

## Miscellanea

Under the heading *Miscellanea*, essays will be published dealing with topics considered to be of general interest to the readers. All contributions will be refereed for their compatibility with this criterion.

# The World Fertility Survey and Its Implications for Future Surveys

*Richard M. Cornelius<sup>1</sup>*

**Abstract:** This paper summarizes the history and achievements of the World Fertility Survey (WFS) and illustrates its scope by the presentation and discussion of a selection of fertility-related comparative statistics. Data from 29 developing countries suggest a pervasive trend toward increased age at marriage, shorter breastfeeding duration, and lower fertility. There are also rather striking inter-country differentials in infant mortality and contraceptive use. The paper also summarizes

the advantages of survey standardization and concludes that the approach used in the WFS is likely to continue to play a critical role in meeting future population data needs in less developed countries (LDCs).

**Keywords:** Survey research; World Fertility Survey; standardization; fertility; nuptiality; contraceptive use; breastfeeding; infant mortality.

### 1. Introduction

During the 1960s the problem of rapid population growth received increased attention in the developing world. The 1960 round of censuses revealed annual population growth rates of 2.5–4.0 percent in most less developed countries (LDCs). Population policies were formulated in a growing number of countries, particularly in Asia (Nortman and Hofstatter

(1978)). By the late 1960s more than a dozen LDCs had established national family planning programs.

It is not surprising, therefore, that during this same decade the number of population-related surveys in LDCs increased significantly. In fact, an inventory of such surveys world-wide during the 1960–1973 period documented no fewer than 222 surveys in LDCs (Duncan (1973)).

A striking feature of these early surveys is their heterogeneity. There appears to have been no common approach to sampling, definition and measurement of key variables, survey organization, or data analysis. Indeed, for many surveys these factors were never

<sup>1</sup> Policy Development Division, Office of Population, U.S. Agency for International Development, Washington, D.C. 20523, U.S.A. The author acknowledges with thanks the very helpful comments and suggestions offered by the two anonymous referees.

properly documented, making it very difficult to evaluate the resulting data. In any case, it is fair to say that a good deal of the population survey data of the 1960s is of questionable validity. Furthermore, since the 1960s an awareness has developed that the usefulness of data, even for strictly national purposes, is enhanced if it can be placed in an international framework.

By 1970 the number and size of LDC population programs had continued to increase, partly as a result of an increased commitment by the major multilateral and bilateral donors toward population program assistance. This led in turn to more pressure for reliable data for population policy formation and family planning program management and evaluation. In 1971, the Agency for International Development and the U.N. Fund for Population Activities entered into discussions with the International Statistical Institute on the feasibility of launching a major centralized fertility survey program to collect a large body of information in as many developing countries as possible within a span of several years. These discussions led eventually to the creation of the World Fertility Survey (WFS) in 1972.

The purpose of this paper is to describe briefly the World Fertility Survey, highlight some of its more important findings, and discuss some of the advantages of the standardized survey approach for future similar activities.

## 2. World Fertility Survey (WFS)

The primary aim of the WFS was to assist as many countries as possible to conduct nationally representative, internationally comparable, scientifically designed and conducted surveys of fertility-related behavior. Another important objective was the institutionaliza-

tion of an improved survey capability in participating countries.

The WFS was the first centralized international survey assistance program, and remains the largest social science research project in history. Forty-two developing countries and 20 developed countries participated in the WFS, representing nearly 40 percent of the world's population (Lightbourne et al. (1982)).

The developed countries undertook their surveys without technical or financial input from the WFS, but the survey instruments used were based on the WFS model core questionnaire. In the developing countries, WFS input was more substantial and direct, resulting in greater international comparability in survey procedures and data.

In each participating LDC, primary responsibility for survey implementation rested with a local executing agency (usually the national statistical office). WFS' role was to provide financial and technical assistance at each stage of survey operations. Every attempt was made to insure that all survey work (including data processing, analysis, and report writing) was completed *in-country* under the leadership of *host country* professionals, even if this meant lengthy delays in publishing the data. Only in a few cases did WFS have to take a leading role in bringing a survey to completion. This approach to technical assistance reflected the priority the WFS accorded to strengthening LDC survey capabilities.

All participating developing countries used the WFS core questionnaire as a model. The questionnaire was then translated into the local language(s) and otherwise adapted to local cultural conditions. This core questionnaire asked each eligible woman for information on basic socioeconomic characteristics, marriage history, work history, birth history, knowledge and use of contraception, and attitudes on family size (World Fertility Survey (1975)). WFS also offered a series of optional

questionnaire modules. Some of the most widely used include:

- Factors other than contraception affecting fertility (lactation, postpartum amenorrhea and abstinence, sterility, etc.);
- Family planning (source of supply, perceived availability of services, etc.);
- Community-level variables (availability of basic health and social services).

A more complete discussion of the various questionnaire modules and their contents is available elsewhere (e.g., World Fertility Survey (1975), Appendix II).

Each participating country was expected to publish a First Country Report which included a description of the country setting, the survey methods and procedures employed, and an analysis of the major findings. A set of detailed tabulations was also published for each country. First Country Reports have been published for 41 of the 42 participating developing countries, the lone exception being Iran.

In addition to these First Country Reports, the WFS issued nearly 200 other publications, divided into the following series:

- Basic Documentation;
- Occasional Papers;
- Scientific Reports;
- Comparative Studies;
- Technical Bulletins;
- First Country Report Summaries.

Moreover, two international conferences were convened by the WFS to give a public account of the substantive and methodological findings of the program. The first and most important of these conferences was the World Fertility Survey Conference of 1980, which was attended by more than 600 participants (World Fertility Survey (1981)). The second, the WFS Symposium, was convened in 1984, and focused its attention more on the scientific contribution made by the WFS.

Perhaps the most important impact of WFS on the scientific literature has been through the further analysis of WFS data tapes. More

than 500 further analysis projects have been undertaken using WFS data. WFS made every effort to facilitate the dissemination and use of its survey data tapes by researchers worldwide, subject of course to the conditions for data release set by each participating country. WFS established an active data archive which performed several useful functions for users:

- creation of standardized recode tapes with supporting documentation;
- dissemination of tapes to requesting institutions;
- updating and correction of tapes and documentation as new versions became available;
- provision of user support to facilitate use of the tapes.

With the completion of the WFS program in December 1984, the entire WFS archive (including data tapes and stocks of publications) was transferred to the headquarters of the International Statistical Institute Research Center in The Hague. Under the direction of Mr. John Cleland, the so-called Dynamic Data Base program will not only continue the WFS archive services described above, but will endeavor to acquire *new* data sets as well.

### 3. Selected Findings from the WFS

One of the intended advantages of the WFS program was the potential for assessing cross-national trends or differentials in fertility and related variables. As a result, comparative analysis of WFS data has flourished. In order to illustrate the scope of the WFS, Table 1 on page 430 presents selected highlights from the first 29 completed WFS surveys.

*Fertility* in the developing world remains far above the level required for population replacement (i.e., approximately 2.5 children per woman). Average completed family size ranges from 5.1 children in Indonesia to 8.5 children in Jordan. Fertility appears to be

Table 1. Selected World Fertility Survey Data for 29 Developing Countries

Region and country	Survey year	Median age at marriage	Mean number of children per woman aged 45-49	Total fertility rate	Infant mortality rate per 1 000 live births	Percent of women who had ever breast-fed	Median length of breast-feeding (months)	Current contraceptive use <sup>1</sup>	Average preferred family size <sup>1</sup>	Percent of women who want no more children <sup>1</sup>
<i>Africa</i>										
Kenya	1977/8	18.3	7.9	8.0	87	98	15.4	8	7.2	17
Lesotho	1977	18.7	5.3	5.9	126	96	20.5	7	6.0	15
Senegal	1978	16.0	7.1	7.1	112	98	19.1	4	8.9	na <sup>6</sup>
Sudan (North)	1978/9	na <sup>6</sup>	6.0	5.7	79	98	14.5	5	6.4	17
<i>Asia and Pacific</i>										
Bangladesh	1976	13.3	6.8	5.9	135	98	30.7	10	4.1	na <sup>6</sup>
Fiji	1974	19.5	6.4	4.1	47	86	9.2	46	4.2	50
Indonesia	1976	16.6	5.1	4.3	95	97	22.2	33	4.3	39
Korea, Rep. of	1974	21.2	5.8	4.0	42	93	16.6	35	3.2	72
Malaysia	1974	19.0	6.1	4.5	36	73	2.6	36	4.4	45
Nepal	1976	15.7	5.8	6.2	142	98	23.6	3	4.0	30
Pakistan	1975	16.3	6.8	5.9	139	95	19.2	7	4.2 <sup>2</sup>	43
Philippines	1978	21.6	6.6	5.1	58	86	12.7	39	4.4	54
Sri Lanka	1975	21.7	5.8	3.5	60	95	20.8	35	3.4	61
Thailand	1975	20.3	6.4	4.3	65	92	18.9	40	3.7	61
<i>Latin America and Caribbean</i>										
Colombia	1976	20.8	6.1	4.5	70	90	6.8	46	4.1	62
Costa Rica	1976	21.4	6.1	3.5	53	74	1.8	71 <sup>3</sup>	4.7	52
Dominican Rep.	1975	18.5	6.5	5.4	89	89	7.2	36	4.7	52
Guyana	1975	18.4	6.5	4.6	58	88	4.5	35	4.6	55
Haiti	1977	20.2	5.8	5.5	123	97	15.0	20	3.6	46
Jamaica	1975/6	18.4	5.5	4.6	43	92	6.0	44	4.1	51
Mexico	1976/7	20.1	6.7	5.9	72	80	6.7	35	4.5	57
Panama	1975/6	19.7	5.7	4.0	33	79	3.7	58 <sup>3</sup>	4.3	63
Paraguay	1979	20.6	6.2	4.9	61	92	11.8	41	5.3	32
Peru	1977/8	20.7	6.2	5.3	97	93	12.9	36	3.8	61
Trin. & Tob.	1977	19.0	5.8	3.1	43	80	6.3	56	3.8	47
Venezuela	1977	20.0	6.1 <sup>4</sup>	4.3	53	82	3.0	52 <sup>5</sup>	4.2	55
<i>Middle East</i>										
Jordan	1976	18.4	8.5	7.2	66	92	8.5	29	6.3	42
Syria	1978	19.4	7.6	7.5	65	96	9.2	23	6.1	37
Turkey	1978	na <sup>6</sup>	6.3	4.3	133	na <sup>6</sup>	na <sup>6</sup>	45	3.0	57

Source: Selected World Fertility Survey country reports and data tapes.

<sup>1</sup> Data are for currently married, fecund women.

<sup>2</sup> Pakistan respondents were asked how many children they considered ideal for the "average family."

<sup>3</sup> Women aged 20-49.

<sup>4</sup> Age group 40-44; sample did not include women aged 45-49.

<sup>5</sup> Women aged 15-44.

<sup>6</sup> Not available (na).

highest in the African and Middle East countries. One approach to discerning recent trends in fertility is to compare actual completed fertility of women aged 45-49 to the total fertility rate, which is the number of children a synthetic cohort of women would bear by age 49 given *current* age-specific fertility rates. A comparison of these two

statistics from Table 1 does indeed reveal rather dramatic recent declines in fertility for the majority of countries listed. The important exceptions are in Africa.

One of the most important proximate determinants of completed fertility is the age at which a woman enters into a marital union. WFS data on *age at marriage* indicate that

LDC women continue to marry at a relatively young age, resulting in longer exposure to the risk of childbearing. The median age at marriage varies from a low of 13.3 in Bangladesh to a high of 21.7 in Sri Lanka. On average, these medians are lowest in Africa, South Asia, and the Caribbean and highest in East Asia and certain South American countries. Other WFS data not shown in Table 1 reveal a trend toward later age at marriage in much of the developing world. Median age at first marriage among women 25–29 averages 0.1–2.0 years higher than for women 45–49, with South Korea, Malaysia, and Sri Lanka showing changes of 5.7, 4.0, and 4.8 years respectively.

One of the unexpected bonuses of the World Fertility Survey has been the wealth of new direct estimates of *infant mortality*. Again, Table 1 reveals significant intercountry differentials in infant mortality – from 36 per 1 000 live births in Malaysia to 142 in Nepal. It is also important to note that other WFS data suggest a correlation between high fertility and high infant mortality. It is quite possible that this relationship is circular – i.e., women bear large numbers of children to offset the impact of infant mortality; and high fertility, particularly with close spacing of births, perpetuates high infant mortality. A recent study by Rutstein (1983) provides strong support for this latter hypothesis. He found that infant mortality was substantially lower among women who spaced their births more than 48 months apart than among those who spaced births less than 24 months apart. Such findings suggest that family planning is an important potential intervention against high infant mortality.

Another factor certainly related to child morbidity and mortality is *breastfeeding*. With the exception of Fiji, Malaysia, Philippines, and parts of Latin America, over 90 percent of women report having breastfed their children. However, duration of breastfeeding varies

widely between countries – from less than two months in Costa Rica to more than 30 months in Bangladesh. In general, Asian women tend to breastfeed longest. However, other recent research has shown a general trend toward shorter breastfeeding durations. Older women report breastfeeding 2–3 months longer per child than younger women (Ferry and Smith (1983)).

*Contraception* is now practiced by about one-third of all women at risk of pregnancy in the developing world, according to WFS data. Contraceptive use is by far lowest in Africa and South Asia, where prevalence rates are less than 10 percent. In most other countries contraceptive prevalence rates vary between 20 and 50 percent. Costa Rica has a prevalence rate of 71 percent, which is very similar to the level found in the developed world.

It should be noted that in Africa, WFS survey data on contraceptive use may not accurately reflect the full range of fertility-inhibiting practices. For example, other WFS data (not shown here) indicate a high level of prolonged breastfeeding and postpartum abstinence, particularly in West African countries such as Nigeria, Benin, and Ghana. It appears that these practices have deep cultural roots and are not seen as “family planning” measures.

WFS data show that *preferred family size* ranges between 3 and 5 children in most developing countries, but is substantially higher in Africa and parts of the Middle East. On average, women in developing countries still desire substantially more children than required for population replacement. Again, however, there are signs of change. Lightbourne et al. (1982) present data which show a significant decline in preferred family size among younger women. In addition, data presented here in Table 1 show that a substantial proportion of women (except in Africa) report not wanting *any* more children. Taken at face value, these data suggest an increasing

potential demand for family planning services.

#### 4. Conclusions

Current and reliable survey data such as those presented here have played a critical role in the formulation of population policies in LDCs, and in the planning and evaluation of population and family planning programs. For example:

- Presentation of new WFS or other survey findings have contributed directly to a strengthening of national population policies in several LDCs (e.g., Mexico, Kenya and Nepal).
- Surveys have been used to identify sub-populations in need of family planning efforts, baseline knowledge, attitudes, and practice of contraception, and factors other than contraception affecting fertility. These studies have led to a clearer understanding during the past decade of how various proximate determinants interact to affect fertility. Moreover, program administrators have utilized WFS data to design new service interventions.
- Family planning program evaluation is probably the area in which survey data have had the most critical impact during the past decade. Centralized survey projects are in fact responsible for much of what we know about LDC fertility trends and differentials during the 1970s. Comparisons with information on trends in contraceptive knowledge, availability, and use have made it possible to make inferences regarding the impact of population assistance programs. Thus, these data have had an important political and programmatic impact in support of new and existing population programs.

The need for high-quality program-relevant data is not specific to the 1970s: there is an equal need for such data in the next decade. For example:

- Many countries, particularly in Africa, have not undertaken any recent nationally representative survey of fertility, family planning (FP), or maternal/child health (MCH). For these countries, it is important to conduct such a survey to provide baseline data on demographic trends and MCH indicators for use in economic/social planning, population policy formulation, or MCH/FP program design and management.
- Other countries may have undertaken surveys in the past and are enthusiastic about repeating them at regular intervals, but continue to require technical and/or financial assistance. These tend to be countries with active family planning programs who, based on experience with previous surveys, recognize the practical utility of survey data for monitoring trends in fertility and contraceptive use. For many of these countries, a relatively focused, high-speed, low-cost survey would be extremely useful.
- Still other countries may have reasonably good data on recent trends, but feel the need to achieve a more detailed understanding of the proximate and socioeconomic determinants of fertility or contraceptive use. This may be especially appropriate in countries where, despite a long history of family planning program activity, contraceptive prevalence has either remained very low (e.g., Kenya, Nepal, Pakistan, Bangladesh) or appears to have reached a plateau (e.g., Sri Lanka, Philippines). Innovative quantitative and qualitative surveys, in conjunction with (for example) operations research or other diagnostic research on service providers, could provide fresh insights on how to improve performance.

Experience with previous large survey projects has amply demonstrated the wisdom of collecting data on certain “core” variables in a standardized fashion. The standardized approach has several readily apparent advantages:

- it eliminates the need to design a totally new questionnaire in each country, resulting in considerable savings in time and money;
- it insures that core variables are collected using a scientifically designed and tested approach, increasing the probability that the resulting data will be valid and reliable;
- it enables cross-national analysis of data and makes it possible to compare trends in different countries and regions of the world;
- within a single country, time series analyses of trends are facilitated if previous surveys have utilized a similar standard approach to measurements of key variables; and
- it facilitates computer editing and tabulation by reducing the amount of time required to adapt generalized software packages to a specific country data file.

In practice, our experience has shown that it is possible to achieve a fairly high degree of standardization without sacrificing responsiveness to individual country needs. We have found that host country counterparts are enthusiastic about utilizing a core questionnaire that is internationally tested and accepted. Special data needs can then be met by (a) adding modules or questions to the core questionnaire which deal with topics of special interest and (b) adapting the entire questionnaire to the local languages and dialects prevalent in each country.

As donors develop plans for continuing their support for fertility and family planning surveys, it is clear that the centralized survey

assistance approach pioneered by the WFS and other similar projects during the 1970s provides a model for similar work in the 1980s and beyond.

## 5. References

- Duncan, W.G. (1973): *Fertility and Related Surveys*. WFS Occasional Papers, No. 1. London: World Fertility Survey.
- Ferry, B. and Smith, D. (1983): *Breastfeeding Differentials*. WFS Comparative Studies, No. 23. London: World Fertility Survey.
- Lightbourne, R., Singh, S., and Green, C. (1982): *The World Fertility Survey: Charting Global Childbearing*. Population Bulletin 37(1): Table 1.
- Nortman, D. and Hofstatter, E. (1978): *Population and Family Planning Programs*. (Ninth Edition). New York: Population Council.
- Rutstein, S. (1983): *Infant and Child Mortality: Levels, Trends, and Differentials*. WFS Comparative Studies, No. 24. London: World Fertility Survey.
- World Fertility Survey (1975): *Core Questionnaires*. WFS Basic Documentation, No. 1. London.
- World Fertility Survey (1981): *World Fertility Survey Conference 1980: Record of Proceedings*. London, 7–11 July 1980, 3 vols.

Received December 1984  
Revised October 1985