

Birthspacing, Fertility, and Family Planning

Policy and Program Implications from the Malaysian Family Life Survey

Julie DaVanzo
William P. Butz



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PREFACE

This report is the edited transcript of a briefing given to staff of the Agency for International Development (AID) in November 1981 in Washington, D.C. It is a companion report to *Improving Infant Nutrition, Health, and Survival: Policy and Program Implications from the Malaysian Family Life Survey*, R-2924-AID, June 1981, by William P. Butz, Jean-Pierre Habicht, and Julie DaVanzo. These two reports summarize the findings of our ongoing research that are likely to be of most direct use to policymakers and program managers. The more detailed scientific findings, and descriptions of methods and data, are reported in a series of more technical Rand publications:

- (1) William P. Butz and Julie DaVanzo, *The Malaysian Family Life Survey, Summary Report*, R-2351-AID, 1978.
- (2) John Haaga, *The Quality of Retrospective Data from the Malaysian Family Life Survey*, N-1823-AID, 1982.
- (3) Julie DaVanzo and John Haaga, *Anatomy of a Fertility Decline: Ethnic Differences in the Experience of Malaysian Women, 1950-1976*, N-1639-AID, 1981.
- (4) Jean-Pierre Habicht, William P. Butz, Linda Meyers, and Julie DaVanzo, *The Effect of Breastfeeding on Post-Partum Amenorrhea: Estimates from a Model Based on the Intermediating Hormone Levels*, N-1640-AID, forthcoming.
- (5) William P. Butz and Julie DaVanzo, *Determinants of Breastfeeding and Weaning Patterns in Malaysia*, forthcoming.
- (6) William P. Butz, Julie DaVanzo, and Jean-Pierre Habicht, *Biological and Behavioral Influences on the Mortality of Malaysian Infants*, N-1638-AID, 1982.
- (7) Julie DaVanzo, Jean-Pierre Habicht, and William P. Butz, *Assessing Socioeconomic Correlates of Birthweight in Peninsular Malaysia: Ethnic Differences and Changes Over Time*, N-1637-AID, 1981.
- (8) William P. Butz and Julie DaVanzo, *Breastfeeding, Contraceptive Use, and Birthspacing*, forthcoming.

Readers interested in the technical bases for particular findings discussed herein will find these publications cited by number throughout the text of this report.

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BIRTHSPACING, FERTILITY, AND FAMILY PLANNING: POLICY AND PROGRAM IMPLICATIONS FROM THE MALAYSIAN FAMILY LIFE SURVEY

INTRODUCTION

Since the 1950s, fertility has fallen for each of Malaysia's three main ethnic groups—Malays, Chinese, and Indians. As Fig. 1 shows, the fertility rate fell sooner, and has fallen more rapidly, for Chinese and Indians than for Malays.⁽³⁾ In 1955 Malays had the lowest fertility rate of the three groups; by 1975, they had the highest. This report discusses some of the factors that contributed to these fertility trends and differentials. We begin by briefly summarizing the conceptual framework that has guided our analyses and by describing recent trends in the key demographic variables. Our principal purpose, though, is to specify the practical implications of our research for programs and policies to improve birthspacing and reduce fertility. Some of these implications deal directly with family planning programs. Others deal with other health programs and broader socioeconomic policies.

Malaysia is an interesting country to study because dramatic demographic and socioeconomic changes have occurred there, though unevenly across different segments of society—for example, across the three ethnic groups shown in Fig. 1. In the 1950s the economic and demographic situation in Malaysia was similar to that in most developing countries: high fertility and mortality rates and little economic growth. Today, however, Malaysia is more advanced economically and demographically than most developing countries. During the 1960s and 1970s an active family planning program was developed, and the government introduced other policies and programs to improve health and welfare. Hence Malaysian experiences over the last thirty years should provide useful lessons for other developing countries.

¹Numbers in parentheses cite the publications listed in the Preface. Interested readers may refer to them for technical details and additional information about particular points.

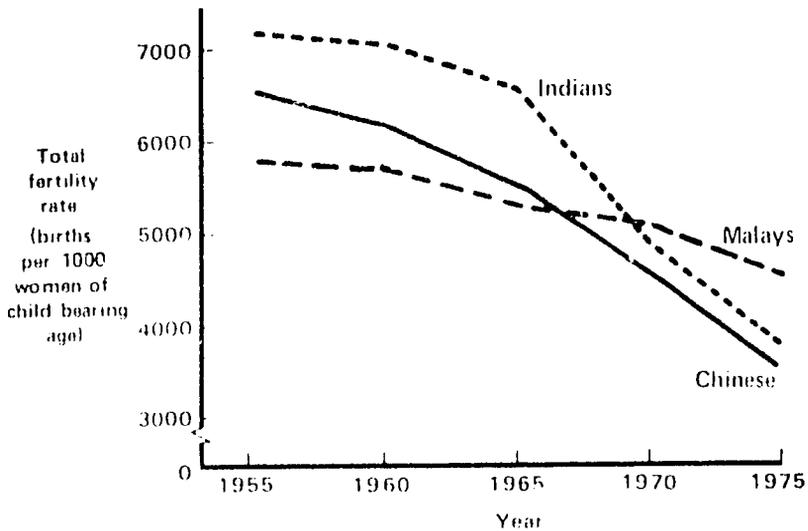


Fig. 1--Fertility rates have fallen for all three ethnic groups in Malaysia

CONCEPTUAL FRAMEWORK

The goals of our data collection and analysis have been to identify factors amenable to public policy influence that might affect birth-spacing, fertility, and infant mortality, and to identify population sub-groups to whom programs and policies should be targeted to maximize their impact.

Several broad policy questions have guided this research. These include:

- To which women should family planning efforts be directed to maximize their effect on fertility?
- What other factors that affect fertility might influence the net effectiveness of family planning programs?

To answer these questions requires understanding the biological and behavioral mechanisms through which community and program factors can influence fertility. Figure 2 outlines some of these mechanisms. We can use the figure to trace the avenues through which policy and program variables might affect fertility, and to identify any unexpected and undesirable side-effects.

We focus here on the pivotal role of birthspacing, using the preg-

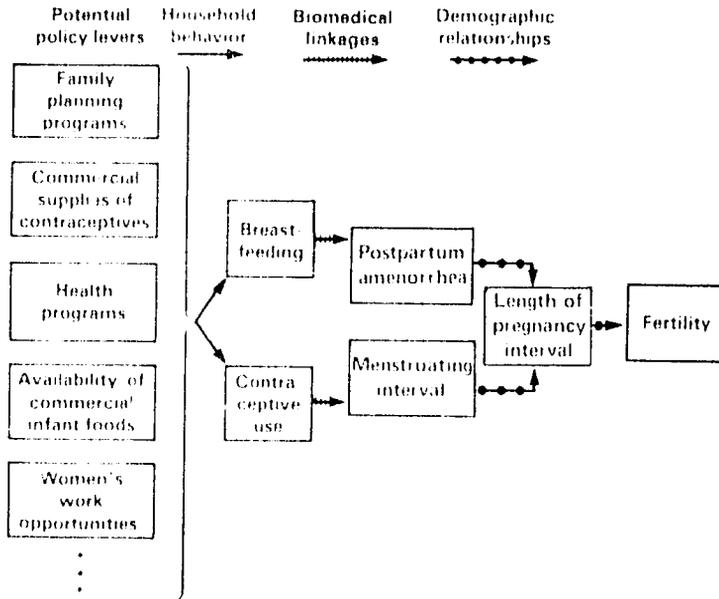


Fig. 2—How programs and policies can affect birthspacing and fertility

nancy interval as our measure. The pregnancy interval is the length of time between pregnancies. Shorter pregnancy intervals can cause a population to grow more rapidly. Short intervals can also be harmful to mothers' and children's health and can increase the risk of infant mortality. In addition, as discussed below, a child's death can affect the length of the subsequent pregnancy interval.

The pregnancy interval consists first of a period of postpartum infertility (measured in our data by the duration of postpartum amenorrhea—the length of time before menstruation resumes). This is followed by the menstruating interval (also called susceptible or at-risk interval), during which ovulation and menstruation occur normally and conception is possible. The length of time between pregnancies can be increased (or shortened) by changes in the length of either of these component intervals. Recent evidence indicates that, in less developed countries, variations in postpartum amenorrhea account for more variation in pregnancy intervals than do variations in menstruating intervals.⁸ Hence, understanding why some women experience long pregnancy intervals and some experience short ones

requires information on what influences each of the two component parts.

It is useful to divide the pregnancy interval into these two parts because different factors affect the length of each part. Practice of contraception is the main factor that lengthens menstruating intervals. Duration and intensity of breastfeeding are the main determinants of the duration of postpartum amenorrhea. (Breastfeeding also improves infants' health and survival prospects. We discuss the policy implications of this relationship in the companion report cited in the Preface.)

Figure 2 depicts (1) the biological relationships through which breastfeeding and contraceptive use influence postpartum amenorrhea and menstruating intervals, (2) the behaviors that give rise to these biomedical relationships, and (3) at the left of the figure, several policy-manipulable factors that may set these behavioral responses in motion. Our research has examined these three kinds of influences on the length of time between pregnancies.

Much previous research on fertility has focused on only one or another arrow in this diagram—for example, estimating the effect of family planning programs on the number of women practicing contraception. Other research has skipped several intervening arrows—for example, by assessing the effect of family planning programs directly on fertility. Inferences from such single-focus research may be misleading, since it ignores the influence of factors other than family planning programs that affect contraceptive use or fertility. Also, such research may not reveal possible side-effects of family planning programs. For example, as we shall see, our research has found that proximity to certain types of family planning clinics in Malaysia is associated with reduced breastfeeding. Reduced breastfeeding not only offsets some of the influence of family planning programs on pregnancy intervals through increased contraceptive use, but also detracts from children's prospects for health and survival.

The more useful question, then, is not "How many women practice contraception in the community where a family planning clinic is located?" but rather "How has the family planning clinic affected fertility compared with what it would have been without the clinic?" This question is not easy to answer. To do so requires, in our opinion, an explicit accounting of the links shown in Fig. 2. At the start, it requires data that document a wide range of demographic outcomes, as well as their behavioral, biological, and institutional determinants.

DATA AND METHODS

To produce such data, we designed and helped field the Malaysian Family Life Survey (MFLS).⁽¹⁾ In these efforts we collaborated with two Malaysian institutions, the Government Department of Statistics and Survey Research Malaysia, a private survey research firm. The survey was fielded in three rounds in 1976-77, in 1262 households. The resulting data are very detailed, documenting both current and retrospective information on demographic, socioeconomic, and institutional factors. The retrospective data cover a period (1946-77) during which substantial demographic and socioeconomic changes occurred. We have investigated the reliability and validity of the retrospective data and find them to be generally acceptable, frequently high. For example, estimates of fertility and infant mortality rates in the 1950s and 1960s derived from the retrospective data are very similar to rates from surveys and vital statistics in those periods.

The MFLS includes a sample of over 5500 pregnancy intervals that occurred between 1946 and 1977. (Even though the number of households surveyed in the MFLS is small compared with that in most fertility surveys, the fact that most women have more than one pregnancy means that the number of pregnancy intervals to be studied is much larger than the number of households surveyed.) These data include not only a retrospective history of demographic outcomes (for example, pregnancies, breastfeeding, and contraceptive use), but also retrospective data on factors that influence these behaviors (for example, characteristics of women's jobs). Therefore, most explanatory variables can be measured as of the time of each pregnancy. The analyses were multivariate, using a variety of statistical techniques.

TRENDS IN BIRTHSPACING, BREASTFEEDING, AND CONTRACEPTIVE USE

Before discussing the policy implications of this research, it is useful to examine trends in birthspacing and its proximate determinants. Figure 3 shows changes between the early 1950s and the mid-1970s in the median length of pregnancy interval, by parity—the number of births the mother had experienced by the time in question. Examining trends by parity can indicate the family sizes at which couples are trying to stop. Empirically, a longer median interval usually means that more women are stopping their childbearing, or at least trying to stop, at that parity.

The median interval between marriage and first birth (not shown here) and the median interval between the first and second child have

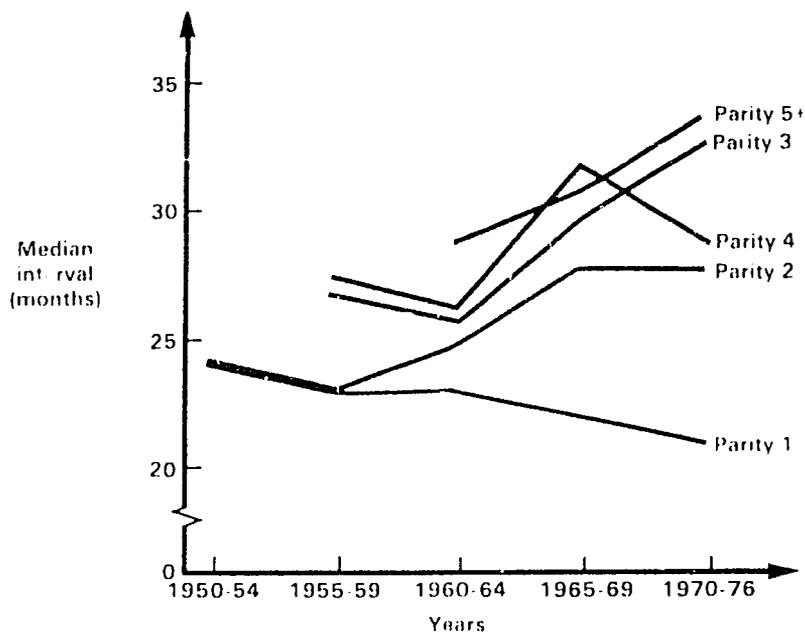


Fig. 3—Trends in pregnancy intervals, by parity

become somewhat shorter over this period; these trends have in fact contributed to an increase in marital fertility rates at the youngest ages.(3) But overall, fertility rates have declined. This has occurred because, beyond parity two, interval lengths have generally increased over time. This has been especially true at high parities. The declines in total fertility rates shown in Fig. 1 are due to these longer intervals at higher parities and to more women stopping at smaller family sizes.

These trends in pregnancy intervals have arisen from changes in their two major components—postpartum amenorrhea and menstruating intervals—and reflect trends in the proximate determinants of those components—breastfeeding and contraceptive use.(3) Even though pregnancy intervals have generally lengthened over time, the duration of the first component of the pregnancy interval—the length of postpartum amenorrhea—has actually decreased. As Fig. 4 shows, this is true for each main ethnic group and is especially dramatic for Chinese and Indians. If the second part of the pregnancy interval had remained the same, these decreases in postpartum amenorrhea would have caused shorter pregnancy intervals and higher fertility rates.

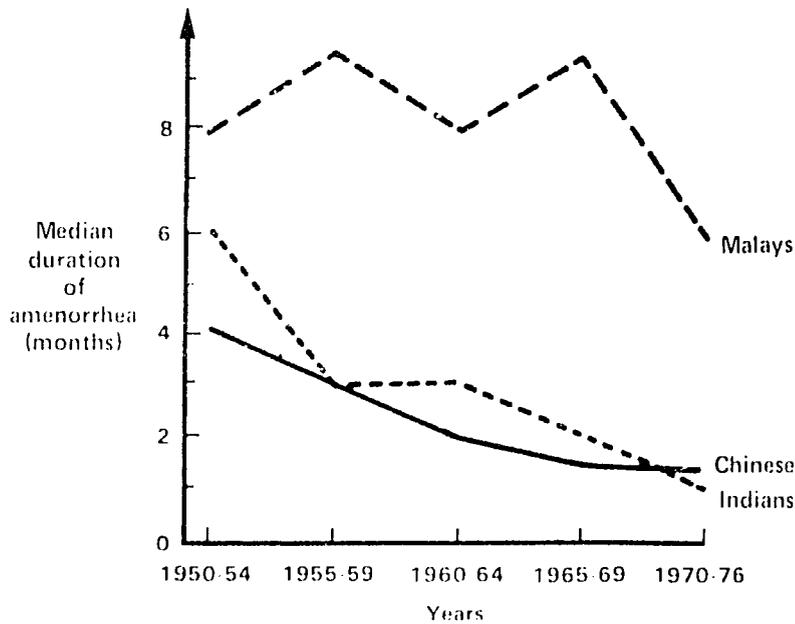


Fig. 4—Trends in postpartum amenorrhea, by ethnic group

For most subgroups of Malaysian women, however, increases in the lengths of menstruating intervals have more than compensated for reductions in the length of postpartum amenorrhea. Figure 5 indicates that this lengthening of menstruating intervals has been especially great since the late 1960s, most notably for Chinese women, who now have the longest intervals of the three ethnic groups.

The decreases in amenorrhea were caused by reduced breastfeeding of Malaysian women. Trends in initiation of breastfeeding are shown in Fig. 6. Both initiation and duration of breastfeeding declined in Malaysia between 1945 and 1976; the same is now happening in many other developing countries. Around 90 percent of Malaysian babies were breastfed in the 1950s, but only about 75 percent in the 1970s. The decline was modest for Malays but very steep for Chinese. Among Chinese and Indians the declines were even more dramatic for young women: By the 1970s less than a third of Chinese women breastfed their first- or second-borns, compared with over 80 percent

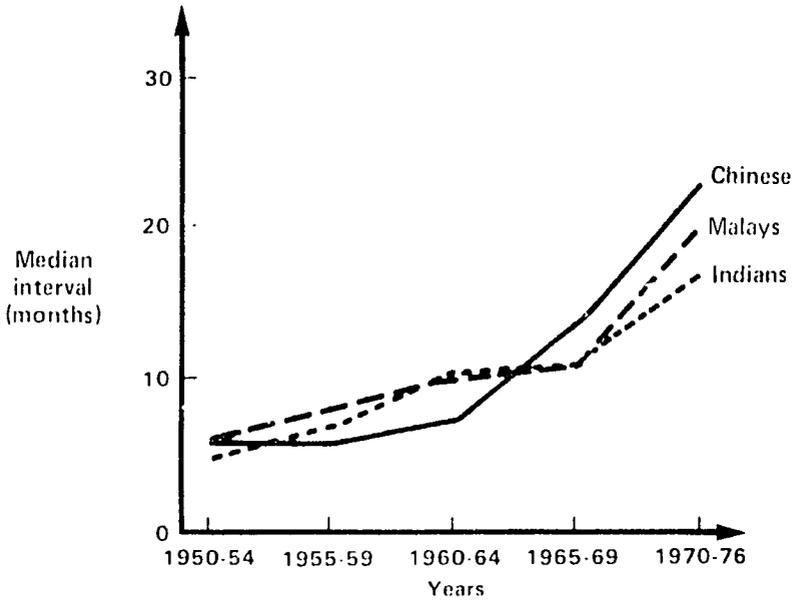


Fig. 5—Trends in menstruating intervals, by ethnic group

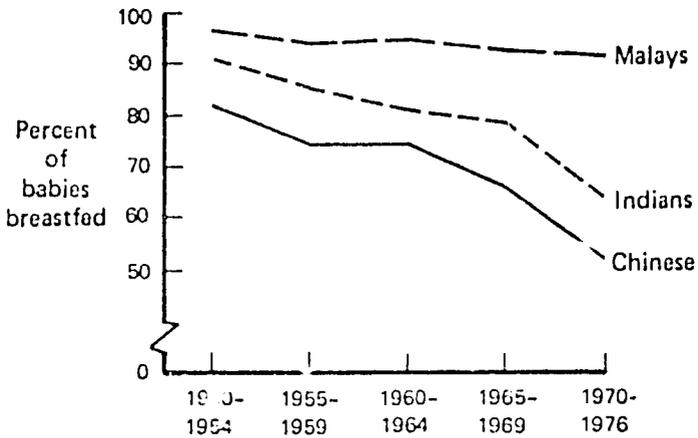


Fig. 6—Trends in breastfeeding, by ethnic group

in the 1950s.(3) The lower levels of breastfeeding and sharper declines for Chinese and Indians are reflected in corresponding ethnic differences in amenorrhea levels and trends shown in Fig. 4. These breastfeeding declines have not only reduced the length of postpartum amenorrhea, hence potentially affecting fertility, but also have affected children's health and survival prospects.

Why has breastfeeding declined? For example, have improved work opportunities for women made breastfeeding a more costly activity (in terms of forgone earnings) and induced women to spend less time breastfeeding? Or has the promotion of infant formula caused women to use it instead of breastfeeding? Have family planning programs contributed to the breastfeeding decline by offering alternative methods of spacing births? The answers to these questions have important implications for policy in countries seeking to slow or reverse breastfeeding declines. Several of our program and policy implications below address these questions.

While amenorrhea lengths have been falling, menstruating intervals have been increasing because of changes in contraceptive use. Contraceptive use rates have increased among all three ethnic groups in Malaysia, especially in recent years (Fig. 7) and especially among

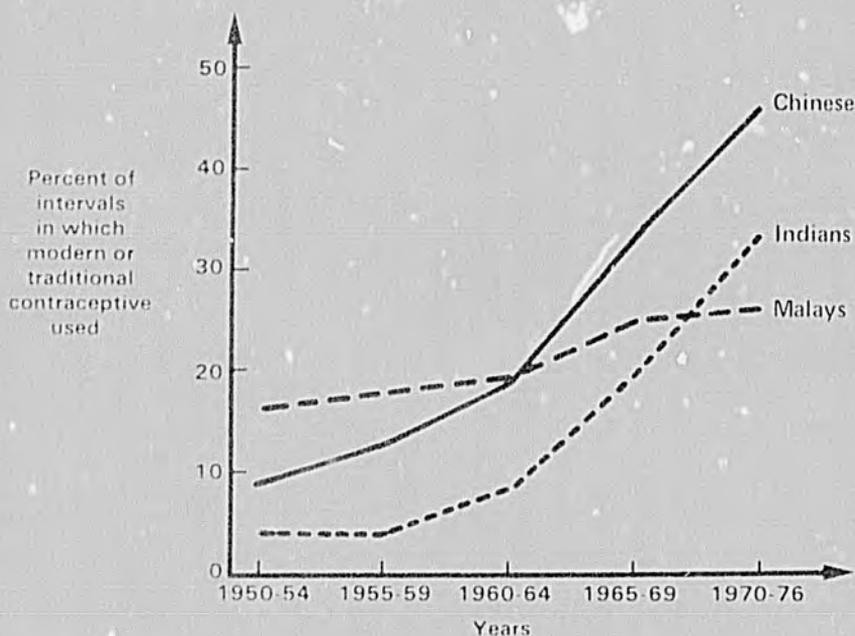


Fig. 7—Trends in contraceptive use, by ethnic group

Chinese. This is why menstruating intervals increased over the period 1950-76, and why Chinese menstruating intervals lengthened most and are now longer than those of Malays and Indians.

Why have contraceptive use rates increased? Knowing the answer is an important prerequisite for designing effective policies. Are the activities of family planning programs responsible? Or is the increase due to couples' increased motivation to limit family size or to space births, regardless of the provision of family planning services? Have decreases in infant mortality contributed, because there is now less need for couples to ensure against the possibility that some of their children might die? To what extent are these increases in contraceptive use rates tied to the decreases in breastfeeding, since these two activities are alternative means of spacing births?

FINDINGS PERTINENT TO PROGRAMS AND POLICIES

The remainder of this report focuses on the most important practical implications of our research for family planning programs, health programs, and socioeconomic policy. In each area we discuss several findings directly pertinent to program or policy concerns, and focus on one or two to illustrate the supporting empirical evidence. We conclude by discussing implications for research and by recommending several specific policy and program initiatives.

Findings Pertinent to Family Planning

*Women are more likely to practice contraception and to do so with effective methods when they want no more children.*⁸⁵ In Malaysia (and many other developing countries, contraception is practiced primarily for limiting the number of births rather than spacing them—but spacing is also a motivation for many Malaysian couples). Figure 7 illustrates these points by showing how rates of contraceptive use by women who have reached their family size goal compare with those by women who say they still want more children. A significant proportion of women who want more children use some form of contraception, primarily the pill. Nonetheless, attainment of the family size goal is associated with increased use of all the methods shown in Fig. 8 except folk methods. Hence, when women want no more children, they change from relatively ineffective methods (e.g., folk methods), or no method at all, to more effective ones, mainly the pill and steril-

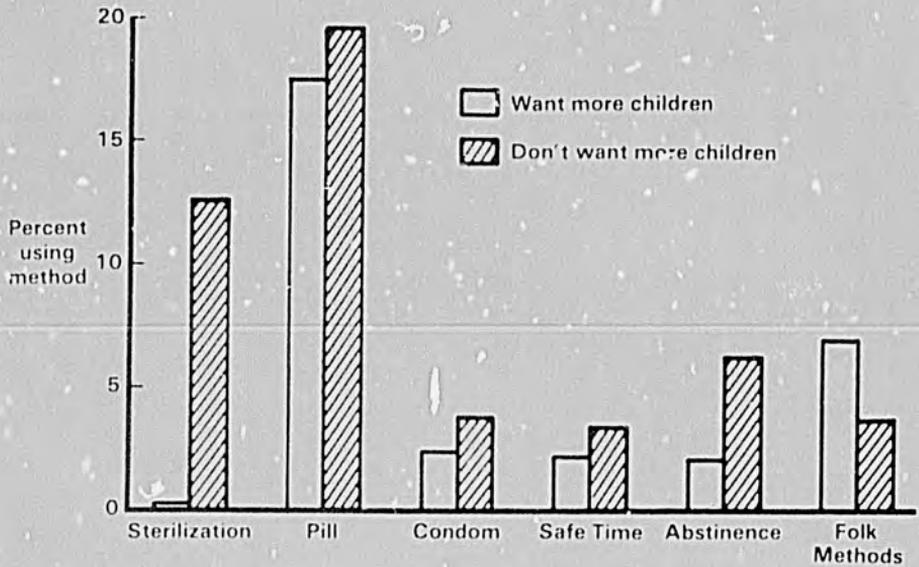


Fig. 8—Most women use more effective contraceptive methods once they reach their family size goal

ization. In fact, one out of eight couples who want no more children have guaranteed this result through tubal ligation or vasectomy. Other Malaysian surveys fielded in the 1960s and 1970s indicate a decrease over this period in the number of children couples desire. These decreases in desired family size have contributed to the increases in contraceptive use rates shown earlier in Fig. 7.

There are six types of family planning clinics in Malaysia. *Some types of family planning clinics, such as the first ones established by the National Family Planning Board (NFPB), are located in areas where women are already motivated to practice contraception, that is, where income and education are high, and desired additional fertility is low.*(8) (Even when proximity to family planning clinics is controlled, income and education are positively related to the use of effective contraceptive methods, such as the pill, condom, and sterilization.(8)) Furthermore, NFPB clinics tend to be located in areas where contraceptives are already commercially available, perhaps in response to families' motivation to practice contraception. Other types of Malaysian family planning clinics, e.g., traditional midwife clinics, are located primarily in the opposite kind of areas—

where incomes are low, desired family size is high, and contraceptives are not available commercially. This nonrandom placement of family planning clinics has important implications for evaluating their impact: If clinics are located where women would practice contraception even if the clinics were not there, or where fertility rates would have fallen anyway, evaluations will overstate the power of clinics to effect changes in contraceptive use or fertility, unless other contributing factors are appropriately controlled.

Proximity to most types of family planning clinics is associated with higher rates of contraceptive use, even when other influences on contraceptive use are controlled.(8) However, because of the nonrandom placement of clinics, the estimated association with proximity to NFPB, Family Planning Association, and estate clinics is smaller when these other factors are controlled.

Certain types of clinics appear to be especially associated with use of particular contraceptive methods.(8) For example, couples who live near Family Planning Association clinics are especially likely to use condoms or to be surgically sterilized. Couples near NFPB clinics are also likely to resort to sterilization, and many use the pill. Understanding the reasons for these differences may help improve procedures in other clinics.

Although modern contraceptive methods are most effective in extending the length of the menstruating interval, some traditional methods are associated with significantly longer menstruating intervals, other things the same.(8) Even though use of condoms and pills is associated with the longest menstruating intervals, Fig. 9 shows that "safe time" (rhythm) and abstinence are also effective methods. Menstruating intervals in which these two traditional methods are practiced are two to three times longer than intervals in which no contraception is practiced. Even the use of folk methods is associated with menstruating intervals that are 24 percent longer than those in which no contraception is practiced. The rather large effect of safe time is probably due to the fact that in Malaysia this method is used by very highly educated women. Such an effect may be unlikely in other countries, where safe time is practiced by less educated women who may not be able to use it as capably.

Breastfeeding is another traditional way of lengthening the pregnancy interval, in this case by extending the duration of postpartum amenorrhea. Our analysis of variations in postpartum amenorrhea shows that *unsupplemented breastfeeding is a more effective contraceptive than previous research has indicated.*(4) The lower effectiveness estimates from other studies are due to methodological problems. Our results indicate that unsupplemented breastfeeding is generally a very effective contraceptive, at least for the first 12 months.

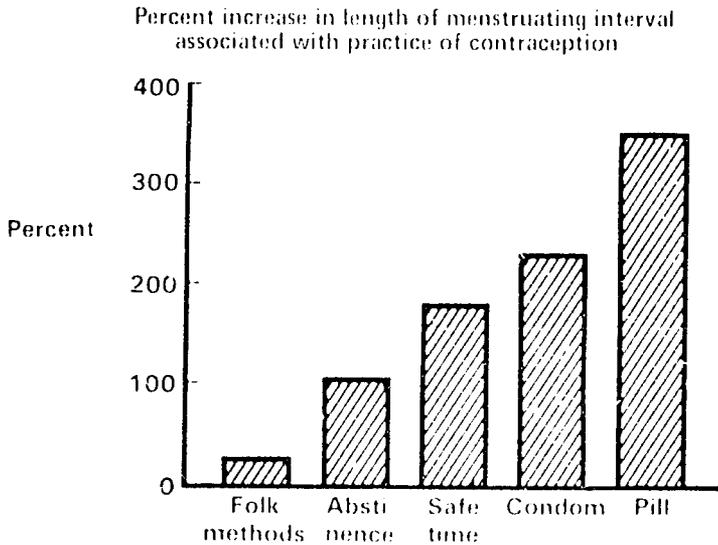


Fig. 9—Some traditional methods of contraception
are effective

Furthermore, *in Malaysia many women treat breastfeeding and use of other contraceptives as substitutes.* Several findings lead us to this conclusion. For one, Malays both breastfeed more and practice contraception less than Chinese and Indians, as we saw above. Also, within each ethnic group, breastfeeding declines occurred simultaneously with increases in the practice of other forms of contraception. Finally, within individual women's reproductive experience, the longer a period of postpartum amenorrhea (due to longer breastfeeding), the less likely she was to practice contraception.⁽⁸⁾

The contraceptive effectiveness of unsupplemented breastfeeding, and the fact that women treat breastfeeding and other contraceptives as substitutes, have important implications for targeting of family planning efforts. One is that a propitious time to encourage family planning services is when the mother first begins giving her child supplementary food—that is, when the contraceptive protection of breastfeeding begins to wane. (Some medical evidence suggests that an appropriate time to begin supplementation is when the child is four to six months old, since unsupplemented breastfeeding does not provide complete nutrition for older infants.)

Because some traditional contraceptive methods are effective,

family planning programs should be directed especially toward couples who are not already practicing some effective form of contraception, modern or traditional. It may be necessary to devote more program resources to motivating such couples, as Malaysia's family planning program now does. However, focusing on these couples who do not use any effective method may yield a greater payoff in terms of net reductions in fertility.

These results also have another implication for the way in which family planning programs should be evaluated. The effect of a program is often measured by counting how many couples use modern contraceptives that it supplies. For two reasons, this measure is likely to overstate the program's effect on fertility. First, it overlooks the fact that some, perhaps many, of these couples previously used other, traditional methods to space or prevent births. The effect on fertility of their adopting modern methods will be smaller than if they had previously used no contraception or only ineffective methods. The second reason is that some couples' demands for contraception may already be partially or fully satisfied through commercial sales. (In Malaysia, around 25 percent of users of modern methods receive their supplies from non-program sources.) A family planning program may induce couples to shift from private to public suppliers, but may not increase by much the total amount of contraception they practice.

Our research also suggests that *proximity to family planning clinics alters women's breastfeeding patterns*.¹⁵ Women near certain types of family planning clinics that do not offer maternal child-health activities are less likely to breastfeed. The reason may be the hormonal interference between contraceptive pills and breastfeeding; it may be that women who treat breastfeeding and other contraceptives as substitutes breastfeed less when modern contraceptives are more readily available. In contrast, women who live near NFPB clinics and family planning clinics that are integrated with maternal child-health activities are *more* likely to breastfeed. This is especially true for Chinese, who breastfeed the least. Proximity to these clinics is associated with higher rates of both contraceptive use (especially the pill) and initiation of breastfeeding.

Findings Pertinent to Health Programs and Policies

In Malaysia the type of place where a woman delivers her babies is associated with her subsequent contraceptive behavior. Even controlling for many socioeconomic characteristics, women who give birth in a hospital are more likely thereafter to practice contraception.¹⁸⁾

Malaysian women who deliver in a private maternity clinic are less

likely to begin nursing their babies.(5) Even when many other influences on breastfeeding are controlled, women who give birth in such a clinic are significantly less likely to begin breastfeeding than women who give birth at home, as shown in Fig. 10. It may be that these clinics use heavier anaesthesia at birth, a factor known to impede the successful initiation of breastfeeding. Instead, it may be that they separate the baby and mother for a longer time, or that they distribute free bottles and infant formula. These reasons merit investigation in data more focused on this question. Though not surprising, it is noteworthy in Fig. 10 that, while place of birth is an important influence on whether the woman begins to breastfeed, place of birth is not associated with how long she continues, once she begins.(4)

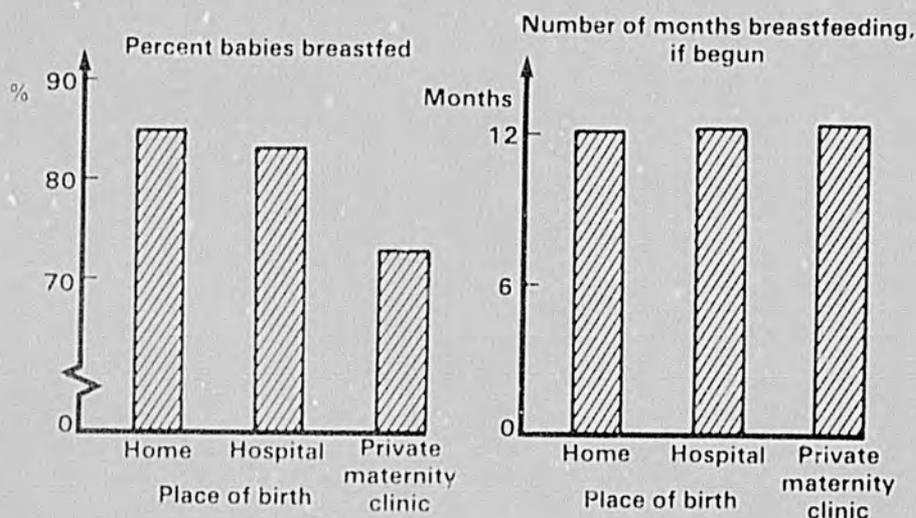


Fig. 10—A baby's place of birth is associated with its breastfeeding

Infant mortality rates in Malaysia are now about one-third what they were following World War II.(6) How has this dramatic decline affected fertility? *In Malaysia both a woman's postpartum amenorrhea and her menstruating interval tend to be shorter following the death of a child.* Hence, when a child dies soon after birth, the subsequent birth interval is generally shorter for both biomedical and behavioral reasons. The death curtails breastfeeding, which, through a biomedical linkage, reduces the length of postpartum amenorrhea.(5.4) Behaviorally, women are less likely to practice contraception follow-

ing a child's death, in an apparent attempt to "replace" the child who died.(8) These findings are replicated in other studies, in addition, we find that a child's death is especially likely to discourage subsequent use of the most effective methods—sterilization and the pill.(8) These results are useful reminders that both biological and behavioral factors affect fertility, and that infant mortality affects population growth not only directly but also indirectly through its effects on fertility. The dramatic reductions in infant mortality in Malaysia should in themselves help reduce the incidence of short pregnancy intervals, which can detrimentally affect mothers' and children's health.

Findings Pertinent to Socioeconomic Policy

Mothers who can earn high wages breastfeed less.(5) Breastfeeding is a time-consuming activity. When women have attractive work opportunities outside their homes, the opportunity cost of time spent breastfeeding (i.e., the value of that time in alternative uses) is high and women tend to breastfeed less. By contrast, agricultural jobs are often nearer to home and more compatible with child care. Other things being the same, women with agricultural jobs breastfeed more than both women who do not work and women with nonagricultural jobs.(5) Encouraging the establishment of child-care facilities where women work might help arrest the breastfeeding declines that otherwise accompany improved nonagricultural work opportunities for mothers.

Socioeconomic changes associated with economic development—increasing education, income, and urbanization—increase contraceptive use but reduce breastfeeding (5,8) Declines in breastfeeding put upward pressure on fertility that is usually, but not always, offset by increases in contraceptive use. Figure 11 shows the situation for one group, young Indian mothers, who have not sufficiently compensated for their reduced breastfeeding by increasing their use of contraceptives. These mothers have experienced dramatic breastfeeding declines, especially since 1969, but their use of modern contraceptives has not kept pace. Consequently, the proportion of short pregnancy intervals (less than 15 months long) has been increasing among young Indian mothers.(3) These increases in short intervals are associated with reductions in birthweights(7) and increases in infant mortality among Indians in our sample.(6) This finding emphasizes the special need to promote family planning among women who breastfeed little or not at all and who do not use other contraceptive methods. It also underscores how important it is for policymakers concerned with fertility, health, and population growth to monitor

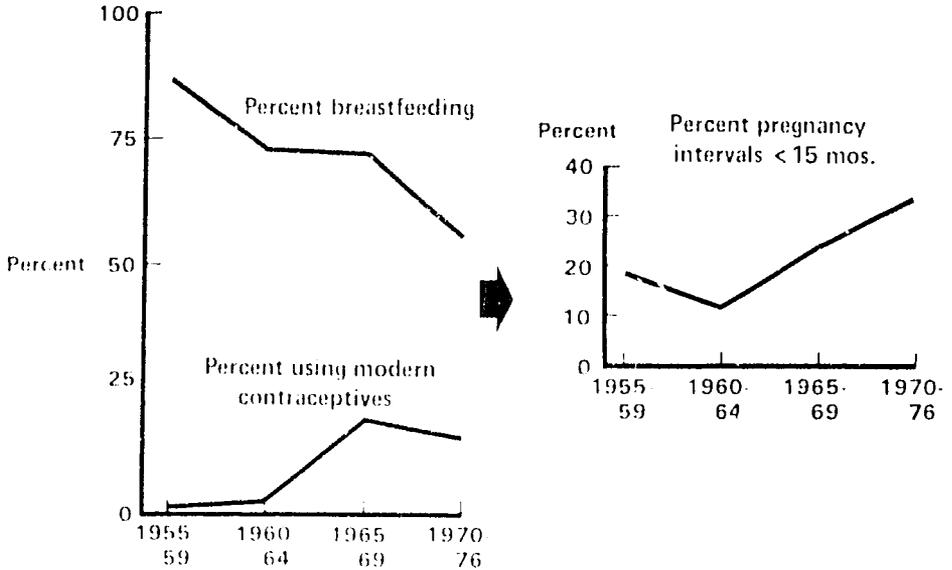


Fig. 11—Contraceptive increases do not compensate for breastfeeding declines for young Indian mothers

levels and trends in breastfeeding and to be aware of the interrelation between breastfeeding and contraceptive use.

A hypothesis frequently advanced to explain declines in breastfeeding is the commercial merchandising of infant formula. Although the MFLS is not ideally suited to investigate this possibility, we find no relationship between a woman's breastfeeding and the availability and price of infant formula in her community.⁵ The relationship might still exist, even though our data and statistical methods cannot uncover it, but our research offers no support at all for the hypothesis. Rather, it shows that *in Malaysia breastfeeding declines began well before the beginning of wide-scale commercial merchandising of infant formula and appear to be associated with improved nonagricultural work opportunities for women and with other socioeconomic changes.*

IMPLICATIONS FOR RESEARCH

Although we focus here on the policy implications of our analyses, the research also has some methodological implications for future research to further inform policy:

- *In-depth surveys of fewer families can be as valuable as or more valuable than surveys with larger samples but narrower scope.* For a given budget, there is always a tradeoff between (1) surveying many families and collecting relatively little information about each, and (2) surveying fewer families and learning more about each. We chose the latter approach and feel the benefits have outweighed the costs. These detailed data have answered questions that could not have been put to larger-sampled but more limited surveys, for example, the World Fertility Surveys.
- *Retrospective data can be much more useful than commonly thought.* In addition to documenting births and deaths, they can be used to document changes in the family and community variables that influence fertility and mortality so that one can attempt to understand better the *reasons* behind the demographic changes.
- *Outcomes that result from interplays of behavioral, biomedical, and institutional factors are most reliably and productively studied in data that document all three aspects and by researchers whose expertise spans these areas.* In our case at least, social scientists, biomedical researchers, and policy analysts have produced more together than they could have separately.

IMPLICATIONS FOR PROGRAMS AND POLICIES AND THEIR EVALUATION

Although many of the findings summarized in this report are new and must be replicated before we feel confident that they are bases for policy initiatives, some results emerge so strongly or are so consistent with findings of other studies that, in our opinion, policy or program initiatives and evaluation activities can now take them into account:

- *Family planning activities should be integrated with maternal child-health (MCH) services in order to encourage breastfeeding and to facilitate the initiation of contraceptive use when mothers begin to supplement their breastfeeding.* There has been considerable debate about whether the delivery of family planning services should be integrated with other health services, particularly MCH. Our finding that mothers who live near family planning clinics integrated with MCH

services are more likely to breastfeed suggests a benefit of integration that, to our knowledge, has not entered the debate. Furthermore, our finding that a propitious time to begin modern contraception is when the mother first begins giving her child supplementary food also supports the integration of family planning and MCH services. A promising movement in that direction has already begun: The number of women who attend integrated clinics in Malaysia has increased dramatically in the 1970s.

- *Field investigations are called for to identify the practices of private maternity clinics that discourage breastfeeding and of hospital maternity procedures that encourage contraceptive use, so that clinical practices can be improved accordingly.*
- *In order to target their services where and when they are likely to be most effective, family planning administrators should monitor breastfeeding trends in different parts of the population and be aware of the implications of these trends for fertility.*
- *Family planning evaluation activities should be modified to include consideration of the traditional methods women have used to space and limit their births. Several of these methods appear to be more effective than heretofore recognized. Evaluations should try to measure the net changes in fertility that result if women use traditional contraceptive methods less as they use modern methods more. Taking account of these substitutions is statistically more difficult than the usual evaluation methods and requires more detailed data, but it is necessary in order to both document and increase the real impact of family planning activities.*
- *In many circumstances family planning programs could increase their benefit, in terms of net reductions in fertility, by focusing on women who are otherwise unlikely to practice contraception, especially women who breastfeed little or not at all and those with limited access to commercially sold contraceptives. Focusing on women who are already interested in practicing contraception is a reasonable way to begin a program, so that organizational and operational procedures can be established efficiently while serving a relatively willing clientele. At a more mature stage, however, it is productive to focus, as Malaysia's program now does, on more difficult groups who would otherwise be unlikely to use modern contraceptives. This should increase the net benefit of the family planning program.*