

PERIODIC ABSTINENCE IN DEVELOPING COUNTRIES

UPDATE AND POLICY OPTIONS



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FAMILY HEALTH INTERNATIONAL

DEMOGRAPHIC DATA FOR DEVELOPMENT
INSTITUTE FOR RESOURCE DEVELOPMENT
AT WESTINGHOUSE

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INTRODUCTION

The purpose of this monograph is to provide information about periodic abstinence and is intended for those who set policy or implement programs in the areas of health and family planning, particularly in developing countries. It attempts to clarify what is meant by periodic abstinence and Natural Family Planning for those unfamiliar with these topics. The wide array of definitions and guidelines emanating from Natural Family Planning research, programs and proponents has led to confusion and uncertainty about the methods, their prevalence of use and their efficacy. These uncertainties have made it difficult for policy makers and service providers to decide whether to include and how to include periodic abstinence methods as an option in their country's health and family planning programs. This paper provides background information on periodic abstinence methods, followed by a general discussion of program options and policy considerations. A description of selected countries with Natural Family Planning programs is included in the Appendix.

The "Natural" Approach to Family Planning

Ask three different people what is meant by "natural family planning" and chances are you would hear three different responses. To one, natural family pl.aning is just another way of saying rhythm, the calendar-based method for calculating the "safe" period of the cycle when a couple can have sexual intercourse without risk of pregnancy. To another, "natural" represents an orientation that discourages the use of "artificial" devices or agents to regulate fertility. This orientation may include concern for health, ecological motivations, or religious and ethical considerations. Still another person might describe new methodologies based on the monitoring of "natural" body signs and symptoms of ovulation to determine changes in levels of fertility and timing of intercourse to avoid or achieve pregnancy.

Each of these responses identifies one aspect of an overall approach to fertility regulation based on the pattern of fertile and infertile phases of the menstrual cycle. The approach includes two distinct sets of methodologies to identify the fertile period of the cycle. The calendar rhythm method is based on calculations of the fertile period based on lengths of previous cycles, while Natural Family Planning (NFP) and other fertility awareness-based methods use fertility signs occurring during the current cycle to identify the fertile period.

When the term is not capitalized, "natural family planning" may refer to a variety of practices and methods, some of which may not include the regulation of fertility as their primary objective. For example, breast-feeding can be considered a natural family planning method because

it tends to postpone resumption of fertility after delivery without the use of artificial devices. Some health and family planning programs promote breast-feeding because it delays the return of ovulation, thereby protecting the health of mother and infant by optimizing birth spacing. Within the cultural context, however, regulating fertility is not the primary objective of this practice. Other practices such as abstinence associated with the post partum or with specific days or events may also be considered as natural family planning, even though the reason for the practice may be only incidentally related to fertility regulation. On the other hand, practices such as withdrawal or use of indigenous preparations or objects may be used for the express purpose of preventing pregnancy. Clearly, there are a number of possible interpretations of the phrase "natural family planning". However, these methods do not involve periodic abstinence and, apart from a discussion of traditional abstinence in Box 1, are not pursued further in this monograph.

When capitalized, the term Natural Family Planning (NFP) refers to a specific set of methodologies based on the observation and interpretation of physiological indicators to determine the fertile and infertile phases during each menstrual cycle. There are three predominant NFP methods, all of which involve the observation of one or more fertility indicators. The cervical mucus method (CM) (also called the Billings or ovulation method) relies on changes in cervical mucus as the primary sign of fertility. The basal body temperature (BBT) method is based on daily recording of the basal (resting) body temperature. The sympto-thermal method (STM) uses a combination of fertility indicators and may include calendar calculations; usually basal body temperature is monitored along with cervical mucus and other signs and symptoms such as change in position, texture and dilation of the cervix as well as breast tenderness and pain with ovulation.

The World Health Organization differentiates between couples who use NFP to achieve and avoid pregnancy, and states that "it is implicit in the definition of [Natural Family Planning] when used to avoid conception, that (a) drugs, devices and surgical procedures are not used, (b) there is abstinence from sexual intercourse during the fertile phase of the menstrual cycle and (c) the act of sexual intercourse, when occurring, is complete" (World Health Organization, 1982).

Fertility awareness is a term that refers to knowledge of reproductive anatomy, physiology and fertility signs. In order to use NFP methods, individuals use this knowledge to monitor and interpret fertility indicators throughout each cycle. Although specific NFP methodologies may differ, they are all based on fertility awareness. However, NFP differs from other fertility awareness-based methods regarding options available during the fertile period. Some fertility

BOX ONE

TRADITIONAL ABSTINENCE PRACTICES

It is traditional in many cultures to abstain from sexual intercourse during various periods, including the following:

- before marriage (Hunt, 1976; Henry and Piotrow, 1979; Page and Lesthaeghe, 1981; Orubuloye, 1981)
- when a woman is menstruating (Ruzicka and Bhatia, 1982; Page and Lesthaeghe, 1981)
- when a woman is pregnant, particularly during late pregnancy (Page and Lesthaeghe, 1981)
- during the postpartum period, particularly while the mother is lactating (Hull, 1978; Page and Lesthaeghe, 1981; Singarimbun and Manning, 1976; Agyei, 1984; Bertrand et al., 1983; Orubuloye, 1981; CDC, 1983; Saucier, 1972)
- after a woman becomes a grandmother or a potential grandmother, i.e., after a child has married (Ruzicka and Bhatia, 1982; Ware, 1979; Tan, 1983; Page and Lesthaeghe, 1981; Orubuloye, 1981)
- on specific days, as stipulated by religious doctrine (e.g., Ramadan) or custom, e.g., inauspicious days of the lunar cycle (Ruzicka and Bhatia, 1982).

These customs often originated as a way to prevent conception at times that were deemed inappropriate for pregnancy to occur. The goal was not to limit fertility, but rather to ensure the survival and well-being of the children. A pregnancy conceived too soon after the birth of another child can often adversely affect the breast-feeding infant, the fetus, and the mother. Pregnancies conceived before marriage or late in reproductive life might also have increased social and health risks for mother and infant, and the resulting infant might not be as well cared for.

Whether these traditional abstinence practices actually affect fertility depends on whether abstinence is being practiced at times when a woman is potentially fertile. Most of the stipulated abstinence periods are times when a woman is at relatively low risk

of conception, but adding the abstinence requirement further reduces the chances that she will become pregnant. For example, although postpartum abstinence is generally practiced for the purpose of protecting the lactation period of the nursing infant, lactation itself has a contraceptive protection which often lasts for many months (McCann et al., 1981). Thus, postpartum abstinence will affect fertility only if it extends beyond an individual woman's period of physiological incapacity to conceive.

Elaborate belief systems and strong social sanctions have developed to enforce the required abstinence practices. For example, some societies believe that if a breast-feeding woman has intercourse, the semen will spoil the milk (Hull, 1978; Singaribum and Manning, 1976; Page and Lesthaeghe, 1981; Orubuloye, 1981). In some cultures, a woman who violates the postpartum or "grandmother" taboos on intercourse will be called derogatory names or otherwise ostracized (Page and Lesthaeghe, 1981).

In many societies these abstinence requirements apply only to the woman, while the man may be free to engage in sexual relations with another partner (Hull, 1978; Page and Lesthaeghe, 1981). Polygamous marriages are one arrangement for providing an alternative partner, and postpartum abstinence is more common and more prolonged in polygamous societies. In some monogamous societies, extramarital relationships and prostitution may be viewed as acceptable for men who are not yet married or whose wives are required to abstain.

Traditional abstinence practices, therefore, differ in many ways from the periodic abstinence methods discussed throughout this paper, although both sets of practices may have pregnancy prevention as a goal. Traditional periods of abstinence are stipulated by a woman's stage of reproductive life, but not necessarily by whether she, as an individual, is potentially fertile on any given day. Other differences, however, relate to the social context within which the abstinence takes place. Traditional abstinence practices are typically enforced by the community, rather than being a voluntary practice. Furthermore, abstinence is traditionally practiced by the woman only, with the man being free to seek other sexual partners. Periodic abstinence methods, on the other hand, may encourage communication and cooperation between the partners.

Many of these traditional abstinence practices are declining, particularly in urban areas of developing countries. Thus, it is important to offer other family planning methods, including periodic abstinence, to replace the contraceptive protection of these practices.

awareness-based methods are not considered NFP because they include the use of barrier methods in place of abstinence during the fertile period. Calendar rhythm is not considered to be a fertility awareness-based method because it does not involve observation of fertility signs during the current cycle. However, some fertility awareness-based programs, including some NFP programs, use calendar techniques to calculate the pre-ovulatory infertile phase, as a means of double-checking fertility indicators (Kass-Annese and Danzer, 1983; Kippley, 1979).

Periodic Abstinence In Historical Perspective

Attempts to regulate fertility based on concepts of the fertile and infertile phases of the menstrual cycle have a long history, although many practices were based on mistaken theories. In a treatise on the history of contraception, Himes (1963) identified several instances in the literature where efforts to avoid conception were based on the principle of periodic abstinence during a perceived fertile period. The first person known to refer to this practice was Soranos of Ephesus, a Greek gynecologist who lived from 98-138 AD. Soranos and Aetios of Amida, a Greek physician of the sixth century, who appears to have borrowed many of his ideas from Soranos, prescribed abstinence from intercourse directly before and after menstruation "in cases where it is more advantageous to prevent conception [than to induce abortion]" (Himes, 1963).

Contemporary periodic abstinence methods have their roots in the 1800's when researchers described certain signs and symptoms related to cyclic hormonal changes (Vollman, 1977). Pouchet described intermenstrual pain and cervical mucus in 1847 and in 1877, Jacobi discovered that women have biphasic temperature patterns. It was not until 30 years later that van de Velde (1905) and Hansen (1913) demonstrated a relationship between ovarian activity and the biphasic temperature pattern. In the 1930's two physicians, Ogino of Japan and Knauss of Austria, independently confirmed the time of ovulation or peak fertility. They showed that ovulation usually takes place 14 days (plus or minus two days) prior to the onset of the next menses, but that the interval between the onset of menstruation and the time of ovulation varies substantially among women. Ogino and Knaus devised formulas to estimate the fertile and infertile days of the cycle based on the length of previous cycles, a technique later popularized as the Ogino-Knaus calendar rhythm method.

Today, calendar rhythm is considered to be useful mainly for women with regular menstrual cycles (the menstrual cycle is described in Box 2). Not all women have regular cycles. However, of the estimated 10-15 million women who currently use some form of periodic abstinence to control their fertility (Leridon, 1980), the majority probably use some version of the calendar rhythm method. In the last twenty-five years, a new set of methodologies has been developed which use information based

on the body's signs of ovulation during each cycle. Careful observation of these fertility indicators, such as changes in body temperature or the consistency of cervical mucus, can enable a properly trained woman to identify the fertile phase of any given cycle. Collectively, these new methods are referred to here as modern Natural Family Planning (NFP) methods. The term "Natural Family Planning" came into use about 1971 (Spieler, 1984).

Evolution of NFP Programs: From Movement to Service

Until recently, many efforts to promote NFP have been ad-hoc, part-time or volunteer-based. Some cannot be considered service programs as such because they offer services too informally or sporadically (Borkman, 1984). This makes it difficult to estimate the number of programs worldwide. While some efforts are independent and offer only NFP instruction, others operate within medical care systems or Catholic marriage and family programs. Some NFP programs are directed towards both husband and wife and may be embedded in a broader program of family life promotion or marriage enrichment. Infertile couples are often given as much attention as those wanting to space or limit pregnancies.

Most existing NFP programs began as social or religious movements with distinct value orientations (Borkman, 1979). Typically, expressed values such as freedom from any physiological effects of contraceptives, shared responsibility between husband and wife, eventual self-sufficiency, and autonomy have been emphasized. From this viewpoint, abstinence is viewed not as a deprivation but as a means of enhancing or achieving fulfillment of the couple's relationship through cooperation in modifying their sexual behavior to permit abstinence. In this context, NFP is not just a specific technique for achieving or avoiding pregnancy. It is, according to one group, more than "just a birth control method." It is part of a "pro-family and pro-life way of living" (Kippley, 1984).

In some early NFP programs the emphasis was on teaching individual women without the involvement of their husbands. But now many groups encourage the participation of both partners in learning and using NFP methods. In one program in India, for example, the husband's involvement is promoted because it is recognized that the mutual understanding and cooperation of both marriage partners is required if they are to successfully practice abstinence (Mascarenhas, 1979-I). A couple-to-couple approach to teaching and motivating continued proper use of NFP methods is being popularized in some parts of the world, by such groups as SERENA in Canada and the Couple-to-Couple League in the USA.

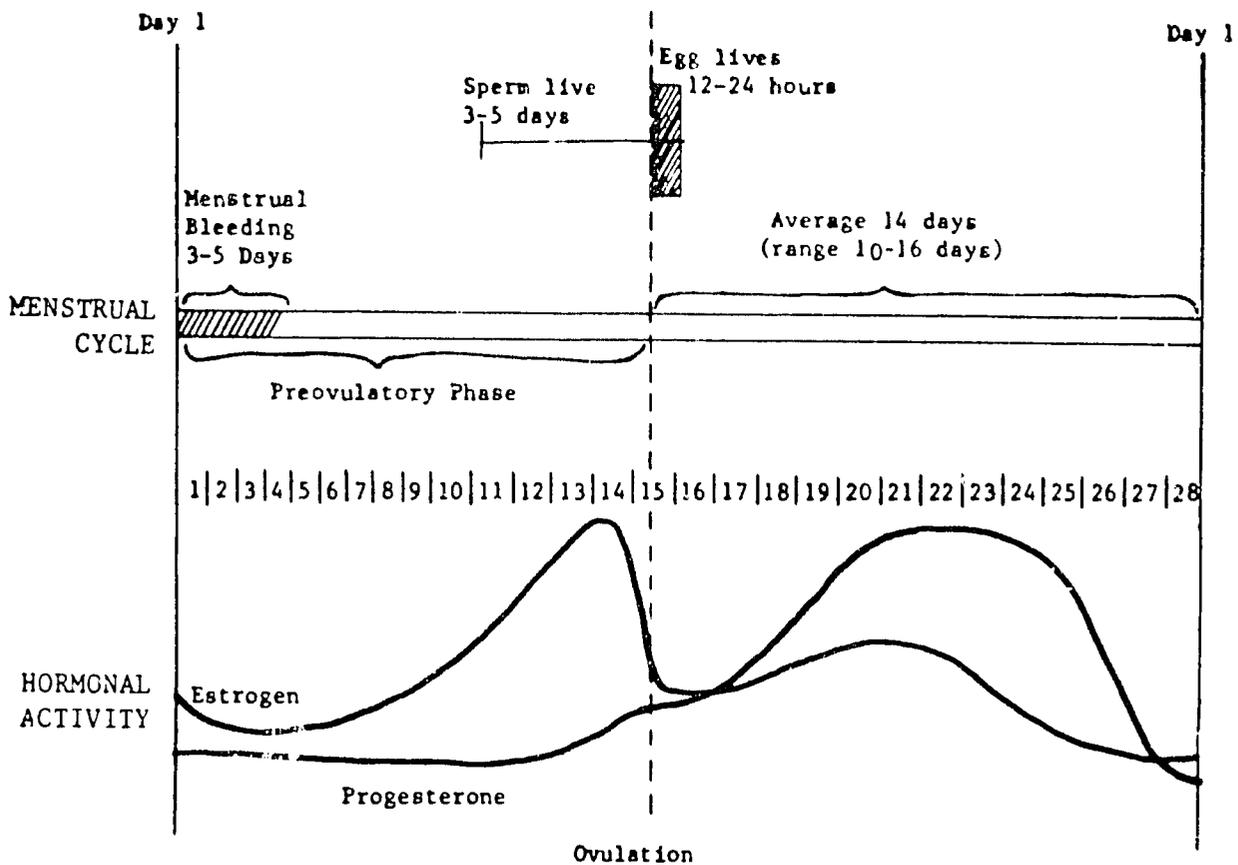
Over the past twenty-five years, NFP programs have been evolving from a social-religious movement to a service orientation (Borkman, 1984). If NFP methods are to become more widely available, it may be necessary to design programs that serve larger, less homogeneous groups of people with diverse lifestyles and value systems. And, as professionalization of services is achieved, apostolic philosophical orientations may gradually diminish.

BOX TWO

DESCRIPTION OF FEMALE REPRODUCTIVE CYCLE

NFP methods seek to identify the moment of ovulation, the release of an egg from the ovary. This will determine the fertile days when they should abstain from sexual relations to avoid pregnancy. As shown in Figure 1A, the hormonal activity related to ovulation is cyclical. The first day of menstrual bleeding is conventionally designated as Day 1 of the cycle. During menses the levels of estrogen and progesterone are both low, but the level of estrogen increases rapidly following menses to a peak the day before ovulation. During this preovulatory phase of the cycle, an ovarian follicle and the egg which it encloses are developing. Under the influence of hormones from the pituitary gland, the follicle ripens and the egg is released. Estrogen levels then decline until the end of the cycle, but progesterone levels rise and remain high for several days before declining toward the end of the cycle.

Figure 1A. The Events of a 28-Day Menstrual Cycle



Source Adapted from Kass-Annese and Danzer, 1962

These cyclic levels of estrogen and progesterone produce a variety of noticeable changes in the body that can give clues about when ovulation occurs. These changes form the basis for NFP methods, which are described in Appendix A. The high estrogen levels which precede ovulation stimulate production of slippery, stretchy cervical mucus. When estrogen levels are lower, the cervical mucus has a different quality and is usually described as sticky, tacky or non-stretchy. High estrogen levels also produce changes in the cervix which a woman may be able to detect. The high progesterone level following ovulation is signaled by a rise in the basal body temperature.

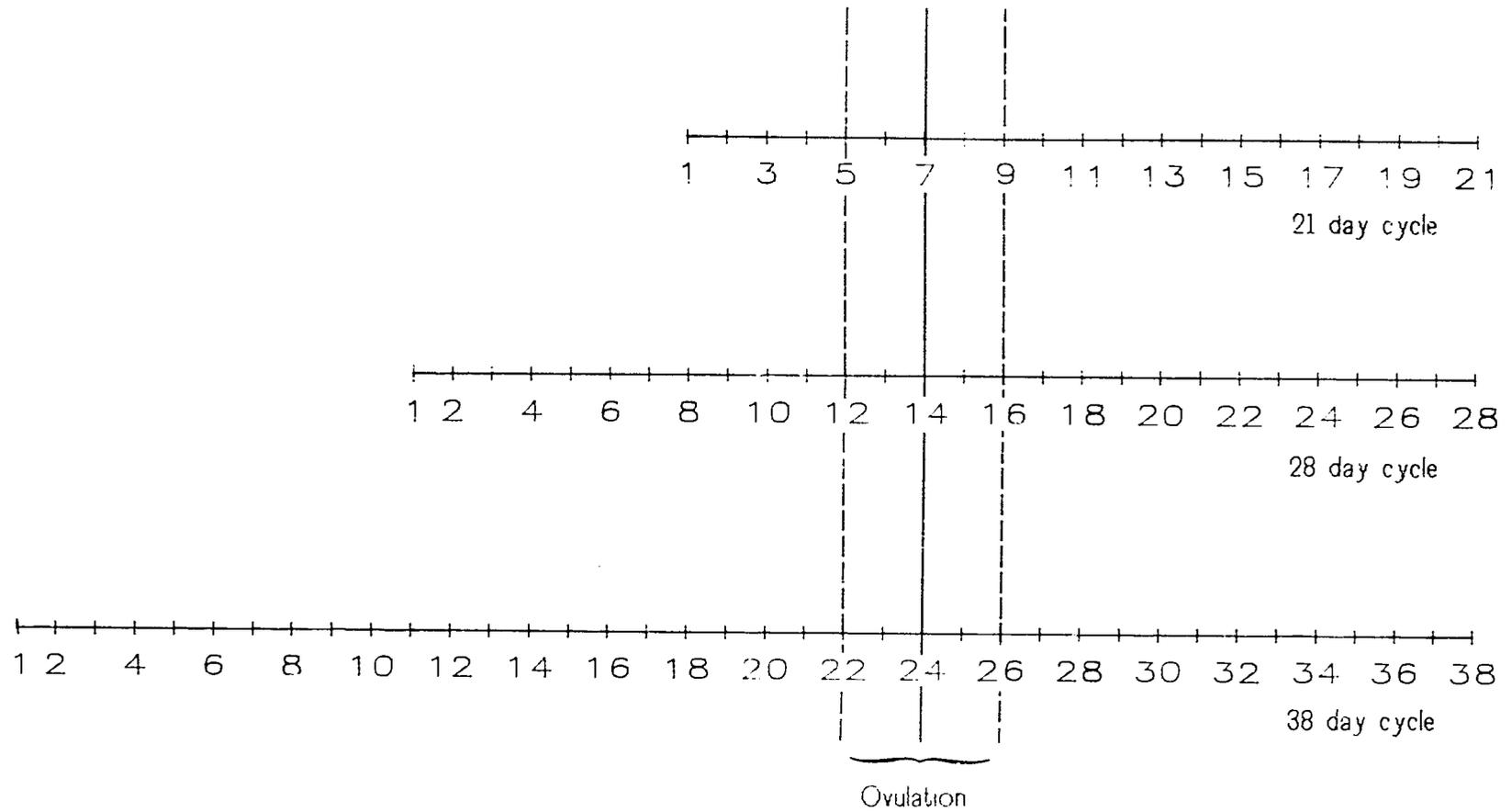
The duration of the fertile phase of the cycle when a woman can become pregnant depends on other factors as well as the time of ovulation, including the survival time of sperm and ovum. Sperm are capable of fertilizing an egg for up to five days, and an egg can be fertilized for 12 to 24 hours following ovulation. Therefore, in order to prevent pregnancy, abstinence would be required for the period of five days before ovulation until one day afterwards, assuming that it were possible to predict ovulation precisely.

The events shown in Figure 1A are based on an average 28-day cycle. In practice, cycle lengths vary considerably, both among women and, for an individual woman, among cycles. Regardless of the total length of the cycle, the phase of the cycle after ovulation (postovulatory) lasts on the average about 14 days. However, the phase of the cycle before ovulation varies considerably depending on cycle length (Figure 1B). If pregnancy prevention is the goal, a woman with a very short cycle length would probably need to abstain from sexual relations until after ovulation, but a woman with a very long cycle length might safely have intercourse for several of the preovulatory cycle days.

Not only does cycle length vary, but the fertility indicators may not appear in exactly the same fashion in different cycles. Factors such as stress, vaginal infections, other illnesses, or a change in living patterns may interfere with some of these indicators (Kass-Annese and Danzer, 1982).

For some women the menstrual cycle may be particularly variable, and may sometimes occur without ovulation. Breast-feeding women may have many months without either menstruation or ovulation. The first postpartum ovulation may precede the first menses, or there may be several menstrual periods before ovulation occurs (McCann et al, 1981). Adolescents and pre-menopausal women often have irregular cycles, some of which are anovulatory (Vollman, 1977). Women who discontinue use of hormonal contraceptives may have several months of irregular cycles, although their menstrual patterns eventually stabilize (Liskin and Rutledge, 1984).

Figure 1-B. Variations in Preovulatory Phase Length



When the cycle length varies, the phase before ovulation usually shows the greater variation. The number of days after ovulation is relatively constant--about 14 days (range 10-16 days). The longer the cycle, the more variable the pre-ovulatory phase.

PREVALENCE OF USE OF PERIODIC ABSTINENCE METHODS

In the past ten years, the World Fertility Surveys (WFS) and the Contraceptive Prevalence Surveys (CPS) have gathered fertility and family planning information for over 60 countries in Asia, the Middle East, Africa, the Caribbean and Latin America. Although these surveys included a category called "rhythm" in the list of methods, neither survey asked about how periodic abstinence was used. Thus the prevalence of use of NFP relative to calendar rhythm or indigenous periodic abstinence practices is unknown. In countries with active NFP programs, some proportions of users may be using a NFP method, whereas in other countries most users are probably relying on either the calendar rhythm method or simply their guess of when their fertile period might be.

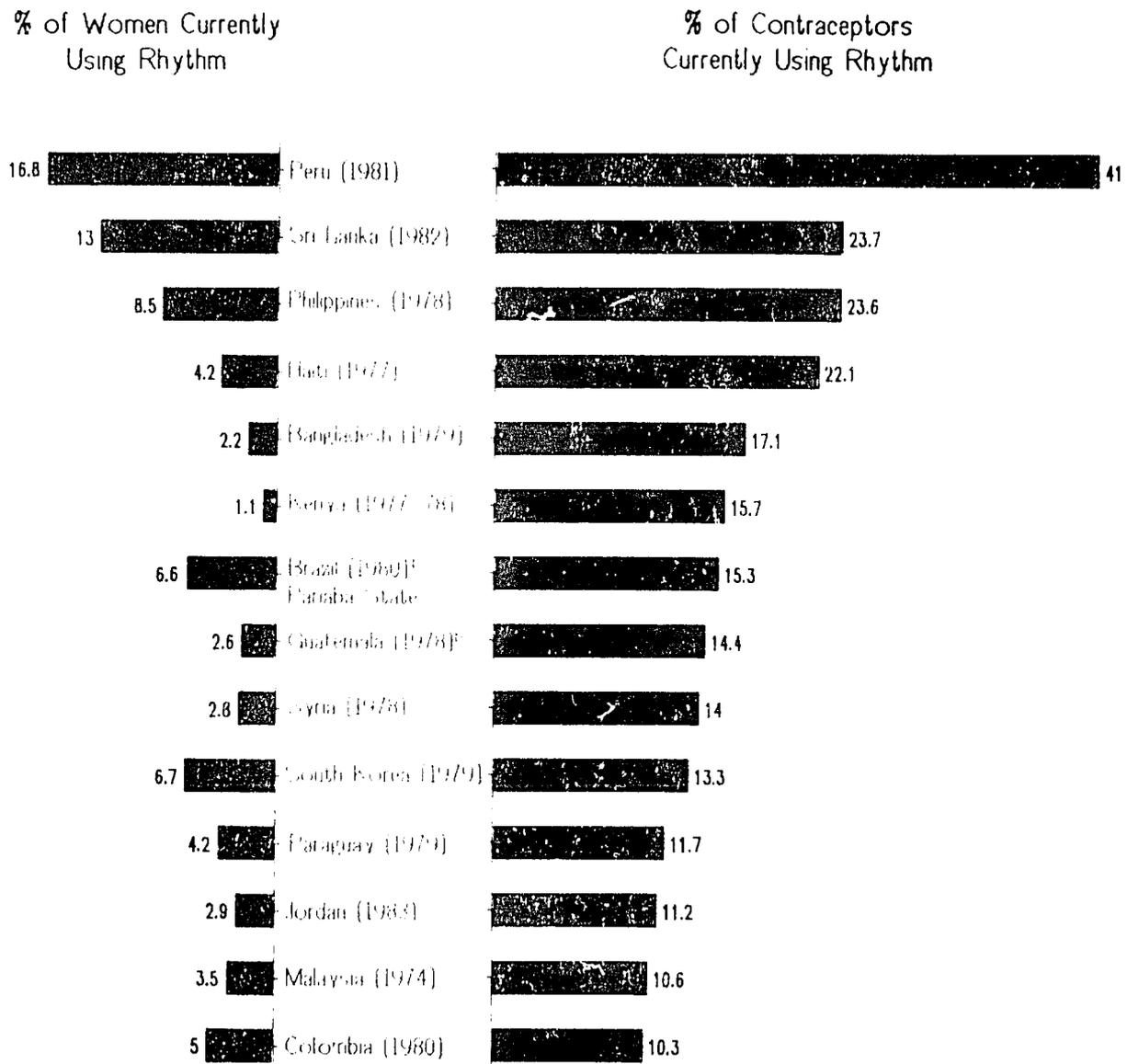
The WFS defined "rhythm" for the respondent as a method in which couples "avoid having sex on particular days of the month when the woman is most able to become pregnant." The CPS did not define "rhythm" for the respondent, and although CPS interviewers sometimes provided alternative terms, these terms were not standardized among countries surveyed. WFS and CPS surveys also differ in who was interviewed and how the questions were asked. WFS questions on current use were asked only of currently married women who were not currently pregnant and who were living with their husbands. Current use data were usually not obtained for single or previously married respondents, except where individual country surveys were modified. By contrast, CPS questions were asked of all respondents, including all ever-married women. Some CPSs first asked women to name the methods they had heard of, then asked them to indicate those methods they knew from a list read to them. Other surveys just used one approach. Although, in general, CPS found lower levels of knowledge of rhythm than did WFS, there is little basis for concluding that use of rhythm was underreported in the CPS (Anderson and Cleland, 1984).

Some recent surveys conducted by Family Health International and the Centers for Disease Control have asked questions on knowledge and use of both calendar rhythm and the ovulation method. These limited data, which are described later in the monograph, show the importance of having separate questions for the different periodic abstinence methods. Future surveys are planned to collect more detailed information on the use of NFP methods.

Cross-National Comparisons

The use of rhythm, as defined above, varies significantly between countries (Figure 2). The percentage of married women of reproductive age who use rhythm (left set of bars on Fig. 2) is highest in Peru (17%) and Sri Lanka (13%). In two Asian countries in which surveys have been conducted, 5% or more of women reported using rhythm: South Korea (6.7%) and the Philippines (8.5%). In Latin America, more than 5% of the women reported using rhythm in several states in Brazil, in Colombia and in

Figure 2 Comparison of Percentage of Women Currently Using Rhythm and Percentage of Contraceptors Using Rhythm in Selected Developing Countries^a



a Women currently married or in union, 15-49 years of age
 b Women 15-44 years only (currently married or in union)

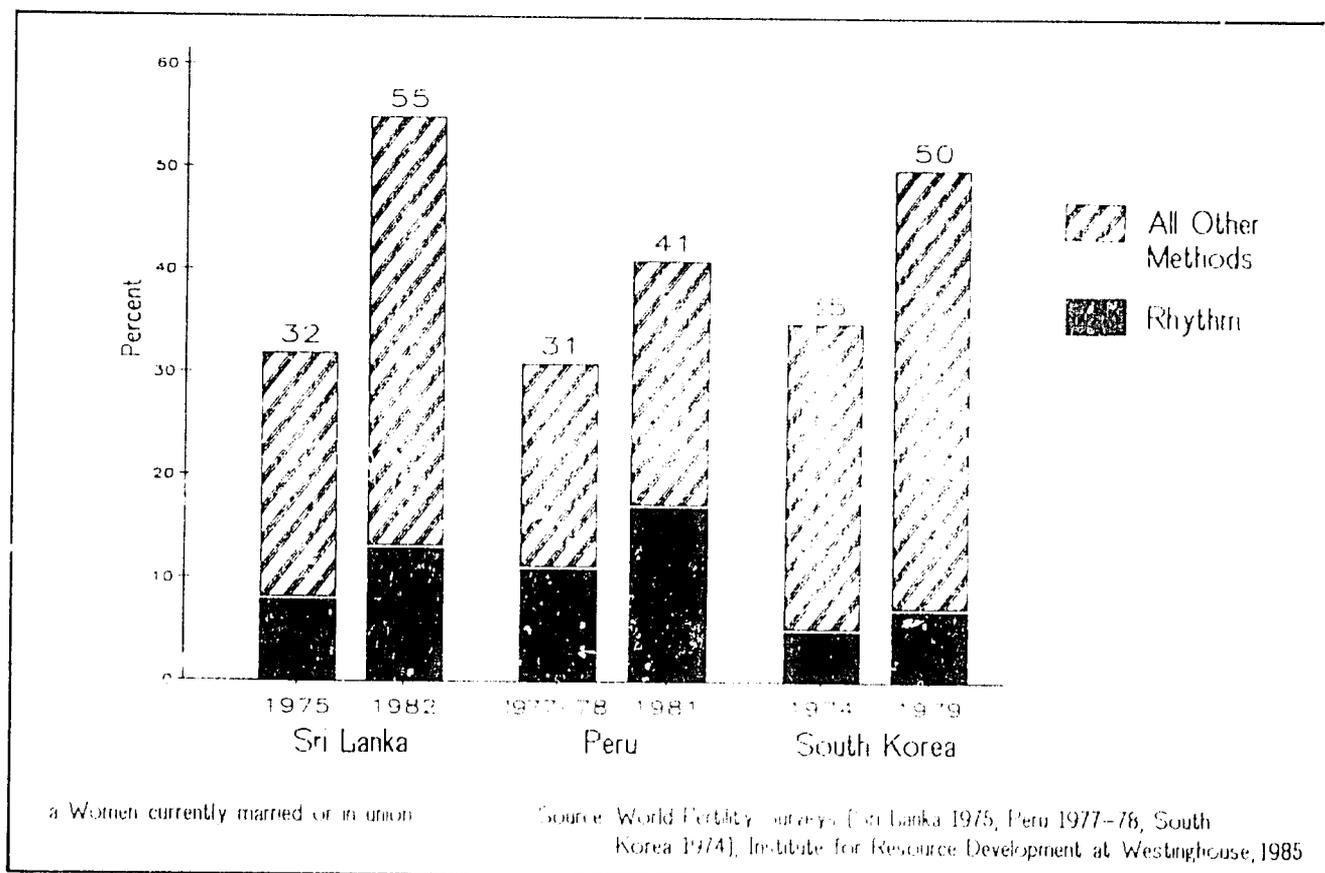
Source: See sources cited for individual country surveys in Table D2, Appendix D

Costa Rica. In Africa and the Middle East, reported use is highest in Jordan (2.9%). Further, it can be seen from Figure 2 that among contraceptive users, more than 20% reported using rhythm in the Philippines, Sri Lanka, Haiti and Peru. In the other countries shown, between 10% and 20% of contraceptive users specified rhythm as the method they were currently using.

For several countries, data are available from more than one survey, permitting comparisons over time (Figure 3). In Sri Lanka and Peru, the percentage of women using rhythm appears to have increased during the time between the two surveys, while the very small increase in South Korea may be simply a statistical fluctuation. In Sri Lanka, although the percentage of women using rhythm increased from 1975 to 1982, the percentage of women using any contraceptive method increased even more rapidly, so that the proportion of users of rhythm among contraceptors changed very little. In contrast, between surveys conducted in 1977-78 and 1981, the use of rhythm increased more than use of other methods, suggesting that the proportion of contraceptors using this approach has grown. Data from new surveys being conducted or planned in Sri Lanka and Peru will show whether these trends have continued.

Data show that rhythm is used regardless of whether other family planning services are available. In some countries, even though modern

Figure 3 Percentage of Women^a Currently Contracepting and Percent Using Rhythm, According to Year of Survey



family planning methods are widely available and most women have heard of the pill, over 5% use some form of rhythm. Such is the case in Sri Lanka, where 55% of all women in union use some form of contraception, and, of these, one-fourth use rhythm. It is not known why rhythm is preferred by these women, but research is proceeding in Sri Lanka to answer this question.

In the same surveys, women who use barrier contraceptives during their perceived fertile phase (whether determined by fertility awareness techniques or calendar calculations) are presumably not counted as rhythm users but as users of barrier contraceptives. It is therefore unknown how widespread the practice of using rhythm in conjunction with barriers is, but it appears to be rather common. In Japan, for example, a large proportion of couples who practice contraception use calendar rhythm and condoms (Coleman, 1983). Data from the Philippines show that calendar rhythm together with withdrawal or condoms is being used by about 4% of the population (Laing, 1984).

Characteristics of Users

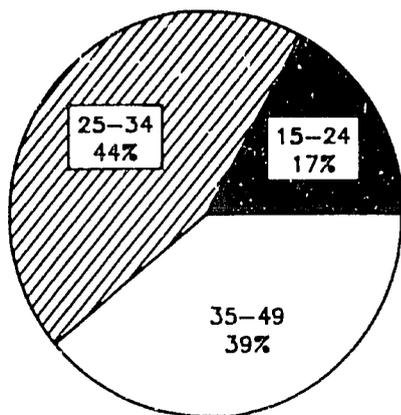
In what respects do women who use periodic abstinence methods resemble users of other family planning methods or non-contraceptors? Are there any differences between users of calendar rhythm and users of NFP methods? CPS data from Mexico, Peru, South Korea and Sri Lanka, where rhythm is relatively popular, provide partial answers to these questions.

The age distributions of women using rhythm in these four countries are shown in Figure 4. The percentages of users are similar in Mexico, Peru and Sri Lanka, but users of rhythm are more likely to be older in South Korea. Across countries, rhythm users are older than users of withdrawal (Table D3, Appendix D). In Mexico, South Korea, and Sri Lanka, users of rhythm are older than non-contraceptors.

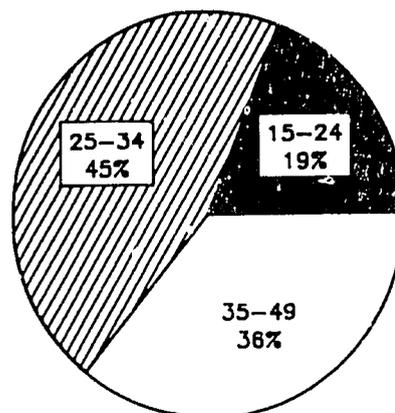
In all four countries, rhythm users are found in both urban and rural areas and at all educational levels (Figure 5). Among residents of urban areas, rhythm users are more likely to have some secondary education than users of withdrawal and non-contraceptors (Table D4, Appendix D; see also Figure 6). Rhythm users are also generally more educated than women using pills, IUDs and injectables. In contrast, rhythm users are less educated than women using barrier methods (spermicides, condoms and diaphragms).

In all of these countries, women who use rhythm or any contraceptive method are likely to have at least one living child (Table D5, Appendix D). In every country, users of rhythm are less likely to have very large families (five or more children) than users of withdrawal. However, in Sri Lanka, South Korea, and Peru, users of rhythm are more likely to have very large families than do users of barrier methods. Compared with non-contraceptors, rhythm users are less likely in every country to have five or more children.

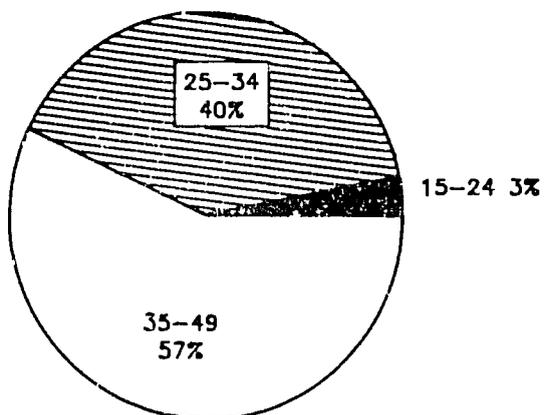
Figure 4. Percent Distribution of Rhythm Users^a by Age Group, for Sri Lanka, South Korea, Peru, and Mexico



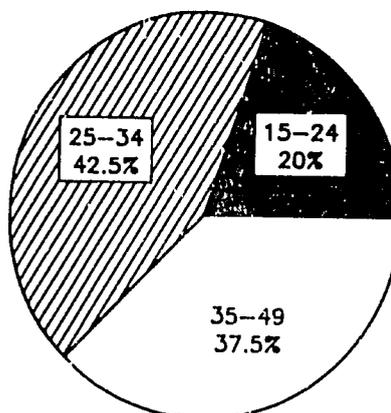
Sri Lanka



Peru



South Korea



Mexico

Age Groups

15-24 yrs.

25-34 yrs

35-49 yrs

^a Women currently married or in union

Source: Institute for Resource Development at Westinghouse, 1985

Figure 5 Comparison of Rhythm Users^a in Four Countries,
by Level of Education and Urban-Rural Residence

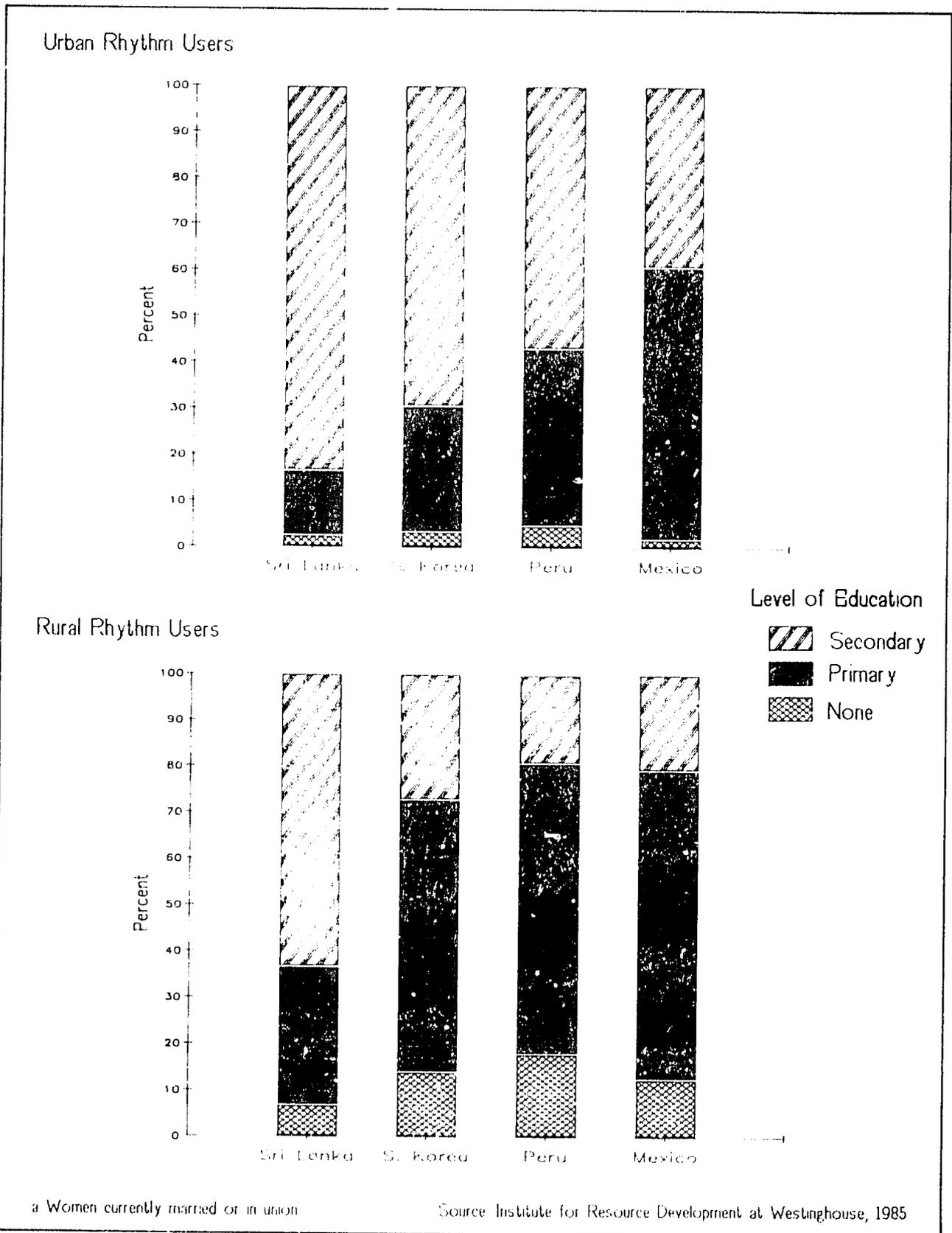
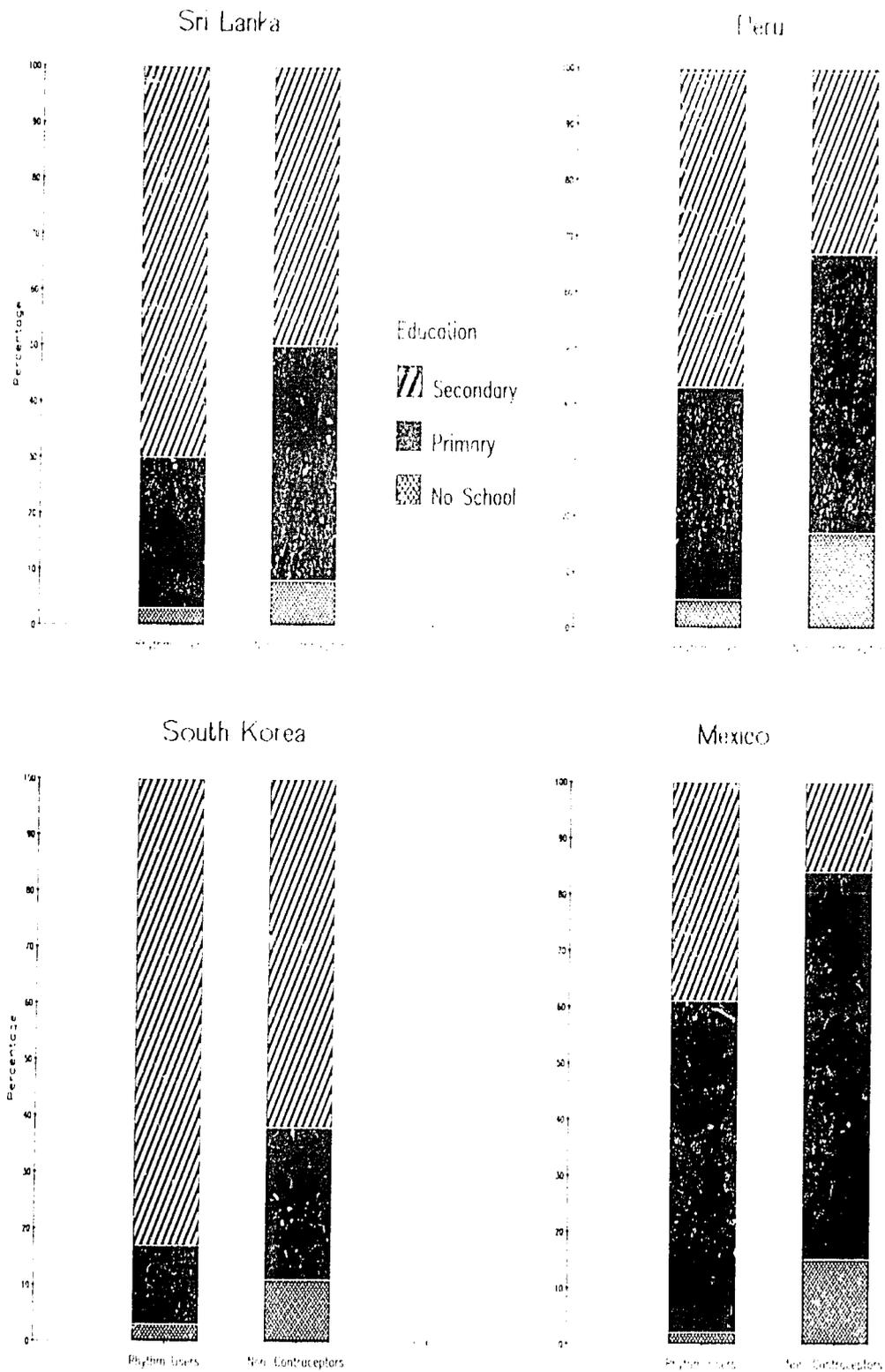


Figure 6. Comparison of Rhythm Users and Women not Using Any Method of Contraception, by Level of Education for Urban Residents



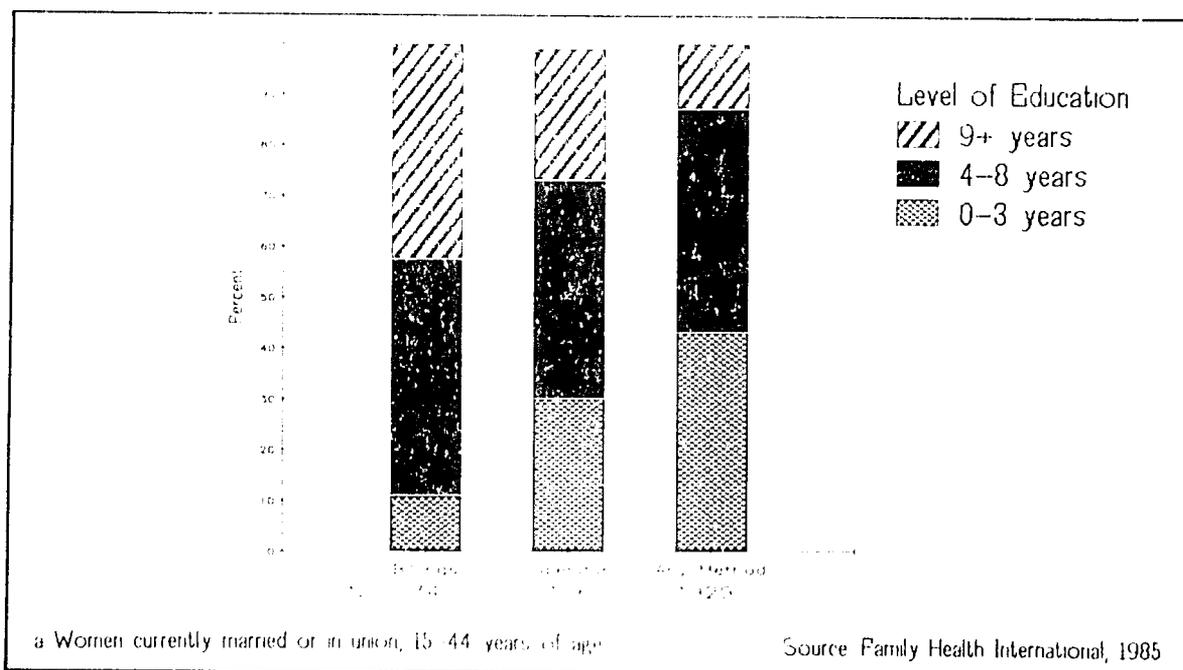
Source: Institute for Resource Development at Westinghouse, 1985

While survey data from these four countries permit comparison of users of the rhythm method with other women, very little information is available for comparing users of NFP methods with other women. Information on NFP users comes primarily from service statistics of some NFP programs, from special studies, like the World Health Organization study discussed later, and from studies conducted mostly in developed countries. These sources provide data on NFP users, but no comparative data on women using other methods or no method.

At present, only one survey provides information on users of a NFP method (ovulation method), users of calendar rhythm, and users of other contraceptive methods. This survey, conducted in the Southern region of Brazil, found that users of the ovulation method had different characteristics from users of calendar rhythm and from contraceptors in general. The three states comprising the Southern region are among the most developed in Brazil. At the time of the survey (1980-81), 67% of women currently in union were contracepting. Just over one percent were using the ovulation method compared with four percent using calendar rhythm (Table D1, Appendix D).

Compared with women using any contraceptive method, users of the ovulation method (Billings) were more than three times as likely to have nine or more years of education (Figure 7). In comparison with women using calendar rhythm, women who used the ovulation method were younger, more educated, and more likely to be residents of urban areas. Also, ovulation method users were more likely to be residents of Rio Grande do Sul than of the other two states, probably because the MOBREAL (The Literacy Movement of Brazil) program to teach the ovulation method was more widespread in that state.

Figure 7 Comparison of Level of Education Among Users of Billings, Calendar and Any Method of Contraception, Southern Region of Brazil^a



EFFECTIVENESS OF PERIODIC ABSTINENCE METHODS

There has been little research in recent years on the effectiveness of the calendar rhythm method (Liskin and Fox, 1981). In contrast, there has been considerable research recently on the effectiveness of NFP methods. However, promoters of these methods do not always consider the standard analytic techniques for measuring effectiveness of family planning to be appropriate. One result has been a wide variation in reported effectiveness rates of NFP methods. Over 50 studies of NFP methods have been conducted during the past 15 years, but different techniques to measure effectiveness makes comparison difficult. Most retrospective analyses have been based on NFP program statistics that used unstandardized methods to define and classify program participants.

Two of the methodological issues that make assessment of the effectiveness of NFP methods particularly difficult are the classification of pregnancies and the classification of method acceptors. Method effectiveness, as distinguished from use effectiveness, is a measure of the probability of pregnancy while correctly using the method. Use effectiveness, on the other hand, depends on a number of behavioral and motivational factors, such as the ability of the woman to recognize and interpret her fertility patterns, her diligence in observing and recording the signs and symptoms, and the motivation and joint cooperation of the couple in abstaining from intercourse. The quality of the instruction the couple receives, and, to some extent, the regularity of the phenomenon being monitored, are other relevant factors (CDC, 1983). While NFP method effectiveness rates may be in the same range as those for methods like the pill, a wide range of use effectiveness rates has been reported. Accurate measures of both types of effectiveness depend upon accurate classifications of pregnancies and method acceptors.

Classification of Pregnancies

Some of the differences in observed rates can be explained by the way pregnancies are classified. Since NFP methods can be used either to avoid conception or to conceive, pregnancies are generally classified into two categories, planned and unplanned. While some studies have classified pregnancies according to the couple's family planning intentions as stated at the outset, other studies allocated pregnancies retrospectively according to the investigator's perception of the couple's intentions.

A number of systems have been developed to further classify unplanned pregnancies. To date no one system has been accepted by all evaluators (Brennan and Klaus, 1982; Hilgers, 1980; DeBethune, 1984; Hilgers et al., 1984). According to Brennan and Klaus (1982), there are three types of user-related failures. If a couple "takes a chance" by having intercourse during the observed fertile period and pregnancy results, that

pregnancy is classified as "informed choice." "Teaching-related" pregnancies are those occurring due to either incorrect teaching or learning or misapplication of the rules, and "unresolved" pregnancies are those that cannot be allocated to any other category due to lack of data. Hilgers (1980), on the other hand, has classified pregnancies into just two categories - "achieving related" and "avoiding-related" - and does not acknowledge chance taking by couples who are properly trained in the methodology. A pregnancy conceived when a couple had intercourse during what they knew to be the fertile period is classified as a planned or "achieving related" pregnancy.

The issue of how to classify pregnancies by couples who "took a chance" is particularly important. Evidence from effectiveness studies indicates that even when the symptoms of fertility are correctly identified, and despite the couples' expressed intentions to avoid pregnancy, many still "take chances" during days of possible fertility. Those who become pregnant show up as "failures." These pregnancies, however, are sometimes excluded from NFP effectiveness rates because, some investigators argue, the couples intentionally ignored the rules of the method. Some researchers have classified such pregnancies as "planned" because the couple did not adequately demonstrate a desire to avoid pregnancy.

An example of how this classification problem can change the resulting effectiveness rates is a study of the ovulation method among 282 selected couples in Tonga. In this study, 29% of the women who learned the method became pregnant (Weissman, 1972). Over 60% of the pregnancies occurred to women who "took a chance" and had intercourse while mucus was present. These pregnancies, together with pregnancies to couples who had stopped using the method because they "were anxious to have more children," were excluded from effectiveness rates. In the end, only three pregnancies out of 81 were classified as "failures."

The quality of teaching is also important in determining the success or failure of the method being practiced. Thus, variations in effectiveness rates are sometimes attributed to different methods of instruction and differing ability of teachers (Flynn and Lynch, 1979). Some advocates of NFP methods argue that all pregnancies not designated as method failures should be classified as teaching failures.

Classification of Acceptors

The second issue that clouds analysis of NFP effectiveness is the classification of acceptors. With IUD acceptance, a woman is defined as an "acceptor" at the time of insertion. Most NFP promoters argue that, in contrast, NFP method acceptance is not a single event. Since the ability of a woman to correctly identify and interpret her fertility signals depends partly on the length of instruction, they argue, she may use a NFP method for a period of time without being considered an

acceptor. Likewise, a pregnancy conceived by a couple just learning a NFP method (usually called the "learning" or "teaching phase") is not considered to be a method failure because the couple may not be yet considered as acceptors. Technically, however, as soon as an individual agrees to learn NFP or starts charting her cycle, she could be considered an acceptor.

Use of terms like "user," "registered client," "acceptor," and "autonomous user," differs from one program to the next. How a client's status as a user is defined may depend as much on the extent of staff outreach and follow up, which are service related factors, as on the demonstrated facility and motivation of the couple in using a method. For example, one program in India defines an acceptor as "a woman whose husband has agreed to follow Natural Family Planning and together with the wife agrees to follow the method for spacing or limitation" of births (Mascareñas, 1979:1). After three months of successful, supervised NFP practice they are considered users, and at one year of "confident" use they become autonomous users.

While it may never be possible to obtain complete scientific standardization among researchers regarding the classification of pregnancies and acceptors, it is certain that a clear understanding of the effectiveness of NFP methods will not be known until there is greater clarity in the conceptual understanding and empirical measurement of pregnancies and acceptors.

Results of Effectiveness Studies of NFP Methods

The majority of NFP effectiveness studies have been reviewed in recent publications (Liskin and Fox, 1981; Klaus, 1982; Kleinman, 1983; Spieler, 1984) and will not be individually described in this paper. Some of the studies, as commented upon in the preceding section, lack standard procedures and definitions of terminology, are not well managed, and do not always follow up subjects or do so inadequately. Often, the number of cycles studied is insufficient, demographic characteristics of the study sample are not reported, and the number of exposure cycles for subjects with variable ovulatory patterns (e.g., lactating or premenopausal women) is not reported. In addition, several studies exclude certain subjects from final analysis based on subjective criteria (Gross, 1979). The conclusions based on these studies are therefore of questionable validity. Tables 1 and 2 show comparisons of selected recent studies of two NFP methods, the ovulation method and the sympto-thermal method. Comparisons of the results of a larger number of studies for each NFP method are contained elsewhere (Liskin and Fox, 1981; Klaus, 1982; Kleinman, 1983).

Table 1: Selected Studies of the Effectiveness
of the Ovulation Method

Author (Date)	Place	Study Description	No. of Cycles/ Months	No. of Unplanned Pregnancies	Failure Rate
Mascarenhas (1979-II)	India (5 states)	Prospective study of 3530 acceptors*	39,967 cycles	176	5.3 ^a 5.7 ^c
Medina et al. (1980)	Colombia	Randomized prospective study of 277 new users	1,967 months	61	37.2 ^a 22.2 ^c
Wade et al. (1981)	USA	Randomized prospective study of 573 new users	3,223 months	94	34.9 ^a 22.4 ^c
WHO (1981)	New Zealand, India, Ireland, Philippines, El Salvador	Prospective study of 869 new users and 725 successful learners	2,701 cycles ^d 7,514 cycles ^e	45 130	21.6 ^b 22.5 ^b

Source: Adapted from Table 1, Liskin and Fox (1981).

^a Pearl Rate per 100 woman years.

^b Modified Pearl Rate per 1300 cycles.

^c Life Table Rate, percent at 12 months.

^d 869 new users, training period (teaching phase).

^e 725 successful learners, period beginning with end of training and beginning with follow up (effectiveness phase).

*Acceptor not defined.

Table 2: Selected Studies of the Effectiveness
of the Sympto-Thermal Method

Author (Date)	Place	Study Description	No. of Months	No. of Unplanned Pregnancies	Failure Rate	Signs of Fertile Period Used
McCarthy (1981)	USA	Prospective study of 83 experienced users	NR	45	10.7 ^b	CM + BBT
Medina et al. (1980)	Colombia	Randomized prospective study of 286 new users	1882 months	54	34.4 ^a 19.1 ^b	BBT + CM + calendar + other
Wade et al. (1980)	USA	Randomized prospective study of 590 new users	3399 months	47	16.6 ^a 11.2 ^b	BBT + CM + calendar + other

Source: Adapted from Table 2, Liskin and Fox (1981).

^a Pearl Rate per 100 woman-years.

^b Life Table Rate, percent at 12 months.

Abbreviations:

BBT = basal body temperature

CM = cervical mucus

NR = not reported

The majority of NFP studies are retrospective and non-randomized. To date, only two studies that compared the ovulation and sympto-thermal methods have used a randomized prospective design (Medina et al., 1980; Wade et al., 1981). Prospective studies tend to be costly, and women may not agree to be randomly allocated to a method, instead preferring to make their own decision about which method to use.

One study by the World Health Organization (WHO) deserves special mention. In a two-phase five-country multicenter prospective trial of the ovulation method in New Zealand, India, Ireland, Philippines, and El Salvador, WHO investigated the percentage of women who could be successfully taught to recognize cervical mucus changes and assessed the effectiveness of the method. The multi-national population included women of proven fertility who were less than 39 years old, non-lactating, and with a history of menstrual cycle length of between 23 and 35 days. Fifty-four percent of all study participants were "limiters" who desired no more children. None of the women had previous experience with the ovulation method.

The WHO study was conducted in a number of countries concurrently, using a standard protocol. This made it possible to compare women representing a wide range of cultural, educational and socioeconomic characteristics who had used the same method. To avoid the problem of distinguishing between unplanned and planned pregnancies, WHO adopted a convention of asking women at each monthly follow-up interview if they planned to continue using the method to avoid pregnancy in the next cycle (Spieler, 1984).

Following the instructions of an experienced teacher, 93% of the women were able to recognize and record cervical mucus changes during the first cycle. After three cycles, less than 2% of the initial 869 subjects failed to learn the method. Five percent became pregnant during this three-cycle teaching phase (WHO, 1981-I).

In the second part of the study, called the effectiveness phase, the 725 women who had successfully learned how to recognize their cervical mucus patterns were studied for 13 cycles. WHO used five categories to classify pregnancies, with more than one category applicable in some instances (WHO, 1981-II). The following modified Pearl rates (number of pregnancies times 1300 woman-months divided by number of cycles) over 7514 cycles of observation were found: 2.8 method-related, 0.4 inadequate teaching, 3.5 inaccurate application of instructions, 15.4 conscious departure from the rules regarding abstinence and 0.5 "uncertain."

There was considerable variation in the pregnancy rates among centers, from 13.8 in Manila to 33.6 in Auckland. The circumstances of conception varied significantly. In San Miguel, El Salvador, all pregnancies resulted from conscious departure from the rules, whereas in Auckland, New Zealand, more than half resulted from inaccurate application of instructions. Method failure rates were markedly different, ranging from 9.4 (Auckland) to 1.1 (Manila, Philippines), with no method failures reported in Bangalore, India, or San Miguel. Among the initial 725 participants in the effectiveness phase, the overall cumulative probability of discontinuation was higher for spacers (43.0%) than for limiters (29.1%).

Effectiveness of Calendar Rhythm in the Philippines

Little attention has been paid to evaluating the effectiveness of the calendar rhythm method. Since calendar rhythm is one form of periodic abstinence, selected results from several recent surveys in the Philippines are included. In the three Philippine National Acceptor Surveys (NAS) of acceptors at clinics, calendar rhythm acceptors were found to have the highest cumulative life-table failure rates at both 12 and 36 months (13.8 and 22.9, respectively), followed by condoms, pills and the IUD (Laing, 1984). Pearl rates were similar for condom and calendar rhythm users (about 20) followed by pills and IUDs. Continuation rates at 12 and 36 months were highest among IUD acceptors and lowest for condom acceptors, while rates for pill and rhythm acceptors were similar.

Although pill acceptors had lower pregnancy rates than calendar rhythm acceptors in the short term, three years after acceptance the cumulative overall pregnancy rate, which includes pregnancies conceived both while using the method and after discontinuation of the method, was about 60 for both pill and calendar rhythm acceptors. According to Laing (1984), because pill users are more likely to discontinue use, "the advantage of the pill's low failure rate while in use is completely cancelled out within three years after acceptance." However, it should be noted that pill users were younger, and therefore presumably more fecund, than (calendar) rhythm users. Furthermore, these effectiveness rates include both planned and unplanned pregnancies.

The more recent Philippines Community Outreach Surveys (COS, 1978 and 1980) reflect a shift in the research focus of the Philippine Family Planning Program from clinic acceptors to eligible couples in village based Outreach Project areas. They provide information on how the calendar rhythm method is practiced in the general population. The 1980 COS showed, not surprisingly, that calendar rhythm users who knew to avoid sex during the middle of the cycle in order to prevent pregnancy reported proportionally fewer accidental pregnancies than did women who stated that they were using calendar rhythm but who did not know that mid-cycle was the period during which they should abstain. Women who knew to abstain during mid-cycle had a Pearl rate of 24.3 per 100 woman-years, compared to 30.6 for those who thought intercourse should be avoided right after the menstrual period and 50.4 for those who thought sex should be avoided immediately before the next period.

Data from the 1978 and 1980 COSs indicate that use of calendar rhythm in combination with either condoms or withdrawal is fairly common. Continuation and pregnancy rates for rhythm plus condoms are similar to the corresponding rates of rhythm used alone (Table D6, Appendix D). In contrast, rhythm plus withdrawal appears to have been a more effective combination than rhythm and condoms and was more widely used. Rhythm plus withdrawal was as likely to be continued as the IUD and to be used as effectively as the pill.

The Philippine COS research attempts to compare use effectiveness of all methods in the general population - not just among couples participating in a particular study or family planning program. Similar research in other countries would provide valuable baseline data on a broader spectrum of users than is currently available.

QUESTIONS RAISED ABOUT PERIODIC ABSTINENCE METHODS

Many questions are asked about periodic abstinence methods. Eleven of the most frequently asked questions are discussed in this section.

How acceptable are periodic abstinence methods? Once a couple decides to delay or limit childbearing, a number of personal and cultural factors will affect their adoption of a particular practice or family planning method. The extent of the couple's knowledge about the range of family planning options available, their access to information and services, their confidence in the safety and efficacy of given methods, and their perceptions about the effects on their marital relationship are some of these factors. For some couples, effectiveness is the primary consideration in selecting a method while for others convenience or safety is more important.

Couples who consider using NFP will need to consider the periodic abstinence requirement, the health benefits and risks of using NFP methods, and the acceptability of techniques used to identify the fertile phase. The relative importance of each of these factors may differ with the sociocultural and economic milieu. For instance, in India:

ultimately, the acceptance of a method of family planning among the urban and rural poor may depend less on its effectiveness (effectiveness may be more important in other cultural situations) than on its simplicity, low financial and psychological costs, reversibility, ease of use, and lack of side effects (Dorairaj, IFFLP, 1984).

Who can use periodic abstinence methods? Women throughout the world of various cultural and socioeconomic backgrounds are using some form of periodic abstinence. For example, as was shown in Figure 5, rhythm users are found in Sri Lanka, South Korea, Peru, and Mexico in both urban and rural areas and at various levels of education. Similarly, the WHO Multicenter Ovulation Method Trial was conducted in five countries, among subjects who were illiterate to those having a postgraduate education (WHO, 1981-1). Level of education did not affect the subjects' ability to recognize and record their cervical mucus patterns in the WHO study.

Religious motivation to choose a periodic abstinence method is apparently not a prerequisite. The percentage of WHO study subjects who cited religious reasons for using OM ranged from 23% to 55% in the five centers (WHO, 1981-1). This is particularly interesting in that more than half the subjects in each of the centers were Catholic.

In the Philippines, women who choose calendar rhythm also appear to attach relatively little significance to religious considerations (Laing, 1984). Instead, medical safety and convenience, and to a lesser extent effectiveness and husband's support, were the primary reasons for choosing calendar rhythm over other methods offered at family planning

clinics. Some cultural resistance to and widespread concern about side effects of modern methods were evident.

How difficult is it to determine the fertile period? Opinions vary as to how difficult it is to learn to identify the fertile period and to maintain the commitment to continuous monitoring that is required. In the WHO study of the ovulation method, more than 90% of the women were able to recognize and record their mucus symptoms (WHO, 1981-I). Continuous monitoring may be more problematic, especially in situations where supplies such as thermometers or charts may not be easily available and where privacy is lacking.

What situations hinder the identification of the fertile period? Women who are breastfeeding, who are in their early or late years of reproductive life, or who have recently stopped using hormonal contraceptives often have irregular cycles, sometimes without ovulation (see Box 2). Vaginal infections may interfere with the observation of the mucus symptom. In all of these situations, reliance on previous experience would be inaccurate, and the symptoms during the current cycle may be difficult to interpret.

How long is the required period of abstinence? The relative length of abstinence required for various periodic abstinence methods for a hypothetical 28 day cycle is depicted in Figure A 1, (Appendix A). In general, abstinence is required for about half of each cycle with all of these methods. The period of required abstinence varies considerably, however, from one woman to another and from one cycle to another. Also, learners are often required to abstain for a longer period than experienced users.

Many people feel that if the periodic abstinence interval can be made shorter, more people will find NFP methods acceptable. The modified mucus method was developed partly for this reason. This method involves identifying the cervical mucus as with the ovulation method, but establishes different rules about abstinence (see description in Appendix A). Current research is attempting to identify ovulation more precisely so that the length of required abstinence can be reduced.

How well can couples comply with the periodic abstinence requirement? Once a couple has learned to identify the fertile period, compliance with the rules of abstinence will determine whether they achieve their family planning objectives. If the couple does not want to have more children, they may be more motivated to abstain than couples who are only interested in delaying pregnancy.

Difficulty in complying with the abstinence requirement is one of the major drawbacks of periodic abstinence methods (Marshall and Rowe, 1973). Couples do not always abstain when they know they should, and as a result, some conceive. Even some enthusiastic users report that abstinence is sometimes difficult and may be a source of marital tension.

In contrast, others view abstinence in a more positive way, emphasizing other ways of expressing their love and focusing on the stronger marital communication that can result. One study of the sympto-thermal method (Daly and Herold, 1983) found that couples who discontinued use were more likely to see abstinence as a time of sacrifice and frustration, whereas those who continued to use the method were likely to perceive abstinence as facilitating marital communication and improving their sexual relationship.

Among its more ardent proponents, NFP is not considered to be contraception but rather a lifestyle or a philosophy. To view abstinence as a chore rather than an integral part of the marital relationship would be inconsistent with the values of many NFP proponents. According to Klaus (1980), while contraception emphasizes the couple's relationship at the "moment of union," NFP permits a "possible extension of the (couple's) relationship in the form of a child." Therefore, people who use NFP methods "chose to allow the full biological presence of their procreative power to be present in any act of intercourse."

What are the options for sexual expression during the period of abstinence? Although it is implied that methods based on periodic abstinence require abstinence, attitudes concerning sexual expression during the fertile phase differ. In a discussion of NFP, Maloof (1978) lists three basic approaches to abstinence: 1) total avoidance of any physical contact, 2) physical contact without genital arousal, and 3) avoidance of coital relations, while seeking genital arousal in other ways.

Traditionally, NFP providers have favored the expression of love through non-arousing behaviors, in part because it is felt that any sexual activity may interfere with accurate identification of fertility signs, particularly cervical mucus. Not all users subscribe to this approach. Some prefer to engage in various forms of sexual activity during the fertile phase without the risk of pregnancy, through genital arousal without genital union. Other approaches include use of contraceptive methods such as barrier methods or withdrawal during the calculated or observed fertile phase, a practice that has been reported in Japan and the Philippines (Coleman, 1983; Laing, 1984). These approaches would not be considered NFP because periodic abstinence is not observed.

What effect does use of NFP have on the marriage relationship? According to NFP proponents, a principal benefit of NFP is improved communication, joint cooperation and shared responsibility in using the method, and heightened awareness of the importance of quality in sexual relations.

Only a few recent studies (McCusker, 1976; Jonas, 1983; Brennan, 1983; Daly and Herold, 1983; Desmarteaux, 1984; Borkman and Shivanandan, 1984) have investigated this aspect of NFP use, and all but one of these,

(Brennan, 1983), were implemented in the United States or Canada. As a whole, the studies attempted to measure behavioral changes associated with NFP use, or to identify the variables related to successful (or satisfied) use. One of the studies based on interviews with a self-selected sample of 46 couples from the southern and western regions of Puerto Rico (Brennan, 1983), concluded that marital communication was positively related to the level of satisfaction with NFP use for both husbands and wives. But the task of separating cause and effect in a relationship is problematic: does a couple's communication improve as a result of using NFP, or are couples who have good communication skills predisposed to carry that style over to other practices, like the use of NFP (Borkman and Shivanandan, 1984)? Standardized measures for assessing attitudinal and behavioral changes resulting from NFP use have not yet been established. Another problem is that the available studies lack control groups of non-NFP users matched for age, duration of marriage, family size, income, and other socioeconomic and demographic variables; only users who are committed to NFP use are included. Consequently, only the most tentative conclusions can be drawn from the studies of the marital impact of NFP use.

As a group, the available uncontrolled, descriptive studies of NFP users suggest some psychosocial benefits to the marriage, but further research is needed. In addition, it would be useful to compare the effects of NFP with other family planning methods.

Are periodic abstinence methods safe? While there are no health risks associated with periodic abstinence methods themselves, as with any other family planning method there are the normal health risks associated with unintended pregnancies. The most serious of these risks, of course, is maternal death, which is much more likely in developing countries where maternal mortality rates may range as high as 1,000 women per 100,000 children born, compared to developed countries where the rate of mortality is less than 15 women per 100,000 children born (Maine, 1981; CDC, 1983; World Health Organization, 1983-II). While women who practice any family planning method are less likely to have an unintended pregnancy than women who do not use a method, the extent to which use of periodic abstinence methods prevents maternal mortality depends on the use-effectiveness of these methods.

Many other family planning methods have health risks, such as sterilization with related surgical complications, increased cardiovascular risks in pill users, or the increased incidence of pelvic inflammatory disease in women using the IUD. Some of these risks (e.g. those associated with surgery) may be higher in developing countries, while others may be lower, such as the risk of cardiovascular complications of pill use, because of the lower prevalence of smoking. However, women who use barrier methods, withdrawal, or periodic abstinence methods are not exposed to health risks other than those associated with unintended pregnancy. On the other hand, NFP has no protective effects, such as those afforded by the pill against

endometrial and ovarian cancer (CDC, 1983-1; CDC, 1983-2) or by barrier methods against sexually-transmitted diseases (Sherris et al., 1984).

For some methods, including periodic abstinence methods, the extent to which a woman complies with standards of correct use affect whether she gets pregnant. If she neglects to take the pill regularly, for example, her risk of pregnancy is higher. Lack of compliance among NFP users can occur either because of lack of motivation to abstain or because of an inability to determine when abstinence is required.

In summary, there are no health risks associated with the use of a periodic abstinence method itself, but the risk of pregnancy is higher if a couple does not abstain during the fertile period. Given the high rates of maternal mortality in many developing countries, the risks associated with unintended pregnancy are significant.

Are there any problems associated with the outcome of pregnancies among users of periodic abstinence methods? Several investigators have claimed that couples who avoid intercourse during what they believe to be the fertile period but nonetheless become pregnant are more likely to have conceptions involving aged sperm or ova (Guerrero and Rojas, 1975; Jongbloet, 1969). In animal studies, fertilization with aged gametes has been linked with an increased incidence of spontaneous abortion and chromosomal and structural defects, though this has not been demonstrated in humans. (Liskin and Fox, 1981; Gray, 1983; WHO, 1984).

A World Health Organization report (1984) provided data on pregnancy outcomes from the multicenter study of the ovulation method. Outcome data were available for 163 of 175 pregnancies out of which there were 140 live births, one stillbirth, 16 spontaneous abortions and six induced abortions. The congenital malformation rate was 1.2 %. These rates were not higher than would be expected in the general population nor were they any higher than with other family planning methods (Gray et al., 1985).

Should prospective users of periodic abstinence methods be warned about these risks? According to the Medical Advisory Panel of the International Planned Parenthood Federation, "while the possibility that periodic abstinence may be associated with a higher incidence of spontaneous abortion and congenital defects in the offspring should be the subject of further study, the present evidence does not suggest that the risk, if any, is appreciable. There is, therefore, no more need to warn prospective users of this hypothetical risk than there would be when prescribing a vaginal spermicide" (Kleinman, 1983).

Can NFP be used to conceive a child of the preferred sex? Some proponents claim that the Billings method can be used by a couple to help preselect the sex of their baby. Conflicting theories have been advanced supporting the argument by Guerrero (1974) and Harlap (1979) that timing of intercourse affects sex ratios. Billings and Westmore (1980) cite some evidence from Nigeria that achieving conception on the day of peak

mucus tends to result in a boy and that intercourse early in the mucus phase without further relations results in a girl.

Most of the studies of sex preselection have, until recently, been poorly documented, retrospective in design and lacking in reliable indicators of ovulation. France (1984) and the above-cited WHO study provide the best data on the relationship between the sex of offspring and the timing of intercourse relative to ovulation and fertilization.

The prospective study by France used three indicators--BBT, "peak day" cervical mucus symptoms and urinary luteinizing hormone (LH) levels--to identify the time of ovulation in 33 pregnancies. The study method used a timed-intercourse approach with intercourse occurring at ovulation for couples desiring a boy or two to three days before ovulation for those desiring a girl. The results were consistent with Guerrero (1974) that males are favored the longer the interval between intercourse and ovulation, but the investigator cautions against drawing conclusions that a child's sex can be predetermined based on this limited number of cases.

In the WHO study, 163 pregnancies were studied for any relationship between sex ratios and timing of conception. Based on mucus symptoms, no significant patterns related to the estimated day of conception, the presumed day of ovulation and the sex of children were found.

PROGRAM AND POLICY CONSIDERATIONS

An increasing number of family planning providers recognize NFP and other fertility awareness-based methods as valid contraceptive choices that should be available in any comprehensive program. Many also desire to escape from the destructive polarization of attitudes for and against NFP that has been apparent in the recent history of family planning. However, many family planning providers are uncertain about the feasibility of including these methods and how to best make them available. They question the kind of service delivery system that would be most appropriate, and to what extent existing systems can be used to provide fertility awareness education or to promote periodic abstinence methods.

Assessing potential demand for these services is problematic, partly because it is not known what proportion of women in most countries have heard of, much less used, periodic abstinence methods. Knowledge of the existence of a method is an obvious prerequisite to acceptance and use, but services must also be accessible. Relatively few couples in the world have access to any family planning services, and fewer have access to NFP services. In addition, family planning programs that offer NFP together with other methods are virtually non-existent in developing or developed countries. This makes it difficult to predict the response should such services become available.

A profile of selected countries where periodic abstinence methods are relatively popular is included in Appendix C. Within these eight countries, a variety of NFP service delivery approaches and the environments in which they are provided are represented. From these country studies, policy makers and program managers can see how programs can be organized. A guide to selected agencies and organizations providing support for NFP research and program activities appears in Appendix B.

Selection of a Periodic Abstinence Method

Which periodic abstinence method should be taught -- one of the NFP methods (cervical mucus, basal-body temperature, or sympto-thermal) or calendar rhythm? The above discussion of program issues refers mainly to NFP services, because these methods are the ones being taught by most organized programs. Because they are believed to be more effective than calendar rhythm, most family planning programs prefer to select a NFP method. The NFP method that is most appropriate will ultimately depend on many local factors, such as whether a method is currently being taught by private programs. Advantages and disadvantages of NFP methods are presented in Box 3. Calendar rhythm should also be considered, particularly if many couples are already practicing some variation of self-taught periodic abstinence. Calendar rhythm has the advantage of not requiring continuous monitoring, and may be quite effective for women with regular menstrual cycles.

Program Options

There are several program options available for expanding the availability of NFP services. These include:

- (1) Provision of NFP services in comprehensive family planning programs, either by:
 - (a) training present staff members in NFP, or
 - (b) hiring NFP instructors.
- (2) Cross-referral of couples between public family planning programs and private NFP programs.
- (3) Coordination at the national level of NFP activities, both:
 - (a) administrative coordination, and
 - (b) establishment of "Centers of Excellence" to provide technical and educational assistance.
- (4) Provision of support for pilot projects or other research activities.

In countries where NFP services are available, delivery channels vary from grass-roots initiatives involving small groups to national or regional family planning programs that teach NFP. In most countries, autonomous NFP groups offer instruction and other services. Some, but not all, are affiliated with either of the two international NFP associations, the International Federation of Family Life Promotion (IFFLP) and the World Organization of the Ovulation Method Billings (WOOMB). In general, services tend to be concentrated in a few (usually urban) areas and are often not available to rural or low income groups. Further, NFP services are sometimes not available to couples who do not have values or beliefs similar to those of the providers.

Can NFP be Effectively Integrated into a National Family Planning Program?

Some in the NFP community argue that NFP is a specialized subject requiring careful instruction, accredited teachers and a separate delivery system. Only a few developing countries have attempted to add NFP to the existing "cafeteria" of family planning choices, but their experience thus far has exposed some of the problem areas. Problems that have surfaced in the Philippines, for example, include a lack of commitment among providers or instructors, competition for manpower and economic resources, and lack of adequate program support, educational materials, or follow-up of clients.

Within a comprehensive family planning program, NFP services could be provided either by staff members trained in the delivery of services, as

BOX THREE

ADVANTAGES AND DISADVANTAGES OF NFP METHODS

ADVANTAGES

- No physical side effects.
- Training increases awareness and knowledge of reproductive function.
- Acceptors can be trained by paraprofessionals and lay volunteers.
- After initial training and follow-up, many users are able to practice the method without additional assistance and at almost no expense.
- Responsibility for family planning is shared by both partners, which may lead to increased communication. By requiring collaboration between partners, periodic abstinence may contribute to more cooperative marital relationships in areas other than just family planning.
- May be used to help couples achieve pregnancy.
- Acceptable to people who prefer not to use other methods of family planning.
- Approved by the Catholic Church.
- May be esthetically more acceptable than other coitus-related methods (condoms, spermicides, diaphragms, or withdrawal).
- Availability of periodic abstinence methods may increase the number of initial family planning acceptors.

DISADVANTAGES

- To be effective, requires consistent use, strong commitment and cooperation from both partners
- Relatively long initial instruction.
- NFP methods require daily monitoring and charting.
- Some women experience fear of unwanted pregnancy.
- Without use of volunteer teachers and instructors, the delivery of NFP methods could be expensive.
- Sexual abstinence may cause marital problems.
- To avoid pregnancy, intercourse must be confined to a limited number of days based on the method practiced. Length of abstinence depends on cycle length and variability:

Cervical mucus (alone):

- learners: 2/3 or all of the days of the first cycle
- experienced users: 1/3 to 2/3 of the cycle

BBT (alone): from 1/2 to 2/3 of the days of the cycle

Sympto-Thermal: depending on the combination of techniques used, from 1/3 to 1/2 of the days.

Calendar (alone): may be as few as 1 to 3 days or as many as 10 to 20 days per cycle.

Source: Adapted from CDC, 1983.

well as other contraceptive services, or by NFP instructors who are hired solely to instruct in periodic abstinence methods. Both of these teaching options have advantages and disadvantages, with the better choice determined by local factors.

An alternative to integration of NFP is to promote cross-referral between government and private family planning programs and the existing private NFP programs. In this way, the range of choices available to clients of both public family planning programs and private NFP organizations would expand, presumably at minimal additional cost. This approach has not been feasible with all NFP promoters because of policies discouraging referral of NFP clients to other family planning services. Many NFP promoters reject contraception, abortion and sterilization and have in the past been unsupportive of cooperation in service provision with national family planning programs that provide any of these services (WOOMB, 1980). They claim their clients are not interested in other methods and that most have already tried using pills or IUDs (UNFPA, 1982).

Other NFP proponents, however, are more supportive of the idea of cross-referrals and are taking steps to promote it. For example, in order to conform with the principle of informed choice, some organizations have adopted the following referral procedures:

- 1) Service providers explicitly state to clients that only NFP information and services are provided; and
- 2) Clients who specifically request information or services for other family planning methods are referred to the appropriate health or family planning service.

In a few countries, a national coordinating organization has been created to reduce the overlap between administration or training-related efforts of separate NFP programs. These organizations are still in the formative stage and are generally sponsored by a combination of public and private sources.

In some countries, NFP is promoted primarily by a cadre of user-instructors with different levels of training. In addition to instructing clients in NFP methods, they function as motivators and do follow-up activities. But clients in special circumstances - women approaching menopause, those with leukorrhea, breast-feeding mothers or women discontinuing the pill - may require more expertise than can be provided at the grass roots level (Thormann, 1984). One proposed solution to these problems is to develop model NFP service "Centers of Excellence" at the national or regional level to provide a focus for training, information and research activities. These centers might operate as information clearinghouses, collecting and disseminating NFP materials to program managers and trainers, in addition to serving as consultation or referral points for NFP instructors.

The Key Role of Instructors

Periodic abstinence methods rely very heavily on well-trained and highly motivated instructors. Each couple requires a great deal of time for the initial instruction and for follow-up during the early months of use. NFP services are therefore very labor-intensive. The key role of instructors implies that decisions regarding such questions as who the instructors should be, how they should be trained, and how much they should be paid will affect both the quality and the cost of the program.

Many NFP providers have teacher training curricula that require demonstrated competency as well as practical experience. However, training content, standards and certification procedures for instructors vary among providers. Evaluation of teaching effectiveness is therefore problematic. In the WHO study of the ovulation method (1981-I), some evaluation of the training of teachers was conducted. Each teacher was asked to complete an ovulation method questionnaire designed to test her knowledge and understanding of the method. If the teacher showed some deficiencies in knowledge, the principal investigator discussed these deficiencies with her. No data have been published, however, on what proportion of teachers had problems, or what criteria principal investigators used in assessing these problems. Also, no data were presented on the teachers other than to mention that they were married women using the method who had successfully completed the questionnaire. While other NFP studies have used certified instructors, this fact is not always explicitly stated and the criteria for certification are sometimes uncertain and unstandardized.

Cost-Effectiveness

Many family planning providers recognize the importance of NFP. For a variety of reasons, however, administrators have not included these methods in national programs. Concern about the cost-effectiveness of providing NFP is one of the reasons.

Cost-effectiveness analysis is a technique for assessing and comparing different program approaches in terms of the relative cost of obtaining a particular unit of output (Fisher et al., 1983; Sirageldin et al., 1983; and Gillespie et al., 1983). Put simply, it "is a measure of the relationship between program costs and achievement" (Gray and Kambic, 1984). Cost per acceptor, cost per couple-years-of-protection and cost per birth-averted are examples of the kinds of ratios used to measure family planning program impact and output using this form of analysis. Cost effectiveness provides a measure of cost-per-input to some given output or outcome.

The comparative cost-effectiveness of NFP and family planning programs in general depends on a variety of factors. These include client loads, methods provided, cost/availability of supplies, and the extent of reliance on volunteers. The variables that should be measured

and the value attributed to them is one important issue. Other considerations are service statistics capabilities, the purpose of the assessment and the way specific costs are allocated.

While it would seem to be a relatively straightforward procedure to calculate the cost of some given level of output, in practice there are a number of costs that are difficult to assess. For example, if NFP is being taught in facilities used to provide other services, such as religious activities, what share of costs (e.g. rent, utilities) should be attributed to the NFP program? If staff who are already providing other services, say church or community workers, start teaching NFP, what share of these costs should be counted as program costs? If NFP workers are volunteers, how should the cost of instruction be calculated?

In the early stages of NFP programs, classes may be conducted on church property and use voluntary workers or church personnel. Program costs may include some additional utility costs and training materials. As the program expands, it may need to acquire additional facilities, an administrative staff, and some additional staff to provide training and follow up.

NFP requires a more extensive educational delivery system and a larger training input than most methods of family planning. Trainers and instructors must be trained and they in turn must teach acceptors. Some programs may require that acceptors attend classes during the teaching phase and that instructors visit couples in their homes to provide follow-up instruction and motivation. The costs of such a program depend on how labor costs are calculated. If trainers and instructors are not paid or if user couples teach new couples, all labor may be voluntary and program costs nearly zero. However, at the highest training levels, at least in large scale programs, trainers may be paid. Even if there are no labor costs, the costs measured in terms of output sacrificed may still not equal zero. If NFP trainers or instructors also provide health or other family planning services, they may be drawn away from these other tasks to teach NFP, thus involving an opportunity cost.

Data on cost-effectiveness of NFP programs are severely limited, although a few NFP research projects now include a component for evaluating cost effectiveness. Some data on total and average costs of service provision per user couple were provided by an evaluation report from a two-year NFP program in India, 1978-80 (IGSSS, 1981). It is unfortunate that little detailed information about the results is available.

Not only is it difficult to determine the costs of NFP services, but the benefits are also difficult to calculate. If the cost per acceptor is being computed, the definition of an acceptor (ranging from someone who attends one lecture to someone who has been thoroughly trained) will affect the results. If the cost per couple-years-of-protection or cost

per birth-averted is being computed, the issue of effectiveness of the NFP method further complicates the calculations. Furthermore, a couple may use the method for only a few months or for many years, with some initial cost to the program. High initial training costs may be justified if a couple will then use the method for the remainder of their reproductive lives, but not if they will discontinue after a few months.

Research Needs

Boxes 4 and 5 present key areas where further research in the area of periodic abstinence methods is needed.

BOX FOUR

RESEARCH NEEDS

- Biomedical research on prediction of ovulation (see Box 5)
- Psychosocial research (such as effect of NFP use on marital relationship, possibly compared with effect of other family planning methods)
- Programmatic (or operations) research including cost effectiveness, efficacy of group versus individual counselling, most effective ways of recruiting users, etc.
- Research on long term impact of NFP educational programs
- Applicability of NFP for women in special circumstances (breast-feeding, premenopausal, vaginal infections, etc.)
- Surveys on the extent of knowledge about fertility cycles in the general population
- Measurement of demand in the general population for periodic abstinence or fertility awareness methods
- Characteristics of more versus less successful users
- Case studies of attempts to integrate NFP methods (or fertility awareness information) into public or private family planning programs
- Research to determine the minimum amount of training/information/follow up needed by couples to practice NFP methods satisfactorily
- Use effectiveness of periodic abstinence methods

BOX FIVE

BIOLOGICAL RESEARCH ON PREDICTORS OF OVULATION

The following matrix shows methods currently available to researchers for the prediction or detection of events in the reproductive cycle associated with the timing of ovulation and fertilization. Improving the level of precision of these measurements will require the development of a better understanding of hormonal activity relative to ovulation and during pregnancy and lactation. On the horizon, new techniques may become available that permit home detection of hormone levels in urine samples with ease, convenience and increased effectiveness. The thrust of most of the research in technological devices has been toward inexpensive, easy-to-use diagnostic devices that could be used by individual women in their homes.

If the timing of ovulation can be predicted more precisely, the amount of abstinence required would be reduced. It would also enable women in special circumstances with irregular ovulatory patterns (i.e. those breast-feeding, post-pill, or premenopausal) to use NFP methods more effectively.

Event/Purpose	Validator of Event/Purpose							
	Ultra Sound	Mucus	Estrogen in Saliva, Serum, Urine	LH in Serum, Urine	BBT	Progesterone in Milk, Saliva, Serum, Urine	HCG in Serum, Urine	PRL in Serum
1. Follicular Development	+	-	+	-	-	-	-	-
2. Start of the Fertile Period	+	+	+	-	-	-	-	-
3. Immediate Prediction of Ovulation	-	+	+	+	-	+	-	-
4. Start of Infertile Period	-	+	+	-	+	+	-	-
5. Adequacy of Luteal Function	-	-	-	-	+	+	-	-
6. Detection of Pregnancy	+	-	-	-	+	-	+	-
7. Resumption of Ovarian Function During Lactation	+	+	+	-	+	+	-	+

+ These methods permit identification of menstrual cycle activity or event shown.
 - Methods do not permit identification of these menstrual cycle activities/events.

Source: Campbell and Collins, 1984.

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APPENDICES

APPENDIX A

Description of Calendar Rhythm and NFP Methods

The following descriptions are meant to guide the reader in understanding the principles involved in the application of the four basic periodic abstinence methods. They are not intended to serve as an instruction guide for teaching or using the methods; other materials are available for those wishing more information (Billings et al., 1974; Vollman, 1977; Kass-Annese and Danzer, 1982; Parenteau-Carreau, 1981). The number of days of required abstinence for each of these methods is shown in Figure A-1 for a hypothetical 28-day cycle.

Calendar Rhythm Method

The calendar rhythm method involves abstinence from sexual intercourse during arithmetically calculated days of potential fertility. The technique for calculating the fertile phase was developed following the discovery that peak fecundity occurs about two weeks before the onset of the next menstruation. The calendar method takes into account variations in the observed cycle lengths of previous menstrual cycles. Traditionally, 6 to 12 cycles are monitored before establishing a normative guideline for abstinence during the next cycles.

Rules determining the infertile and fertile days are based on relatively simple calculations. These calculations vary depending on which rules are used, but the first day of bleeding is always considered Day 1 of the cycle. The cycle has three phases: the preovulatory infertile phase, the fertile (ovulatory) phase and the postovulatory infertile phase. The two infertile phases are considered safe for intercourse because pregnancy is unlikely to occur (Figure A-1).

The preovulatory infertile phase begins on Day 1. Its duration is based on the length of the woman's shortest menstrual cycle. The number of days during which intercourse is permitted during the preovulatory phase is found by subtracting 18 to 21 days from the length of the shortest menstrual cycle, depending on the level of effectiveness desired. The postovulatory infertile phase is calculated by subtracting 8 to 11 days from the length of the longest cycle to determine the day that the fertile phase is likely to end. The numbers resulting from these calculations represent the beginning of the fertile phase and the beginning of the postovulatory infertile phase, respectively (CDC, 1983).

The calendar method assumes that (a) ovulation occurs about fourteen days (plus or minus 2 days) before the onset of menstruation, (b) sperm remain capable of fertilizing an ovum for about three days, and (c) the ovum itself can be fertilized for up to 24 hours following ovulation (CDC, 1983).

Calendar rhythm is convenient, simple to use and relatively easy to teach or to learn. However, the method is generally considered unsuitable for individuals with variable cycle lengths (especially postpartum, post-pill or premenopausal women) because of the increased likelihood that the safe period for intercourse without conception will be miscalculated.

Cervical Mucus or Ovulation Method (CM or OM)

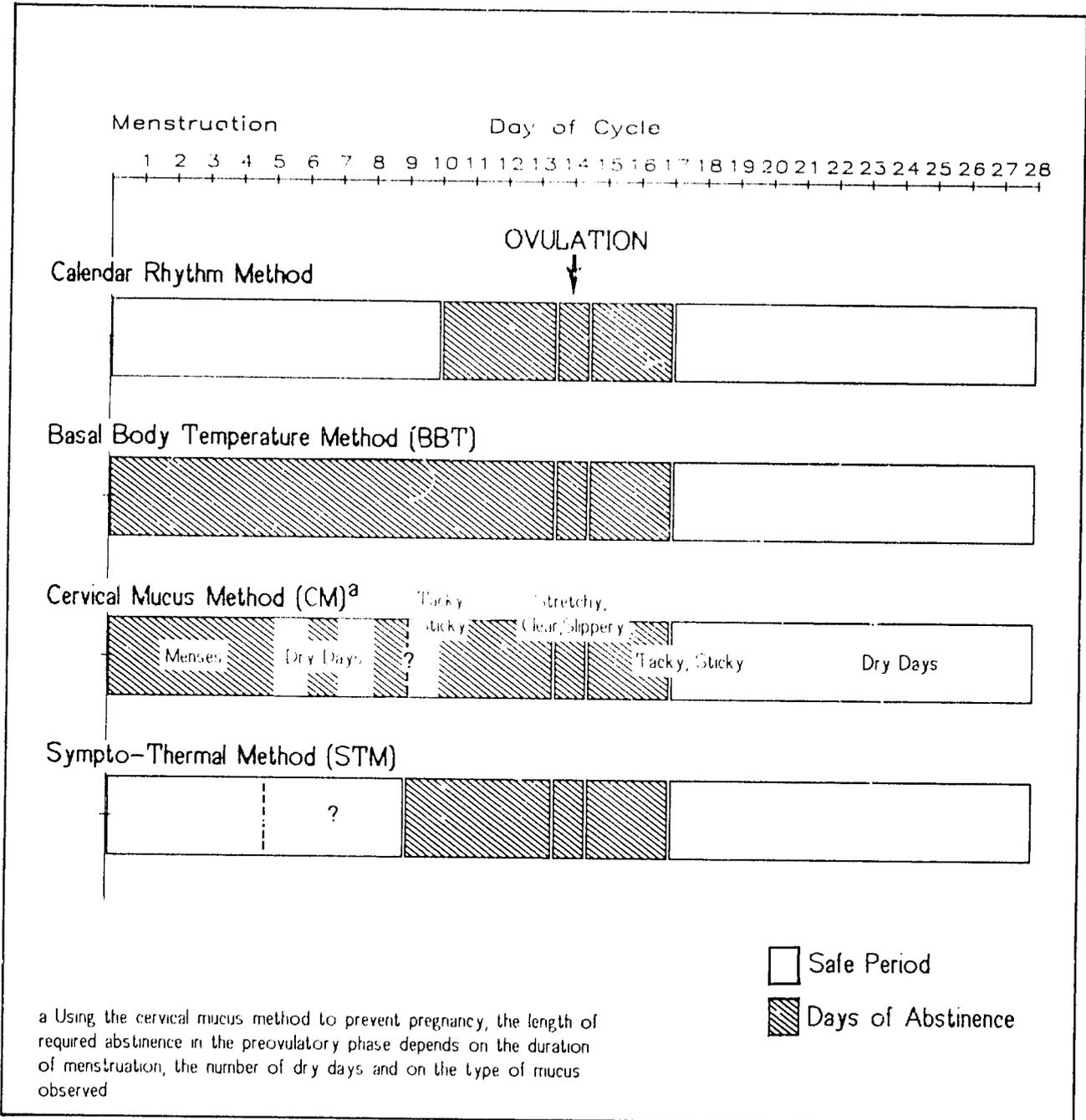
Monitoring of the cervical mucus to identify days of fertility and infertility has been associated primarily with Billings (1964) although Keefe (1962) also was an early advocate. Today there are variations of cervical mucus monitoring described by Hilgers (1979), Flynn (1979), and Dorairaj (1980), among others. We will refer to this approach as the cervical mucus (CM) method; other names are the ovulation method (OM) and the Billings method. These methods are based on self-observation of cervical mucus either at the vulva, the cervix itself, or both.

The endo-cervical glands are sensitive indicators of blood estrogen levels and as the menstrual cycle progresses, mucus secretion from these glands reflects follicular ripening and ovulation (Bonnar, 1982). Low levels of estrogen produce a thick, tacky, viscous cervical mucus that does not flow and leaves the vulva dry. Higher levels of estrogen produce a slippery, lubricative mucus that flows into the vagina and is noticed at the vulva as a "wet" sensation. The more "estrogenic" mucus can usually be seen as clear and will stretch into long strings around the time of maximum fertility.

The quality and quantity of mucus, as well as the length of time mucus is secreted, varies from one woman to another and, to some extent, from cycle to cycle in the same woman. To use CM for family planning, women are taught to recognize their own mucus patterns and to time intercourse based on changes in mucus sensation and appearance.

In a typical menstrual cycle, after menstruation and during early follicular development, there may be some days when no mucus is present at the vulva. The result is a sensation of dryness in the genital area. As estrogen levels rise, the woman will notice a change from no mucus or "dryness" at the vulva to mucus resulting in a no longer dry sensation. Days of mucus are usually considered fertile, with some exceptions according to specific methodologies. Observation of the mucus can show the first mucus to be sticky or tacky. At the height of estrogen production, around the time when ovulation takes place, the vulva feels highly lubricated, the mucus is slippery, and it will be observed to be clear and to stretch without breaking. This stretch characteristic is called "spinnbarkeit". The day of highest fertility is the last day of the slippery lubricative mucus, which can only be determined retrospectively (on the next day).

Figure A-1. Approximate Length of Required Abstinence for a Hypothetical 28-Day Cycle



After ovulation, the corpus luteum produces smaller amounts of estrogen and larger amounts of progesterone that inhibits the production of slippery, stretchy mucus. The post-ovulatory mucus is recognized either by the return of sticky, nonstretchy or nonslippery mucus, or by the disappearance of mucus altogether, so that there is a sensation of dryness.

In general, use of CM to avoid pregnancy requires abstinence from intercourse (a) during menstruation, because of the possible early onset of mucus discharge (which might be disguised by menstruation); (b) on alternate dry days preceding the onset of mucus secretion after menstruation, to permit recognition of the onset of mucus secretion without confusion caused by the presence of seminal fluid; and (c) during days of mucus secretion and until at least the morning of the fourth day after the peak mucus day (Billings et al., 1974; Billings, 1981) (see Figure A-1). Couples are advised to abstain from all sexual contact during the first learning cycle so that correct information can be obtained. Some methodologies allow experienced users to have intercourse during the latter days of menstruation, assuming they have learned the difference between menses and mucus.

According to Billings and others, the cervical mucus method can be used by women with irregular or anovular cycles including following childbirth, during lactation and in the premenopausal and adolescent years, although additional rules are needed to guide these women in determining their fertile and infertile days. Others argue that more research is needed to determine the effectiveness and appropriateness of the cervical mucus method (as well as other NFP methods) for women in these special circumstances.

Some individuals find self-detection techniques unacceptable because of taboos associated with discussing sex-related issues or touching the genitals. However, many teachers of CM emphasize that it is not necessary to touch the vulva, cervix or mucus because changes in the sensation at the vulva can be monitored through daily mental "checks" throughout the cycle. Some programs recommend the use of tissue paper to check the mucus.

The Modified Mucus Method (MMM), also based on cervical mucus, is related to CM but uses different abstinence rules. MMM requires fewer days of abstinence and was designed to be more acceptable to illiterate couples in India with high fertility and low motivation to regulate fertility (Dorairaj, 1980).

The MMM departs from abstinence rules of most CM methodologies in several ways. For example, unlike CM which requires abstinence during all days of mucus and for three nights after the "peak" mucus, abstinence with MMM is reduced to the days of slippery, stretchy mucus and two days and nights after this mucus has stopped. Also, while CM requires abstinence during menstruation, with MMM the first four days of the

menstrual cycle and any days thereafter of brownish or blood stained discharge with a dry sensation at the vulva are considered safe for intercourse. Further, unlike other CM methodologies, which require abstinence during the entire first month of learning, MMM has two learning phases with less abstinence during each month.

The modifications developed by Dorairaj are based on data indicating that different qualities of mucus can be discerned and the information used to enable more precise definition of the fertile phase. MMM uses a graded scale to identify five different types of mucus, two of which are considered safe for intercourse.

Basal Body Temperature Method (BBT)

The basal body temperature method is based on daily observation and interpretation of the basal (resting) body temperature. In most women, a biphasic temperature pattern is discernable during the menstrual cycle as the BBT shifts from a lower to a higher level in response to changes in hormone production following ovulation.

Although the BBT method has predictive value in determining the onset of menstruation, prediction of ovulation is not possible (CDC, 1983). This is because elevation of the BBT may take place on the same day as ovulation or it may precede or follow ovulation by several days. This means that abstinence is required during the entire preovulatory period until the specified number of days after the temperature shift (Figure A-1). Hence, BBT requires more abstinence than the other NFP methods.

BBT has, however, been characterized as "the most quantitative of all available techniques which can be used in the home to detect the occurrence of ovulation" (CDC, 1983). The following is one way of describing the temperature shift occurring with ovulation:

Ovulation is detected by identifying a shift in temperature (0.2-0.5 degrees C or 0.4-1.0 degrees F) from a relatively low level during the follicular phase [pre-ovulatory] of the menstrual cycle to a relatively higher level during the luteal phase [post-ovulatory]. This temperature shift can be defined as one that occurs within 48 hours, and in which three consecutive daily temperatures are at least 0.2 degrees C (0.36 degrees F) higher than the last six daily temperatures before the start of the shift (CDC, 1983).

Some programs use the "coverline technique" developed by the SERENA program of Canada to help the BBT user differentiate between the series of low temperatures preceding ovulation and the postovulatory hyperthermal plateau (Parenteau-Carreau, 1981).

Identification of the postovulatory infertile phase of the menstrual cycle requires accurate reading and careful recording of the BBT. A woman's basal body temperature pattern may fluctuate with illness, emotional stress or changes in exercise or sleep patterns and may be effected by activities like smoking or drinking. Effective use of the BBT method must therefore take into account any deviations from regular routines. While some BBT programs are relatively flexible about when the temperature can be taken, most emphasize that it should be taken upon waking in the morning--immediately before undertaking any activities. When the temperature is taken using this conservative guideline, the emergent pattern is more accurate and the shift easier to identify.

Ease of interpretation of the charted temperature curve depends in part on the nature of the BBT shift itself. BBT may rise in different ways, as shown in Figure A-2: abruptly and distinctly (A), gradually (B), in a step-like pattern (C), or in a saw-tooth fashion (D). Which type of chart works best has been the subject of some controversy. Variations in the same women's temperature pattern may be difficult to see if the scale of the chart is small because the shift is less obvious (Figure A-3). However, the scale of the chart itself is considered by some to be less important than care in observing and plotting.

Because the adolescent and premenopausal phases of the reproductive cycle are subject to greater fluctuations in hormone levels, a greater frequency of monophasic patterns is likely to occur among these age groups as compared with the population as a whole. Vollman (1977) showed that there is an age-dependent and cycle-dependent variation in temperature patterns. Women who are younger or older and those with longer or shorter cycles are more likely to have monophasic BBT curves than women of reproductive age in general. The BBT method may therefore be inappropriate for these women because they are at increased risk of irregular cycle lengths and monophasic curves.

Sympto-Thermal Method (STM)

Identification of the fertile period through the use of a combination of methods to predict and detect ovulation is called the sympto-thermal method (STM). This multiple-index approach uses observation of changes in cervical mucus and other indices to identify the onset of the fertile period in conjunction with basal body temperature changes to detect ovulation and the end of the fertile period. The type and mix of other indices used differs from one program to another. Self-examination of the cervix to determine changes in position, texture and dilation is incorporated into some STM programs. Calendar calculations and interpretation of secondary fertility symptoms such as breast tenderness or pain with ovulation are other frequently-used indices. The STM provides a woman with a number of signs and symptoms to check and compare. This is considered to be an advantage by proponents, particularly in those instances where a woman encounters difficulty with the interpretation of only one sign. Some STM promoters believe that

Figure A-2 Common Basal Body Temperature Patterns

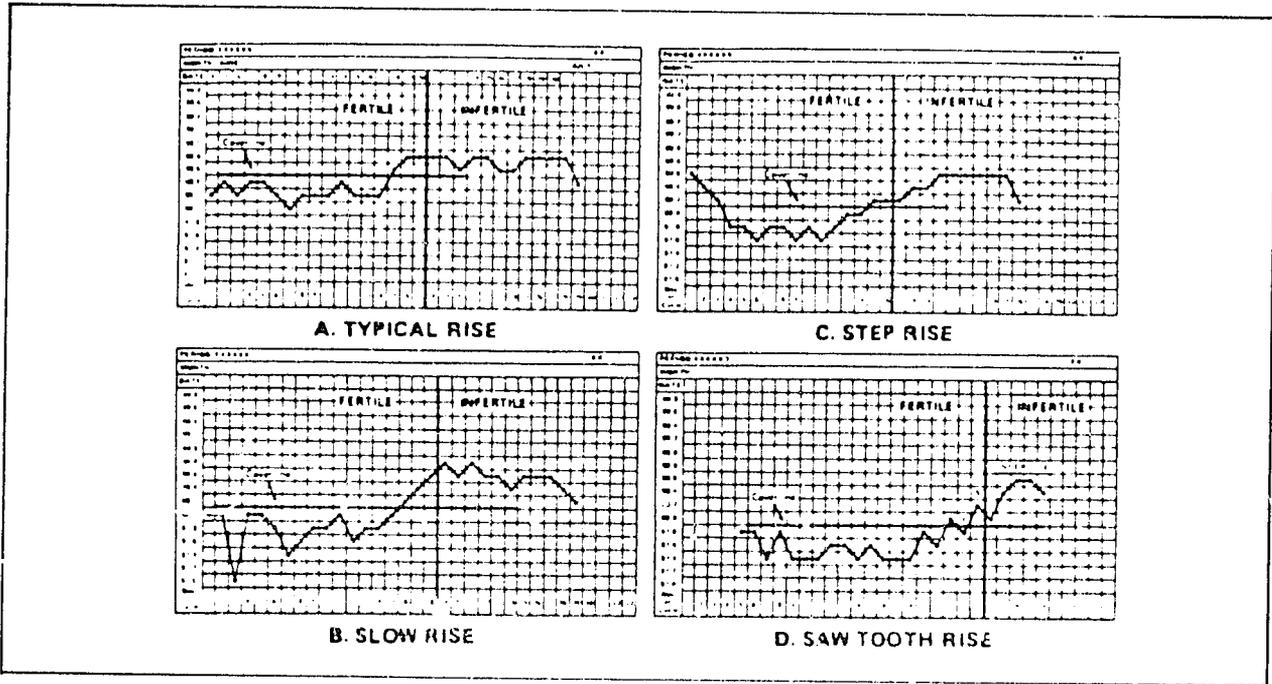
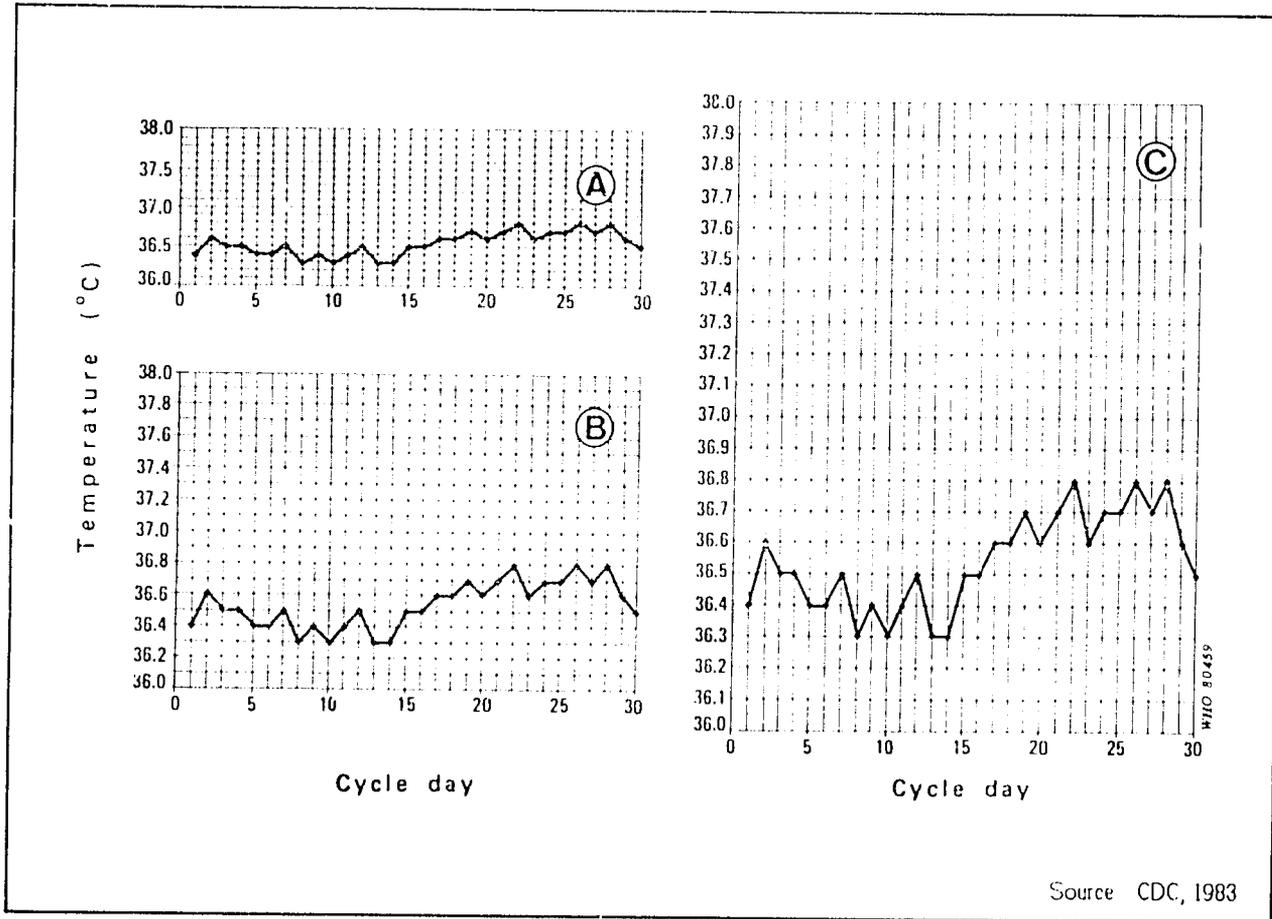


Figure A-3 The same Bi-phasic Temperature Curve Drawn on Three Different Temperature Scales



Source CDC, 1983

the BBT shift is a more objective and reliable method than mucus changes for identifying the end of the fertile phase (CDC, 1983).

Double-checking a number of indices may be a particularly useful approach for couples who are planning a pregnancy. As described earlier, a couple is most likely to conceive when the mucus is lubricative and fluid. A temperature shift confirms ovulation. If the basal body temperature remains high for 20 days, it is likely that conception has occurred. Abstaining from intercourse for a few days prior to the most fertile phase may increase the chance of achieving a pregnancy (Parenteau-Carreau, 1981). On the other hand, couples who want to avoid conception use the STM much like other NFP methods to monitor infertile phases during which intercourse does not lead to pregnancy.

Just as sympto-thermal method indices differ from program to program, guidelines and rules also vary. For instance, the NFP curriculum developed under the auspices of the World Health Organization instructs STM users to practice abstinence using calendar calculations to determine the first possible fertile day or by observing the onset of the first cervical mucus symptom, whichever occurs first (CDC, 1983). The end of the fertile phase is signaled by either the third day of consecutive higher temperatures above the coverline or the fourth day after the peak mucus symptom, whichever comes last (Figure A-1). Other programs instruct users to rely on observation of mucus or calendar calculations during the preovulatory phase and to use only the temperature shift as a means of identifying the postovulatory infertile phase.

Proponents of STM believe that monitoring more than one indicator is more effective than using a single indicator. They also cite the reassuring effect that measuring and relying on more than one indicator provides to users. In addition, total abstinence during the first month of the learning phase is unnecessary with STM. Unlike other NFP methods, intercourse is permitted in the first cycle of use after the temperature shift has been identified.

There are several disadvantages of the STM. The teaching requirements are greater for STM than for other NFP methods. Some women find certain indices of a given sympto-thermal method less acceptable than others. There may be more room for error, confusion or distraction with STM because of the number of different indicators which need to be monitored. The cost or availability of charts and thermometers may be problematic among low income populations. And in tropical and subtropical areas, chronic and acute disturbances and infections can disrupt the temperature pattern. Further, in situations where ovulation occurs irregularly (i.e., during lactation), the BBT is cumbersome, difficult to interpret, and may not be a useful indicator.

APPENDIX B
Guide to Selected Agencies and Organizations
Providing Support for NFP Research
and Program Activities

A. PRIVATE ORGANIZATIONS

Center for Population and Family Health
Columbia University, 60 Haven Avenue, New York, NY 10032
Telephone: (212) 305-6960 Telex: 971913 Cable: POPHEALTH
NEW YORK

Development Associates
2924 Columbia Pike, Arlington, VA 22204
Telephone: (703) 929-0100 Cable: DAWASH

Family Health International (FHI)
One Triangle Drive, Research Triangle Park, North Carolina 27709
Telephone: (919) 549-0517 Telex: 579442 Cable: FamHealth

Family Planning International Assistance (FPIA)
810 Seventh Avenue, New York, NY 10019
Telephone: (212) 541-7800 Telex: 426101 FPIA UI
Cable: Famliplan, N.Y.

Institute for International Studies in Natural Family Planning
Georgetown University, 3800 Reservoir Road, N.W.,
Washington, D.C. 20007
Telephone: (202) 625-6957

International Federation for Family Life Promotion (IFFLP)
Suite 700, 1511 K Street, N.W., Washington, D.C. 20005
Telephone: (202) 783-0137, 783-0057

Johns Hopkins Program for International Education in Gynecology and
Obstetrics (JHPIEGO)
The Johns Hopkins University, 550 North Broadway, Baltimore, MD 21205
Telephone: (301) 955-8558 Telex: 240172 PIEGO UR Cable: JHPIEGO

Los Angeles Regional Family Planning Council (LARFPC)
Suite 320, 3250 Wilshire Boulevard, Los Angeles, CA 90010
Telephone: (213) 386-5614

The Pathfinder Fund
1330 Boylston Street, Chestnut Hill, (Boston), Massachusetts 02167
Telephone: (617) 731-1700 Telex: 6817095 Cable: PATHFIND-BOSTON

The Population Council
One Dag Hammarskjold Plaza, New York, NY 10017
Telephone: (212) 444-1300 Telex: 234722 POCO UR
Cable: Popcouncil, New York

Program for Applied Research on Fertility Regulation (PARFR)
Northwestern University, Suite 1525, 875 North Michigan Avenue, Chicago,
Illinois 60611
Telephone: (312) 664-0085 Telex: 756086 Cable: PARFR Chicago, Illinois

Program for International Training in Health (INTRAH)
University of North Carolina, 208 North Columbia Street, Chapel Hill,
North Carolina 27514
Telephone: (919) 966-5636 Telex: 3772242 Cable: INTRAH, Chapel Hill, NC

Program for the Introduction and Adaptation of Contraceptive Technology
(PIACT)
Canal Place, 130 Nickerson Street, Seattle, Washington 98109
Telephone: (206) 285-3500 Telex: 4740019 Cable: PIACT

University Research Corporation (URC)
Suite 1600, 5530 Wisconsin Avenue, Chevy Chase, MD 20815
Telephone: (301) 654-8338 Telex: 64693 Cable: URCINTER

B. MAJOR MULTILATERAL ORGANIZATIONS

United Nations Fund for Population Activities (UNFPA)
220 East 42nd Street, New York, NY 10017

World Bank
1818 H Street, N.W., Washington, D.C. 20433

World Health Organization (WHO)
1211 Geneva 27, Switzerland

C. MAJOR NATIONAL GOVERNMENTAL AGENCIES

Japan: Policy Coordination Division, Economic Cooperation Bureau,
Ministry of Foreign Affairs, 2-2-1 Kasumigaseki, Chiyoda-ku, Tokyo, Japan

Canada: Canadian International Development Agency, 200 Promenade du
Portage, Hull, Quebec, K1A 0G4 Canada

Sweden: Swedish International Development Authority, S-10525, Stockholm,
Sweden

Germany, Federal Republic: Federal Ministry for Economic Cooperation,
Government of the Federal Republic of Germany, P.O. Box 120322, 5300
Bonn 1, Federal Republic of Germany

United Kingdom: Overseas Development Administration, Eland House, Stag
Place, London SW1E 5DH, United Kingdom

Australia: Australian Development Assistance Bureau, G.P.O. Box 887, Canberra City, A.C.T. 2601, Australia

Switzerland: Directorate for Development and Humanitarian Aid, Eigerstrasse 73, 3003 Bern, Switzerland

Italy: Department for Development Cooperation, Ministry of Foreign Affairs, Piazza Farnesina, Rome 00100, Italy

Belgium: General Administration for Development Assistance, Place du Champs de Mars 5, 1000 Brussels, Belgium

D. MAJOR U.S. POPULATION STUDY, RESEARCH AND TRAINING CENTERS

Columbia University, New York, NY

Georgetown University, Washington, D.C.

E. LIST OF NFP CENTERS

AFRICA

Burundi Action Familiale du Burundi C.E.D.-Caritas, F.P. 2110 Bujumbura, Burundi

Central African Republic Service d'Education à la Maitrise de la Fécondité, Pensaire du Foyer de Charité, B.P. 335, Banqui, RCA

Congo Foyers Chrétiens, P.O. Box 200, Brazzaville, Republic of Congo

Kenya Family Life Counseling Association, Mater Misericordiae Hospital, P.O. Box 30325, Nairobi, Kenya

Madagascar Fivondrovan'ny Tokantrano Kristiana (FTK) Family Life Promotion Movement, Immeuble Falda, Antanimena, B.P. 1382, 101-Antananarivo, Madagascar

*Mauritius L'Action Familiale, Route Royale, Rose Hill, Mauritius

Morocco L'Heure Joyeuse, 5 Rue El Jiraoui, Casablanca, Morocco

Nigeria Catholic Secretariat of Nigeria, Force Road, P.O. Box 951, Lagos, Nigeria

Rwanda Action Familiale du Rwanda (Centro Medico-Social Gikondo), Boite Postale 442, Kigali, Rwanda

Seychelles Action Familiale Seychelles, P.O. Box 289, Mont Fleuri, Seychelles

Sierra Leone Family Life Education Programme, 29 Howe Street, P.O. Box 129, Freetown, Sierra Leone

South Africa (Republic of) National Natural Family Planning Association, Khanya House, P.O. Box 941, Pretoria 0001, South Africa

Tanzania Family Life Education and NFP, P.O. Box 2133, Dar-es-Salaam, Tanzania

Tunisia Action Familiale, 27 Rue des Mimosas, 2070 La Marsa, Tunis, Tunisia

Upper Volta Entr'Aide Familiale, B.P. 481, Bobo Doulasso, Upper Volta

Zambia Family Life Movement, P.O. Box 31965, Lusaka, Zambia

THE AMERICAS

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Bolivia Centro de Vida Familiar Arquidiocesano, Avenida Armentia 512, Casilla 8596, La Paz, Bolivia

*Brazil Centro de Pastoral Familiar (CENPAFAM), Alameda France 889, 01422, Sao Paulo, S.P., Brazil

*Canada Serena, 55 Parkdale, Ottawa, Ontario K1Y1E5, Canada

Chile

*Comision Nacional de Pastoral Familiar, Ch, Hamilton 11051, Santiago, Chile

Universidad Catolica (Medical School), Casilla 144-D, Santiago (Attn: Alfredo Perez), Chile

Colombia

§Carvajal Foundation, Apartado Aereo 46, Cali, Colombia

*Centro de Pastoral Familiar para America Latina, Calle 65 N° 13-50, Mezzanine, Bogota, Colombia

Dominican Republic Comision Episcopal de Pastoral Familiar, Apartado Postal 186, Santo Domingo, Dominican Republic

*Ecuador Instituto Ecuatoriano de Accion Familiar (IEDAF), Esmeraldas 2811 y Calicuchima, Guayaquil, Ecuador

*Haiti Action Familiale d'Haiti, Rue des Casernes N° 65, B.P. 528
(Archevêché), Port-au-Prince, Haiti

*Mexico Centro Nacional Billings de Planificacion Natural de la
Familia, Ave. Paseo Palmas 745-12, Col. Lomas de Chapultepec, 11000
Mexico City DF, Mexico

U.S.A.

§Human Life Center, Saint John's University, Collegeville, Minn 56321

*§The Couple to Couple League International, 3614 Glenmore Avenue,
Cincinnati, Ohio 45211

New England Natural Family Planning Inc., 90 Cushing Ave., Boston, MA
02125

Natural Family Planning of Rhode Island, 433 Elmwood Ave., Providence, RI
02907

*Diocesan Development Program for NFP, Suite 334, 1511 K St. N.W.,
Washington, D.C. 20005

*Los Angeles Regional Family Planning Council, 3250 Wilshire Blvd., Suite
320, Los Angeles, CA 90010

*§Family of the Americas Foundation Inc, 308 South Tyler St., Covington,
LA 70433

Family Life Mission for North America, 704 11th Ave., South,
Minneapolis, MN 55415

*Creighton University Natural Family Planning Education and Research
Center, 601 North 30th St., Omaha, Nebraska 68131

Venezuela Avemo Billings, Apartado 70505, Prados del Este, Caracas,
Venezuela

ASIA/OCEANIA

Australia

*§Australian Council of NFP Inc, 1 Robert Street, Willoughby NSW 2068,
Australia

*Ovulation Method Research and Reference Centre of Australia, 27
Alexandra Parade, Fitzroy North 3068, Victoria, Australia

*Hong Kong Catholic Marriage Advisory Council, 502 Caritas House, 2-8
Caine Road, Hong Kong

India

*Center for Research, Education, Service and Training for Family Life Promotion (CREST), 24 High Street, Bangalore, 560005, India

Natural Family Planning Association of India, 43 Lodi Estate, New Dehli, 110003, India

*Tamil Nadu Family Development Centre, 37 Allithusai Road, Aruna Nagar, Post Office Box 702, Puthur, Tituchirapalli, India

Indonesia National Bureau of NFP Services, Jahan Ciding Timur 71, Jakarta Pusat, Indonesia

Japan The Family Life Association, Yuwa Building, Shiba 3-4-16 Minato-ku, Tokyo 105, Japan

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Malaysia National Natural Family Planning Association of Malaysia, 23-F Mk, 13 Ayen Itam, Penang, Malaysia

*New Zealand New Zealand Association of Natural Family Planning, Mater Hospital, Auckland 3, New Zealand

Pakistan Natural Family Life Office, P.O. Box 304, Faisalabad, Pakistan

Papua New Guinea National Catholic Family Life Office, P.O. Box 592, Goroka, E.H.P., Papua New Guinea

*Taiwan Catholic Happy Family Service Association, 9th Floor, N° 2, Chungshan N. Rd., Sect. 1, Taipei, Taiwan 104

*Thailand National Commission for Family Life Promotion, 2 Soi Soensuk, Prachasongkroh Rd., Bangkok 10310 Thailand

EUROPE

*Austria Marriage Advisory Service, Vorstadt 6, A-4840 Voechlabruck Austria

England

§Catholic Marriage Advisory Council, 15 Landsdowne Rd., London W113AJ, U.K.

*The National Association of Natural Family Planning Teachers, NFP Centre, Birmingham Maternity Hospital, Birmingham B15, U.K.

France

§Centre de Liaison des Equipes de Recherche (CLER), 65 Boulevard de Clichy, 75 009 Paris, France

*Institute Recherche sur L'Enfant et la Couple (IREC), 16 Place Notre Dame, 38000 Grenoble, France

*Germany Family Life Mission, Postfach 1965, D-7640 Kehl/Rhein, Germany

*§Ireland Catholic Marriage Advisory Council of Ireland, All Hallows College, Dublin 9, Ireland

Italy

§Centro Internazionale Studi Famiglia (CISF). Via Monte Rosa 21, 20149 Milano, Italy

Centro Ambrosiano Metodi Naturali, Via Bice Cremagnani 15, Vimcarcate, Milano, Italy

*Center of Study and Research on NFP, Universita Catolica del 5, Cuore, Facolta de Medicina Chirurgia, Roma Policlinico "A. Gemelli," Largo Agostino Gemelli 8, 00168, Rome, Italy

Poland Klub Inteligencji Katolickiej, ul Kopernika 34, 00-336 Warszaws, Poland

Towarzystwo Olpowick Rodricielstiva, al Powstacicow Trrans. N2S, Warsaw, Poland

Portugal

Movimento de Defesa da Vida, Rua de Beneficancia 7, 1000 Lisbon, Portugal

Servicio de Entreaajuda Es Documentacao Conjugal (SEDC), Rua Raquel Roque Gamiero 2-5°E, 1500 Lisbon, Portugal

Scotland Scottish Association for Natural Family Planning, Chester House, Beardsden, Glasgow, Scotland

Spain Delegacion Espanola de la FIDAD, Apartado de Correo 24, 071 Barcelona, Spain

Sweden Familjeframjandet, Post Office Box 3076, S-161 03 Bromma, Sweden

* Denotes major NFP centers.

§ Denotes centers which may provide lists of materials and price lists upon request.

APPENDIX C

Selected Country Profiles

Throughout the world, interest in calendar rhythm and NFP methods has expanded over the last 15 years primarily through the Catholic Church, in response to the doctrine of the 1968 Papal Encyclical *Humanae Vitae*. In a majority of developing countries, the bulk of funding for existing programs is obtained from church-related groups. Public sector interest, however, has been growing, although the amount of national support for instruction and promotion of periodic abstinence methods varies considerably from one country to the next. Today, the governments of nine countries (Australia, Canada, France, Kiribati, Mauritius, the Philippines, Papua-New Guinea, Rwanda and the UK) support work on periodic abstinence methods through public funding. Six others (Argentina, Brazil, Chile, Ireland, USA and Zambia) specifically mention NFP in family planning-related legislation.

This section describes programs in eight developing countries where the periodic abstinence approach is relatively popular. In some areas, individuals wishing to use a periodic abstinence approach have depended on "folk" knowledge of the fertile period based on information obtained from a spouse, friends, neighbors, or traditional practitioners. But the available evidence suggests that calendar rhythm method is the most commonly used form of periodic abstinence in the world today.

Unfortunately, because of limitations discussed earlier, survey data do not differentiate between users of calendar rhythm, users of NFP methods, and those relying on folk knowledge of the fertile period. Country-specific program statistics on calendar rhythm and NFP methods are so limited, and cross-national comparisons are problematic because data-gathering techniques and measures have not been consistently applied or standardized across programs.

In each of the following profiles, data from the WFS and CPS are presented at the beginning for those countries that had surveys. Prevalence of "rhythm", or any periodic abstinence method, is contrasted with overall contraceptive prevalence. Statistics reported for couples who have been instructed or who are using NFP methods were generally provided by NFP programs, using program-specific definitions. These numbers may include couples with various levels of interest in NFP, ranging from attendance at one class to thoroughly-trained couples who are actually using the method.

Mauritius

Mauritius is an island nation located in the Indian ocean, east of Madagascar. It has a population of 970,000, of which about 47% lives in urban areas. An estimated 61% of Mauritians are literate. The official

policy of the Mauritian government has been to encourage a reduction in population growth. Currently, Mauritius has one of the lowest annual growth rates among developing countries (1.6%) and a total fertility rate (TFR) of only 2.9.

No national survey data are currently available on contraceptive use. In 1981, however, it was estimated that half of all married women of reproductive age in this island nation were using some form of contraceptive method (IFFLP, 1984). Family planning and maternal and child health services are available through the Ministry of Health, and both the Mauritian Family Planning Association and L'Action Familiale provide NFP services.

L'Action Familiale, sometimes referred to as the pioneer NFP program of Africa, was established in 1963 at a time when the high crude birth rate and population growth rate were a national concern (Juste, IFFLP, 1984). This non-governmental organization, legally recognized in 1964, has received the bulk of its financial support in the form of federal grants-in-aid, with additional support provided by such international agencies as Misereor, Catholic Relief Services and the US Agency for International Development.

NFP services are divided into nine districts corresponding to the standard statistical geographical areas used by the evaluation unit of the Ministry of Health. A national coordinating board, made up of representative couples from each region and a representative from the Ministry of Health and Population Control, has responsibility for nominating advisory commissions.

Couples are taught NFP through home visits over a period of months, with the frequency of visits decreasing until the couple is autonomous. The program recognizes four categories of users: 1) beginners, or learners, who have had instruction and have begun to chart; 2) nonregistered users, who have charted one complete cycle and filled out the requisite charts and forms correctly; 3) registered couples recognized by the MOH as official users after having completed three cycles; and 4) autonomous users, or those who have successfully used NFP methods for 3-9 cycles and who need no further follow-up.

Curriculum materials developed by L'Action Familiale are used in Mauritius and a number of other countries. Volunteer instructors receive approximately 60 hours of training over 15 weeks. The number of volunteer teachers has been declining, which may be due in part to rising living costs (Radhakeesoon, 1981). To offset this trend, the Mauritian government and international organizations have been called upon to encourage and support voluntary efforts.

Service statistics maintained between 1965-1982 indicate that nearly 32,000 new recruits were registered as official users at a rate of

1,000-2,000 annually. This represents approximately 17% of all couples using a method of birth control (Juste, IFFLP, 1984).

A national contraceptive prevalence survey is being planned by CDC that could provide more definitive information on NFP in Mauritius.

Sri Lanka

Sri Lanka, with 15 million inhabitants, has one of the highest rhythm prevalence rates in the world. The 1982 Contraceptive Prevalence Survey found that 13% of currently married women reported that they were currently using rhythm (known as "safe period" in Sri Lanka), a figure second only to Peru among countries surveyed. Further, data from two national surveys conducted in 1975 and 1982, indicate that both overall contraceptive prevalence and rhythm prevalence have increased substantially. In both survey years, rhythm users comprised one quarter of all contraceptors.

The increase in total contraceptive use among Sri Lankans in the seven years between surveys was dramatic. In 1975, 32% of currently married women were contracepting and by 1982, the proportion increased to 55%. Significantly, the pill and the IUD, the two most popular methods in the early stages of Sri Lanka's national family planning program, are relatively less popular today. Among all methods, only female sterilization has increased proportionately more than rhythm.

Across all age groups, the proportion of currently married women using rhythm is greater than the combined proportions using the pill, IUD and condom. Further, among women under 30 years of age, rhythm is the most popular method. Knowledge of rhythm is high: at least 60% of women surveyed by CPS (1982) had heard of rhythm.

Beliefs about the actual fertile time vary. According to preliminary research supported by Family Health International (Nichter, 1984), "safe period" practices among some Sri Lankan women are not based on perceptions about ovulation, but rather are defined according to perceptions about menses. Results of focus group discussions and in-depth interviews indicate that some women define the "safe period" as the time when a woman's womb is "closed" to pregnancy, or soon after menstruation has ended. Unfortunately, the perceived fertile period is actually the infertile time, around and during menstruation.

Other women in Sri Lanka are able to correctly identify their fertile time (DeSilva, 1984). A high literacy rate and media prevalence in Sri Lanka may be partly responsible for this awareness. Other women practice abstinence for a large proportion of the menstrual cycle because they believe the fertile period to be longer than it actually is. The "safe period" is sometimes practiced together with another method such as withdrawal.

The cervical mucus or ovulation method is being taught in a limited way within the Catholic community by the Family Services Institute in the capital city of Colombo. The Institute offers NFP as part of its educational activities, which include parent education, marriage enrichment, marriage preparation, and life education for youth (Presentation Summaries, 1983).

The Sri Lanka national family planning program has not included either "safe period" or NFP in its "cafeteria" of methods. The Family Planning Association (FPA) has begun to provide information and education about the correct safe period to its clients through volunteer motivators with the objective of increasing use effectiveness among those now practicing "safe period" techniques. NFP services may be gradually introduced into the national FPA program (DeSilva, 1984).

In order to explore what "safe period" users know about the method, how they practice it and why they are attracted to it, Family Health International (FHI) has sponsored research conducted by the Department of Census and Statistics and the FPA to further investigate qualitative and quantitative aspects of the practice. Surveys and focus group sessions are among the approaches being used to explore the extent and nature of these practices in Sri Lanka.

Philippines

The Republic of the Philippines, with a population of 55 million, is predominantly Catholic, 38% urbanized and has a literacy rate of about 88%. The annual rate of natural increase is 2.6% and the TFR is 4.7. The Philippines has one of the highest rhythm prevalence rates in the developing world. Rhythm prevalence is third highest in the Philippines among countries surveyed by WFS and CPS. According to the 1978 Philippine Fertility Survey, 8.5% of currently married women were rhythm users, with nearly 24% of all contraceptors using rhythm.

Since its inception in 1971, the Philippine family planning program has included calendar rhythm but has emphasized other methods (Laing, 1984). Until recently, no systematic effort was made to promote the effective use of rhythm, but its role in the program is receiving renewed attention in light of findings of recent national surveys (Reyes, 1984).

Despite the relatively high rate of rhythm practice, knowledge about the fertile period varies widely (Laing, 1984). Results of a survey of 308 rhythm users in the Bicol Region and focus group discussions involving users in a rural area outside of Manila suggest a general lack of awareness about non-calendar NFP methods and indicate that the crude formulas used in calendar rhythm practice do not take into account fluctuations in cycle length. Further, there appear to be discrepancies in the length of abstinence and inconsistencies in perceptions about the fertile period. The result is a "serious lack of understanding of the mechanism by which rhythm practice affects fertility" (Laing, 1984).

Observations from the Bicol survey are borne out by data from larger-scale studies including the National Acceptor Surveys and the 1980 Community Outreach Survey. In general, rhythm users have relied more on non-program sources for instruction than on program personnel.

The national population coordination agency, the Commission on Population is committed to upgrading the practice of natural methods "through the training of volunteer workers of community-based organizations, particularly lay leaders" in response to a perceived demand for community-based services for natural methods (Laing, 1984). Thus far, attempts to teach the NFP methods, rather than to improve the practice of calendar rhythm, have met with only limited success. Three large-scale, three-year projects have recently been approved which use different approaches to service delivery. However, efforts to promote NFP methods have been hampered by inadequate supplies, confusion about methods, lack of follow-up, and unwillingness on the part of Church supported groups and Church authorities to collaborate with the government population program.

India

India, with 750 million people, is the second most populous country in the world and was the first to have a national family planning policy. India's government-supported family planning program has actively sought to reduce fertility levels since its inception over thirty years ago. One objective of the sixth five-year plan (1981) was to increase contraceptive acceptors from 23% to 37% of all eligible couples by 1985.

For the most part, family planning proponents at the national level have not been receptive to NFP for a number of reasons. Some feel that NFP is synonymous with calendar rhythm, which is considered to be outdated and ineffective (Dorairaj, IFFLP, 1984; Thormann, 1984). Some family planning providers may be concerned that NFP proponents are attempting to discredit and replace modern, more efficient methods of birth control. In addition, NFP methods are sometimes thought to be too difficult for poor, illiterate populations to learn.

Proponents, however, contend that NFP is an alternative that should be viewed as complementary to government and public sector family planning programs rather than competitive with them. They believe that NFP may, in fact, be much more acceptable than other methods for India's poor populations because NFP methods are not permanent and because of their focus on health and improving the quality of family life and community welfare (Dorairaj, IFFLP, 1984; Thormann, 1984).

NFP in India is disseminated primarily through the infrastructure of the Catholic Church. Sixty-nine out of India's 110 dioceses have NFP programs. In 1978, two German organizations, Misereor and the Central Catholic Agency for Development Aid, allocated one million dollars for

NFP program development. A voluntary organization in New Delhi, the Indo-German Social Service Society (IGSSS) disbursed these funds to implementing agencies.

The dioceses, the religious order of sisters, the Catholic Bishop's Conference of India and the Catholic Hospital Association of India are the primary avenues of NFP promotion. Other voluntary organizations promote NFP, including the Christian Medical Association and the Center for Research, Education, Service and Training for Family Life Education, both based in Bangalore. In 1975 a professional association, the Natural Family Planning Association of India (NFPAI), was established to promote NFP in India.

Since 1966, when the first NFP center was established in Bangalore, a network of autonomous NFP service channels has been established in India. According to an evaluation report by IGSSS issued in 1981, there were approximately 100,000 user-couples registered in 61 diocesan NFP programs throughout India. Most of these couples were poor and illiterate, living in rural areas and urban slums. The Billings Method and the Modified Mucus Method are the most widely promoted. NFP user was defined by the report as a person or couple who has learned the NFP method to the satisfaction of the teacher and who has used the method for a specified period of time, normally six weeks (All India Documentation and Evaluation Report, 1981). The development and orientation of selected NFP programs are described below. These autonomous programs were designed to meet the needs of people in their respective geographic areas. They are characterized by a mixture of philosophies and approaches, but most have relied heavily on volunteers.

The Natural Family Planning Association of India (NFPAI) was formed in 1975, and currently maintains its central office in Delhi. The Association has 45 branches and 450 members throughout India. The primary concern of NFPAI is the promotion of NFP, and it offers information about NFP and general health care.

Mother Teresa's Missionaries of Charity NFP program in Calcutta was established in 1967 and has grown from 699 couples in 1971 to about 43,000 in 1982. Sixty percent of the population in the program in 1982 was Hindu, 24% Muslim and 16% Christian (IFFLP, 1984). The Sympto-Thermal Method was taught until 1978 but was replaced by the Modified Mucus Method. In order to facilitate promotion of NFP, instruction is accompanied by health services such as check-ups and treatment of minor problems of family members, prenatal and postnatal care.

At present, couples are classified as "unregistered" until they are able to correctly identify the fertile and infertile phases of the cycle. After four to six months of instruction, couples are presented with a certificate and registered as users. After three years of successful use a couple is considered autonomous. NFP instructors are

recruited from among the autonomous user group. In 1982, there were a total of 110 paid instructors working under the supervision of the Sisters.

The Tamil Nadu Family Development Center (TNFDC), with its regional center located in Tiruchirapalli, was founded in 1976. The center serves a client population of predominantly agricultural and semi-skilled laborers in the state of Tamil Nadu, which has a population of over 50 million. Following two years of needs assessment activities, funding for the center was obtained from Misereor in 1978. By 1984, the NFP section of the TNFDC had instructed approximately 52,000 couples in the use of the Billings Method (Thormann, 1984).

The center has a regional organizational structure comprising twelve dioceses covering 12 districts. The Union Territory of Pondicherry is a separate diocese and has an autonomous NFP program unit. The TNFDC NFP program has evolved into a relatively well-documented program with a well-defined, systematic process for NFP instructor selection and training and a locally appropriate skill development program. Job responsibilities of program coordinators and NFP facilitators are very specific. District coordinators are responsible for program assessment, supervisory functions and establishing contacts within the diocese to promote NFP. Facilitators are responsible for instruction and follow-up of women and couples and for conducting motivational sessions. Couples are followed-up for at least 12 months, at which time they are considered autonomous users.

The Center for Research, Education, Service and Training for Family Life Promotion (CREST) was inaugurated in Bangalore in 1975. It is a secular, nonprofit, voluntary organization whose objectives are the promotion of family life. It functions as a liaison with government and voluntary agencies (Presentation Summaries, 1983). CREST represented India as one of five participating countries in the World Health Organization multicenter study of the cervical mucus or ovulation method. CREST has an international advisory board and a local supporting group and operates adjunct to a hospital clinic.

Kenya

Kenya's population of 20 million is predominantly rural (87%) and has the highest annual rate of natural increase in the world at 4.0%. Kenya's total fertility rate (TFR) of 8.0 is also very high. The religious composition includes 38% Protestants, 28% Roman Catholics and 26% indigenous beliefs. The rate of functional literacy in English is 25%.

According to data from the 1978 Kenya Fertility Survey, only 7% of women currently in union were using contraception. Sixteen percent of these contraceptors were using rhythm. However, 54% of the ever-married population of women had heard of rhythm and 14% had used the method.

Kenya has been the site of expanding interest in NFP since the 1970s (Thapa and Gross, 1984). In 1977, a voluntary non-governmental organization, the Family Life Counselling Association of Kenya (FLCAK) was created. FLCAK is comprised primarily of doctors and nurses and participated in the first phase of development of a WHO-sponsored NFP teaching program in 1979. Kenya was one of six countries that participated in a collaborative evaluation of the WHO Family Fertility Education Resource Package, or "learning package", and familiarity and expertise with NFP increased at that time.

The cervical mucus or ovulation method is the most popular NFP method practiced in Kenya, although STM instruction is provided in some programs for couples who have difficulties using the ovulation method. Most services are provided through the Catholic Diocesan structure of parishes and "outstations," or community centers. NFP teaching services through the dioceses are largely provided by couples or individuals on a part-time, voluntary basis.

FLCAK and KCS (Kenya Catholic Secretariat), are the two principal organizations that have been involved in expanding NFP services in Kenya. They provide independent teacher training workshops and seminars and offer separate teacher accreditation certificates. A non-structured approach, contingent upon perceived needs and availability of trained teachers, characterizes provision of services.

NFP service delivery systems vary widely, from the community-based approach to NFP instruction at mission hospitals and dispensaries under KCS sponsorship. An estimated 8,000 couples have been taught NFP in Kenya by trained NFP teachers. The continuation rate among these users is unknown, as is the number of current users who learned NFP through informal networks. It appears that most user-couples have some formal education and that a large proportion are in the low to middle income categories.

The FLCAK training program for teachers and tutors has a standard set of criteria for trainee selection (Kiura, 1984). Teaching candidates should have a minimum number of years of schooling, have no other volunteer responsibilities in the community, and be locally sponsored by a hospital, parish, or community organization. Kiura has commented that standardization of teaching methods would be facilitated through the development of a national association of NFP teachers.

A pilot project administered jointly by Kenya Catholic Secretariat, Johns Hopkins University and the Christian Organization Research Advisory Trust is currently underway in the Nyaharuru parish of the Nyeri Diocese (Labbok, 1984). This is one of four church-based projects, and it has introduced the ovulation method in an area with no previous NFP use.

In mid-1984, about 100 couples were certified by the project to teach the ovulation method. Teachers were selected from a group of trained

autonomous users who demonstrated an ability to teach, were respected in the community and were married. Each volunteer teaching couple will teach between three and five user couples. At the one-year follow-up, continuation among accentors will be assessed. The primary research questions to be addressed by the project are use effectiveness and optimal number of sessions necessary to effectively train couples.

Costs for teaching and charting supplies have been kept to a minimum. The major financial input is for four staff positions--a program manager, a secretary, a clerk, a driver--and office space. A cost effectiveness evaluation of this project is planned. Use effectiveness studies are under development for several other NFP programs in Kenya.

Peru

Peru, with a population of 19 million, has a TFR of 5.2 and a natural increase rate of 2.5% per annum. The literacy rate in Peru is 72% and over 65% of the population lives in urban areas.

Over 40% of Peruvian women currently in union use some form of contraception. With 17% using rhythm, it is used by more women than any other family planning method (CPS, 1981), and is the highest rhythm prevalence in the developing world. Further, data from two national surveys (WFS, 1978 and CPS, 1981) indicate that overall contraceptive use, and especially use of rhythm, has been increasing. While total contraceptive prevalence among women currently in union increased by 25% between the two surveys, rhythm prevalence increased during the same period by over 50%. Rhythm is used in Peru primarily by women interested in limiting births, although 25% of rhythm users are "spacers" (CPS, 1981).

Religious affiliation in this predominantly Catholic country may be a factor in method preference. Calendar rhythm is presumed to be the primary periodic abstinence method used in Peru, but more research is needed on exactly what users know about periodic abstinence methods and how they are being practiced.

At least two NFP programs are active in Peru. One is the Asociacion de Trabajo Laico Familiar (ATLF, the Association of Lay Family Workers). ATLF has provided family planning services since 1968. Until recently, calendar rhythm was the only periodic abstinence method taught. NFP services have been integrated into the program of selected health services to women, responsible parenthood classes and family life promotion. Approximately 300 couples were enrolled in the NFP training program by early 1985.

ATLF is currently involved in a research project with FHI to establish and evaluate its NFP program. The training component, psychosocial aspects of MNFP, use effectiveness, cost effectiveness, and user characteristics are among the topics being evaluated during the project.

The second group is the Centro de Promocion Familiar y Regulacion Natural de la Natalidad, (CEPROFARENA, the Center of Family Promotion and Natural Family Planning). CEPROFARENA is a nonprofit organization legally recognized as a service institution. Its main objectives are family life promotion and resolution of fertility problems through natural family planning, primarily the cervical mucus or ovulation method (IFFLP, 1984). NFP promotional activities of CEPROFARENA, a WOOMB (World Organization of the Ovulation Method Billings) affiliate, include conferences, introductory courses, and advertising; teacher training and preparation of teaching materials; and couple teaching and follow-up in permanent consultation centers.

CEPROFARENA offers courses for couples and initiates outreach activities through a variety of local institutions including parishes, school associations and centers for mothers. The ovulation method has been taught to an estimated 5,000 couples through this program. Service statistics for one permanent consultation center in Ciudad de Dios show that 582 couples were taught the ovulation method during the past five years. Over 500 were taught in another area, Nueva Esperanza, over the past seven years.

Mexico

Like Peru, Mexico's 78 million inhabitants are predominantly Roman Catholic and live in urban areas (67%). Mexico's TFR is slightly lower than that of Peru at 4.7, but the rate of natural increase is comparable (2.6%).

According to the 1978 CPS, 40% of Mexican women in union were using contraception. Rhythm prevalence was low at 3.1%. While the contraceptive prevalence was 33% higher in the CPS than in the earlier WFS (1976-77), the proportion of women in union using rhythm did not change markedly.

The cervical mucus or ovulation method is the predominant, but not sole NFP method practiced in Mexico today (IFFLP, 1984; McKay et al., 1984). The ovulation method has been taught to an estimated 220,000 couple users since the mid-1970s through the Catholic Church at the diocesan and parish levels and more recently, through social centers and NFP promotional centers (Presentation Summaries, 1983).

A national coordinating body, the Centro Nacional Billings or National Billings Center (CNB) was established in 1979. It is supported by lay and clerical members of the Catholic Church. CNB is an affiliate of the World Organization of the Ovulation Method Billings and is recognized by civil authorities as a nonprofit association with educational objectives. Headquartered in Mexico City, CNB is organized through zonal centers for coordination of teaching, regional centers, research, program planning and evaluation. The number of centers has grown over the past five years from about 12 to 40 and is still growing

(McKay et al., 1984). Up to now, there has not been an organized effort to collect quantitative data at most of these centers.

Since CNB was established, promotional activities have become more broad-based. For example, in some programs, users promote the marriage-enhancing benefits of NFP. Public response to NFP appears to have improved and users appear to consider themselves to be part of a social change movement (McKay et al., 1984). CNB counsels rejection of contraceptives, abortion, and sterilization (Presentation Summaries, 1983).

According to one three-year evaluation of 1,320 couples conducted in Mexico City during the period 1980-1983, 90% were identified as users with birth spacing or limiting intentions. Ninety percent of all users reportedly became autonomous after two months (IFFLP, 1984).

Up to now, the Mexican government has not supported incorporation of NFP methods into the national family planning program.

South Korea

South Korea's population of 42 million is characterized by a high rate of literacy (90%), a diversity of religions and a moderate degree of urbanization (57%). According to the 1979 CPS, 50% of women currently in union were using contraception. Contraceptive prevalence increased by about 15 percentage points between the WFS in 1974 and the CPS in 1979. The proportion of contraceptors using rhythm did not change, however, remaining steady at around 13%. Little information is available on exactly how rhythm is being practiced in South Korea.

According to data from the CPS, knowledge of rhythm in South Korea is highly correlated with education. Only 6% of ever-married women with no education had ever heard of rhythm compared with 52% of college educated women.

Since the early 1970s, the cervical mucus or ovulation method has been offered in Korea under the auspices of at least one Catholic diocese. With the establishment in 1975 of a national organization called the Korea Happy Family Movement (KHFM), NFP instruction became available through centers in all Catholic hospitals and clinics throughout the country. According to one source, the KHFM seeks to "stem the tide of abortion" in Korea while promoting NFP in a "holistic approach to life" and creating a positive approach to sexuality among youth through fertility awareness (Presentation Summaries, 1983).

NFP services are provided at the centers by a director-priest together with a qualified NFP couple. Many KHFM centers, especially hospital- and clinic-based programs, provide other health services in conjunction with NFP instruction. These services may include maternal and child care, preventive medicine and referrals as needed. It is

estimated that half of the clients seeking instruction through KHFM centers are Catholic (compared with only three percent of the general population), young, and have small families.

During the years 1980-1982, KHFM was largely self-supporting within the dioceses. Just over one quarter of the budget was provided from outside sources. The major expenses reported by KHFM are salaries, printed materials and workshops (IFFLP, 1984). In 1983, there were 200 practicing trained NFP teachers (Presentation Summaries, 1983).

APPENDIX D
Tables on Contraceptive Practices

Table D1. Percent Distribution of Women Currently in Union Using Periodic Abstinence Methods and Any Contraceptive Method, by Age, Residence and Level of Education for the Southern Region of Brazil^a

	Billings	Calendar Rhythm	Any Contraceptive Method
Prevalence ^b	1.2	3.6	66.6
Age			
15-24	35	14	24
25-34	42	53	44
35-44	23	33	32
Total ^c	100	100	100
Residence			
Urban/Town	79	61	55
Rural	21	38	44
Unknown	0	1	1
Total ^c	100	100	100
Level of Education			
0-3	11	30	43
4-8	47	43	44
High Sch/Univ	43	26	13
Unknown	0	1	0
Total ^c	100	100	100
State			
Parana	24	28	34
Santa Catarina	18	22	27
Rio Grande do Sul	61	50	39
Total	100	100	100
No. of Cases (unweighted)	34	106	1929

^aThe Southern Region comprises three States: Parana, Santa Catarina and Rio Grande do Sul.

^bCurrent use of method as % of all women currently married or in union.

^cMay not equal 100% due to rounding errors.

Source: Family Health International, 1985.

Table D2. Comparison of Current Use of Contraception, Current Use of Rhythm, and Proportion of Current Contraceptors Using Rhythm for Women Currently in Union^a, Age 15-49, by Country

	Source	Date	% of Women Currently Contracepting	% of Women Currently Using Rhythm	% of Contraceptors Currently Using Rhythm
<u>ASIA & PACIFIC</u>					
Bangladesh	(11)	1975	8	1.1	13.8
	(9)	1979	12.9	2.2	17.1
	(10)	1981	18.6	3.9	21.0
Fiji	(11,1)	1974	41	2.3	5.6
Indonesia	(11,1)	1976	26	0.8	3.1
South Korea	(11,1)	1974	35	4.6	13.1
		1979	50.2	6.7	13.3
Malaysia	(11,1)	1974	33	3.5	10.6
Nepal	(9)	1981	6.9	0.0	0.0
Philippines	(11,1)	1978	36	8.5	23.6
Sri Lanka	(7,1)	1975	32.0	8.0	25.0
	(9)	1982	54.9	13.0	23.7
Thailand	(11,1)	1975	33	0.9	2.7
	(8)	1978	52.7 ^c	1.3 ^c	2.5 ^c
	(9)	1981	56.6	0.9	1.6
<u>SUB-SAHARAN AFRICA</u>					
Cameroon	(2)	1978	3.1 ^b	1.5 ^b	0.5 ^b
Ghana	(3)	1979-80	12.4 ^b	0.9 ^b	7.3 ^b
Kenya	(11)	1977-78	7	1.1	15.7
Lesotho	(5)	1977	5.0 ^b	0.1 ^b	3.0 ^b
Mauritania ^d	(12)	1985			

Table D2. Continued

	Source	Date	% of Women Currently Contracepting	% of Women Currently Using Rhythm	% of Contraceptors Currently Using Rhythm
Nigeria	(4)	1981-82	6.2 ^b	0.4 ^b	6.5 ^b
Senegal	(11)	1978	4	0.4	10.0
Sudan	(11)	1979	6	0.5	8.3
<u>NORTH AFRICA & THE MIDDLE EAST</u>					
Egypt-rural	(9)	1980	17.1	0.0*	0.2*
Jordan	(1)	1976	22.8	2.1	9.2
		1983	26.0	2.9	11.2
Morocco (rural)	(9)	1981-82	28.2	1.0	3.7
(national)	(10)	1983-84	25.5	1.5	5.9
Syria	(11)	1978	20	2.8	14.0
Tunisia					
(Jendouba)	(9)	1979	32.7	0.5*	1.7*
(preliminary)	(10)	1983	40.7	3.6	8.8
Turkey	(11)	1978	38	1.0	2.6
<u>CENTRAL & SOUTH AMERICA</u>					
Barbados	(9)	1980-81	48.2	1.2*	2.5*
Bolivia					
Brazil	(6)				
Bahia		1980	31.3 ^c	3.6 ^c	11.6 ^c
Pernambuco		1980	41.4 ^c	3.5 ^c	8.4 ^c
Paraiba		1980	43.2 ^c	6.6 ^c	15.3 ^c
Piaui		1979	30.9 ^c	2.6 ^c	8.4 ^c
Sao Paulo		1979	63.9 ^c	5.2 ^c	8.1 ^c
Rio Grande do Norte		1980	47.0 ^c	6.01 ^c	12.8 ^c

Table D2. Continued

	Source	Date	% of Women Currently Contracepting	% of Women Currently Using Rhythm	% of Contraceptors Currently Using Rhythm
Southern Region		1981 (total)	66.2 ^c	4.9 ^c	7.4 ^c
Parana			61.6 ^c	3.3 ^c	5.4 ^c
Santa Catarina			65.2 ^c	3.9 ^c	6.0 ^c
Rio Grande do Sul			71.3 ^c	6.9 ^c	9.8 ^c
Colombia	(11,1)	1976	43	5.1	11.9
	(8)	1978	47.6 ^c	4.1 ^c	8.7 ^c
	(9)	1980	48.5	5.0	10.3
Costa Rica	(11,1)	1976	64	5.1	8.0
	(8)	1978	65.0 ^c	5.1 ^c	7.8 ^c
	(9)	1981	65.1	6.2	9.5
Dominican Republic	(11,1)	1975	32	1.2	3.8
	(10)	1983-84	45.8	1.1	0.2
Ecuador	(10)	1982	39.9	4.8	12.0
El Salvador	(8)	1978	34.4 ^c	1.7 ^c	4.9 ^c
Guatemala	(8)	1978	18.1 ^c	2.6 ^c	14.4 ^c
Guyana	(11,1)	1975	32	2.9	9.1
Haiti	(11)	1977	19	4.2	22.1
Honduras	(9)	1981	26.9	1.6	5.8
Jamaica	(11,1)	1975-76	39	0.3	0.8
	(8)	1979	54.9 ^c	0.2 ^c	0.4 ^c
Mexico	(11)	1976-77	30	3.1	10.3
	(9)	1978	39.9	2.8	7.0
Panama	(11)	1977	54	2.5	4.6
	(8)	1979	60.6 ^c	2.9 ^c	4.8 ^c
Paraguay	(11)	1977	24.0 ^c	1.6 ^c	6.7 ^c
	(8)	1979	36	4.2	11.7

Table D2. Continued

	Source	Date	% of Women Currently Contracepting	% of Women Currently Using Rhythm	% of Contraceptors Currently Using Rhythm
Peru	(11,1)	1977-78	31	10.9	35.2
	(9)	1981	41.9	16.8	41.0
Trinidad and Tobago	(11)	1977	52	2.3	4.4
Venezuela	(11)	1977	49 ^c	4.0 ^c	8.2 ^c

^aWomen currently married or in union, except where otherwise noted.

^b"Exposed" women currently married or in union. Includes only fecund, non-pregnant women.

^c Women aged 15-44 years only.

^d The Mauritanian National Fertility Survey has been completed, but data are not yet available.

* Number of cases less than 20: Egypt, 2 cases; Tunisia (Jendouba), 10 cases; Barbados, 13 cases.

Note: Figures in parentheses represent data sources. These sources are listed below.

- (1) Carrasco (1981).
- (2) Cameroon National Fertility Survey 1978.
- (3) Ghana National Fertility Survey 1979-1980.
- (4) Nigeria National Fertility Survey 1981-1982.
- (5) Lesotho National Fertility Survey 1977.
- (6) Family Health International, 1985.
- (7) Sri Lanka Contraceptive Prevalence Survey 1982.
- (8) Morris et al. (1981).
- (9) Institute for Resource Development/Westinghouse, 1985.
- (10) A. Cross, personal communication, February 15, 1985.
- (11) Carrasco (1982).
- (12) Mauritania National Fertility Survey, 1985.

Table D3. Percent Distribution of Women Currently Married or in Union Using Selected Contraceptive Methods by Age for Sri Lanka, South Korea, Peru and Mexico

	Sri Lanka 1982	South Korea 1979	Peru 1981	Mexico 1978
Age				
Rhythm				
	(N=541)	(N=827)	(N=611)	(N=80)
15-24	16.6	2.9	18.7	20.0
25-34	44.4	40.4	44.8	42.5
35-49	39.0	56.7	36.5	37.5
Withdrawal				
	(N=194)	(N=505)	(N=127)	(N=84)
15-24	18.6	1.2	19.0	31.0
25-39	46.9	33.9	36.5	31.0
35-49	34.5	64.9	44.6	38.1
Spermicides, Condoms and Diaphragms				
	(N=134)	(N=631)	(N=88)	(N=71)
15-24	14.9	7.6	16.4	15.5
25-34	51.5	54.1	61.9	49.3
35-49	33.6	38.3	21.7	35.2
Pills, IUDs and Injectables				
	(N=272)	(N=2322)	(N=409)	(N=671)
15-24	22.8	6.1	27.8	34.6
25-34	47.1	39.3	47.3	45.2
35-49	30.1	54.6	24.9	20.3
Not Using Any Method				
	(N=1875)	(N=6855)	(N=2328)	(N=1716)
15-24	25.1	16.3	25.7	30.2
25-34	39.4	34.6	31.8	31.5
34-49	35.5	49.1	42.4	38.3

Source: Institute for Resource Development/Westinghouse, 1985.

Table D4. Percent Distribution of Urban Women Currently Married or in Union Using Selected Contraceptive Methods by Level of Education for Sri Lanka, South Korea, Peru and Mexico

	Sri Lanka 1982	South Korea 1979	Peru 1981	Mexico 1978
Level of Education^a				
Rhythm				
	(N=157)	(N=467)	(N=487)	(N=56)
None	2.5	3.3	4.6	1.8
Primary	14.0	27.1	38.3	58.9
Secondary+	83.4	69.6	57.1	39.3
Withdrawal				
	(N=31)	(N=212)	(N=95)	(N=32)
None	3.2	5.2	7.7	21.9
Primary	16.1	47.2	54.4	68.8
Secondary+	80.6	47.6	37.8	9.4
Spermicides, Condoms and Diaphragms				
	(N=52)	(N=397)	(N=82)	(N=60)
None	0.0	2.7	4.2	1.7
Primary	3.8	22.6	17.3	55.0
Secondary+	96.2	74.8	78.5	43.3
Pills, IUDs and Injectables				
	(N=75)	(N=780)	(N=376)	(N=487)
None	4.0	5.2	3.9	6.4
Primary	26.7	44.7	37.0	70.8
Secondary+	69.3	50.0	59.1	22.8
Not Using Any Method				
	(N=432)	(N=3130)	(N=1372)	(N=778)
None	10.6	7.8	16.1	15.5
Primary	27.3	41.8	50.4	69.3
Secondary+	62.0	50.4	33.6	15.7

^aPrimary level includes grades 1-5. Secondary level includes grades 6-12, high school and university.

Source: Institute of Resource Development/Westinghouse, 1985.

Table D5. Percent Distribution of Urban Women Currently Married or in Union Using Selected Contraceptive Methods by Number of Living Children for Sri Lanka, South Korea, Peru and Mexico

	Sri Lanka 1982	South Korea 1979	Peru 1981	Mexico 1978
Number of Living Children				
Rhythm				
	(N=157)	(N=468)	(N=487)	(N=55)
None	1.9	0.9	3.4	7.3
1-2	61.8	38.5	39.3	29.1
3-4	26.8	50.2	38.8	43.6
5+	9.6	10.4	18.4	20.0
Withdrawal				
	(N=31)	(N=212)	(N=95)	(N=32)
None	6.5	0.6	1.6	3.2
1-2	38.7	28.6	33.8	40.6
3-4	35.5	56.6	36.3	18.8
5+	19.4	14.2	28.2	37.5
Spermicides, Condoms and Diaphragms				
	(N=52)	(N=398)	(N=82)	(N=60)
None	0.0	1.8	1.2	1.7
1-2	67.2	57.1	50.2	36.7
3-4	26.9	35.7	39.9	38.3
5+	5.8	5.4	8.7	23.3
Pills, IUDs and Injectables				
	(N=75)	(N=780)	(N=376)	(N=486)
None	1.3	1.5	2.3	3.1
1-2	58.7	41.6	45.9	42.6
3-4	32.0	44.5	37.4	29.6
5+	8.0	12.4	14.5	24.7
Not Using Any Method				
	(N=432)	(N=3131)	(N=1372)	(N=762)
None	26.2	12.2	9.1	11.8
1-2	41.2	46.5	36.5	36.5
3-4	19.2	28.3	25.5	21.3
5+	13.4	13.0	29.0	30.4

Source: Institute for Resource Development/Westinghouse, 1985.

Table D6. Annual Continuation Rates and Pearl Pregnancy Rates, by Method, for the Republic of the Philippines

Method	Woman-years of Observation	Annual Continuation Rate	Pearl Pregnancy Rate
Calendar Rhythm alone	710	51	33
Pills	423	42	19
IUD	165	70	4
Condoms	114	10	60
Calendar Rhythm + Withdrawal	241	73	17
Calendar Rhythm + Condoms	71	51	31
Withdrawal Alone	767	43	44

Source: Adapted from Laing, 1981.