion using mifepristone-misoprostol compared to 4% of their male counterparts. Specifically the odds of intending to provide were significantly lower among male obstetrician-gynecologists compared to female ob-gyns (OR 0.06, $p < .05$). Multivariate analyses results show for obstetrician-gynecologists that the provider level variable, sex, was significantly associated with the outcome of interest, *intention to provide medication abortion using mifepristone-misoprostol* holding all other variables constant. Male ob-gyns were substantially less likely to intend to provide medication abortion compared to their female counterparts (OR 0.01, $p < .05$).

Medication abortion provision intentions of general physicians

Bivariate analyses showed that among general physicians significant differences were found between those who were very or somewhat likely versus not likely to provide medication abortion by *number of years providing family planning services, health facility location* and *number of family planning providers on staff at the health facility* (Table 3.3). Those general physicians who were not likely to provide mifepristone-misoprostol for medication abortion had on average more years of experience (18.30 years) compared to those who were very/somewhat likely to offer medication abortion using mifepristone-misoprostol (14.53 years). Sixty-two percent of general physicians staffed at health facilities in rural areas reported intending to be very likely or somewhat likely to provide medication abortion using mifepristone-misoprostol compared to 18% of those general physicians working in urban clinics. Examination of the odds ratio showed that general physicians working at health facilities located in rural areas were significantly more likely to intend to provide medication abortion compared to those staffed at urban health facilities (OR 7.25, $p < .05$). Higher percentages of those general

physicians working in health facilities with at least two family planning providers (59%) or three or more family planning providers on staff (59%) intended to provide medication abortion in the next year compared to general physicians working at health facilities with only one family planning provider on staff. Thus, general physicians staffed at facilities with two family planning providers and those working at health clinics with three or more family planning providers were more likely to intend to provide medication abortion compared to those working at facilities with only one family planning provider on staff (OR 5.62, $p < .05$; OR 5.78, $p < .05$, respectively). The adjusted multivariate logistic regression model found strong significant associations between the health facility level factors, *health facility location and number of family planning providers on staff at health facility*, and general physicians' intention to provide medication abortion services using mifepristone-misoprostol (after controlling for the variable, *currently provide/help provide abortion services*). Holding all other variables constant, the odds of intending to provide medication abortion among general physicians staffed at rural health facilities were more than six times the odds of those working in urban facilities (OR 6.16, $p < .05$). Also, the odds of intending to provide medication abortion using mifepristone-misoprostol among general physicians staffed at facilities with three or more family planning providers on staff were more than six times the odds of general physicians working in a health facility where there was only one family planning provider on staff (OR 6.38, $p < .05$).

DISCUSSION

Under India's MTP Act, only physicians are eligible to offer abortion services to women in India. Women's access to abortion services and choice of abortion methods depend greatly on the interest and motivation of heads of health facilities and physicians

to provide these services. This is the first study to our knowledge to examine associations between physician level and health facility level characteristics and the intentions of obstetrician-gynecologists and general physicians in India to provide medication abortion using mifepristone-misoprostol. The findings of this study show that overall, obstetrician-gynecologists and general physicians in Bihar and Jharkhand have highly supportive attitudes towards women in a variety of different situations being able to obtain abortion services and a significant percentage of both types of physicians intend to provide medication abortion. Our results also highlight the stark differences between obstetrician-gynecologists and general physicians in this area regarding factors that influence their intentions to provide medication abortion using mifepristone-misoprostol.

Medication abortion provision at the time of the survey

The results of this study indicated that 31% of ob-gyns and 17% of general physicians surveyed provided medication abortions using mifepristone-misoprostol two years after the Drug Controller of India approved the regimen. The percentage of obstetrician-gynecologists that reported offering medication abortion using mifepristone-misoprostol in Bihar and Jharkhand is much lower than that found by a study utilizing self-administered questionnaires to elicit information from ob-gyns who were members of the Federation of Obstetric and Gynecological Societies of India; that study administered one year after the regimen was approved in India found 69% of ob-gyns offered mifepristone-misoprostol for medication abortion (127). The mail survey may have been limited by the fact that those ob-gyns providing the method may have selectively responded to the questionnaire. The study described in this paper is limited to two highly rural and poor states in northern India, while ob-gyns from all parts of India responded to the mail survey.

The results of this study show that the majority of medication abortion providers and those who intended to provide medication abortion among both ob-gyns and general physicians in Bihar and Jharkhand were also providers of surgical and/or aspiration abortion. Forty-two percent of ob-gyns and 43% of general physicians in this survey reported not providing abortion services using surgical and/or aspiration methods. The shortage of abortion providers in this area of India can be mitigated by specifically targeting those ob-gyns and general physicians who are not currently providing surgical and/or aspiration abortion to be trained to provide medication abortion using mifepristone-misoprostol.

Of particular note is that a high percentage of general physicians in this area that reported offering surgical abortion services, provided abortions using only D&C. Vacuum aspiration is the preferred method of uterine evacuation for early induced abortion as D&C has higher clinical risks compared to aspiration methods. Physicians in this part of India using D&C to provide abortion services need to be trained to provide aspiration or medication abortion to offer women safer methods of abortion and conform to WHO recommendations. An important finding to emphasize is that more than half of the general physicians who were not providing medication abortions at the time of the survey were interested in medication abortion training.

Further research needs to be conducted to find out why 73% of ob-gyns who were not providing medication abortions were not interested in being trained to provide mifepristone-misoprostol for early abortion. This study was limited in terms of the variables that could be included in the analyses as the measures that could be constructed are limited by the available data. Medication abortion related provider profit potential data were not collected by the survey. A study conducted in the same two

states in India, which used in-depth interviews of physicians, found indirect suggestions of medication abortion being less profitable than surgical abortion; three out of the eleven providers said that medication abortion could not substitute financially for surgical or aspiration abortion (70). This suggests that provider views on their profit potential may influence their intentions to offer medication abortion.

Medication abortion provision intentions

Twenty-nine percent of all ob-gyns and 50% of general physicians in this study reported they were very or somewhat likely to provide abortions using mifepristone-misoprostol in the next year. Findings of this study showed that most ob-gyns and general physicians in Bihar and Jharkhand held highly supportive attitudes towards abortion. The results of the multivariate analyses showed that attitude towards abortion was not associated with the intentions of either ob-gyns or general physicians to provide abortion using mifepristone-misoprostol and that the factors influencing the intentions of physicians to provide medication abortion were different for obstetrician-gynecologists in comparison to general physicians in Bihar and Jharkhand.

Studies conducted in North America on abortion provision have found abortion attitudes to be one of the strongest predictors of a provider's decision to perform abortions; favorable personal attitudes are associated with abortion provision (87-90). The attitude norms within a health facility are also found to be important. One study found that ob-gyns were more likely to perform abortions and to demonstrate high levels of commitment to abortion services if they were in a favorable, in contrast to an unfavorable, normative climate (88). Although abortion attitudes among providers in India may differ compared to providers in the West, due to a variety of cultural differences, we thought attitudes were still an important factor to consider when trying

to understand provider intentions regarding medication abortion provision in India. Fishbein's IM of behavioral prediction suggests that if strong intentions to perform the behavior of interest have not been formed, then one of the three primary determinants of intention is the person's attitude toward performing the behavior, their overall feelings of favorableness or unfavorableness toward performing the behavior. Data related to the attitude of physicians with regards to providing medication abortion were not collected in this study and hence abortion attitude was used instead. Abortion is not as political a topic in India as it is in North America; findings from this study show that the majority of physicians are supportive of women being able to obtain abortion in a variety of situations. Factors other than abortion attitudes seem to be driving whether or not a physician intends or does not intend to provide medication abortion.

Being male versus female, an individual physician level factor, was found to influence ob-gyn intentions to provide medication abortion; whereas for general physicians, the health facility level factors, rural or urban location of the health facility and the number of family planning staff members at the health facility were found to be the most important factors influencing their intentions to provide medication abortion using mifepristone-misoprostol. As anticipated, male obstetrician-gynecologists were less likely to intend to provide medication abortion in the future compare to their female counterparts. The sex of the physician can influence whether or not a physician provides abortion services, especially in a country like India where throughout society females have a lower status compared to males. The finding in this study might be explained by the simple fact that males do not experience pregnancy and may not be able to relate to the variety of problems females with an unwanted pregnancy may face in such a setting. Female physicians may be able to empathize more with women who have an unwanted pregnancy and want to obtain an abortion.

General physicians' intentions to provide medication abortion were influenced by health facility level factors over individual level factors. General physicians working in health facilities based in rural areas versus those located in urban areas were more likely to intend to provide medication abortion using mifepristone-misoprostol. Rural areas in India have been largely found to be served by untrained abortion providers who may put the health and lives of women in danger (60). As there are few ob-gyns working in health facilities located in rural areas, general physicians must serve the abortion needs of women who come to these health facilities. As general physicians in this study were mostly staffed at rural facilities and rural facilities in India are found often not to have adequate equipment and supplies, these physicians are most likely able to understand the significant role medication abortion can play in increasing women's access and choice regarding abortion services. General physicians working for health facilities with three or more family planning providers on staff compared to those working at facilities with one family planning provider were more likely to intend to provide medication abortion also. Those physicians who have the support of other staff members at their facility to take on other roles may be freer to provide such services as abortion.

Of note, while attitude may not be associated with the intentions of providers to offer medication abortion services, they may still act as barriers to women accessing care from physicians. A critical finding in this study is that 62% of ob-gyns and 97% of general physicians were not supportive of a woman being able to obtain an abortion if her husband has not provided consent, even though under MTP Act consent of any type is not necessary for women over eighteen years of age. Interventions designed to address such attitudinal barriers to women's access to safe abortion care need to target heads of health facilities, ob-gyns and general physicians.

Limitations

The findings of this study must be viewed taking into account a few limitations. Firstly, given the small subsamples of obstetrician-gynecologists and general physicians the statistical power to detect differences may have been limited. Also, data limitations did not allow physicians who were registered to provide abortion services under the MTP Act to be distinguished from those who were not. Thus, one could not separate out physicians who did not intend to provide medication abortion because they legally could not from those who did not want to provide such services. Another limitation relates to the generalizability of the study to health care providers and facilities in Bihar and Jharkhand as a whole. As clinics with more than 50 beds were excluded from being surveyed in the sampling design, these health facilities and the obstetrician-gynecologists and general physicians that work there were not surveyed. Findings therefore may not be generalizable to all health care providers and facilities in the two states. Employing face to face interviews to elicit information on physician attitudes and intentions may lead to social desirability bias (126) as physicians may feel pressured to give a socially desirable answer which may not be the true situation. An additional limitation is the cross-sectional nature of this study. Cross-sectional studies can investigate associations between various factors and the outcome of interest. However, because they are carried out at one time point and can give no indication of the sequence of events, it is impossible to infer causality.

Conclusions

Despite the limitations of this study the findings may be useful to policymakers and health care professionals designing programs to better women's access to safe

abortion services. In a country like India where unsafe abortion-related morbidity and mortality rates are high and the health infrastructure does not allow easy access to safe abortion care, medication abortion has the potential to greatly improve abortion safety and access. This is the first study to describe the medication abortion provision intentions and practices of general physicians and the factors that influence their intentions in India. The findings indicate that the majority of general physicians are highly interested in medication abortion training and a significant number intend to provide medication abortion. Medication abortion can help enlarge the number of physicians in India who can provide safe abortions, as extensive infrastructure is not necessary to provide this method of abortion. Since the majority of general physicians work in health facilities based in rural areas and hence are closest to where the majority of women in Bihar and Jharkhand live, heads of health facilities, program planners and policymakers need to work to create interventions to increase the pool of general physicians who can provide medication abortion services. As the results of this study show, these interventions should take into account that health facility level factors influence general physicians over individual provider level factors. Interventions should also address the need to strengthen referral networks; if the physician does not have the skills to provide surgical evacuation of the uterus in case of a failed or incomplete medication abortion, s/he should have access to a facility that can provide back up surgical abortion care. Interventions need to especially target obstetrician-gynecologists who are not providing surgical and/or aspiration abortion methods to urge them to participate in medication abortion training and provision. The results of this study also highlight the need for interventions aimed at obstetrician-gynecologists that are distinct from those directed at general physicians.

Table 3.1 Obstetrician-gynecologists and general physicians in Bihar and Jharkhand				
	Ob-gyns (n=54)		General Physicians (n=88)	
	n	%	n	%
Sex				
female	44	68%	10	20%
male	10	32%	78	80%
Years providing family planning	14.28	(2.44)	16.41	(1.48)
Abortion attitude	7.20	(0.50)	6.83	(0.18)
Provide/help provide abortions				
no	6	27%	23	8%
yes	48	73%	65	92%
Provide surgical/aspiration abortion				
Do not provide MVA/EVA/D&C	15	42%	60	43%
MVA or EVA only	4	4%	3	1%
D&C only	6	13%	9	21%
MVA or EVA and D&C	29	41%	16	34%
Provide abortions using mife-miso				
no	30	69%	75	83%
yes	24	31%	13	17%
Interested in mife-miso training				
no	26	60%	34	41%
yes	28	40%	54	59%
Intend to provide mife-miso in the next year				
not likely	26	71%	63	50%
very or somewhat likely	28	29%	25	50%
Health facility where staffed				
other	20	50%	45	61%
private	34	50%	43	39%
Health facility location				
urban	41	60%	36	27%
rural	13	40%	52	73%
Health facility family planning staff				
one	9	10%	32	23%
two	9	11%	20	25%
three or more	36	79%	36	52%

For categorical variables, unweighted n and weighted percentages are presented.

For continuous variables, average values are presented with standard deviations in parantheses.

Table 3.2 Obstetrician-gynecologists and general physicians distribution of their being supportive or non-supportive of statements reflecting attitudes towards abortion				
Under which of the following conditions or situations do you personally believe a woman should be able to have an induced abortion?	Ob-gyns (n=54)		General Physicians (n=88)	
	supportive n %	not supportive n %	supportive n %	not supportive n %
<i>The woman is unmarried.</i>	53 100%	1 0%	84 93%	4 7%
<i>The pregnancy results from rape</i>	54 100%	0 0%	85 99%	3 1%
<i>The woman's health is endangered by the pregnancy.</i>	54 100%	0 0%	85 99%	3 1%
<i>There is a strong chance of serious defect in the baby.</i>	51 97%	3 3%	84 98%	4 2%
<i>The pregnancy results from contraceptive failure.</i>	51 97%	3 3%	76 95%	12 5%
<i>The woman's husband has not provided consent.</i>	15 38%	39 62%	7 3%	81 97%
The woman does not want another child.	45 72%	9 28%	63 88%	25 12%
The woman cannot afford the child.	45 72%	9 28%	65 88%	23 12%
The woman is more than 20 weeks pregnant.	8 32%	46 68%	11 16%	77 84%
The woman knows the sex of the fetus.	6 13%	48 87%	9 4%	79 96%

Statements in italics are situations where abortion is allowed under the MTP Act

Table 3.3 Odds ratios and 95% confidence intervals from logistic regression analyses identifying factors associated with the intentions of obstetrician-gynecologists and general physicians to provide medication abortion using mifepristone and misoprostol

Characteristic	Ob-gyns (n=54)				General Physicians (n=88)							
	very or somewhat likely n (%)	not likely n (%)	Unadjusted OR	95% CI	Adjusted OR	95% CI	very or somewhat likely n (%)	not likely n (%)	Unadjusted OR	95% CI	Adjusted OR	95% CI
Abortion attitude												
female (Reference)	7.23 (.14)	7.19 (.71)	1.02	0.53 - 1.93	1.71	0.46 - 6.33	7.05 (.26)	6.60 (.16)	1.66	0.75 - 3.67	1.31	0.43 - 3.99
male	13.45 (2.37)	14.62 (3.31)	0.98	0.87 - 1.11	0.88	0.72 - 1.08	14.53 (1.14)	18.30 (1.99)	0.95*	0.91 - 0.99	0.94	0.85 - 1.03
Sex												
female (Reference)	24 (41%)	20 (59%)	1.00		1.00		5 (53%)	5 (47%)	1.00		1.00	
male	4 (4%)	6 (96%)	0.06*	0.01 - 0.44	0.01*	0.00 - 0.39	20 (49%)	58 (51%)	0.86	0.10 - 7.13	1.03	0.10 - 11.08
Health facility type												
other (Reference)	13 (36%)	7 (64%)	1.00		1.00		14 (53%)	31 (47%)	1.00		1.00	
private	15 (22%)	19 (78%)	0.52	0.06 - 4.08	0.25	0.02 - 3.50	11 (45%)	32 (55%)	0.74	0.14 - 3.91	2.23	0.41 - 11.99
Health facility location												
urban (Reference)	21 (33%)	20 (67%)	1.00		1.00		7 (18%)	29 (82%)	1.00		1.00	
rural	7 (23%)	6 (77%)	0.60	0.08 - 4.56	1.29	0.11 - 13.93	18 (62%)	34 (38%)	7.25*	1.46 - 35.93	6.16*	1.12 - 33.77
Health facility family planning staff												
one or two (Reference)	10 (25%)	8 (75%)	1.00		1.00		-	-	-		-	
three or more	18 (30%)	18 (70%)	1.28	0.13 - 12.55	7.12	0.33 - 153.30	-	-	-		-	
Health facility family planning staff												
one (Reference)	-	-	-	-	-	-	7 (20%)	25 (80%)	1.00		1.00	
two	-	-	-	-	-	-	8 (59%)	12 (41%)	5.62*	1.43 - 22.18	4.08	0.38 - 43.27
three or more	-	-	-	-	-	-	10 (59%)	26 (41%)	5.78*	1.40 - 23.98	6.38*	1.29 - 31.48

For categorical variables, unweighted n and weighted percentages are presented.

For continuous variables, average values are presented with standard deviations in parentheses.

Adjusted model for ob-gyns controls for current provision of surgical abortion.

Adjusted model for general physicians controls for currently help provide/provide abortion services

p value *p<.05 **p<.01 ***p<.001

CHAPTER 4

Mid-level health care providers and medication abortion provision in Bihar and Jharkhand, India

INTRODUCTION

Even though abortion is legal for broad indications in India, women find access to safe abortion services difficult due to the limited availability of trained providers (31). Rates of maternal mortality and morbidity due to unsafe abortions are high in the country (31). Current abortion policies in India exclude non-physicians from being trained as abortion providers. Only registered physicians meeting specific training and experience requirements at hospitals or clinics approved by the government may provide abortion services in India (25). To help solve the problem of maternal mortality and morbidity caused by unsafe abortion, experts in the field recommend increasing women's access to abortion by increasing the numbers of properly trained and adequately equipped personnel using methods that have been proven to be safe. The World Health Organization (WHO) recommends further that abortion services be provided at the lowest appropriate level of the health care system (11). Around the world, interest in involving mid-level health care providers in a variety of medical roles including early (first trimester) abortion provision has been increasing. The term 'mid-level provider' usually refers to a wide range of non-physician health care providers (physician assistants, nurses, midwives and others) who differ in training and

responsibilities from country to country but have the training to provide basic clinical procedures including those related to reproductive health (11).

Recent international studies including those conducted in India show that medication abortion – abortion induced using pharmacological agents to terminate the pregnancy- offers a safe, effective and acceptable option in addition to aspiration and surgical methods (39-44). Medication abortion using a regimen of mifepristone and misoprostol was approved by the Drug Controller of India in April 2002 for pregnancies up to 49 days gestation (127). Approval of the medication abortion regimen provides an opportunity to expand women’s service options for safe abortions in India.

Little evidence exists on mid-level provider interest in providing medication abortion services or the views of physicians on the participation of mid-level providers in medication abortion provision, especially in India (72, 91, 103, 127). The study described in this article aims to understand the potential for mid-level provider participation in legal medication abortion provision in Bihar and Jharkhand, India. Understanding the views of mid-level providers and physicians with regards to medication abortion provision in India is necessary to improve abortion services in an environment where legal providers are difficult to access and rates of maternal mortality due to unsafe abortion are high.

Abortion situation in India

India is a country where abortion is legal but access to safe abortion care is difficult for women due to a variety of barriers related to the country’s abortion legislation, the health system and the sociocultural and economic status of women (19, 31). Annually an estimated 540 maternal deaths occur per 100,000 live births in the country (128). Unsafe abortion is a significant cause of maternal deaths, estimated to

account for about 9% - 20% of the total (19-22, 44). In 1971, the Medical Termination of Pregnancy (MTP) Act was passed in India in response to the high levels of maternal mortality and morbidity associated with illegal abortions (19). Although the MTP Act legalized abortion under certain social and medical conditions, morbidity and mortality related to unsafe abortions remain major public health challenges for India close to four decades later. An estimated six million induced abortions are carried out in India every year, with as many as eight illegal abortions for every legal procedure (19, 24). Safe abortion services are offered in India in rural and urban areas of the country through a variety of health facilities, which include government institutions, private hospitals, clinics and nursing homes and a few health facilities run by non-governmental organizations. However, even where licensed facilities exist, they may not provide abortions because of inadequate equipment or supplies or lack of available providers who are sufficiently trained or confident in performing abortions (19, 24). In India, legally only obstetrician-gynecologists and registered general practitioners (MBBS doctors) can provide abortions in facilities that have been certified by the government. Shortages of licensed facilities and practitioners who can provide safe abortion services exist throughout India, and the scarcity is especially pronounced in rural areas where three-quarters of the population of India live (19, 128). Rural areas are largely served by untrained abortion providers (60). Studies have shown that the abortion providers most accessible to women in India tend to be unauthorized, untrained or both; such providers may include nurses, traditional birth attendants, rural medical practitioners, physicians without proper training and others (31).

Mid-level providers and abortion provision

In recent years, the WHO and other international bodies have supported expanding the role of mid-level providers in early (first trimester) abortion provision

(11). Training mid-level providers can be an important step in increasing access to safe abortion services, as these providers are more numerous than doctors in most regions, they live and work in closer proximity to where most women live and they can often offer more affordable services compared to physicians (11, 71, 75). A randomized trial comparing the safety of first-trimester manual vacuum aspiration abortions by physicians and mid-level providers carried out in outpatient clinics in South Africa and Vietnam found that abortions performed by mid-level providers were comparable to those done by physicians in terms of safety and acceptability (76). Legally, non-physicians have been providing surgical abortion in Vietnam since 1945 and in South Africa since 1996 (74). Mid-level providers have been successfully involved in abortion care in Sweden and in the state of Vermont in the United States (73). A major barrier preventing mid-level providers from participating in safe abortion care provision is that in most countries the training and authorization to perform abortions and related procedures are restricted to physicians (73).

Medication abortion

To safely and effectively terminate pregnancy during the first trimester of pregnancy the WHO recommends vacuum aspiration and medication abortion (11, 37). Vacuum aspiration can include manual vacuum aspiration (MVA) or electric vacuum aspiration (EVA). If medication abortion is used, a combination of mifepristone and a prostaglandin is recommended for up to 63 days since first day of last menstrual period (LMP) (11, 38). The WHO recommends that dilation and curettage (D&C) should only be used when neither aspiration nor medication abortion is available (11).

Despite the safety and effectiveness of aspiration and surgical abortion, women around the world continue to have difficulty accessing safe abortion services and

continue to obtain procedures under unsafe conditions. Recent international studies show that medication abortion offers a safe, effective and acceptable option in addition to aspiration and surgical methods of abortion (39-44). The WHO recommends a regimen of 200 mg of mifepristone given orally, followed 36–48 hours later by a prostaglandin (either 0.8 mg of misoprostol or 1 mg of gemeprost) given vaginally up to 63 days of gestation (38).

Only in the past two decades have evidence-based regimens for the use of pharmacological drugs in terminating first trimester pregnancies come into existence. Few countries have developed guidelines for medication abortion provision as the regimen has undergone several modifications based on the most recent research evidence, often leaving clinicians confused regarding contraindications to medication abortion, appropriate counseling, the use of ultrasound to confirm complete abortion and the most appropriate dose and route of administration (45). The government of India is currently developing guidelines.

Medication abortion has the potential to expand not only abortion method choice, but also women's access to safe abortion services by increasing the number, types and geographic distribution of abortion providers (77, 78). In contrast to surgical abortion, medication abortion has the potential to offer clear opportunities for trained and supervised mid-level providers to perform early induced abortion (77). In addition to the necessary policy changes, for mid-level providers to participate in medication abortion provision, an enabling environment, which includes the support of physicians, is very critical. Mid-level providers also need to be offered training in appropriate clinical skills (73). Clinical skills needed to provide medication abortion include: physical and psychological evaluation of the patient, pregnancy diagnosis and dating, informing and counseling the woman about her options, administering drugs, monitoring the woman's

recovery, counseling her about postabortion contraceptive options, seeing her for follow-up care and performing/referring for surgical evacuation of the uterus in cases of method failure (73).

In a country like India where abortion related morbidity and mortality are high and the health infrastructure does not allow for easy access to safe surgical abortions, medication abortion has the potential to greatly improve abortion safety and access. Medication abortion provision does not require extensive infrastructure and can be offered in settings where surgical or aspiration methods are not widely available. Women in India have reported the fear of instruments and the invasiveness of surgical abortion as reasons for not seeking abortions in health care facilities; young unmarried women in India have reported being especially fearful of D&C (60, 61). Studies in India have shown that medication abortions are feasible and acceptable to women living in both urban and rural settings. Medication abortion is non-invasive and women have greater control and privacy compared to other methods of abortion.

Research suggests that many of the barriers to accessing safe abortions are at the health facility and individual health care provider levels. Understanding the characteristics of health facilities and health providers in relation to their facilitating or hindering abortion services provision is needed as both levels of the health care system have a significant role in easing or impeding the access women have to safe abortion services. Conducting research to identify determinants of provider intentions and behaviors may help explain variations in health care provision across providers and health care organizations. Identifying such determinants may help detect particular approaches for changing behavior or point to relatively unchangeable factors that should be taken into account when designing or evaluating health care.

Few researchers have attempted to understand what factors influence provider intentions to participate in abortion services provision. Also lacking are studies from developing countries on the views of mid-level providers with regards to their own participation in abortion provision and the attitudes of physicians regarding mid-level provider participation in abortion provision. Behavioral theorists have identified attitudes, perceived norms and self-efficacy as important determinants of people's intentions to engage in a particular behavior (119). Fishbein's integrative model of behavioral prediction suggests that a given behavior is most likely to occur if one has a strong intention to perform the behavior, if one has the necessary skills and abilities required to perform the behavior, and if there are no environmental constraints preventing the performance of that behavior. Physician attitudes are important to understand, as they may be part of the environmental constraints that mid-level providers face when deciding to participate in abortion provision. The model further suggests that if one has formed a strong intention to perform a given behavior and all the other factors mentioned also hold true, then the probability is close to one that the behavior will be performed (119).

This study aims to establish an understanding of the potential participation of mid-level providers in medication abortion provision in Bihar and Jharkhand by 1) investigating and identifying provider level and health facility level factors associated with the intention of mid-level providers to participate in medication abortion training for early abortion and 2) examining whether obstetrician-gynecologists and general physicians have supportive attitudes towards non-physicians participating in early medication abortion provision and what individual provider level and health facility level factors influence these attitudes.

Study setting

The former state of Bihar in India was divided into the separate states of Bihar and Jharkhand in 2000. Nearly 85% of the population in Bihar and 75% of those residing in Jharkhand live in rural areas (130, 131). Bihar and Jharkhand have relatively poor socioeconomic and health indicators compared to other states in India including high rates of poverty, illiteracy and infant and child mortality (130, 131). Bihar and Jharkhand also have relatively high total fertility rates (TFR), high unmet need for family planning and low numbers of deliveries in medical facilities (130). Both states also have high estimated rates of abortion, yet have limited facilities offering abortion services (19, 70, 123). Data from 1991-92 show that the former state of Bihar, where 10% of India's population lived had about 2% of India's licensed abortion facilities. In comparison the state of Gujarat, which made up only 5 % of the population of the country had close to 10% of the country's abortion facilities (19, 68).

METHODS

Study Design and Data Collection Procedures

The data utilized in this study come from the second phase of a larger evaluation project seeking to assess the overall level of effectiveness and cost-effectiveness of clinic franchising programs in improving the delivery of family planning services and increasing the use of contraception among individuals (124). The project applied a multistage cluster sample design to the entire area making up the former state of Bihar (except for some districts that were politically unsafe for fieldwork) to obtain samples of health facilities and their health staff in areas that are a part of the current states of

Bihar and Jharkhand. Between May and August 2004 surveys of health facilities and their health staff were piloted and then carried out in the two states.

As part of the sampling strategy, districts in the former state of Bihar's six regions were first listed and two were selected probability proportional to size for each region. The district was then divided into urban and rural strata and within the rural strata, into villages. Villages were selected probability proportional to size, and all contiguous villages surrounding the selected village were identified. All health facilities in the cluster of villages were selected into the sample. In the urban stratum, the ward containing the district capital was selected with unity and two other wards were randomly selected. Ward clusters were formed with the selected ward and the surrounding contiguous ones. All health facilities within the ward clusters were selected and asked to participate. Due to the design of the study, large hospitals with more than fifty beds were excluded.

Health facility managers were approached by a pair of male and female field interviewers to consent to the interview. All health staff members in the facilities were enumerated and all authorized to provide family planning services and who consented to participate were interviewed if present. Male field staff interviewed male health care providers and female field personnel interviewed female providers. The 2004 sample of health facilities is composed of three subsamples: 864 health facilities from the 2001 sample that were successfully followed up; 304 health facilities newly selected from the 12 original 2001 districts; and 178 health facilities selected from 3 new districts in Jharkhand to provide representation for the new state for a final total sample of 1,346 health facilities. All authorized family planning providers who were present were interviewed for an achieved sample of 2,039 staff. The response rate for family planning providers was 84%.

Measurement

The larger project from which the study data come was concerned with evaluating franchised health services in Bihar and Jharkhand. The health facility survey questionnaire aimed to measure service activity and features. Heads of health facilities were personally interviewed about the types of reproductive health services and commodities acquired and provided, client load and the number, type and service capacity of the staff on hand. The health staff questionnaire documented family planning provider's sociodemographic characteristics, provider training experience, training quality, referral behaviors, knowledge of abortion legislation, attitudes towards abortion, preferences for who should be providing abortions, and abortion related practices. A separate medication abortion module of questions was developed and added to the 2004 health facility staff questionnaire.

Dependent variables

The first outcome of interest in this study is: *interest in attending mifepristone-misoprostol training for early abortion* among mid-level providers. To create this variable, the question "If a seminar or training on mifepristone and misoprostol for early abortion were offered in the future, would you be interested in attending?" was used. All providers were asked this question. The providers could respond either yes or no.

Ob-gyn and general physician *attitude towards non-physicians being eligible to be trained to provide early medication abortion services* is the second outcome of interest. This variable was created using the question asked of all providers: "Should health care providers other than physicians be eligible to be trained and to provide early medical abortion?" 'Yes' responses were coded as supportive and 'no' as not supportive.

Independent variables

Health care provider level and health facility level independent variables are described below. Not all predictor variables are included in every equation.

At the family planning provider level, independent variables of interest were: *attitude towards abortion*, *sex*, *current abortion provision using pharmacological drugs*, and *current abortion provision using mifepristone-misoprostol*.

Attitude towards abortion: This measure was created by first making an additive index. The index was constructed by assigning a score of 1 for each yes and a score of 0 for each no answer to the question "Under which of the following (ten) conditions or situations do you personally believe a woman should be able to have an induced abortion" (see Appendix 1). The index ranges from 0 to 10 with higher numbers indicating a more permissive attitude towards abortion as the respondent has responded yes to more situations in which a woman should be able to have an abortion. The abortion attitude variable was then coded as a three category variable with the modal attitude score (7 on a scale of 0 to 10) among all family planning providers labeled as 'permissive', all scores less than the modal score labeled as 'less permissive' and those scores higher than the modal score as 'more permissive'.

Current abortion provision using mifepristone-misoprostol and current abortion provision using pharmacological drugs: Each family planning staff member was asked, "Do you provide (or help provide) any kind of abortion services?";[If yes] "Which services do you provide?" The providers could choose from any or all of the following abortion methods: MVA, D&C, EVA and medical abortion (mifepristone-misoprostol). A two-category variable *current abortion provision using mifepristone-misoprostol* was created from this

question and coded as yes if the provider indicated they provide medication abortion using mifepristone-misoprostol or no if they do not. In another part of the survey all providers were also asked "Do you currently use any pharmacological drugs in your practice to induce abortions?". This question was used to create the two category measure, *current abortion provision using pharmacological drugs* which was coded as yes or no.

Sex: Interviewers marked the sex of the family planning providers.

Education (a three-category variable coded as none to ninth grade education, tenth complete, or twelfth complete and more) is a control variable in one of the models. Interviewers asked each provider his or her *age* in years. *Age* is a control variable in all three models. *Sex* is a control variable for two of the models.

Health facility level independent variables of interest in this study include: *type of health facility where staffed, obstetrician-gynecologists and general physicians on staff at health facility, and mid-level providers on staff at health facility.*

Type of health facility where staffed is a measure created by combining twelve different service delivery points marked by the interviewer. The three-category measure for *type of health facility* is coded as: government facility, private facility, or other (which is made up of franchised NGOs, NGOs, medical store and private unqualified health facilities).

Health facility obstetrician-gynecologists on staff, general physicians on staff and mid-level providers on staff: All heads of health facilities were asked "How many staff members provide health care at this hospital/clinic/shop"? The list of sixteen different

provider types included obstetrician-gynecologists, general physicians and different types of mid-level providers. *Obstetrician-gynecologists and general physicians on staff* is a dichotomous measure created from the question above and coded as no (none on staff at health facility) or yes (one or more on staff). *Mid-level providers on staff* is a two-category measure coded as no (none on staff) or yes (one or more on staff). *Location of health facility* is a control variable in all models. The interviewer marked the *location of health facility* as rural or urban as directed by the sampling team.

Data Analyses

Data were analyzed using Stata 9.2 statistical software. All data analyses were weighted and adjusted to take into account the clustered sampling design using Stata's survey analysis (svy) commands. The 2004 health facility data were merged with the 2004 provider level data to create a merged dataset for analysis purposes. Three subpopulations were created for analysis purposes: mid-level providers, obstetrician-gynecologists and general physicians. Mid-level providers in this study include nurses, paramedics, auxiliary nurse midwives (ANMs), lady health visitors (LHVs), and male health workers (MHWs) (unweighted n=263). ANMs, LHVs, and MHWs work at government facilities only. Obstetrician-gynecologists included physicians who stated their position was obstetrician-gynecologist and had a MD/MS/DNB in Obstetrics and Gynecology or a Postgraduate Diploma in Obstetrics and Gynecology (unweighted n=54). General physicians are those doctors who self-reported they were general physicians and stated they had an MBBS degree (n=88).

The first outcome of interest in this study is mid-level provider *interest in attending mifepristone-misoprostol training for early abortion*. Bivariate analyses using simple logistic regression examined associations between this outcome and selected

health facility level and provider level variables. Multivariate logistic regression was used to assess the association of the dependent variable *interest attending mifepristone-misoprostol abortion training* among mid-level providers and the independent variables: *sex, attitude towards abortion, current abortion provision using pharmacological drugs, type of health facility where staffed, and obstetrician-gynecologists and general physicians on staff at health facility*. The model controlled for: Mid-level provider *age, education, and location of health facility where staffed*.

The second outcome of interest is *attitude towards non-physicians being trained to provide early medication abortion services* among obstetrician-gynecologists and general physicians. Associations between this outcome and selected health facility level and provider level variables were first examined using bivariate analyses. Two separate logistic regression models were used to estimate the relationship between the outcome *attitude towards non-physicians being trained to provide early medication abortion* and the independent variables, *attitude towards abortion, current abortion provision using mifepristone-misoprostol, mid-level providers on staff, and type of health facility where staffed*, first among obstetrician-gynecologists and then among general physicians.

RESULTS

Characteristics of family planning providers

The majority of family planning providers in Bihar and Jharkhand hold permissive attitudes regarding who should be allowed to access abortion services. Overall, 15% of mid-level providers, 45% of obstetrician-gynecologists, and 16% of general physicians

fall into the most permissive attitudes group about who should be able to have an abortion compared to the attitudes of all family planning providers in the survey (Table 4.1). The majority of mid-level providers, obstetrician-gynecologists and general physicians reported providing or having helped provide abortion services in Bihar and Jharkhand: 92% of general physicians, 73% of obstetrician-gynecologists, and 55% of mid-level providers reported doing so. Twelve percent of mid-level providers reported providing abortions using pharmacological drugs. A little less than half of all obstetrician-gynecologists reported using pharmacological drugs to provide abortion services and 31% reported providing abortion using mifepristone-misoprostol. Thirty percent of general physicians report providing abortions using pharmacological drugs, with only 17% overall reporting mifepristone-misoprostol use. Most mid-level providers were staffed at government health facilities, whereas the majority of ob-gyns and general physicians worked at non-government facilities. Mid-level providers and general physicians mostly worked at health facilities based in rural areas in Bihar and Jharkhand whereas the majority of obstetrician-gynecologists practiced in health facilities located in urban areas.

Mid-level provider interest in attending mifepristone-misoprostol training

Table 4.2 shows the results of bivariate and multivariate analyses examining the relationship between the outcome *interest in attending mifepristone-misoprostol training for early abortion* among mid-level providers and various provider level and health facility level characteristics. Overall, 74% of mid-level providers showed interest in attending medication abortion training for early abortion. Although, a high percentage of both male and female mid-level providers showed interest in training, a significantly higher percentage of male mid-level providers (94%) reported being interested compared to female providers (70%). Ninety percent of mid-level providers who

reported providing abortions using pharmacological drugs at the time of the survey showed interest in attending medication abortion training. Close to half of mid-level providers staffed in private health facilities and over three-quarters of those working in government facilities showed interest in attending training on mifepristone-misoprostol for early abortion. Bivariate analyses showed there were no significant differences between those mid-level providers interested in attending mifepristone-misoprostol training for early abortion compared to those not interested in training by *attitude towards abortion, current abortion provision using pharmacological drugs, type of health facility where staffed, and obstetrician-gynecologists and general physicians on staff at health facility*. Sex of the provider is the only one out of the five variables of interest included in the logistic regression analyses which is statistically significant at the bivariate level with the outcome, *interest in attending mifepristone-misoprostol training for early abortion* among midlevel providers.

In the multivariate logistic regression model, provider *sex, attitude towards abortion, current abortion provision using pharmacological drugs, and type of health facility where staffed* were associated with mid-level provider *interest in attending mifepristone-misoprostol training for early abortion* (after controlling for provider *age, education and health facility location* where staffed). Mid-level providers who were male were much more likely to show interest in training compared to female providers (OR 5.79, $p < .05$). Mid-level providers reporting more permissive abortion attitudes were significantly more likely to have reported being interested in medication abortion training compared to those with less permissive attitudes (OR 5.06, $p < .05$). Current providers of abortions using pharmacological drugs were more likely in comparison to mid-level providers who did not provide abortion using such drugs to be interested in attending medication abortion training (OR 4.50, $p < .05$). Furthermore, mid-level providers staffed at private health facilities were much less likely to intend to participate in medication

abortion training for early abortion compared to providers working at government facilities (OR 0.05, $p < .05$).

Physician attitudes towards non-physician medication abortion provision

Bivariate analyses (Table 4.3) indicated that among obstetrician-gynecologists, significant differences were found between those who were supportive versus not supportive of non-physicians being eligible to be trained to provide medication abortion by *attitude towards abortion* and *health facility mid-level providers*. Overall 34% of obstetrician-gynecologists held a supportive attitude towards non-physicians being eligible to be trained to provide early medication abortion. However, 95% of ob-gyns with the most permissive attitudes were not supportive of non-physician participation in medication abortion provision. Only 11% of those obstetrician-gynecologists who worked with mid-level providers at their health facility were supportive of non-physicians being eligible to be trained to provide early medication abortion compared to 82% of ob-gyns who did not work with any mid-level providers showing a supportive attitude. Among general practitioners, 58% were supportive overall of non-physicians participating in early medication abortion provision.

Multivariate analyses results show for obstetrician-gynecologists that the provider level variables *attitude towards abortion* and *current abortion provision using mifepristone-misoprostol* were significantly associated with the outcome of interest, *attitude towards non-physicians being eligible to be trained to provide early medication abortion*. Ob-gyns with the most permissive attitudes (OR 0.01, $p < .05$) and those who provided abortions using mifepristone-misoprostol (OR 0.03, $p < .05$) at the time of the survey were substantially less likely to be supportive of non-physician participation in early medication abortion provision compared to those with less permissive attitudes

towards abortion and those who did not use mifepristone-misoprostol in their practice to provide abortions, respectively (after controlling for provider *sex, age* and *location of health facility* where the physician worked).

Bivariate analyses found significant differences among those general physicians who were supportive versus those who were not supportive of non-physician participation in early medication provision depending on the health facility where they were staffed. A slightly lower percentage of general physicians working at private facilities were supportive compared to those working in government facilities.

Among general physicians, (after controlling for provider *sex, age* and *location of health facility* where staffed), the results of multivariate analyses found that general physicians who worked for private (OR 0.02, $p < .01$) or other types of health facilities (OR 0.04, $p < .05$) were significantly and substantially less likely to be supportive of non-physician participation in early medication abortion provision compared to those staffed at government facilities.

DISCUSSION

Mid-level providers

Very limited research exists on abortion provision in India, especially literature related to mid-level providers. The findings of this study show that the majority of mid-level providers in Bihar and Jharkhand were interested in participating in training to provide early abortion using mifepristone-misoprostol.

According to the results of this study, sex was one of the variables most strongly associated with mid-level providers showing interest in medication abortion training. Male mid-level providers were more likely to show interest in training compared to their female counterparts. This result goes counter to our expectation that female providers would be more likely to intend to participate in medication abortion training based on previous research. No published studies to our knowledge have explored the relationship between mid-level provider sex and their intentions or practices related to abortion training in India. Past research in the US and Canada has suggested sex can be an important factor in trying to understand health care provision for gender related health care needs and conditions (79). While, previous research has been inconsistent with regards to explaining the relationship between sex of provider and abortion related attitudes and practices, female physicians in the US have been shown to be more likely to have favorable attitudes towards abortion (87), intend to provide and provide surgical abortion (87), intend to provide medical abortion (92, 93) and provide a correct prescription for emergency contraception (94). A study of nurse practitioners, physician assistants and certified nurse-midwives in the United States found sex of the provider was not associated with their desire for medication abortion training (91). A study of medical residents in the US found that provider sex was not associated with their intention to provide abortions or their clinical experience with first-trimester abortion provision. A study in Pakistan found female general physicians were more likely to provide reproductive health services in their clinics compared to male physicians (95). The finding in this study of male mid-level providers being more likely to be interested in medication abortion training might be explained by the mere fact that males in this area are traditionally the main income generators and they may want to partake in learning new skills to increase their income potential.

Abortion attitude was also found to be strongly associated with mid-level provider intentions to participate in mifepristone-misoprostol training for early abortion. Mid-level providers in the most permissive category were more likely to intend to participate in training compared to providers in the least permissive category. This result is consistent with findings from research conducted in the United States among nurse practitioners, physician assistants and certified nurse-midwives; favorable personal abortion attitudes were found to be associated with desiring medication abortion training (91). Very little research has been conducted on provider attitudes and abortion provision in India and this finding is an important contribution to the literature.

Results of our study indicated that those mid-level providers who reported providing abortions using pharmacological drugs at the time of the survey were more likely to want to participate in medication abortion training compared to those who did not provide abortion services using medication. Not only do a high number of mid-level providers in this area want to participate in medication abortion training for early abortion, but those who are providing it already are more likely to want to learn the correct skills to provide medication abortion for their clients. Research has suggested that much of the unsafe abortion in the country is due to abortions provided by untrained individuals. Mid-level providers in this area seem to want to be trained properly if the opportunity to acquire such training exists.

The type of health facility where the mid-level provider works is found in this study to be associated with whether or not s/he is interested in medication abortion training for early abortion. Working at private facilities is associated with lowering the likelihood that mid-level providers show interest in mifepristone-misoprostol training compared to working at government facilities. Private facilities are for-profit entities where mid-level providers most likely have more clearly delineated roles and there is less scope for change.

Surprisingly, whether or not the health facility where the mid-level providers worked had an obstetrician-gynecologist or general physician on staff was not found to be associated with mid-level provider interest in medication abortion training for early abortion. We had expected that providers that work at facilities with no physicians on staff might be more likely to want to be trained to provide medication abortion services as they may have wanted to learn the skills necessary to satisfy the needs of abortion seekers in their communities.

Physicians

Overall physicians in Bihar and Jharkhand were fairly supportive with regards to non-physicians being eligible to be trained to provide medication abortion services for early abortion. The results have to be interpreted keeping in mind the limitation that the subsamples of ob-gyns and general physicians were small and hence the standard errors large and the confidence intervals subsequently quite wide.

The study findings underscore the stark differences between obstetrician-gynecologists and general physicians in this area in terms of a variety of provider level and health facility level characteristics and the factors that influence their attitudes towards non-physician's participating in medication abortion provision. General physicians were more supportive compared to obstetrician-gynecologists: more than half of general physicians and a little over a third of ob-gyns in the study held supportive attitudes towards non-physician participation in early medication abortion provision. General physicians largely work for rural based health facilities and hence see the need for increasing access to safe abortion care for women; non-physician participation in abortion provision is one way to do this. The majority of obstetrician-gynecologists were female whereas 95% of general physicians were male. Ob-gyns practiced mostly

in urban areas whereas general physicians worked at health facilities based in rural areas. A higher percentage of general physicians reported providing or helping to provide abortion services compared to ob-gyns, which was an unexpected result. This result is perhaps due to the fact that most general physicians are based in rural areas where there are few ob-gyns and they must work to meet the demand for abortion services as the majority of the population lives in rural areas. Ob-gyns in urban areas must have more choice as to what services they do and do not provide and must specialize more in terms of what they provide due to competition with their peers.

The study results showed that the characteristics influencing the attitudes of physicians with regards to their support of non-physician participation in medication abortion were different for ob-gyns versus general physicians in Bihar and Jharkhand. Individual level factors (attitude towards abortion and current provision of abortion using mifepristone-misoprostol) influenced ob-gyn attitude towards non-physician participation in medication abortion provision, whereas for general physicians, the health facility level factor, type of health facility where they were staffed was the most significant factor affecting their attitude. Ob-gyns who are providing abortions using mifepristone-misoprostol may be less supportive of other health care providers being eligible to provide medication abortion due to simple economic reasons. The more providers there are, the more competition there is and the lower their monetary gain. Furthermore, obstetrician-gynecologists may feel territorial, as abortion has been a service they have traditionally provided. General physicians working in private or other types of health facilities were less likely to be supportive on non-physician participation in medication abortion provision compared to those working in government health facilities. Economic reasons (lowering of profit potential with more competition) may be a factor that can explain these results.

Limitations

The present study has several limitations. Some limitations are inherent to using survey data. Using surveys to elicit information on provider attitudes and behavior may lead to social desirability bias (126); health care providers may feel pressured to give a socially desirable answer that may not reflect the true situation. For example, providers may try to answer the abortion attitude and intentions related to medication abortion questions in a way they may think is what the interviewer wants to hear or what they think is the norm for the area where they practice. Health facility managers (who answered the questions for the health facility surveys) may also try to answer in a way that makes their facility stand out compared to other facilities.

This study also has limitations in terms of the variables that could be included in the analyses as the measures that could be constructed are limited by the data available. Medication abortion related *cost to client* information and *provider profit potential* data were not collected by the survey. A study conducted in Bihar and Jharkhand, which used in-depth interviews of physicians, found indirect suggestions of medication abortion being less profitable than surgical abortion; three out of the eleven providers said that medication abortion could not substitute financially for surgical or aspiration abortion (70). This suggests that provider views on their profit potential may influence their intentions to offer medication abortion.

Another limitation relates to the generalizability of the study to health care providers and facilities in Bihar and Jharkhand as a whole. As clinics with more than 50 beds were excluded from being surveyed in the sampling design, these health facilities and the health care providers that work there were not surveyed. Findings may therefore not be generalizable to all health care providers and facilities in the two states.

A final limitation is the cross-sectional nature of this study. Cross-sectional studies can investigate associations between various factors and the outcome of interest. However, because they are carried out at one time point and can give no indication of the sequence of events, it is impossible to infer causality.

Conclusion

Despite the limitations above, the study results can help to target various stakeholders in Bihar and Jharkhand with regards to medication abortion training and information dissemination. The study findings demonstrate mid-level provider interest and a reasonable amount of physician support of non-physician provider involvement in medication abortion provision. Policymakers should take this opportunity to consider expanding the pool of cadres that can be legally trained to provide safe abortion care. Physicians are fairly supportive of non-physicians being trained to provide medication abortion, but if policymakers want to pave the way for mid-level involvement in medication abortion provision, interventions to increase their supportive attitude are necessary, especially the attitudes of obstetrician-gynecologists. The physician results also underscore the need for specifically targeted interventions for obstetrician-gynecologists that are distinct from general physicians.

	Mid-level providers (n=263)		Ob-gyns (n=54)		General Physicians (n=88)	
	n	%	n	%	n	%
Sex						
female	225	82%	44	68%	10	20%
male	38	18%	10	32%	78	80%
Age	38.33 (1.07)		43.87 (2.54)		47.31 (1.99)	
Abortion attitude						
less permissive	102	32%	16	30%	30	20%
permissive	112	53%	18	25%	44	64%
highly permissive	49	15%	20	45%	14	16%
Provide/help provide abortion services						
no	102	45%	6	27%	23	8%
yes	161	55%	48	73%	65	92%
Provide abortions using pharma drugs						
no	237	88%	28	52%	67	70%
yes	26	12%	26	48%	21	30%
Provide abortions using mife-miso						
no	249	96%	30	69%	75	83%
yes	14	4%	24	31%	13	17%
Health facility where staffed						
govt	146	57%	7	17%	18	20%
private	45	14%	34	50%	43	39%
other	72	29%	13	33%	27	41%
Health facility location						
rural	183	73%	13	40%	52	73%
urban	80	27%	41	60%	36	27%

For categorical variables, unweighted n and weighted percentages are presented.

For continuous variables, average values are presented with standard deviations in parantheses.

Table 4.2 Odds ratios and 95% confidence intervals from logistic regression analyses identifying factors associated with mid-level provider interest in attending mifepristone-misoprostol training for early abortion						
Characteristic	(n = 263)		Unadjusted		Adjusted	
	Interested n (%)	Not Interested n (%)	OR	95% CI	OR	95% CI
Sex	193 (74%)	70 (26%)				
female (Reference)	163 (70%)	62 (30%)	1.00		1.00	
male	30 (94%)	8 (6%)	6.23**	1.81 - 21.50	5.79*	1.33 - 25.19
Abortion attitude						
less permissive (Reference)	68 (70%)	34 (30%)	1.00		1.00	
permissive	88 (74%)	24 (26%)	1.21	0.30 - 4.81	1.72	0.55 - 5.42
more permissive	37 (84%)	12 (16%)	2.23	0.50 - 10.02	5.06*	1.14 - 22.38
Provide abortions using pharma drugs						
no (Reference)	170 (72%)	67 (28%)	1.00		1.00	
yes	23 (90%)	3 (10%)	3.40	0.43 - 26.96	4.50*	1.15 - 17.72
Health facility where staffed						
govt (Reference)	105 (77%)	41 (23%)	1.00		1.00	
private	32 (49%)	13 (51%)	0.28	0.05 - 1.62	0.05*	0.01 - 0.55
other	56 (80%)	16 (20%)	1.21	0.34 - 4.31	0.61	0.15 - 2.47
Health facility ob/gyns or gen docs on staff						
no, none (Reference)	98 (76%)	30 (24%)	1.00		1.00	
yes, one or more	95 (72%)	40 (28%)	0.82	0.24 - 2.73	0.97	0.30 - 3.10

Unweighted n and weighted percentages are presented.

Adjusted model controls for provider age, provider education, and health facility location where provider is staffed.

p value *p<.05 **p<.01 ***p<.001

Characteristic	Ob-gyns (n=54)						General Physicians (n=88)					
	Supportive n (%)	Not Supportive n (%)	OR	95% CI	Unadjusted	Adjusted	Supportive n (%)	Not Supportive n (%)	OR	95% CI	Unadjusted	Adjusted
Abortion attitude												
less permissive (Reference)	7 (86%)	9 (14%)	1.00				16 (46%)	14 (54%)	1.00			
more permissive	7 (25%)	11 (75%)	0.05*	0.01 - 0.54	0.00 - 1.48	0.00 - 0.35	24 (56%)	20 (44%)	1.53	0.24 - 9.93	0.16 - 3.48	
more permissive	4 (5%)	16 (95%)	0.01***	0.00 - 0.09	0.00 - 0.35	0.00 - 0.35	7 (79%)	7 (21%)	4.56	.42 - 49.69	0.54 - 236.28	
Provide abortions using mife-miso												
no (Reference)	11 (44%)	17 (56%)	1.00				40 (54%)	35 (46%)	1.00			
yes	7 (12%)	19 (88%)	0.18	0.02 - 1.66	0.00 - 0.48	0.00 - 0.48	7 (76%)	6 (24%)	2.72	0.41 - 18.16	0.30 - 5.18	
Health facility where staffed												
govt (Reference)	2 (17%)	5 (83%)	1.00				9 (59%)	9 (41%)	1.00			
private	12 (24%)	22 (76%)	1.50	0.08 - 27.29	0.05 - 14.73	0.05 - 14.73	23 (55%)	20 (45%)	0.13*	0.03 - 0.61	0.00 - 0.18	
other	4 (58%)	9 (42%)	6.54	0.37 - 114.98	0.41 - 217.36	0.41 - 217.36	15 (58%)	12 (42%)	0.62	0.13 - 2.92	0.00 - 0.47	
Health facility midlevel providers												
no, none (Reference)	6 (82%)	10 (18%)	1.00				35 (61%)	22 (39%)	1.00			
yes, one or more	12 (11%)	26 (89%)	0.03**	0.00 - 0.25	0.00 - 1.21	0.00 - 1.21	12 (55%)	19 (45%)	0.79	0.13 - 4.78	0.05 - 1.33	

Unweighted n and weighted percentages are presented.

Adjusted models control for provider sex, provider age and health facility location where provider is staffed

p value *p<.05 **p<.01 ***p<.001

CHAPTER 5

Conclusions

Summary of Research Findings

This dissertation aimed to describe a variety of health facility level and health care provider level characteristics associated with the medication abortion related attitudes, intentions and practices of health care providers in Bihar and Jharkhand, India. While the data for this dissertation came from Bihar and Jharkhand, this research attempted to address the larger research gaps with regards to understanding the factors that influence provider participation in abortion provision in a setting like India where abortion is legal under broad indications but access to safe abortion care is difficult for women there. A dearth of research exists trying to understand what factors influence physician intentions to offer medication abortion services. Also lacking are studies on the views of mid-level providers with regards to their own participation in medication abortion provision. No studies in India have explicitly explored the attitudes of mid-level providers regarding abortion and whether physicians in India are supportive of non-physician involvement in medication abortion provision. This dissertation research was conducted to help identify characteristics which may help explain the variations in medication abortion related attitudes and intentions among different health care providers and across different types of health facilities. Identifying such factors can help point to changeable and relatively unalterable factors that should be taken into account

when designing policies and programs to ensure the availability of safe abortion services for women in India.

This chapter starts by reviewing and summarizing each dissertation aim and ends with a discussion of the study limitations and strengths and the policy and programmatic implications of the research findings.

Aim 1

To describe the availability of early abortion services (surgical, aspiration and medication) in Bihar and Jharkhand and the health facility level factors and health care provider level factors that may potentially affect the provision of these services based on variables identified in the literature and behavioral theory. This will be accomplished by describing: 1) the types of health facilities located in Bihar and Jharkhand and the abortion related services provided by the health facilities; 2) the characteristics of health facilities that are associated with early abortion provision by those facilities; 3) the sociodemographic characteristics and abortion related knowledge, attitudes, intentions and practices of different cadres of family planning providers practicing in Bihar and Jharkhand; and 4) the characteristics of health care providers that are associated with their provision of early abortion services

The results of this study contribute essential descriptive information on the availability of abortion services in Bihar and Jharkhand and the health facility level and family planning provider level factors that could influence the provision of these services two years after the Drug Controller of India approved the use of mifepristone-misoprostol for early medication abortion. One of the most critical findings in this study is that government health facilities have a negligible role in abortion provision in Bihar and Jharkhand. Only 3% of government health facilities reported providing first trimester abortion services and no government facilities offered second trimester abortions. Despite WHO recommendations, D&C is the most widely available method of

abortion at the majority of health facilities in Bihar and Jharkhand. No government facilities reported the availability of MVA/EVA or medication abortion. Only 4% of medical stores in this study reported having mifepristone-misoprostol usually available. The majority of government and private health facilities reported not having pregnancy tests available even though a significant percentage of these facilities reported having at least one patient request a pregnancy test in the month prior to the survey. Only one-third of medical stores surveyed stated they had pregnancy tests usually available. None of the government facilities surveyed in Bihar and Jharkhand offered emergency contraception. Only 6% of medical stores reported having emergency contraception usually available. This study's findings indicate that significant percentage of unqualified health facilities reported providing first trimester abortion services, but less than 5% reported using any of the abortion methods recommended by WHO.

High percentages of ob-gyns, general physicians, ISM practitioners, mid-level providers, compounders and RMPs reported providing or helping to provide abortion services. The majority of ob-gyns in Bihar and Jharkhand practiced in urban settings, while most general practitioners worked in rural areas. Mid-level providers also worked mostly in rural locations. The majority of ob-gyns and general practitioners in Bihar and Jharkhand worked at clinics that were not government health facilities. A substantial percentage of non-physician providers were interested in attending seminars/trainings on the use of mifepristone-misoprostol for medication abortion. A decent number of non-physicians also said they were very/somewhat likely to provide medication abortions in the next year. Legally these providers cannot provide abortions. Due to the limitations of the survey data, one cannot separate out those who said they are not likely to provide because they know they cannot legally provide such care from those who truly are not interested. This suggests that the percentages of non-physicians that reported being very/somewhat likely to provide medication abortion in this study are

most likely conservative estimates. The majority of all providers were not supportive of a woman being able to have an abortion if her husband had not provided consent. Additionally, the majority of physician and non-physician providers did not know if medication abortion is safe or effective.

Aim 2

To gain a better understanding of the intentions of obstetrician-gynecologists and general physicians in Bihar and Jharkhand to provide medication abortion using mifepristone-misoprostol by: 1) describing potential provider level and health facility level characteristics of the physicians that may influence their intention to provide medication abortion in the future; 2) describing the abortion related attitudes of physicians; and 3) examining what health care provider level and health facility level factors are associated with ob-gyns and general physicians in Bihar and Jharkhand expressing an intention to offer medication abortion using mifepristone-misoprostol.

Only physicians are eligible to offer abortion services to women in India under the country's MTP Act. Women's access to abortion services and choice of abortion methods depend greatly on the interest and motivation of heads of health facilities and physicians to provide these services. This is the first study to our knowledge to examine associations between physician level and health facility level characteristics and the intentions of obstetrician-gynecologists and general physicians in India to provide medication abortion using mifepristone-misoprostol. The findings of this study show that overall, obstetrician-gynecologists and general physicians in Bihar and Jharkhand hold highly supportive attitudes towards women in a variety of different situations being able to obtain abortion services and a significant percentage of both types of physicians intend to provide medication abortion. Our results also highlight the stark differences between obstetrician-gynecologists and general physicians in this area regarding factors

that influence their intentions to provide medication abortion using mifepristone-misoprostol.

The results of this study indicated that 31% of ob-gyns and 17% of general physicians surveyed provided medication abortions using mifepristone-misoprostol two years after the Drug Controller of India approved the regimen. The study results showed that the majority of medication abortion providers and those who intended to provide medication abortion among both ob-gyns and general physicians in Bihar and Jharkhand were also providers of surgical and/or aspiration abortion. Forty-two percent of ob-gyns and 43% of general physicians in this survey reported not providing abortion services using surgical and/or aspiration methods. Of particular note is that a high percentage of general physicians in this area that reported offering surgical abortion services, provided abortions using only D&C. More than half of the general physicians who were not providing medication abortions at the time of the survey were interested in medication abortion training.

Twenty-nine percent of all ob-gyns and 50% of general physicians in this study reported they were very or somewhat likely to provide abortions using mifepristone-misoprostol in the next year. Findings of this study showed that most ob-gyns and general physicians in Bihar and Jharkhand held highly supportive attitudes towards abortion. The results of the multivariate analyses showed that attitude towards abortion was not associated with the intentions of either ob-gyns or general physicians to provide abortion using mifepristone-misoprostol as hypothesized and that the factors influencing the intentions of physicians to provide medication abortion were different for obstetrician-gynecologists in comparison to general physicians in Bihar and Jharkhand. Studies conducted in North America on abortion provision have found abortion attitudes to be one of the strongest predictors of a provider's decision to perform abortions;

favorable personal attitudes are associated with abortion provision (87-90). Factors other than abortion attitudes seem to be driving whether or not a physician intends or does not intend to provide medication abortion in this area of India.

Years providing family planning services was not found to be associated with ob-gyn or general physician intention to provide medication abortion. We had hypothesized that physicians with greater number of years providing family planning services would be more likely to intend to offer medication abortion services as over the years they may have witnessed the problems women face when they cannot access safe abortion care. Being male versus female, an individual physician level factor, was found to influence ob-gyn intentions to provide medication abortion; whereas for general physicians, the health facility level factors, rural or urban location of the health facility and the number of family planning staff members at the health facility were found to be the most important factors influencing their intentions to provide medication abortion using mifepristone-misoprostol. Our hypothesis that male obstetrician-gynecologists would be less likely to intend to provide medication abortion in the future compare to their female counterparts was supported. However, sex was not found to be associated with medication provision intentions among general physicians. General physicians' intentions to provide medication abortion were influenced by health facility level factors over individual level factors. As hypothesized, general physicians working in health facilities based in rural areas versus those located in urban areas were more likely to intend to provide medication abortion using mifepristone-misoprostol. As there are few ob-gyns working in health facilities located in rural areas, general physicians must serve the abortion needs of women who come to these health facilities. As general physicians in this study were mostly staffed at rural facilities and rural facilities in India are found often not to have adequate equipment and supplies, these physicians are most likely to be able to understand the significant role medication abortion can play in increasing

women's access and choice regarding abortion services. Our hypothesis that general physicians working for health facilities with three or more family planning providers on staff compared to those working at facilities with one family planning provider were more likely to intend to provide medication abortion was supported by the findings of this study also. Those physicians who have the support of other staff members at their health facility may be freer to provide such services as abortion.

Aim 3

To establish an understanding of the potential participation of mid-level providers in medication abortion provision in Bihar and Jharkhand by: 1) investigating and identifying provider level and health facility level factors associated with the intention of mid-level providers to participate in medication abortion training for early abortion and 2) examining whether obstetrician-gynecologists and general physicians have supportive attitudes towards non-physicians participating in early medication abortion provision and what health care provider level and health facility level factors influence these attitudes.

Very limited research exists on abortion provision in India, especially literature related to mid-level providers. The findings of this study show that the majority of mid-level providers in Bihar and Jharkhand were interested in participating in training to provide early abortion using mifepristone-misoprostol.

According to the results of this study, sex was one of the variables most strongly associated with mid-level providers showing interest in medication abortion training. Male mid-level providers were more likely to show interest in training compared to their female counterparts. This result goes counter to our expectation that female providers would be more likely to intend to participate in medication abortion training based on previous research. Our hypothesis was supported with regards to abortion attitude. Abortion attitude was also found to be strongly associated with mid-level provider intentions to participate in mifepristone-misoprostol training for early abortion. Mid-

level providers in the most permissive category were more likely to intend to participate in training compared to providers in the least permissive category. Results of our study supported our hypothesis that those mid-level providers who reported providing abortions using pharmacological drugs at the time of the survey were more likely to want to participate in medication abortion training compared to those who did not provide abortion services using medication. Not only do a high number of mid-level providers in this area want to participate in medication abortion training for early abortion, but those who are providing it already are more likely to want to learn the correct skills to provide medication abortion for their clients. The type of health facility where the mid-level provider works is found in this study to be associated with whether or not s/he is interested in medication abortion training for early abortion. Private health facilities are less likely to have mid-level providers show interest in mifepristone-misoprostol training compared to working at government facilities. This finding supports our hypothesis.

Surprisingly, whether or not the health facility where the mid-level providers worked had an obstetrician-gynecologist or general physician on staff was not found to be associated with mid-level provider interest in medication abortion training for early abortion. We had expected that providers that work at facilities with no physicians on staff might be more likely to want to be trained to provide medication abortion services as they may have wanted to learn the skills necessary to satisfy the needs of abortion seekers in their communities.

Overall physicians in Bihar and Jharkhand were fairly supportive with regards to non-physicians being eligible to be trained to provide medication abortion services for early abortion. The study findings underscore the stark differences between obstetrician-gynecologists and general physicians in this area in terms of a variety of provider level

and health facility level characteristics and the factors that influence their attitudes towards non-physician's participating in medication abortion provision. General physicians were more supportive compared to obstetrician-gynecologists: more than half of general physicians and a little over a third of ob-gyns in the study held supportive attitudes towards non-physician participation in early medication abortion provision. General physicians largely work for rural based health facilities and hence most likely see the need for increasing access to safe abortion care for women; non-physician participation in abortion provision is one way to do this. The majority of obstetrician-gynecologists were female whereas 95% of general physicians were male. Ob-gyns practiced mostly in urban areas whereas general physicians worked at health facilities based in rural areas. A higher percentage of general physicians reported providing or helping to provide abortion services compared to ob-gyns, which was an unexpected result.

The study results showed that the characteristics influencing the attitudes of physicians with regards to their support of non-physician participation in medication abortion were different for ob-gyns versus general physicians in Bihar and Jharkhand. Individual level factors (attitude towards abortion and current provision of abortion using mifepristone-misoprostol) influenced ob-gyn attitude towards non-physician participation in medication abortion provision, whereas for general physicians, the health facility level factor, type of health facility where they were staffed was the most significant factor affecting their attitude. Ob-gyns who reported providing abortions using mifepristone-misoprostol were found to be less supportive of other non-physician health care providers being eligible to provide medication abortion, which was what we had expected. Our hypothesis on abortion attitudes was not supported among physicians. Ob-gyns with more permissive attitudes were less likely to be supportive of non-physician participation in medication abortion provision compared to ob-gyns with less

permissive attitudes. Abortion attitude was not associated with general physician attitudes towards non-physicians being eligible to provide medication abortion care. As expected, general physicians working in private or other types of health facilities were less likely to be supportive of non-physician participation in medication abortion provision compared to those working in government health facilities. In the adjusted model, the health facility level characteristic, having mid-level providers on staff, was not found to be associated with physician attitude towards non-physicians being eligible to be trained and to provide early medication abortion services.

Limitations and Strengths

This dissertation research has several limitations. Some limitations are inherent to using survey data. General disadvantages of using data from a large survey include the likelihood for potential biases: surveys that are administered are subject to recall bias; there may be an intentional source of error with participants not wanting to disclose personal or controversial information; surveys may also be subject to social desirability bias where subjects may give what they feel is a normative answer; surveys are also prone to interviewer bias through such actions as intentional or unintentional recording of wrong answers by the interviewer, failure to probe an answer, or influence on respondents' answers due to the tone or attitude of the interviewer; and as more and more individuals are asked to participate in surveys, the more they may see participating in a survey as a burden and may be less inclined to participate (126). The context of the study is very important when using surveys to elicit information. Using surveys to elicit information on provider attitudes and behavior may lead to social desirability bias (126); health care providers may feel pressured to give a socially desirable answer which may not be the true situation. For example, providers may try to

answer the abortion attitude, referral behavior, and intentions related to medication abortion questions in a way they may think is what the interviewer wants to hear or what they think is the norm for the area where they practice. Health facility managers (who answered the questions for the health facility surveys) may also try to answer in a way that makes their facility stand out compared to other facilities. Ideally, survey data should be validated by external sources in contexts where other types of data are available to make sure the findings are accurate.

The proposed study also has limitations in terms of the variables that could be included in the analyses as the measures that could be constructed are limited by the data collected. The aim of the ABM Project was to assess the overall level of effectiveness and cost-effectiveness of clinic franchising programs in improving the delivery of family planning services and increasing the use of contraception among individuals. Also at the time we created the medication abortion module to add to the health care provider survey, the research aims had not been finalized; thus, certain factors that could influence the outcomes of interest in the proposed study were not included in the surveys and thus could not be included in the analyses. For example, medication abortion related *cost to client* information and *provider profit potential* data were not collected. Cost has not been found to be a significant issue when choosing a surgical versus a medication abortion for women in Europe as most countries cover abortion services through national insurance programs or the cost difference is minimal (49). For most providers in Europe there is little difference in profit potential between the two methods (49). Often the cost in terms of staff and time is greater for providing medication versus surgical abortion. Very little information is available, but cost to client may be an important factor for women in India. The Ipas study in Bihar and Jharkhand found that cost to client was not significantly different for medication versus surgical abortion (70). The same study found through in-depth interviews of providers, the

providers did not directly address the issue of personal profit when choosing to offer medication abortion. However, indirect suggestions of medication abortion being less profitable compared to surgical abortion were expressed in the interviews. Three out of the eleven providers said that medication abortion could not substitute for surgical or aspiration abortion (70). Thus, provider views on their profit potential may influence their intentions to offer medication abortion. Further research needs to be conducted to explore this area.

Other limitations are related to potential error in the measurement of the variables *provider attitude towards non-physicians being trained to provide early medication abortion* and *provider intention to provide medication abortion*. Attitude is a challenging construct to measure. Attitude is typically measured using a semantic differential scale and is usually indexed by more than one item. For the variable, *provider attitude towards non-physicians being trained to provide early medication abortion*, I only have a dichotomous measure: yes (supportive) and no (not supportive). Similarly, *intention to provide medication abortion* is constructed using two possible levels of measurement, very/somewhat likely or not likely and *intention to participate in mifepristone-misoprostol for early abortion training* uses a dichotomous measure. Again, the measures would have been more reliable with increased levels of measurement. The measure for *current abortion attitude* proposed in this study is constructed in a manner similar to that used by other researchers in past abortion studies (132).

With regards to the models using samples of ob-gyns and general physicians, the findings must be viewed taking into account a couple of limitations. Firstly, given the small subsamples of obstetrician-gynecologists and general physicians out of the total sample of family planning providers, the statistical power to detect differences may have been limited. Also, data limitations did not allow physicians who were registered to

provide abortion services under the MTP Act to be distinguished from those who were not. Thus, one could not separate out physicians who did not intend to provide medication abortion because they legally could not from those who did not want to provide such services.

An additional limitation is the potential generalizability of the study findings to all health care facilities and providers in Bihar and Jharkhand and to the rest of the country as a whole. Policymakers and stakeholders designing interventions need to consider that the results of this study are based on data from the former state of Bihar, which included the areas now comprising the two states of Bihar and Jharkhand. The results of this study are in a sense an average of data from both states. Literature shows that while both states have high rates of poverty, illiteracy and rates of abortion and poor health indicators compared to other states in India (19, 70, 123) the current state of Bihar has poorer overall socioeconomic and health indicators compared to Jharkhand (121, 122). Given the limitations of this study, separate recommendations for the two states cannot be made. Additionally, given that Bihar and Jharkhand are two of the poorer states in India, one must be cautious in applying the results to other parts of the country. Also, as clinics with more than fifty beds were excluded from being surveyed in the sampling design, these health facilities and the health care providers that work there were not surveyed. The findings may therefore not be generalizable to all health care providers and facilities in the two states. The majority of health care providers surveyed in Bihar and Jharkhand who provided referrals for abortion services reported referring their patients to the nearest district hospital. District hospitals usually have more than fifty beds (133) and were thus excluded in the survey; data from this important source of abortion services and the health care providers that work there could not be included. Information from district hospitals would have provided a more complete picture of the availability of early surgical, aspiration and medication abortion services in Bihar and

Jharkhand and the health facility level factors and health care provider level factors that may influence the provision of these services. Literature on the relative role of district hospitals versus other health facility types in abortion provision in Bihar and Jharkhand could not be found in the literature.

A final limitation is the cross-sectional nature of this study. Cross-sectional studies can investigate associations between various factors and the outcome of interest. However, because they are carried out at one time point and can give no indication of the sequence of events, it is impossible to infer causality.

Nonetheless, this study has several strengths. Using surveys to elicit data has advantages which include: surveys have standardized questions which make measurement more precise; very large populations can be sampled making the results statistically significant; and data input and analysis are fairly straightforward. This study also examines a topic, medication abortion provision, which has not been well explored in India and Bihar and Jharkhand in particular. Very few studies in India have surveyed mid-level providers and physicians on their attitudes and intentions with regards to abortion and hence the findings of this study are an important contribution to the abortion field. The findings have the potential to have important policy and programmatic implications on abortion provisions in Bihar and Jharkhand.

Policy and programmatic implications

The findings of this dissertation research can help policymakers and health facility managers plan strategies to help ensure comprehensive and safe abortion care services to women in Bihar and Jharkhand and other parts of India. The study results can help

better target the various stakeholders with regards to medication abortion training and information dissemination, in particular.

Interventions in this area should take place using a two step approach. Given current abortion provision related policies in India that prevent other cadres of providers from being trained to offer abortion services, women's access to medication abortion depends heavily on the willingness of obstetrician-gynecologists and general physicians to offer it. Initially, the shortage of abortion providers in this area of India can be mitigated by specifically targeting those ob-gyns and general physicians, in particular who are not currently providing any method of abortion to be trained to provide medication abortion using mifepristone-misoprostol. As medication abortion requires minimal health infrastructure, this step would not be difficult to implement. The findings indicate that the majority of general physicians are highly interested in medication abortion training and a significant number intend to provide medication abortion. Medication abortion can help enlarge the number of physicians in India who can provide safe abortions, as extensive infrastructure is not necessary to provide this method of abortion. Since the majority of general physicians work in health facilities based in rural areas and hence are closest to where the majority of women in Bihar and Jharkhand live, heads of health facilities and program planners and policymakers need to work together to create interventions that can increase the pool of general physicians who can provide medication abortion services. As the results of this dissertation research show, these interventions should take into account that health facility level factors influence general physicians over individual provider level factors. Interventions should also address the need to strengthen referral networks; if the physician does not have the skills to provide surgical evacuation of the uterus in case of a failed or incomplete medication abortion, s/he should have access to a facility that can provide back up surgical abortion care. Interventions need to especially target obstetrician-gynecologists

who are not providing surgical and/or aspiration abortion methods to urge them to participate in medication abortion training and provision. The results of this study also highlight the need for interventions aimed at obstetrician-gynecologists that are distinct from those directed at general physicians. Further research needs to be conducted to find out why 73% of ob-gyns who were not providing medication abortions were not interested in being trained to provide mifepristone-misoprostol for early abortion and why male ob-gyns are less likely than female ob-gyns to intend to provide medication abortion; this can be best done using qualitative research methods. This dissertation was limited as the findings are based only on survey data. Qualitative studies can provide in-depth descriptive information and can help elucidate the findings of quantitative studies. Information from a combination of quantitative and qualitative findings can be used to design appropriate interventions to increase the number of medication abortion providers among ob-gyns. While attitude was not found to be associated with the intentions of providers to offer medication abortion services, they may still act as barriers to women accessing care from physicians. A critical finding in this study is that 62% of ob-gyns and 97% of general physicians were not supportive of a woman being able to obtain an abortion if her husband has not provided consent, even though under MTP Act consent of any type is not necessary for women over eighteen years of age. Interventions designed to address such attitudinal barriers to women's access to safe abortion care need to target heads of health facilities, ob-gyns and general physicians.

Next, policymakers need to consider expanding the pool of cadres that can be legally trained to provide safe abortion care. The findings of this dissertation research demonstrate mid-level provider interest and a reasonable amount of physician support of non-physician provider involvement in medication abortion provision. Research has suggested that much of the unsafe abortion in India is due to abortions provided by

untrained individuals. Mid-level providers in this area seem to want to be trained properly if the policies allow their being trained and the opportunity to participate in such training exists. Physicians are fairly supportive of non-physicians being trained to provide medication abortion, but if abortion stakeholders want to pave the way for mid-level provider involvement in medication abortion provision, interventions to increase the supportive attitudes of physicians are necessary, especially the attitudes of obstetrician-gynecologists.

Thus, given the majority of general physicians and mid-level providers in Bihar and Jharkhand are interested in medication abortion training, have permissive attitudes towards abortion and work in rural areas and that the majority of the populations of both states are based in rural settings, these two cadres of health care providers, particularly those working in government facilities should be targeted for abortion training, especially medication abortion training. This training should not only cover clinical skills, but also should discuss abortion policy in the country and confront attitudinal barriers that may come in the way of providing quality care to women seeking abortion services. The knowledge of all family planning providers with regards to medication abortion and the MTP Act may be important targets for interventions designed to increase women's access to safe abortion services in India. Heads of health facilities and program managers must address attitudinal barriers among family planning providers to improve women's access to safe and quality abortion care. Respectful and non-judgmental care needs to be especially emphasized.

While the findings of this dissertation research show that male mid-level providers were more likely to be interested in participating in medication abortion training compared to their female counterparts, when designing interventions to increase the pool of trained providers these results must be utilized taking into

consideration the Indian cultural context; women in India prefer female health care providers. Researchers have documented that women in India say they do not seek out health care if a female provider is not available as they prefer female health care providers; reasons cited include fear and embarrassment of being checked by a male health care provider (134-136). The findings of this study need to be researched further to understand why female mid-level providers are less likely to be interested in medication abortion training compared to male providers.

Health facilities in this area that offer or can offer abortion services need to incorporate MVA/EVA and medication abortion services to offer women more choice for safe abortion care to be in accordance with WHO recommendations. Pregnancy tests need to be promoted by family planning providers in Bihar and Jharkhand and health facilities need to do a better job in ensuring such tests are available. Health facilities and health care providers need to also do a better job promoting family planning services including encouraging the use of and making emergency contraception available to their patients.

The GOI needs to ensure that adequately trained providers and essential supplies and equipment are available at public facilities to provide abortion services at the lowest levels. The GOI also needs to work to better regulate medical stores and chemist shops to make sure pharmacists with valid pharmacy degrees staff them. Additionally, further research needs to be conducted to determine why government health facilities have such a minimal role in abortion provision in these two states and what can be done to better their involvement in abortion provision. Research also needs to be conducted to see what techniques are being used to provide abortions in clinics run by unlicensed medical practitioners.

Appendix 1

From Family Planning Staff questionnaire:

		Yes	No
<p>We would like to know your personal opinions about abortion. Under which of the following conditions or situations do you personally believe a woman should be able to have an induced abortion?</p> <p>READ OUT ALL</p>	A. The woman does not want another child	1	2
	B. The woman cannot afford the child	1	2
	C. The woman is unmarried	1	2
	D. The pregnancy results from contraceptive failure	1	2
	E. The pregnancy results from rape	1	2
	F. The woman's health is endangered by the pregnancy	1	2
	G. There is a strong chance of serious defect in the baby	1	2
	H. The woman knows the sex of the fetus	1	2
	I. The woman is more than 20 weeks pregnant	1	2
	J. The woman's husband has not provided consent	1	2

Abortion attitude was created by first making an additive index. The index was constructed by assigning a score of 1 for each yes and a score of 0 for each no answer for each of the ten situations in the above question. The index ranges from 0 to 10 with higher numbers indicating a more permissive attitude towards abortion as the respondent has responded yes to more situations in which a woman should be able to have an abortion. The abortion attitude variable was then coded as a three category variable with the modal attitude score among all family planning providers labeled as 'permissive', all scores less than the modal score labeled as 'less permissive' and those scores higher than the modal score as 'more permissive'.

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