Assessing the Prevalence and Determinants of Unwanted Pregnancy and Induced Abortion in Nigeria

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This study was conducted to determine the prevalence and sociodemographic determinants of unwanted pregnancy and induced abortion in the Jos and Ife local government areas of Nigeria. A total of 1,516 randomly selected women aged 15–45 responded to a pretested structured questionnaire designed to elicit information concerning previous unwanted pregnancies and induced abortions in a value-free manner. Nearly 20 percent of the women reported having had an unwanted pregnancy. Of these, 58 percent reported that they had successfully terminated the pregnancies; 32 percent continued the pregnancies; and nearly 9 percent stated that they had attempted termination but failed. Overall, the prevalence of self-reports of induced abortion was 11 percent. The results reveal that information can be obtained on abortion in areas with restrictive abortion policies if an indirect interviewing approach is used. (STUDIES IN FAMILY PLANNING 1999; 30[1]: 67–77)

Presently, induced abortion is one of the gravest problems associated with women's reproductive health in Nigeria (Okonofua 1997). As a result of a restrictive abortion policy, most pregnancy terminations are carried out clandestinely by poorly trained individuals, resulting in high rates of abortion-related morbidity and mortality. Hospital estimates indicate that induced and unsafe abortion may be responsible for approximately 40 percent of maternal deaths in Nigeria (Ladipo 1989; Okonofua 1992; Okonofua et al. 1992). Induced abortion has also been implicated as a cause of chronic pelvic inflammatory disease (Ladipo 1989), ectopic pregnancy (Olatunbosun and Okonofua 1986), and secondary infertility among Nigerian women (Okonofua 1994; Okonofua and Snow et al. 1995).

Despite the high level of morbidity and mortality associated with induced abortion among Nigerian women, the extent of the problem has not been documented. In particular, substantive data are lacking concerning the circumstances leading to unwanted pregnancy and the number and characteristics of women seeking induced abortion. Such data are relevant for designing appropriate community-based approaches intended to reduce the rate of morbidity and mortality associated with unsafe abortion.

A major obstacle to estimating the prevalence and determinants of unwanted pregnancy and unsafe abortion is the difficulty of eliciting abortion histories from respondents. Women are often reluctant to admit to survey interviewers that they have terminated a pregnancy (Barreto et al. 1992; Singh et al. 1991). To counter this reluctance, various indirect survey methods have been developed and tested in different settings. These include the randomized response technique (Warne 1965), the self-administered questionnaire method (Jones and Forrest 1992), and the value-free survey technique (Huntington et al. 1993).

Of these, the value-free technique has the advantage of simplicity and the potential of greater accuracy

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in community-based surveys. Huntington et al. (1993) first reported the use of this method within the context of family planning operations research in Côte d'Ivoire, which has a restrictive abortion policy. In that study, the interviewers posed precise questions that first broached the topic of unwanted pregnancy in a value-free manner. Then they assessed and evaluated a potential range of actions, including induced abortion. Twenty-five percent of the respondents reported that they had undergone an induced abortion; only a small proportion refused to answer the questions relating to unwanted pregnancy and abortion. These results suggested that the value-free technique could be of substantial worth in diverse situations and settings.

This method of indirect questioning has been used with similar success with family planning clients in Egypt (Cairo Demographic Centre 1994) and Turkey (Tezcan and Omran 1981), and for a recent Demographic and Health Survey conducted in Senegal (Macro International 1994). By contrast, few studies have used the method to estimate the prevalence of induced abortion among representative samples of women. A study in Bolivia employed the value-free technique for this purpose among a representative sample of urban women (INOPAL Project 1992). In that study, however, only a small proportion of the women surveyed reported having undergone an abortion, indicating that the validity of the survey method should be tested in every community before recommendations are made regarding its widespread applicability.

This report presents the results of studies that used the value-free technique as a method of assessing the prevalence of abortion among a random sample of women in the Ile-Ife and Jos local government areas of Nigeria. A systematic attempt was made in this study to document the prevalence of induced abortion in the two communities and to compare women's experiences of unwanted pregnancy and induced abortion in southwest Nigeria with those of northern Nigerian women. The results of a logistic regression analysis highlight and compare the main sociodemographic determinants of unwanted pregnancy and abortion prevalence in the two areas. Despite the study's difficulties and inherent limitations, the results appear to have significant implications for formulating appropriate policies aimed at reducing the problems associated with induced abortion in Nigeria.

Methodology

The population-based study was conducted concurrently in the Ife Central local government area (Ife LGA) in southwest Nigeria and the Jos North local government area (Jos LGA) in northern Nigeria in 1995–96 to test the hypothesis that women in southwest Nigeria have a lower level of unwanted pregnancy and unsafe abortion, compared with those in northern Nigeria. The study instrument consisted of a 103-item questionnaire that was administered by interviewers to both married and unmarried women of reproductive age.

The survey was conducted in urban and rural parts of the two areas. Ife LGA has a population of nearly 200,000 with almost 80 percent residing in its urban portion, the city of Ile-Ife, and the remainder in surrounding villages. The population is mainly Yoruba, a large proportion of whom are traders, farmers, or petty artisans. By contrast, Jos LGA lies in the north-central part of Plateau State, with a predominantly savannah type of landscape. The main urban area is Jos, which, considered together with several surrounding villages, also has an estimated population of 200,000. Seventy percent reside in the urban part of the area, which is highly cosmopolitan and home to a broad range of ethnic groups from diverse parts of Nigeria.

Data from the Nigerian Demographic and Health Survey (DHS) (1992) indicate that the Jos and Ife LGAs have an equal proportion of women of reproductive age (15 to 45 years) (20 percent in Ife LGA and 22 percent in Jos LGA). Ile-Ife appears to enjoy a higher level of socioeconomic development than does Jos. More Ile-Ife women are literate (50 percent, compared with 25 percent in Jos LGA). Fewer women living in Jos LGA are enrolled in school by the time they are 20. The sociodemographic profiles of Ile-Ife women correspond to their higher socioeconomic level. The total fertility rate in Ile-Ife is 5.5 children per woman of reproductive age, compared with 6.6 children in Jos. The mean age at marriage is 19.5 years for women of Ile-Ife, whereas it is 15.5 years for those of Jos. The contraceptive prevalence rate is 15 percent in Ile-Ife and only 1.2 percent in Jos. Indeed, the Ife area is thought to be undergoing substantial demographic transition, whereas the Jos area is not. The results of the Nigerian DHS indicate that the various indices of childhood mortality and morbidity are at least 1.5 times higher in the Jos area than in Ife LGA. Because the patterns of sociodemographic development differ for the two areas, the authors expected to be able to identify major regional differences in women's experiences of unwanted pregnancy and unsafe abortion.

Abortion law is restrictive in Nigeria; it is governed by the criminal code in southern Nigeria and the penal code in northern Nigeria. Under both codes, abortion is permitted only in order to save the life of the woman. Two physicians must certify that the pregnancy poses a serious threat to the woman's life. In both regions, prison

sentences as long as 14 years can be invoked for those who breech the provisions of the law. Nevertheless, abortion services of various types are generally acknowledged to be widely available throughout the country. No convictions have been rendered under the prevailing abortion law.

The Sample

In the absence of accurate data concerning the incidence of unwanted pregnancy and induced abortion in Nigeria, a population estimate of 30 percent was used for calculating the sample size for the study. This figure was derived from the clinical caseloads of women who present with complications of induced abortion in the regions. To obtain this level of prevalence from a total sample of eligible women of 40,000 per study site with 95 percent confidence limits of $\pm$ 2 percent, the desired sample size was set at 700 respondents for each site. To increase statistical validity and to allow for refusals, 725 women were interviewed in Ife LGA and 725 women in Jos LGA (400 respondents from each of the urban sites and 325 from each of the rural areas).

A systematic simple random sampling procedure was used to identify the eligible respondents in each of the study sites. In Ife LGA, the National Integrated Survey of Households (NISH) was used as the sampling frame, and the sampling procedure was a two-stage stratified random sample—stratified by urban–rural residence and by health wards within the urban and rural strata. The National Census Listing of Households (NCLH) was used as the sampling frame for Jos LGA because of the apparent inadequacies of the NISH system for that sample. There, also, the sampling procedure was a two-stage stratified random sample—stratified by urban–rural residence and by supervisory/enumeration areas within the urban and rural strata.

Household visits established that 1,532 women eligible to be respondents resided in the sampling areas of Jos and Ife LGAs. Of these, 1,516 women were successfully interviewed; 16 women either declined interviews or could not be traced, resulting in a response rate of nearly 99 percent. Of the 692 women interviewed in Ife LGA, 66 percent were urban residents; of the 824 women interviewed in Jos LGA, 56 percent were urban residents. In all, 502 households in Ife LGA and 520 households in Jos LGA were sampled to obtain the desired sample sizes. All eligible women in the households—married and unmarried women aged 15–45—were interviewed, except when households were vacant, when they had no eligible respondents, if a respondent refused to participate, or if the respondent(s) were not at home when interviewers visited three times.

The Questionnaire

A four-part structured questionnaire was designed to elicit responses about pregnancy and reproductive health. From the questions in the first section, respondents' sociodemographic characteristics were obtained; section two collected information on their previous pregnancies—including miscarriages, stillbirths, and neonatal deaths—and on the women's knowledge of reproduction and use of contraceptive services.

Section three of the questionnaire included the key question in the survey relating to unwanted pregnancy and induced abortion, stated in value-free terms. This style of questioning previously had been shown to be effective in eliciting a more accurate history of induced abortion than is otherwise obtainable in communities where abortion is illegal (Huntington et al. 1993). Huntington and his colleagues subsequently showed, however, that the accuracy of the responses varies in different communities according to the type of filter question used (Huntington et al. 1996). To determine the most appropriate filter question for this study, 20 women in Ile-Ife and 20 in Jos were interviewed prior to the design of the questionnaire. The results indicated that a filter question that solicits information about unwanted pregnancy before delving into the subject of abortion is more appropriate in the Nigerian context. Therefore, the women were asked:

In the past, have you ever been pregnant when you did not want to be?

If they answered "no," the remaining questions concerning abortion were skipped. If they answered "yes," however, they were asked "What did you do?" They were read four possible responses: nothing; attempted to stop the pregnancy, but did not succeed and gave birth; attempted to stop the pregnancy and succeeded; and other (specify).

From those who answered that they had successfully terminated their pregnancies, information was obtained concerning the methods and practitioners they used, the complications they experienced, and the cost of treatment. In the final part of the questionnaire, women's attitudes toward induced abortion and toward the national abortion law were explored.

Interviewers' Training

Twenty adult female interviewers (ten in each LGA) were trained to administer the questionnaires in the households of the sampled women. All interviewers were graduates of the local universities in Jos and Ife, respectively, and were fluent in English and in the local languages. Before the survey was conducted, all interview-

ers underwent a three-day training course in their respective areas that included: (1) a statement of the goals and objectives of the study; (2) a description of the sampling scheme and instructions for identifying eligible respondents and obtaining consent from their households; (3) a detailed description of the questionnaire and the value-free method; (4) instructions for interviewing techniques; and (5) implementation of the interview, focusing on issues of confidentiality, reliability, and accuracy and the need to probe for correct answers to questions.

The interviewers were trained in groups using role-playing techniques. The training teams consisted of an obstetrician–gynecologist, an epidemiologist, and a sociologist who were drawn mainly from the faculties of the local universities in Ife and Jos. An official of the National Population Commission was present at the training workshops to describe the household identification and numbering systems.

For conducting the survey in Ife and Jos, the interviewers were divided into two groups, with a male supervisor heading each group who assisted the interviewers in locating the sampling wards, enumeration areas, and households and in reviewing finished questionnaires for completeness and accuracy. The supervisors also assisted in solving major logistical problems that arose during the field visits.

All sampled women were interviewed in their homes after consent had been obtained from them and from the heads of their households. The interviews were conducted with the respondents alone in a private area of the house. Respondents were assured of the confidentiality of the information they provided, and only those who gave their fully informed consent were interviewed.

Pretests

To test the validity of the questionnaire in eliciting information about previous abortions, pretests were conducted among women recognized from Ile-Ife hospital records as having been admitted for complications of induced abortion during the preceding two years. These women had been told at the time of their hospitalization that they might be contacted for follow-up visits in their homes. Additional informed consent was obtained from the women before they were interviewed, and they were assured of the confidentiality of any information they provided. They were interviewed in their homes by the same trained interviewers who were to conduct the larger survey. The interviewers had no knowledge of the abortion status of the women surveyed for the pretests.

Of the 50 women targeted for a pretest interview, 32 (64 percent) were successfully interviewed. Ten women could not be traced, and eight declined to be interviewed. Of the 32 women surveyed, 24 (75 percent) reported that they had experienced an unwanted pregnancy. Only 50 percent of these women said that they had successfully terminated such pregnancies, however, a finding suggesting that abortion could be underreported by as much as 50 percent even when the value-free technique of questioning is used. Therefore, before the commencement of the main study, the interviewers underwent another round of training on methods for conducting confidential interviews and eliciting accurate responses.

Results

A summary of the sociodemographic characteristics of the respondents is presented in Table 1. The mean age of the women interviewed in the two areas was about the same, 26.9 years (not shown). Equal proportions of adolescents (aged 20 years or younger) were interviewed in the two study areas. Women in Ife LGA had substantially higher levels of education than did those in Jos. A smaller proportion of the women surveyed in Ife than in Jos were uneducated, and more women in Ife were educated at the secondary level, compared with those in Jos LGA.

The marital status of respondents in both study areas was similar. Although more married women were included in the Jos sample, the difference was not substantial. As the table shows, substantially more unemployed women were interviewed in Jos LGA as compared with Ife LGA. In both areas, the majority of women who indicated that they were employed worked as petty traders or were students; very few were professionals.

Yorubas constituted the dominant ethnic group in Ife LGA, followed by Southern minorities, Ibos, Northern minorities, and Hausa/Fulani. Hausa/Fulani constituted the majority of respondents in the Jos area, followed by Southern minorities, Northern minorities, Ibos, and Yorubas. The respondents were predominantly Protestant in the Ife area and Muslim in the Jos area. Both areas reflected a substantial diversity of religion: More than 25 percent of women surveyed in the Ife area reported that they were Muslims, whereas more than 50 percent of those interviewed in Jos stated that they were either Protestants or Catholics.

Knowledge of Reproduction and Practice of Contraception

The respondents' knowledge of reproduction was assessed by asking them whether they knew the time during the menstrual cycle when a woman who has sexual

Table 1 Percentage distribution of survey respondents, by selected sociodemographic characteristics, according to area of residence, Nigeria, 1996

Characteristic	Ife LGA (N = 692)	Jos LGA (N = 824)	Total (N = 1,516)
Age			
15–19	22.5	23.7	23.1
20–29	37.5	40.8	39.2
30–39	26.7	25.3	26.0
> 40	10.4	10.1	10.3
Not stated	2.9	0.1	1.5
Education			
None	17.8	22.0	19.9
Primary	27.3	39.8	33.6
Secondary	52.6	30.5	41.6
University	2.3	7.7	5.0
Marital status			
Married	66.7	70.4	68.5
Divorced/separated	0.3	2.1	1.2
Widowed	1.3	1.3	1.3
Unmarried	31.7	26.2	30.0
Occupation			
Unemployed	3.6	34.2	18.9
Farmer	7.5	2.3	4.9
Trader	40.6	28.3	34.5
Student	20.2	16.9	18.6
Teacher	7.1	11.3	9.2
Professional	2.5	0.8	1.7
Others	4.0	2.4	3.2
Not stated	14.5	3.8	9.2
Ethnic group			
Yoruba	86.8	7.6	47.2
Ibo	5.5	7.8	6.6
Hausa/Fulani	0.4	36.2	18.3
Northern minorities	1.4	18.7	10.1
Southern minorities	5.9	29.7	17.8
Religion			
None	0.6	0.2	0.4
Protestant	68.6	38.3	53.4
Catholic	4.2	11.8	8.0
Muslim	25.4	46.7	36.1
Traditional	na	1.3	0.6
Other	1.2	1.7	1.5

LGA = Local government area. na = Not available.

Table 2 Percentage of women surveyed who reported knowledge of family planning methods and contraceptive practice, by area of residence, Nigeria, 1996

Contraceptive knowledge and practice	Ife LGA	Jos LGA	Total
Knows a family planning method	92.3	88.4	90.4
Knows a method source	83.6	74.2	78.9
Ever used a method	38.5	31.0	34.8
Methods ever used			
Pill	21.1	31.9	26.5
Condom	12.0	4.8	8.4
IUD	18.8	12.6	15.7
Injectables	8.0	13.9	11.0
Other*	40.1	36.8	38.5
Currently using a method	12.9	10.4	11.7
Methods currently used			
Pill	19.1	18.3	18.7
Condom	9.7	3.9	6.8
IUD	13.4	5.7	9.6
Injectables	6.7	11.7	9.2
Other*	51.1	60.4	55.8

*Other = Female sterilization, foaming tablets, periodic abstinence, withdrawal, postpartum abstinence, breastfeeding, traditional methods.

intercourse and is not using a contraceptive method can become pregnant. Approximately 15 percent of the women in Jos and 39 percent in Ife answered the question correctly, indicating that the Ife respondents had a better knowledge of reproduction compared with those in Jos LGA. As shown in Table 2, a large proportion of respondents in the two study areas were aware of a modern family planning method; however, more women in Ife than in Jos reported knowing a modern method. Similarly, a greater proportion of respondents in Ife LGA knew a contraceptive method source, compared with women in Jos LGA. Women in Ife LGA appeared, therefore, to be generally more knowledgeable about reproduction and family planning, compared with women in Jos.

More women in Ife LGA said they had ever used a family planning method, compared with women surveyed in Jos, and more women in Ife were practicing modern contraception at the time of the survey than were those in Jos. The rates of ever and current use of contraceptives reported for these cohorts are higher than those published in 1992 in the Nigerian DHS, suggesting that contraceptive prevalence may have increased in Nigeria since 1992. Oral contraceptives were the most widely used modern method among the women surveyed in Ife LGA, followed by the IUD, condoms, and injectables. Among Jos women, the pill was the most commonly reported method used, followed by injectables, the IUD, and condoms.

Prevalence of Unwanted Pregnancy and Induced Abortion

Overall, 291 (20 percent) of the women surveyed reported having experienced an unwanted pregnancy. The proportion for Ife was 19 percent and for Jos, 21 percent. This difference was not statistically significant at the five percent level. A univariate analysis of the ways in which the women resolved their unwanted pregnancies is presented in Table 3. Nearly 58 percent of the women stated that they had terminated the pregnancy successfully, whereas 9 percent reported that they had attempted termination but failed. No difference was found between the proportion of women in Ife LGA and that in Jos LGA who indicated that they had terminated their pregnancies successfully. The two study areas also

Table 3 Percentage of women surveyed who reported experiencing an unwanted pregnancy and percentage distribution of subsequent actions they took as a consequence of the pregnancy, by type of action, according to area of residence, Nigeria, 1996

Action	Ife LGA	Jos LGA	Total
Women with unwanted pregnancies	18.9 (N = 126)	20.8 (N = 165)	19.9 (N = 291)
Actions taken			
None	33.3	30.3	31.8
Attempted pregnancy termination but failed	7.9	9.1	8.5
Attempted pregnancy termination and succeeded	57.9	57.6	57.8
No response to survey question	0.9	3.0	1.9
Total	100.0	100.0	100.0

showed no difference in the proportions of women who reported that they had attempted termination but failed. In absolute terms, 73 (11 percent) of the women surveyed in Ife LGA compared with 95 (12 percent) of women interviewed in Jos LGA reported having terminated a previous unwanted pregnancy successfully. This difference in the rates of self-reports of abortion was not statistically significant at the five percent level.

Reasons That Pregnancies Were Unwanted

The reasons respondents gave for not wanting the pregnancies they had experienced as undesirable are presented in Table 4. Approximately 19 percent said that they had became pregnant while they were using a family planning method. More women in Jos LGA than in Ife LGA reported failed contraception. As noted above, the pill was the most commonly used contraceptive for these cohorts. The other most common reasons respondents gave included the bad timing of these pregnancies, the respondents' desire to remain in school, the high cost of rearing children, and the feeling that the pregnancy was not socially acceptable. When the reasons were desegregated by study areas, bad timing was the most common reason stated by women in Jos, whereas the desire to remain in school was the reason most frequently stated by women in Ife LGA. The responses did not differ significantly between urban and rural areas in the two study regions.

Table 4 Percentage distribution of reasons respondents gave for not wanting the pregnancies they had reported as unwanted, by reason, according to area of residence, Nigeria, 1996

Reason	Ife LGA (N = 127)	Jos LGA (N = 164)	Total (N = 291)
No reason	8.9	3.1	5.6
Method failure	15.0	21.0	18.6
Wanted to stay in school	38.2	25.5	31.0
High cost of rearing children	7.3	9.9	8.8
Bad timing of pregnancy	30.9	47.8	40.5
Abandoned by partner	5.7	1.9	3.5
Pregnancy socially unacceptable	4.1	6.2	5.3
Extramarital pregnancy	—	2.5	1.3
Other	2.4	1.2	1.8
No response	2.5	1.9	2.1

Note: The total adds up to more than 100 because of multiple responses.

Predictors of Reporting a Previous Unwanted Pregnancy

To measure the strength of association of some selected background variables on the likelihood of reporting an unwanted pregnancy and induced abortion, a multivariate logistic regression was performed for the entire sample and separately for respondents living in the Ife and Jos LGAs. As shown in Table 5, the results for unwanted pregnancy indicate that age, education, occupation, knowledge of a contraceptive method, knowing the fertile period, and current use of a contraceptive were the most significant predictors of unwanted pregnancy. In

Table 5 Logistic regression showing odds ratios for the characteristics predicting that women surveyed would report having experienced an unwanted pregnancy, Ife and Jos local government areas (LGAs), Nigeria, 1996

Characteristic	Ife LGA	Jos LGA	All
Age			
15–24 (r)	1.0	1.0	1.0
25–34	1.4	2.1*	1.9*
35–44	1.0	1.9*	1.5
45+	2.4*	4.0*	3.4*
Education			
None (r)	1.0	1.0	1.0
Primary	1.7	1.2	1.4
Secondary	1.4	2.6*	1.9*
University	0.5	4.7*	3.1*
Occupation			
Unemployed (r)	1.0	1.0	1.0
Farmer/trader	0.7	0.9	0.8
Artisans/seamstress	0.8	1.2	1.0
Professional	1.3	1.4	1.5**
Marital status			
Married (r)	1.0	1.0	1.0
Divorced/separated	0.6	1.7	1.6
Unmarried	0.7	1.1	0.9
Residence			
Urban (r)	1.0	1.0	1.0
Rural	0.7	1.4	1.1
Knowledge of family planning method	3.0**	1.7	2.0**
Currently using a method	2.8***	3.3***	2.9**
Knows fertile period	2.8***	3.3***	2.9***
-2 log likelihood	1.1	1.1	1.1
χ^2	62.5	9.1	159.3
Degrees of freedom	16	16	16
Constant	–3.2	–3.7	–3.5

*Significant at $p \leq 0.05$; **$p \leq 0.01$; ***$p \leq 0.001$.
(r) = Reference category.

Jos LGA, greater age of respondents increased the likelihood that they would report a previous unwanted pregnancy. This relationship was less profound in Ife LGA; only those women older than 45 years were more likely to report unwanted pregnancies than were younger women. In the overall sample, women aged 25–34 years and those older than 45 were more likely to report having experienced an unwanted pregnancy, compared with those 24 years old or younger (odds ratios 1.9 and 3.4, respectively).

As compared with women without education, the results in Table 5 indicate that better-educated women have higher odds of reporting that they had had an unwanted pregnancy than do those with lower levels of education. Specifically, women with a university education were, on average, three times more likely to report an unwanted pregnancy. However, the relationship between unwanted pregnancy and women's educational level was stronger for Jos than for Ife women. Indeed, women with tertiary education in Ife tended to have a decreased likelihood of reporting an unwanted pregnancy, although the relationship was not statistically significant. In the overall sample, respondents in professional jobs (teaching and medicine) were significantly more likely to report an unwanted pregnancy, compared with unemployed women. However, this relationship did not hold true for the independent samples in Jos and Ile-Ife. Interestingly, the marital status of women and their area of residence (rural versus urban) were not significant predictors of their being likely to report having experienced an unwanted pregnancy.

Other predictors of self-reports of an unwanted pregnancy in the sample were having some knowledge of family planning, current use of a modern family planning method, and knowing the fertile time during the menstrual cycle. Overall, women who had knowledge of a modern family planning method were two times more likely than those without such knowledge to report that they had had an unwanted pregnancy. This relationship was stronger, however, in the Ife LGA than in the Jos LGA. Similarly, women who indicated they were currently using a family planning method were nearly three times more likely than those who were not using one to report experiencing an unwanted pregnancy. This relationship was significant in Ife and in Jos.

Women who could state correctly the period in the menstrual cycle during which a woman is most fertile were nearly three times more likely to report having had an unwanted pregnancy. This relationship was significant in the overall sample as well as in the Ife LGA and in the Jos LGA.

Predictors of Reporting Having Had an Induced Abortion

The results of the regression analysis of the factors associated with the likelihood that women would report having undergone an induced abortion are presented in Table 6, which shows that the key predictors are age, education, knowing the fertile period of the menstrual cycle, and current use of a family planning method. In both Jos LGA and the overall sample, women aged 25–34 and those older than 45 were more likely to report having had induced abortions, compared with women younger than 24. Women in Ife LGA showed decreased odds with increasing age, compared with younger women.

The table shows that in the overall sample, women with a university education were four times more likely and those with a secondary education were nearly three times more likely to report having had an induced abortion than were those lacking education. In Ife LGA, women's education was not a significant factor. However, having a professional occupation significantly pre-

Table 6 Logistic regression showing odds ratios for characteristics predicting that women surveyed would report having undergone an induced abortion, local government areas (LGAs), Nigeria, 1996

Characteristic	Ife LGA	Jos LGA	All
Age			
15–24 (r)	1.0	1.0	1.0
25–34	1.6	2.1**	1.9**
35–44	1.0	1.1	1.1
45+	0.0	3.5**	1.6
Education			
None (r)	1.0	1.0	1.0
Primary	1.9	1.3	1.5
Secondary	2.2	4.5**	2.8**
University	2.1	5.0**	4.1**
Occupation			
Unemployed (r)	1.0	1.0	1.0
Farmer/trader	1.4	0.6	0.8
Artisan/seamstress	1.9	0.2	1.0
Professional	2.5**	1.5	1.9**
Marital status			
Married (r)	1.0	1.0	1.0
Divorced/separated	1.6	1.3	2.4
Unmarried	1.1	2.1	1.6
Residence			
Urban (r)	1.0	1.0	1.0
Rural	0.7	0.6	0.7
Knows family planning method	6.1**	3.7**	7.4**
Currently using a method	2.5**	2.4**	2.3*
Knows method source	1.1	1.7	1.3
Knows fertile period	1.1	1.7	1.5
-2 log likelihood	425.7	457.9	908.9
χ^2	40.6	131.2	146.9
Degrees of freedom	16	16	16
Constant	–10.1	–5.4	–5.8

*Significant at $p \leq 0.05$; **$p \leq 0.01$. (r) = Reference category.

dicted self-reports of induced abortion in the overall sample as well as in Ife LGA. This relationship was not significant in Jos LGA where better-educated women were more likely to be unemployed. In Jos, artisans and seamstresses had markedly reduced odds of having undergone an induced abortion; however, these odds were not significant when controlled for the effects of women's education.

In the overall and the separate samples, divorced and unmarried women were more likely than married women to report having had an induced abortion, but the relationships were not statistically significant. In the three samples, rural residence diminished the likelihood of a woman's reporting having undergone an induced abortion. This relationship did not achieve statistical significance in either of the two study sites, however. Women who had knowledge of family planning and those currently using a family planning method were significantly more likely to report having had an induced abortion in the overall sample as well as in the independent ones. Knowing a source for a contraceptive method and knowing the fertile period of the menstrual cycle had no significant effect on the likelihood of reporting having had an induced abortion.

Discussion

The results of this study indicate that according to their own reports, nearly 20 percent of the women experienced an unwanted pregnancy, and more than half of these women resolved such pregnancies with induced abortions. This prevalence rate appears to be low in comparison with the absolute number of women who are admitted to Nigerian hospitals with complications of induced abortion. The study revealed that abortion is as common in northern Nigeria as it is in the southern part of the country. The assumption that had been made that abortion was less common in northern Nigeria than in the south was based on meager data from the north. The results suggest that unwanted pregnancy and induced abortion may, in fact, be more prevalent in the northern part of the country, although this finding is not statistically significant. It is, however, consistent with the lower prevalence of contraceptive use that women in the Jos LGA reported in this study.

The study's results demonstrate women's low use of contraceptive methods in both study sites. Although the contraceptive prevalence rates reported here are higher than those reported in the Nigerian DHS, they are still substantially below what would be needed to achieve a meaningful demographic transition in Nigeria. Additionally, a large proportion of the women surveyed said that they became pregnant while they were using contraceptives, suggesting a high level of contraceptive failure in both communities. This high rate of failure might be explained by the poor quality of family planning programs, the incorrect and inconsistent use of methods, and the use of methods of low or uncertain effectiveness. Whatever the cause of the problem, the results suggest the need for active promotion of effective family planning methods in both communities. Clearly, improved community efforts are required to educate women about family planning and to enable them to gain access to modern contraceptives. Additional research for identifying reasons for nonuse of contraceptives among women who do not immediately desire children is advisable so that community-based promotion of contraceptive use among married and unmarried women can be implemented.

The predominant social antecedents of unwanted pregnancy and induced abortion identified in both study areas were women's desire to remain in school and their perceptions that their pregnancies were badly timed. These responses, which varied by region, offer program officials an opportunity to target appropriate methods of contraception for the prevention of unwanted pregnancy and of induced abortion in the two study areas. In Ife, the prevention of premarital conception among adolescent schoolgirls appears to be a priority. For women of this age group, who are often unwilling to practice long-term, effective contraception, emergency contraception would be an attractive option. In Jos LGA, the promotion of contraceptive use among married women wishing to space pregnancies should be a priority. Because religion and male attitudes influence women's willingness to use contraceptives in this part of Nigeria (Renne 1996), designing programs that address men's concerns may be the most appropriate approach for increasing contraceptive use.

Rogo (1996) has proposed that programs be designed to reduce the problems associated with unwanted pregnancy and induced abortion by addressing the needs of high-risk groups where these can be identified. The aim of this study, therefore, was to identify the risk factors for unwanted pregnancy and induced abortion among the women in the sample through multivariate analysis of selected independent variables. The results indicate that unwanted pregnancy and induced abortion are somewhat more prevalent in urban than in rural areas. This finding, however, is not statistically significant. Previous reports from other parts of sub-Saharan Africa also

suggest that induced abortion is more common in urban areas (Ladipo 1989; Briggs 1992; Okonofua 1992 and 1995).

Several studies have suggested that Nigerian adolescents are at an increased risk of experiencing various complications of induced abortion (Okojie 1976; Unuigbe et al. 1988; Adetoro 1989; Konje 1992). No studies have measured accurately the strength of the association between adolescence and unwanted pregnancy and induced abortion in this population. The results of this study indicate that adolescents are at a decreased risk of experiencing an unwanted pregnancy, compared with older women. This finding was not surprising because the study was designed to elicit lifetime experience rather than specific episodes of induced abortion. The odds of terminating an unwanted pregnancy were not much greater, however, for older women in the overall sample. Indeed, in Ife LGA, no significant difference was found between adolescents and older women in their likelihood of terminating unwanted pregnancies despite the higher prevalence of unwanted pregnancies among older women. These results, at least for the Ife LGA sample, suggest that although older women may be more likely to report unwanted pregnancies, they may be less likely to terminate such pregnancies by means of induced abortion. Adolescents, however, were more likely to report that their attempt at pregnancy termination failed. Most adolescents reported that they sought an induced abortion because of their desire to remain in school. These results provide additional evidence that programs for reducing the incidence of unwanted pregnancies and induced abortion should be aimed at adolescents. Such programs should promote reproductive health education within and outside of schools and provide contraceptives to sexually active adolescents.

An interesting finding of this study was that in neither study area did marital status have a predictive effect on the prevalence of unwanted pregnancy and induced abortion. Because the study solicited information on women's lifetime experience, the questions implied that some pregnancies may have occurred before the women were married and that, contrary to widely held opinion in Nigeria, unwanted pregnancies and induced abortion are not restricted to the unmarried. In a population with a large unmet need for family planning, married couples are likely to seek induced abortions, and Nigerian family planning practitioners must recognize this circumstance and take account of it in their designs for family planning programs.

This study's findings indicate that Nigerian women's employment level and educational status are significant predictors of unwanted pregnancy and induced abortion, according to the logistic regression model. Women working in the formal sector and those with higher levels of education were significantly more likely to report having experienced unwanted pregnancy and induced abortion, compared with less-educated women and those who were unemployed or working outside the formal sector. These relationships were particularly strong in Jos where educated women are more likely to be unemployed. Therefore, an independent effect of women's employment on unwanted pregnancy and induced abortion was lacking in the findings for Jos LGA. Shapiro and Tambashe (1994) also reported that better-educated women working in the formal sector in Zaire were more likely to have undergone an induced abortion than were unemployed women having lower levels of education. These results are of interest because employed and better-educated women are generally expected to be more likely to use contraceptives. In Jos, however, women may be under religious and cultural pressures not to use contraceptives to prevent unwanted pregnancy. In Ife, educated women may be under less social pressure of this sort, but may not use contraceptives effectively because they lack services. Therefore, the higher rates of abortion reported by better-educated women may reflect better access to abortion services or a greater willingness among such women to report having had an abortion. In addition, better-educated women may seek more actively to control their fertility, becoming contraceptive and family planning innovators, compared with less-educated women. However, targeting preventive programs selectively to such women, especially where inequality in access to health care already exists, may worsen the situation of poor women in rural areas. Therefore, program planners should seek to improve access to family planning and abortion services and to provide specific information on reproductive health to all women.

Another explanation for the observed relationship between women's education and employment and the likelihood of their reporting having experienced an unwanted pregnancy and induced abortion is that better-educated women have a stronger motivation than other women to space their children or to delay the onset of a first birth. The impact of employment parallels that of education because educated women are often employed in the formal sector. These women would be most likely to use contraceptives to prevent an unwanted pregnancy. Where effective and efficient use of contraceptives is not guaranteed, however, as is the case in most parts of Nigeria, a woman's motivation to terminate an unwanted pregnancy may well exceed her need to use contraceptives effectively. Thus, educated women in Nigeria may be relying on abortion to regulate the num-

ber of children they have because effective contraceptives are either not easily available or may not be desired. This hypothesis gains support from the results of this study indicating that women who have better knowledge of reproduction and family planning and who are current users of contraceptive methods are more likely to report unwanted pregnancy and induced abortion. Further research is warranted to determine the exact nature and pattern of this relationship.

The major limitation of this study is the likelihood that women who did not report their experience of abortion were classified as not having had one, a probability indicated by the high incidence of underreporting of induced abortion observed during the pretesting stage. Clearly, women who have not had an abortion are unlikely to report having had one. However, the magnitude of recall bias is reduced by the significantly increased number of women who did not report having had one compared with those who did. Despite the pitfalls inherent in the research design, the study has identified trends and patterns useful for designing interventions aimed at reducing morbidity and mortality associated with induced abortion in Nigeria. One of the principal strengths of the study is that it is one of the first comprehensive population-based studies of unwanted pregnancy and induced abortion undertaken in Nigeria. The results have wide applicability to the rest of Nigeria because women from two representative areas of the country with different cultural backgrounds were included in the sample.

The results of this study have far-reaching implications for women's reproductive health in Nigeria. The study confirms that despite the prevailing restrictive abortion law in Nigeria, women frequently resort to induced abortion as a method of resolving several social problems associated with unwanted pregnancy. As this situation is made clear, Nigerian policymakers have sufficient grounds for designing appropriate and realistic programs within the framework of the national population policy that are focused on reducing the number of unwanted pregnancies and induced abortions in the country.

The study has revealed Nigerian women's poor and inconsistent use of contraceptives, suggesting the need to establish effective family planning services throughout the country as well as to provide information to enable women to use existing services. Currently, available family planning services are donor-driven and cannot meet the needs of the large majority of Nigerians. The barriers that currently prevent certain women, especially adolescents, from using existing family planning services should be identified and dismantled.

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