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Factors Influencing the Use of Traditional versus Modern Family Planning Methods in Bas Zaire

Jane T. Bertrand, Nlandu Mangani, Matondo Mansilu,
and Evelyn G. Landry

Findings from a baseline survey conducted prior to the initiation of organized family planning efforts in one urban and one rural area of Bas Zaire reveal the widespread use of traditional methods and a surprisingly high level of knowledge of modern contraceptives. However, in the absence of a delivery system, use of the latter was extremely limited (4–5 percent of currently married women). The data reflect a deep-seated motivation for birth spacing, which is achieved primarily through withdrawal and abstinence. Of the variables tested as possible correlates, only economic status was related to use of both traditional and modern methods in the same direction. Use of a traditional method was largely determined by age of the youngest child and breastfeeding status. By contrast, use of a modern method was highest among women over 30 with higher levels of education and parity, who were not currently breastfeeding.

While birth rates have fallen during the past decade in many developing countries in Asia and Latin America, fertility levels in sub-Saharan Africa have remained high. Crude birth rates for most of Africa range from 45 to 52 per 1,000, and fertility declines do not appear to be forthcoming in the near future (Caldwell, 1981).

To an outsider, the high birthrates of the region might suggest uncontrolled fertility. However, the literature to date indicates that women in African society have traditionally practiced fertility regulation—not for the purpose of family-size limitation but rather for birth spacing, with the objective of enhancing the health and thus the survival probability for each child (Caldwell and Caldwell, 1977; Dow, 1977; Lamptey et al., 1978; Rehan and Abashiya, 1981).

Traditionally, birth spacing was achieved in Africa by means of a nearly universal taboo on postpartum sexual relations, which varied in length from a few weeks after birth to two to three years in different societies (Lesthaeghe et al., 1981). While avoidance of

pregnancy has been one motive for abstinence, avoidance of contamination of the mother's milk during the period of breastfeeding is another.

However, there is evidence that the taboo on postpartum relations is gradually eroding (Caldwell and Caldwell, 1981; Mabogunge, 1981). Polygamy, an institution that facilitated postpartum abstinence, is on the decline in Zaire. Urban living conditions force a physical closeness that makes abstinence more difficult to practice. Women, especially those with more education, may consider the extended period of abstinence an unreasonable hardship or inconvenience. The forces of modernization play a major role in this process, as data from Nigeria (Caldwell and Caldwell, 1977) suggest: the length of abstinence is inversely related to every measure of modernization included in the study.

In short, the norms for birth spacing in tropical Africa are well established, yet the means of achieving this end are changing. If the practice of postpartum abstinence disappeared and was not replaced by other means of fertility regulation, even higher levels of fertility could result. It is more likely, however, that other methods—both traditional and modern—would be adopted to achieve birth spacing without the drawbacks inherent in abstinence. As Caldwell and Caldwell (1977) have pointed out, "the path of fertility will be determined by the extent to which modern contraception substitutes for abstinence and ultimately by the extent to which it is more efficient than periods of abstinence as a means of birth control" (p. 213).

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The study of fertility regulation is of particular interest in the Republic of Zaire (formerly the Belgian Congo). While most Francophone countries in sub-Saharan Africa have shown little inclination toward developing family planning efforts, Zaire is somewhat of an exception. In 1972 President Mobutu Sese Seko openly declared his support for efforts to promote "desirable births"—family planning for health and humanistic reasons. Although this did not translate into the routine provision of family planning services by the government at that time, it did open the door for the development of such activities.

As implementation of organized family planning activities begins to develop in several areas of Zaire, it is of particular interest to document patterns of fertility regulation and factors influencing any type of method use *prior* to the initiation of these activities. The data below constitute part of a larger study conducted in one urban and one rural area of Bas Zaire at a time when modern contraceptive methods were not yet readily available to this population.¹ The specific objectives of the current analysis are:

- 1 To determine the prevalence of use of traditional and modern methods of fertility regulation in this population,
- 2 To identify correlates of method use and determine how these differ for traditional versus modern method use, and
- 3 To develop a model that explains the role of breastfeeding in relation to other correlates of method use.

These data are important for several reasons. First, they represent one of the few reports of contraceptive prevalence in a francophone sub-Saharan country currently available in the family planning literature. Second, they constitute a baseline against which the impact of family planning efforts can eventually be analyzed. Third, they provide additional insight into the issue of breastfeeding and its relationship to contraceptive use, a topic that has recently been the subject of considerable discussion.

Methodology

Selection of the Respondents

Data for this survey were collected from a representative sample of women aged 15 to 49 years, regardless of marital status, in the urban area of Matadi, Bas Zaire (estimated population in the study area: 133,000) and in the neighboring rural zone of Songololo (estimated population in the study area: 25,000). The task of sampling in both areas was hindered by the lack of reliable estimates of population size and maps sufficiently detailed to show the number and location of houses.

In the *urban area*, to approximate a probability sample the study area was divided into 109 quadrants (*car-rés*) of equal size; these were stratified by density. The first stage of sampling consisted of randomly selecting 60 quadrants; in the second stage 30 houses per quadrant were randomly selected. An attempt was made to interview all women of reproductive age, regardless of marital status, in each selected household.

The sampling procedure used in the urban area gave women from low density quadrants a greater likelihood of being selected, while those from the high density quadrants were less likely to be included. To adjust for this unequal probability of selection, weighting factors were applied to the data for the urban area only. The weights were calculated from a "census" taken just after the survey, in which the total population of three quadrants (specifically, the quadrant that had the median number of households for each density category) was enumerated by the interview team.

The difference between the data before and after weighting is slight, as shown by the unadjusted and adjusted percentages for the urban area in Table 1. Results for the urban area in all subsequent tables are based on the weighted data, although the unweighted number of cases (N) is shown.

There was a total of 53 villages in the rural study area. Since maps of all villages were needed for subsequent service delivery activities, it was decided to map and interview in all villages rather than in a sample of them. An attempt was made to interview all women of reproductive age at every *second* household; this resulted in a self-weighted sample.

Data Collection and Processing

Data collection for this survey took place from February to May 1981 in the rural area and from September 1981 to January 1982 in the urban area. All interviewing was done in the local Kikongo dialect by women 20 to 25 years old who were native to the area, and who had undergone two weeks of standard interviewer training. In 5 percent of the cases the supervisor revisited the household for verification.

The answers of the respondents were coded and subsequently transferred to computer cards and magnetic tape. The data were edited prior to processing, using the Mini-Tab Edit Program (Elkins, 1971).

Results

Profile of the Study Population

The study population consisted of 1,797 urban and 1,704 rural women, aged 15 to 49. As shown in Table 1, the mean age of the respondents was 27 years (urban) and 28 years (rural). While most had attended school, there

Table 1 Sociodemographic characteristics of the study population, by area

Sociodemographic variable	Urban (N = 1,797)			Rural (N = 1,704)	
	N ^a	Unadjusted percent	Adjusted percent ^b	N	Percent
Age of the respondent					
15–19	371	21.5	20.8	266	16.6
20–24	486	28.1	29.2	369	23.0
25–29	328	19.0	19.6	336	20.9
30–34	192	11.1	11.0	238	14.8
35–39	159	9.2	9.3	180	11.2
40–44	110	6.4	5.4	149	9.3
45–49	81	4.7	4.8	68	4.2
Mean age	26.7 years			28.3 years	
Education					
None	396	22.0	21.2	688	40.4
1–3 years primary	251	14.0	13.4	334	19.6
4–6 years primary	417	23.2	23.6	397	23.3
1–3 years secondary	519	28.9	29.8	246	14.4
4+ years secondary	212	11.8	11.8	32	2.0
Don't know	2	0.1	0.1	6	0.4
Literacy					
Can read	1,202	66.9	68.3	741	43.5
Cannot read	595	33.1	31.7	963	56.5
Occupation					
Housewife	1,173	65.3	66.8	49	2.9
Vendor	341	19.0	18.0	40	2.3
Works in field (in addition to housework)	104	5.8	5.1	1,563	91.8
Civil servant	64	3.6	3.4	15	0.9
Other	115	6.4	6.7	36	2.1
Nationality					
Zairian	1,651	91.9	91.8	1,203	70.6
Angolan	146	8.1	8.2	499	29.3
Other	0	0	0	1	0.1
Religion					
Protestant	799	44.5	44.4	861	50.6
Catholic	761	42.3	43.3	598	35.2
Kimbanguiste	120	6.7	6.3	139	8.2
Other	109	6.1	5.6	75	4.5
None	8	0.4	0.4	28	1.6
Current marital status					
Married/in union	1,256	69.9	68.7	1,061	62.3
Separated, widowed, divorced	61	3.4	3.9	128	7.6
Single	480	26.7	27.4	514	30.2
Mean age at first marriage	17.5 years			17.0 years	
Type of marriage ^c					
Monogamous	1,146	91.1	89.7	788	74.3
Polygamous	110	8.9	10.3	268	25.2
No data	0	0	0	5	0.5

Note: Total percents may not always equal 100 due to rounding. The number of cases per category does not add to the total N in those cases where there were missing data for a given variable.

^aUnweighted N.

^bPercentages have been adjusted by weighting the data, as explained in the text.

^cTotal number (N) of urban married is 1,256; rural married is 1,061.

were marked urban/rural differences; 42 percent (adjusted) in the urban versus 16 percent in the rural had some schooling beyond the primary level. This difference was also evident in the percentage that could read: 68 (urban) versus 44 (rural).

Two-thirds of women in the urban area were housewives, while 18 percent were employed in some type of petty trade. In the rural area, almost all women reported to work in the fields in addition to performing their household duties.

Over 90 percent of the urban respondents were Zairian nationals, whereas this was true of only 71 percent of the rural respondents. The study area is near the border of Angola, and the presence of Angolan refugees in this population is evident from these data.

The great majority of respondents were Christian, with Protestants slightly outnumbering Catholics—especially in the rural area—and Kimbanguists, a native religious group in the area, following as a distant third.

In terms of current marital status among urban respondents, 69 percent were married or living in union, 27 percent were single, and 4 percent were separated, divorced, or widowed. In the rural area, the percentage married was slightly lower (62 percent), while 30 percent were reported single, and 8 percent were separated, widowed, or divorced.²

The mean age at first marriage was 17.5 years in the urban area and 17.0 in the rural area. One-tenth of the urban respondents were involved in a polygamous union, whereas one-quarter of the women in the rural area reported that their husband had at least one other wife.

Childbearing generally begins in the teens among this population, and by the mid-twenties over 90 percent of the women have been pregnant at least once (data not shown). Completed fertility was 7.8 among urban respondents and 7.7 among rural respondents, based on the assumption that most women aged 45 to 49 had reached the end of their childbearing period.

Knowledge and Use of Traditional Family Planning Methods

One of the main purposes of this study was to determine existing patterns of use, both of traditional methods (abstinence, withdrawal, rhythm, a traditional belt believed to ward off pregnancy, and vaginal douche for contraceptive purposes) and modern contraceptives (pill, injection, female sterilization, IUD, condoms, spermicides, and diaphragm). As in similar surveys, respondents were asked which of these 12 methods they knew; among those they knew, they were asked if they had ever used the method and if they were currently using it.

Knowledge of traditional methods of family planning is almost universal in this population; 95 percent of the women in both areas had heard of at least one

Table 2 Knowledge of family planning methods among all respondents by area and method, Bas Zaire, 1981–1982

Extent and type of knowledge	Percent having knowledge of family planning	
	Urban (N = 1,797)	Rural (N = 1,704)
Know at least one method		
Traditional	95.0	95.1
Modern	86.2	76.5
Either type	97.0	96.2
Method known		
Abstinence	73.8	83.0
Withdrawal	72.1	63.1
Belt	68.4	57.7
Orals	64.4	53.6
Injection	64.4	52.6
Female sterilization	58.8	66.2
Rhythm	53.6	36.8
Condom	32.9	37.0
IUD	24.3	41.3
Vaginal douche	11.2	22.5
Vaginal methods	8.2	15.3
Diaphragm	2.7	11.3
Mean number of methods known		
Traditional	2.8	2.6
Modern	2.5	2.8
Either type	5.3	5.4

Note: Knowledge is operationally defined as the respondent's either mentioning spontaneously or reporting to have heard of the method.

traditional method (see Table 2). Moreover, three of these traditional methods—abstinence, withdrawal, and the belt—were mentioned more frequently than any of the modern methods (with the exception of sterilization).³

In addition, the large majority of respondents had used at least one of these traditional methods (see Table 3). Among ever-married women aged 15 to 49 years old, 76 percent of the urban respondents and 82 percent of the rural respondents reported having ever used one. If those women who did not yet have a living child were excluded, these percentages would increase an additional three percentage points in each area.

Data on current use are particularly striking. The denominator for the data shown in Table 3 was all currently married women 15 to 49 years. *At least one-half of the currently married women (50 percent, urban; 62 percent, rural) reported use of a traditional method of fertility regulation at the time of the interview.* In both areas, withdrawal and abstinence were the two most widely used methods, though in the urban area there was a marked preference for the former.

These findings reflect the importance of birth spacing in this society, which is achieved by using the methods most readily available. It may also be the case that women use abstinence and withdrawal as a means

Table 3 Use of traditional and modern methods of fertility regulation, by area and method, Bas Zaire, 1981–1982

Method use	Percentage practicing fertility regulation	
	Urban	Rural
Ever use^a		
Traditional method	76.2	81.6
Modern method	11.2	7.1
Either type of method	80.8	83.5
Current use^b		
Traditional	50.3	61.8
Withdrawal	31.2	27.6
Abstinence or separate beds	13.2	24.8
Rhythm	3.1	1.6
Vaginal douche	0.2	0.5
Two or more traditional methods	2.0	6.8
Other	0.6	0.6
Modern	4.9	3.6
Orals	2.3	0.4
Female sterilization	1.5	2.5
Condom	0.4	0.3
Injection	0.7	0.2
IUD	0.0	0.3
Vaginal methods	0.0	0.0
Diaphragm	0.0	0.0
Either modern or traditional	55.2	65.4
No method	44.8	34.6

^aPercentage based on all women 15 to 49 years old who have ever been married (N for urban = 1,320; rural = 1,190).

^bPercentage based on all women 15 to 49 years old, currently married (N for urban = 1,255; rural = 1,061).

of protecting their milk from contamination during breastfeeding.

Knowledge and Use of Modern Contraceptives

Given the very limited access that the sample population had to modern contraceptives at the time of this study, knowledge of modern methods was surprisingly high. In the urban area 86 percent and in the rural area 77 percent of the respondents had heard of at least one modern method (see Table 2). Most frequently mentioned were the pill, injection, and female sterilization.

By contrast, actual use of modern methods was very low. Among ever married women aged 15 to 49, 11 percent in the urban area and 7 percent in the rural area had ever used a modern method (shown in Table 3). The percentages for current use of a modern method, based on all currently married women aged 15 to 49, were even lower: 5 percent, urban; 4 percent, rural. Among the scant number of urban respondents using a modern method, the pill was most common, followed closely by female sterilization, the condom, and injection.

By contrast, in the rural area female sterilization headed the list, reflecting the work of one local phy-

sician in this area. While the percentage is small (2.5 percent of all married women) and corresponds in absolute numbers to only 26 of the 1,061 married women interviewed, it is nonetheless important in dispelling the notion that a permanent means of fertility regulation would be totally unacceptable in this strongly pronatalist society. At the same time, it should be noted that these were mostly older women with a large number of children, who underwent the operation for medical reasons, at the suggestion of the doctor.

Most studies regarding contraceptive prevalence find marked urban/rural differences. In the case of Bas Zaire, there was virtually no difference between areas on use of modern methods (a low 4–5 percent in each group). However, rural respondents were more likely than their urban counterparts to be using a traditional method. Of the traditional methods available, a larger percentage of the rural than urban women practiced abstinence as opposed to withdrawal. The differences are not great; however, they suggest that to the extent a weakening of the postpartum taboo on sexual relations exists, it is occurring more rapidly in the urban than in the rural area.

Factors that Explain the Use of Traditional and Modern Methods

Is the widespread use of traditional methods and the limited use of modern methods simply a reflection of the relative availability of the two, or are these two different phenomena whose use is motivated by different factors? An analysis of the correlates of traditional and modern method use among currently married women suggests the latter.

In regions of the world other than Africa, an analysis of the correlates of family planning use would focus on sociodemographic characteristics such as age, number of living children, education, economic status, religion, ethnicity (or nationality), and so forth. However, in the context of sub-Saharan Africa, three other factors are relevant and have been included in the current analysis: type of marriage (monogamous or polygamous), breastfeeding status, and age of the youngest child.

Breastfeeding is known to be strongly linked to postpartum abstinence in much of sub-Saharan Africa. To the extent that women use breastfeeding as a means of fertility regulation, it could be viewed as a dependent variable rather than an explanatory factor.

However, in the current study among the 1,066 women who were breastfeeding, 31 percent practiced abstinence, 53 percent used another traditional method (primarily withdrawal), and 3 percent used a modern method. Only 13 percent of the lactating women did not use some type of method that had contraceptive effects. Some would argue that the motivation for traditional method use is not necessarily fertility regulation,

since both abstinence and withdrawal could be practiced to protect the mother's milk from contamination. However, among those women who were breastfeeding, 96 percent in the urban area and 85 percent in the rural reported that they did not want a pregnancy "now."

If breastfeeding were used as a contraceptive means in itself, one would not expect such a large percentage of women to practice other methods as well. Moreover, while breastfeeding and abstinence are strongly associated, the majority of lactating women in this study were not abstaining. In light of these findings, the analysis herein focuses on the role of breastfeeding in relation to method use, not as a method in itself or as a proxy for abstinence. It is examined first as a bivariate correlate and subsequently as an intervening variable between socioeconomic factors and method use.

The hypothesis underlying this treatment of breastfeeding is that breastfeeding may dictate the need for, or interest in, fertility regulation. That is, women are motivated to breastfeed by the desire to enhance the health status of the youngest child and the probability of that child's survival. To this end, the mother seeks to avoid an untimely pregnancy that would cut the lactation period short, and she achieves this through the available means of fertility regulation. However, once the baby is weaned, there is no reason to prevent pregnancy or consequently to use any form of fertility regulation.

Bivariate Analysis of Correlates

If traditional and modern method use were simply two different means to a single end, and the use of one over the other was determined by availability alone, then one would expect the factors affecting use to be the same in both cases.⁴ The pattern that emerges from the bivariate analysis does not support this hypothesis (see Table 4). Two variables that were tested showed little or no consistent relationship with either type of use; these were nationality and religion.

The relationship between the remaining seven variables and method use differed markedly for the two types of methods; specifically:

- *Age of the respondent* Use of a traditional method was greatest among women in the middle age-range in both urban and rural areas; by contrast, use of a modern method was unrelated to age in the urban area and generally increased with age in the rural area—reflecting the number of older women who had had a tubal ligation.
- *Number of living children* For both types of methods, use was negligible among women with no children and increased after a parity level of at least one. However, among women with at least one child, the actual number did not affect traditional use, whereas modern use increased with the number of living children in both areas.

Table 4 Correlates of traditional and modern methods of fertility regulation, Bas Zaire, 1981–1982

Correlates of current use	Percentage who use traditional or modern methods			
	Urban		Rural	
	Traditional	Modern	Traditional	Modern
Total	50.3	4.9	61.8	3.6
Age of the respondent				
15–19	37.3	0.0	54.7	0.0
20–24	57.0	5.0	68.2	1.4
25–29	59.9	5.2	70.4	1.7
30–34	60.4	7.6	64.3	3.9
35–39	49.3	4.5	59.2	9.1
40–44	47.6	8.0	61.8	4.7
45–49	30.0	5.9	41.7	11.1
p value	.001	.2	.0003	.0001
Number of living children				
0	1.7	0.0	8.3	0.0
1–2	53.2	3.4	67.0	1.3
3–4	57.6	6.3	67.7	2.5
5–6	60.7	7.7	70.7	4.1
7+	59.5	5.0	68.5	10.6
p value	.001	.02	.001	.001
Age of youngest child				
0–12 months	80.9	2.2	87.7	2.7
13–24 months	67.3	7.8	84.1	3.6
25+ months	32.0	8.8	56.7	4.0
p value	.0001	.0003	.001	.6
Breastfeeding				
Yes	81.2	3.4	88.9	3.2
No	47.3	6.5	61.4	4.7
No child under 36 months	12.9	2.9	21.4	4.5
p value	.0001	.05	.0001	.6
Education				
None	45.6	4.5	63.9	4.2
Primary	55.6	3.0	62.3	3.4
Secondary	55.1	7.6	70.8	1.4
p value	.01	.006	.2	.3
Economic status				
Lower	52.2	2.2	64.7	2.8
Middle	52.2	3.3	61.5	4.7
Upper	53.5	6.4	64.0	6.1
p value	.9	.03	.7	.1
Type of marriage				
Monogamous	53.9	4.3	63.5	3.8
Polygamous	43.4	8.9	66.2	3.0
p value	.04	.04	.5	.7
Nationality				
Zaire	52.4	4.9	63.0	3.9
Angola	58.1	5.3	66.4	3.0
p value	.3	.9	.3	.6
Religion				
Protestant	52.2	3.8	64.4	5.1
Catholic	52.8	5.8	64.0	1.3
Other/none	56.0	5.5	62.8	3.5
p value	.7	.3	.9	.01

Note: Rates are for currently married (or in union) women aged 15–49 years who use traditional or modern methods of contraception.

— *Age of the youngest child* Use of a traditional method dropped off as the age of the youngest child increased in both the urban and rural areas. Just the opposite was true of modern methods, where use increased with the age of the youngest child, at least in the urban area. The direction of this relationship was similar in the rural area, but was not statistically significant.

— *Breastfeeding* In this population breastfeeding was almost universal for women with a child under 12 months and widespread for those with babies 13 to 24 months. Thus, breastfeeding status and age of the youngest child were very closely related. Not surprisingly, the two had a similar relationship to use of modern and traditional methods. In both the urban and rural areas, use of a traditional method was substantially higher among women who breastfed, compared to those who had a child under three but were not breastfeeding. Interestingly, there is little use of traditional methods among women who don't have a child under three years of age.

By contrast, the relationship between breastfeeding and modern contraceptive use was barely significant at the .05 level in the urban area and it was not significant in the rural area. Moreover, the direction of the relationship was just the opposite of what was found for traditional method use; that is, use of a modern method was lower among women who breastfed than those who did not.

— *Education* In the urban area education had a similar effect on both traditional and modern use: use was higher among more educated respondents. However, in the rural area education was not found to have an effect on either type of use.

— *Economic status* In this study, economic status was operationally defined by a five-point scale that included ownership of a radio and refrigerator, presence of electricity in the house, and the type of material used in the floor and roof. This index, ranging from zero to five, was then collapsed into lower (0–1), middle (2), and upper (3–5).

In neither the urban nor rural population was economic status a determinant of traditional method use. By comparison, economic status was positively correlated with use of a modern method in both areas (although the relationship was only of borderline significance in the rural area).

— *Type of marriage* This variable did not affect use of either type of method in the rural area. By contrast, it was significantly related (at $p < .05$) to both types of method use in the urban area, though in opposite directions. Use of traditional methods was higher among women in monogamous than polygamous unions, while use of modern methods was higher among women in polygamous than monogamous unions.

Multiple Logistic Regression

Once the bivariate correlates of method use were identified, multiple logistic regression was used to determine the relative importance of these factors and to eliminate any that did not contribute significantly to explaining variance in method use, once other factors were taken into account. For this purpose the urban and rural data sets were combined to provide a sufficiently large number of cases and to allow the urban/rural factor to be included as an independent variable. This analysis was limited to women who were currently in union, were not currently pregnant, and had a child under three years of age. (The reason for this last criterion was to better assess the impact of breastfeeding on method use.)

Three factors emerged from this analysis as the prime determinants of *traditional* use, which are, in order of importance: age of the youngest child, economic status, and breastfeeding status (see Table 5). Whereas economic status was *not* a determinant in the bivariate analysis discussed above, it emerges in the multivariate analysis when the urban/rural populations are combined, for the reasons discussed below.

By comparison, for use of *modern* contraceptives, the variables entered in the following order: breastfeeding status, educational level, number of children, age of youngest child, and economic status. However, at this point breastfeeding was removed and the final battery of predictors consisted of education, number of children, age of youngest child, and economic status. This demonstrates that while breastfeeding status was the strongest single variable for predicting use of a modern method, an interaction developed between economic status and other independent variables that was a more powerful predictor than breastfeeding status alone.

In summary, there are two variables that emerge from this analysis as correlates of *both* types of use:

Table 5 Results of multiple logistic regression analysis of traditional and modern contraceptive method use

Variable	Level	Ratio of coefficient to standard error	
		Traditional	Modern
Age of youngest child	25–36 months	–4.10	2.26
	13–24 months	3.89	1.45
Economic status	Upper	–3.02	2.51
	Middle	–2.44	–1.17
Breastfeeding	Not currently	–1.91	—
Education	Secondary	—	3.07
	Primary	—	–2.56
Number of children	6+	—	2.35
	3–5	—	0.63
(Constant)		(12.2)	(–18.10)

Note: Variables with no values were not included in the final model, indicated by a dash.

economic status and age of the youngest child. Even then, the way these variables affect method use is different.

In the case of economic status, one suspects that this variable emerges as a predictor in the multivariate but not in the bivariate analysis for different reasons. Regarding modern use, the trend is there, and the multivariate analysis (by combining urban and rural data) shows it to be significant due to the urban/rural differences in prevalence of use of modern methods and parallel differences in economic status. By contrast, economic status emerges as a correlate of traditional method use in the combined urban/rural multivariate analysis, in part because economic status is strongly related to the urban/rural factor.

Age of the youngest child was also a determinant of both types of method use, but the direction of the relationship differed. Use of a traditional method decreased as age of the youngest child increased, while use of a modern method increased.

The conclusion to be drawn from these findings is that use of traditional methods is determined largely by the desire to avoid another pregnancy while one baby is still young and breastfeeding. The widespread use of traditional methods and the near universal practice of breastfeeding during at least the first year of life reflects the deeply ingrained value placed on child spacing in this society, which is unrelated to education, religion, or other social factors. This presents a sharp contrast to the correlates of use of a modern method, a practice that had been adopted by few and appears to be a reaction among those women of higher economic status to increased levels of parity.

Log Linear Analysis

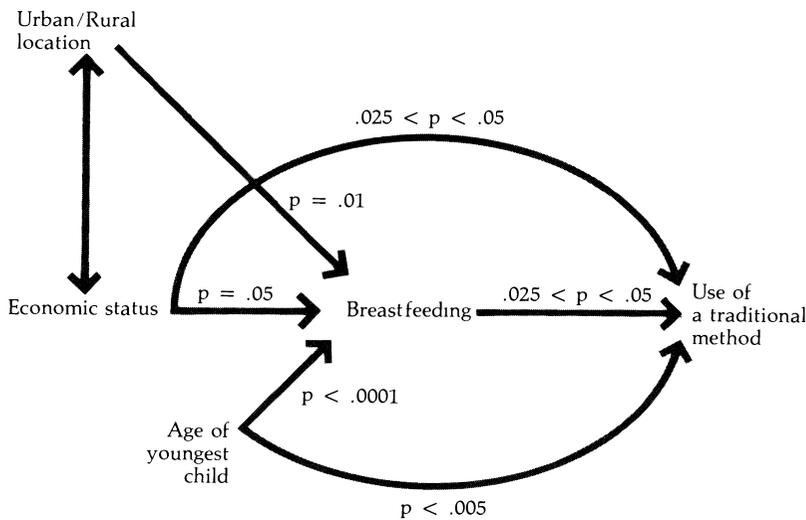
Once these explanatory factors were identified in the multiple logistic regression, log linear analysis was used to develop a causal model that would incorporate these factors and provide a clearer picture of the relationships between certain sociodemographic variables, breastfeeding, and method use.

The results of the log linear analysis are shown in Figure 1. With regard to traditional use, two variables—age of the youngest child and economic status—have both a direct effect on traditional use and an indirect effect through breastfeeding. Place of residence (urban/rural) does not have a direct effect on traditional method use, but rather acts indirectly through economic status and through breastfeeding. Also, as expected, breastfeeding is linked to traditional use, though it is by no means the only or even the strongest determinant.

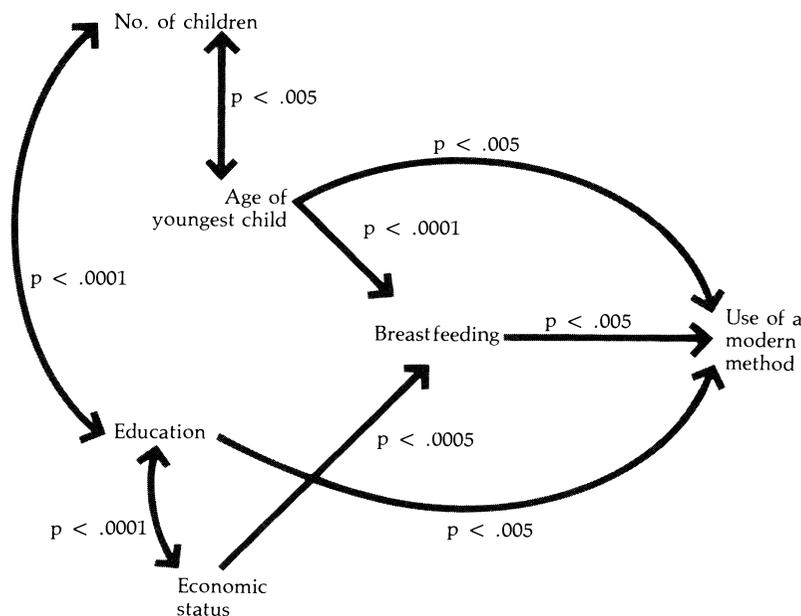
Figure 1 also shows the relationship between several sociodemographic factors, breastfeeding, and modern contraceptive use. Age of the youngest child has both a direct and indirect effect (through breastfeeding) on use. Educational level, which is not a determinant of traditional use, does have a direct effect

Figure 1 The relationship of sociodemographic factors, breastfeeding, and method use

Use of a traditional method (N = 1,292)



Use of a modern method (N = 1,231)



on modern method use. Economic status, by comparison, acts only through breastfeeding. Finally, breastfeeding is directly related to use of a modern method.

In sum, the log linear models help to demonstrate the relationships identified through the multiple logistic regression. While the inability of this modeling technique to utilize higher-order interactions prevents the precise duplication of the regression model, these models allow breastfeeding to be treated as an inter-

vening variable, rather than simply as another explanatory variable.

Discussion

This survey was conducted for the purpose of obtaining baseline data before introducing a service program that would make modern contraceptive methods readily available to the target population. It is sometimes

argued that in the absence of modern contraceptive methods to facilitate the task, few people could or would seriously attempt to regulate the spacing or number of their pregnancies. However, the results of this study provide little support for this notion. Under the appropriate circumstances, women in this population do attempt birth spacing: over 80 percent of women still breastfeeding a baby aged 0–18 months reported using some means to prevent another pregnancy. However, the motivation in this case is related to child spacing and/or avoidance of contaminating the breastmilk, not family-size limitation, as can be seen by the fact that the percentage using a method was markedly lower among women whose babies were weaned.

In contrast to the classic “KAP-gap” between knowledge and practice found in study after study around the world, knowledge *is* found to be closely linked to practice in the present survey: approximately 80 percent of women who have had at least one child have at some point practiced a means of birth spacing—albeit almost entirely traditional. If one examines the percentage of married women 15 to 49 years old currently using some type of method (55 percent, urban; 65 percent, rural), this level of prevalence is high in comparison to the majority of developing countries in which data on contraceptive prevalence have been obtained (Morris et al., 1981). The difference is that “use” in this study consists almost entirely of traditional methods.

These findings have several important program implications. First, women in this study population are strongly motivated to use some means of fertility regulation, which to date has been almost exclusively for the purpose of child spacing rather than family-size limitation. To this end, they have used the means most readily available and traditionally acceptable.

Second, few women in this population count on breastfeeding alone as a means of preventing pregnancy, although it is widely practiced for the health of the child. Rather, the majority of lactating women reported practicing either abstinence or withdrawal.

Third, use of traditional methods following the birth of a child emerges from this survey as virtually a cultural imperative, practiced by women of all ages, parity, and educational level. In fact, two of the three predictors of traditional method use—age of the youngest child and breastfeeding status—relate to reproduction.

By contrast, there was relatively little use of modern methods among women who were breastfeeding, possibly because (1) traditional methods are considered more acceptable during this period, and/or (2) women do not believe they are at high risk of conceiving. Rather, use of modern methods emerged from this study as the response of women over 30 with a relatively higher level of education to increased levels of parity. This is not surprising in light of the limited access to modern contraceptives at the time of this study; use

would have required knowledge that such products existed, motivation to seek them out, and the ability to pay for them.

With the practice of postpartum abstinence on the decline in many sub-Saharan populations, the issue of the potential acceptance of modern contraceptives has important implications for fertility levels in the next few decades. There is evidence to suggest that change is beginning to occur, at least among the better educated and more urbanized individuals in certain populations. As Dow (1977) describes for the Yoruba in Nigeria, the pattern is one of controlled change: among higher status urban women, abstinence is reduced rather than eliminated, with contraception supplementing rather than replacing continence. Reports from Ghana (Belcher, 1978), Nigeria (Caldwell and Caldwell, 1977), Kenya (Central Bureau of Statistics, 1980), and Zaire (Bertrand et al., 1983) also show women with higher education and socioeconomic status to be the innovators regarding modern family planning.

Considerable resistance still exists regarding the use of modern contraceptive methods through much of sub-Saharan Africa, stemming from the strong desire for large families, religious conviction that “God alone” should determine family size, fear of promiscuity if women are contracepting, and other related factors.

To the extent that modern methods are unavailable to the population, either for logistic or economic reasons, it is likely that the widespread use of traditional methods will continue. However, as modern contraceptive methods become increasingly available during the next decade in certain sub-Saharan countries such as Zaire, it will be interesting to determine the extent to which the population chooses to replace traditional methods with modern ones.

Notes

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- 1 Access to modern contraceptives was limited in this population. In the urban area contraceptives were sporadically available through a single dispensary and a few private physicians. In the rural area covered by this survey the population had had some exposure to the concept of family planning through group meetings at the community level, organized by one of the authors (Nlandu Mangani, M.D.). However, contraceptives were not readily available.
- 2 Data on marital status in the *rural* area should be interpreted with caution. Due to an error in the interviewing procedure, rural women who volunteered the fact that they were living in consensual union rather than a legally sanctioned union were mistakenly classified as “single.”

Thus, the reported percentage of women currently married or living in consensual union (62 percent) is believed to underestimate the true number. While no other data are available, it is estimated that the percent of women married or living in union in the rural area is closer to 75–80 percent. (This error has the effect of decreasing the sample size of subsequent analyses based on currently married women, but is not believed to otherwise affect the results presented herein).

- 3 In the rural population, the second most widely known method was female sterilization. This can be explained by the fact that a local physician (who is one of the authors: Nlandu Mangani, M.D.) was trained in this procedure and had carried out a number of operations in the region, which drew considerable attention.
- 4 In this bivariate analysis of correlates and in the subsequent multivariate analysis, "use of a traditional method" is defined as use of a traditional method versus use of *no* method. The 5 percent of women who used a modern method have been excluded from this variable, since it would have been illogical to combine "modern and no use" into a single category.
- 5 In developing these models a slightly different designation of categories for some of the predictors was developed due to problems of cell frequencies and sample size. The following table describes the categorization employed in the sections on multiple logistic regression and log linear modeling:

Number of children	0–2 3–5 6+
Educational level	None ≤Primary ≤Secondary +
Age of youngest child	<12 months 13–24 months ≥25 months
Economic status	Low (0,1) Middle (2) Upper (3,4,5)
Age of respondent	15–24 years 25–34 years 35+

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