

The Likelihood of Induced Abortion Among Women Hospitalized for Abortion Complications in Four Latin American Countries

By Susheela Singh and Deirdre Wulf

Application of the World Health Organization (WHO) method of classifying abortions to data on 8,589 women hospitalized for abortion complications in Bolivia, Colombia, Peru and Venezuela reveals that 67% of all such women may have experienced their complications as the result of an induced abortion, compared with 9% reported by the women. According to WHO criteria, 13% of the women in these four countries are certain to have had an induced abortion, 6% probably have had one and 49% possibly have had one. Unmarried women are significantly more likely than married women to be classified as certain to have had an induced abortion (24% vs. 10%). Compared with women who are likely to have had a spontaneous abortion, those who are likely to have had an induced abortion tend to have more children (16% vs. 2% had had five or more live births) and to be older (39% vs. 22% were aged 30 or older). Among women likely to have been hospitalized for induced abortion complications, 40% had been using a contraceptive method at the time of conception and 31% said they had had at least one previous abortion. About 23% of women who are likely to have had an induced abortion had a septic infection, 31% were at 13 weeks or more gestation and about 50% stayed in the hospital for two days or more.

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Underreporting and misreporting of abortion in surveys and health statistics are widespread throughout the world, especially where induced abortion is illegal in most instances.¹ As a result, the incidence of abortion in these countries is very difficult to measure. Reliable measures of the incidence of induced abortion are needed to evaluate the impact of family planning efforts, as well as to understand contraceptive failure rates in a given setting. Contraceptive failure is usually associated with an increase in unintended births, but if researchers overlook the use of illegal abortion to end unintended pregnancies, they will underestimate the number of pregnancies associated with contraceptive failure.² More precise estimates of induced abortion lev-

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els are also necessary to understand the broad fertility dynamics of a population.³

Abortion is illegal in almost all Latin American countries, and the only source of quantifiable and reasonably complete data about abortion at the national level is the discharge records of women hospitalized for abortion complications. Despite many imperfections, these data must be used to obtain indicators of the level of induced abortion. In countries where induced abortion is illegal, however, women with complications resulting from spontaneous abortion are included with those hospitalized for complications of induced abortion. Therefore, when using hospital discharge data to estimate the level of abortion, researchers must first eliminate spontaneous abortion cases. Because it is difficult to distinguish between spontaneous and induced abortion on the basis of reported diagnoses alone, researchers must use indirect methods.

Most Latin American countries use a national system of diagnoses detailed in the ninth revision of the International Classification of Diseases (ICD-9) to collect information about hospitalization. The comprehensiveness of information about hospitalized abortion cases varies by country, but misreporting according to the standard ICD-9 diagnosis categories occurs in almost all countries. Thus even

these national statistics, based on actual hospital stays (for which discharge records are prepared within the medical system), are subject to misreporting of the cause of hospitalization.

In countries where induced abortion might incur legal and social sanctions for both the woman and her practitioner, many women hospitalized for induced abortion complications say that they sought treatment for a spontaneous abortion. Moreover, doctors and hospitals report almost all patients treated for abortion complications as having had a spontaneous or unspecified abortion, even when a clear diagnosis of induced abortion complications might be made. Doctors also report that in a large proportion of cases, the symptoms of these two types of patients are too similar to diagnose whether the abortion was spontaneous or induced.

Because the classification of patients hospitalized for abortion complications obtained from hospital discharge records cannot be taken at face value, researchers have devised methods of distinguishing between spontaneous abortions and induced abortions, independent of the official classification. One highly plausible and widely endorsed method is the typology introduced and tested by a task force created in the 1980s by the World Health Organization (WHO) to study the health consequences of clandestine abortion. This task force established a set of uniform criteria to reclassify the abortion cases treated in hospitals, and tested the feasibility of applying these criteria to abortion complication cases treated at health centers in Malaysia, Nigeria, Turkey and Venezuela.⁴ Another method, utilizing an indirect estimation technique based on the biological probability of spontaneous pregnancy loss by duration of gestation and on assumptions about the likelihood of hospitalization among women experiencing spontaneous abortions, has also been applied to hospitalization data in three countries in Latin America.⁵ Other surveys have identified the cause of hospitalization with some success through careful and extensive interviewing of the women involved.⁶

The purpose of this study is to apply the WHO method of separating induced abor-

tions from spontaneous abortions to new data from four Latin American countries—Bolivia, Colombia, Peru and Venezuela—to obtain more reliable estimates of the treatment of complications that resulted from induced abortion. Our second aim is to describe the demographic and medical characteristics of women hospitalized for abortion complications in these four countries and to discuss the differences between women who are classified as likely to have had an induced abortion and those likely to have had a spontaneous abortion.

Methodology

The data on hospitalized patients collected by national systems (the Ministry of Health, the Social Security Administration and other institutions that administer hospitals) are usually limited to diagnosis, length of the hospital stay, age, place of residence, type of hospital and, occasionally, a few other characteristics, such as type of surgical procedure or source of health insurance. Often, even these items are not provided. More detailed information about social and demographic factors and the medical condition and treatment of the patient is usually recorded on the patient's medical chart, but this information is not transferred to the hospital discharge record or computerized.

To obtain better information about women hospitalized with abortion complications, the Federación Latinoamericana de Sociedades de Obstetricia y Ginecología (FLASOG) conducted a prospective study of such women in four Latin American countries in 1990, yielding data for 8,871 patients sampled from 36 hospitals. The women were treated for incomplete abortions or abortion complications between March and September 1990 in 15 hospitals in Colombia, 10 hospitals in Venezuela, six in Peru, and five in Bolivia.

The women were selected for the study if they had had an abortion, whether it was induced or spontaneous, without restriction to standard ICD-9 codes, which classify abortion patients as codes 634–639. Some patients not classified by ICD-9 codes as having had an abortion, such as women with a diagnosis of retained fetus (code 632) or of threatened abortion (code 640), were also included in the sample.* Identical analyses were performed for 7,396 women who were classified as abortion patients and for 1,193 women classified either as having had a threatened abortion (678 cases), a retained fetus (473 cases) or no diagnosis (42 cases). The final sample did not include 282 cases that lacked sufficient information.

A hospital was selected if one or more obstetrician-gynecologists agreed to participate and were able to conduct the study in their hospital; thus, the sample of hospitals is neither random nor representative of hospitals in each country. The number of abortion patients per surveyed hospital during the six-month period ranged from 24 to 1,190; however, only five hospitals had more than 400 patients and 22 had fewer than 200 patients, yielding an average of 246 patients per hospital.†

The participating physicians supervised the hospital staff who reviewed the women's medical records. Each patient was also interviewed by an attending nurse or nurse-midwife, who used a questionnaire containing 36 questions about social and demographic characteristics and medical symptoms and treatment. The study emphasized medical aspects such as the woman's condition on admission, the medical treatment she received and the health and mortality consequences of the abortion. The initial findings on morbidity and mortality from this study were published in 1991 in a Colombian medical journal.⁷

Using data collected in the 1990 study, our analysis focuses on the precise nature of the event that brought the women to the hospital, and the women's background and medical characteristics. The data collected in this four-country study are sufficiently comprehensive to apply the WHO reclassification. We categorize the patients into four groups according to the likelihood that they had had an induced abortion: certain, probable, possible and unlikely.

According to the criteria established by the WHO Task Force that developed the methodology,⁸ a woman hospitalized for abortion complications is considered to have "certainly" had an induced abortion if she reports it as such, if (in the case of the woman's subsequent death) a health worker or relative reports it as induced, or if there is evidence of genital or cervical trauma or a foreign body in the genital tract. An

Table 1. Percentage distribution of patients hospitalized with complications attributable to abortion, by the likelihood of having had an induced abortion, according to selected characteristics, Federación Latinoamericana de Sociedades de Obstetricia y Ginecología (FLASOG), 1990

Characteristic	N	Likelihood of induced abortion				Total
		Certain	Probable	Possible	Unlikely	
All women	8,589	12.5	5.5	49.3	32.7	100.0
Country						
Bolivia	758	13.7	3.6	53.4	29.3	100.0
Colombia	4,046	12.9	7.0	46.8	33.4	100.0
Peru	1,930	19.4	2.8	47.3	30.5	100.0
Venezuela	1,855	4.2	6.0	55.3	34.6	100.0
Age-group						
<20	1,195	14.4	5.2	38.1	42.4	100.0
20–24	2,347	12.8	4.6	42.4	40.2	100.0
25–29	2,195	13.2	6.1	47.3	33.4	100.0
30–34	1,448	12.3	6.5	54.9	26.3	100.0
35–39	985	10.4	5.6	64.0	20.1	100.0
40+	412	8.3	5.1	76.9	9.7	100.0
Marital status						
Married	6,744	9.5	5.0	49.4	36.1	100.0
Unmarried	1,761	24.1	7.6	48.9	19.3	100.0
Education (years)						
0–4	1,723	13.0	8.0	55.8	23.3	100.0
5–6	2,256	12.5	6.0	52.0	29.4	100.0
7–9	2,347	11.5	4.9	47.5	36.2	100.0
10+	1,968	13.2	3.8	42.4	40.7	100.0
Parity						
0	2,188	12.6	3.0	33.2	51.2	100.0
1	1,958	11.5	4.5	39.4	44.6	100.0
2–4	3,463	13.4	7.0	58.1	21.5	100.0
5+	944	11.2	8.4	75.0	5.4	100.0

Note: In this and subsequent tables, percentage distributions exclude patients with missing data. Variables with less than 1% missing information are age and parity; 1%, marital status; and 3–4%, education.

abortion is considered "probably" induced, regardless of the woman's report, if none of the previous criteria applies but the woman had sepsis and was either using a contraceptive method at the time of conception or said she did not want the pregnancy. An abortion is deemed "possibly" induced if none of the preceding criteria applies but the woman was using a contraceptive method at the time of conception or said that she did not want the pregnan-

*Women are classified as having a threatened abortion if they experience dangerous hemorrhaging before 22 weeks of gestation. A retained fetus (or retained products of conception) typically results from an early fetal death. Women with these conditions are not normally considered abortion patients. However, some methods of induced abortion, in particular the insertion of herbal infusions into the uterus, can result in fetal death with symptoms similar to those of spontaneous fetal death. Thus, women may be given this diagnosis or that of threatened abortion even though they were actually admitted and treated for an abortion.

†The large clusters within the surveyed population mean that the sample is less efficient than a random sample, or a sample with smaller clusters, in measuring variation. Although significance testing discussed later in this article assumes a normal distribution and a random sample, we allowed for a larger sample error by considering significant only differences at the .01 level or higher. Almost every differential highlighted in the text has a much stronger significance level than .01.

Table 2. Percentage distribution of patients hospitalized with complications attributable to abortion, by demographic and social characteristics, according to likelihood of having had an induced abortion

Characteristic	All women (N=8,589)	Certain or probable (N=1,552)	Possible (N=4,236)	Certain, probable and possible (N=5,788)	Unlikely (N=2,801)
Age					
20	13.9	15.1	10.8	11.9	18.1
21-24	27.3	26.4	23.5	24.3	33.7
25-29	25.6	27.3	24.6	25.3	26.2
30-34	16.9	17.5	18.8	18.5	13.6
35-39	11.5	10.1	14.9	13.6	7.1
40+	4.8	3.5	7.5	6.4	1.4
Marital status					
Married	79.3	63.6	79.4	75.2	87.7
Unmarried	20.7	36.4	20.6	24.8	12.3
Education (years)					
<4	20.8	24.1	23.6	23.7	14.7
4-6	27.2	27.8	26.7	28.5	24.5
7-9	28.3	25.7	27.3	26.9	31.2
10+	23.7	22.3	20.4	20.9	29.5
Parity					
0	25.6	22.0	17.2	18.5	40.2
1-4	22.9	20.3	18.3	18.8	31.3
5+	40.5	45.7	47.7	47.2	26.7
Unk.	11.0	12.0	16.8	15.5	1.8
Previous abortions					
0	71.1	71.0	67.6	68.6	76.2
1-3	20.5	19.7	22.7	21.9	17.5
4+	8.5	9.3	9.6	9.5	6.3
Contraceptive method					
None	73.3	62.6	59.7	60.5	100.0
Modern: effective*	18.1	24.6	27.6	26.8	0.0
Modern: less effective†	2.0	3.0	3.0	3.0	0.0
Traditional	6.5	9.7	9.7	9.7	0.0
Wanted pregnancy					
Yes	54.8	20.3	36.9	32.4	100.0
No	45.2	79.7	63.1	67.6	0.0
Wants more children					
Yes	55.5	33.9	33.8	33.8	100.0
No	44.5	66.1	66.3	66.2	0.0
Wanted pregnancy or more children					
Yes	45.6	13.4	17.7	16.6	100.0
No	54.4	86.6	82.3	83.4	0.0
Total	100.0	100.0	100.0	100.0	100.0

Sterilization, pill, IUD or injectables. †Condom, diaphragm or spermicides. Note: In this and subsequent tables, variables with 1-2% missing data are number of previous abortions; 2-3%, wanted pregnancy; and 5%, method used at conception.

ry. The fourth category, "unlikely," is a residual group that includes women who probably had a spontaneous abortion, but it may also include some women who had an induced abortion.*

To learn more about the characteristics of women hospitalized for abortion com-

*The WHO study also conducted a discriminant analysis to compare the two most extreme groups—certain and unlikely. The results were then used to reclassify the intermediate groups as induced or spontaneous abortion. In our analysis, we decided not to conduct a discriminant analysis of the data because reporting on some of the variables used in the discriminant analysis shows little variation, some of the reporting contained data quality problems and three necessary characteristics (duration of marriage, interval since the last pregnancy and women's work status) were not included in the Federación Latinoamericana de Sociedades de Obstetricia y Ginecología study.

plications, we also combined the certain and probable groups (for whom the evidence of an induced abortion is strongest) and compared them with the possible group. To compare women who were classified as likely to have had an induced abortion with those who probably did not, we combined all three induced abortion groups and compared it with the unlikely group.

Results

Spontaneous or Induced Abortion

Results of applying the WHO classification method to the Latin American data are presented in Table 1 (page 135). According to the reclassification, 13% of abortions were certainly induced, 6% were probably induced, and 49% were possibly induced. By

adding these three categories, we find that 67% of abortions are certainly, probably or possibly induced, compared with 9%, as reported by the women when interviewed.

Table 1 also shows variation in the proportion of induced abortions according to country. In Bolivia, it appears that 71% of all women in the study were hospitalized with abortion complications that might have resulted from induced abortion, compared with 13% reported by Bolivian women. Complications of induced abortion were estimated to be as high as 66% in Venezuela, compared with only 3% according to patient reports. The proportion of women who possibly had had an induced abortion was highest in Venezuela (55%) and Bolivia (53%). However, the proportion of women who certainly or probably had had an abortion was significantly lower ($p < .01$ in this and all subsequent differences) in Venezuela (10%) than in the other three countries (17-22%).

Variation in the likelihood of having had an induced abortion, according to five-year age-groups, is included in Table 1. Although 33% of all abortions might have been spontaneous, only 20% of women aged 35-39 and 10% of women aged 40 and older were likely to have had a spontaneous abortion. This pattern may result because the proportions of women who certainly and who probably had had an induced abortion varied only slightly by age-group, while the proportion of women who possibly had had an induced abortion was relatively small among younger women but increased steadily with age. Since older women were likely to have already had all the children they wanted, they were more likely to report that the current pregnancy was unplanned or unwanted.

According to the results shown in Table 1, unmarried women (including never-married, separated, widowed and divorced women) were considerably more likely than married women (including women in union) to be classified in the certain category (24% vs. 10%). The data also indicate that as education increased, women were less likely to be in the probable and possible categories, but more likely to be in the unlikely category, denoting that the complications were likely the result of a spontaneous abortion.

Parity did not have much effect on the likelihood that complications were the certain result of an induced abortion. However, the likelihood of having had a spontaneous abortion, as measured by the proportion in the unlikely group, decreased with an increase in the number of live births a woman had had, mostly as a

Table 3. Percentage distribution of patients hospitalized with complications attributable to abortion, by health and medical characteristics, according to likelihood of having had an induced abortion

Characteristic	All women (N=8,589)	Certain or probable (N=1,552)	Possible (N=4,236)	Certain, probable and possible (N=5,788)	Unlikely (N=2,801)
Complication at admission					
None	90.6	76.5	92.2	88.2	95.5
Trauma	1.2	7.2	0.0	1.8	0.0
Excessive blood loss	6.9	12.6	6.7	8.3	4.0
Other	1.3	3.7	1.0	1.7	0.5
Gestation (weeks)					
0-10	26.9	29.6	28.1	28.5	23.6
11-12	42.0	41.3	40.8	40.9	44.1
13-16	20.1	18.9	19.7	19.5	21.3
17-20	11.1	10.1	11.5	11.1	11.0
Days hospitalized					
0-1	54.4	27.7	58.8	50.4	62.6
2-3	35.7	49.0	33.4	37.6	31.7
4-5	6.7	15.7	5.6	8.3	3.3
6+	3.2	7.7	2.1	3.6	2.4
Anesthesia					
None	3.4	3.0	3.6	3.5	3.2
General	64.8	53.3	66.2	63.1	69.1
Other	31.8	43.7	30.2	33.4	27.7
Procedure					
Observation only	2.5	2.0	2.8	2.6	2.4
D & C	94.8	92.7	95.2	94.9	95.2
Hysterectomy	0.6	2.6	0.2	0.8	0.2
Other	2.1	2.7	1.8	1.7	2.2
Sepsis or infection					
Yes	15.7	68.4	6.7	23.2	0.0
No	84.3	31.6	93.3	76.8	100.0
Blood transfusion					
Yes	5.9	12.2	5.3	7.2	3.2
No	94.1	87.8	94.7	92.8	96.8
IV liquids transfusion					
Yes	84.7	88.0	83.8	84.9	84.2
No	15.3	12.0	16.2	15.1	15.8
Fever after treatment					
None	92.1	72.9	95.4	89.3	98.0
In first 24 hours	5.2	18.2	3.0	7.1	1.4
In first 24 hours and continuing	1.3	4.3	0.9	1.8	0.2
After first 24 hours	1.3	4.6	0.7	1.8	0.4
Total	100.0	100.0	100.0	100.0	100.0

Note: In this and subsequent tables, variables with less than 1% missing data are anesthesia, procedure, sepsis, blood transfusion, IV liquid transfusion and fever after treatment; 2-3%, complication on admission and days hospitalized; 3-5%, gestation.

result of a large increase in the proportion of women with two or more children who were classified in the possible category.

Social and Medical Characteristics

Table 2 shows the demographic and social characteristics of various categories of women who were likely to have had an induced abortion, including the combined certain or probable groups and the combined certain, probable or possible groups. The women in the certain or probable category, who had had more serious complications, were younger than the women in the possible group, who had had less serious health complications: About 42% of women in the certain or probable group were younger than 25, compared with 34%

of those in the possible group. The women in the certain or probable group were also more likely than those in the possible group to be unmarried (36% vs. 21%) and childless (22% vs. 17%). However, these two groups were similar in educational achievement, number of previous abortions and type of contraceptive method used when they became pregnant.

Marked demographic differences were found between women in the induced abortion group and those in the unlikely group, who were most likely to have had a spontaneous abortion. Since women who did not plan their most recent pregnancy or who wanted no more children were classified as possibly having had an induced abortion, they tended to have had more

children than had women in the unlikely group (16% vs. 2% had had five or more live births). The women in the induced abortion group also tended to be older than women in the unlikely group (39% vs. 22% were aged 30 or older). Because they were older, women in the induced abortion group were also less educated than those in the unlikely group (52% vs. 39% had had six years or less of schooling).

Table 3 presents the health and medical characteristics of women hospitalized for complications attributable to abortion. As expected, since the certain or probable category includes women who had sepsis or obvious signs of genital or cervical trauma, these women had a longer hospital stay, and a higher proportion of them had been admitted suffering from trauma, experienced fever after treatment and needed a blood transfusion than had women in the possible group. Despite the greater severity of complications among women in the certain or probable group, their distribution according to weeks of gestation was very similar to that of the women in the possible group.

Differences in complications and treatment of women in the induced abortion groups and of those in the unlikely group are also shown. Women in the induced abortion group were more likely than women in the unlikely group to have had a major complication at admission (12% vs. 5%), experienced fever after treatment (11% vs. 2%), required a blood transfusion (7% vs. 3%) and had a longer hospital stay (50% vs. 37% stayed two days or longer).

Induced Abortion Patients

The demographic characteristics of women classified as likely to have had an induced abortion (those in the certain, probable and possible categories) are shown in Table 4 (page 138), according to country. Almost 50% of all women in this group were aged 20-29; only 12% were younger than 20 and 6% were older than 40. About 25% of women hospitalized for induced abortion complications were unmarried, ranging from 15% in Bolivia and Peru to 34% in Colombia. Nearly 80% of women in all four countries had had at least one child, from 78% of women in Colombia to 89% in Bolivia.

Table 4 also shows that 22% of all women being treated for complications attributable to an induced abortion acknowledged having had one previous abortion, and an additional 10% said they had had at least two previous abortions. The repeat abortion experience was higher than the average (31%) for all four countries among women in Bolivia (45%) and Peru (37%), while it was

lower than average in Venezuela (28%) and Colombia (23%).

Among women hospitalized for abortion complications attributable to an induced procedure, 40% had been using a contraceptive method when they became pregnant; one-fourth of these women had been using a traditional method. Use of a modern method at the time of conception was lowest in Bolivia (11%) and Peru (17%). Women in these countries had the highest repeat abortion rates: In Bolivia, 45% of women classified as likely to have had an induced abortion had acknowledged having had at least one previous abortion; in Peru, 37% had done so. Among women hospitalized for complications, about 83% did not want the current pregnancy or any more children.

Table 5 presents the medical characteristics of hospitalized women categorized as having had an induced abortion, according to country. Overall, 70% of these women were in their 11th week of pregnancy or more at the time of the abortion, but despite this relatively advanced stage of gestation, only 12% of the women had had serious medical complications at the time they were admitted to the hospital, and about 23% had had sepsis (from 11% in Bolivia to 32% in Colombia). The treatment given to patients hospitalized for induced abortion complications was standard in all four countries: More than 90% had had a dilatation and curettage (D&C), usually with general anesthesia. About 50% of the women stayed in the hospital for a day or less, 37% remained for 2–3 days and about 12% were required to stay longer.

Variables that may indicate the severity of medical risk from induced abortion—length of hospitalization, length of gestation and prevalence of sepsis—are shown in Table 6 (page 140). We found surprisingly little variation by age or educational level in duration of hospital stay or length of gestation. Teenagers were not significantly more likely than women aged 30 or older to stay in the hospital longer (2.09 days vs. 1.96 days) or to seek treatment for abortion complications later in the pregnancy (mean gestation of 11.3 weeks vs. 11.1 weeks). Sepsis, however, was significantly more common among younger women than among older women, with the occurrence decreasing as age increases. Differences according to education were significant. Women with 0–4 years of schooling were only slightly more likely than women with more than 10 years of schooling to have had a longer hospital stay (2.01 days vs. 1.96 days), but less educated women sought treatment later (mean gestation of 11.3

Table 4. Percentage distribution of hospitalized patients classified as having had an induced abortion, by demographic and social characteristics, according to country

Characteristic	All (N=5,788)	Bolivia (N=536)	Colombia (N=2,696)	Peru (N=1,342)	Venezuela (N=1,214)
Age					
<20	11.9	6.2	14.5	8.9	12.0
20–24	24.3	18.0	27.1	21.3	24.1
25–29	25.3	22.8	25.5	26.5	24.5
30–34	18.5	20.2	16.2	19.6	21.4
35–39	13.6	20.4	11.8	15.7	12.3
40+	6.4	12.4	4.9	7.8	5.7
Marital status					
Married	75.2	85.4	66.0	84.9	80.4
Unmarried	24.8	14.6	34.0	15.1	19.6
Education (years)					
0–4	23.8	27.3	26.1	19.8	21.5
5–6	28.5	20.9	28.8	28.0	31.8
7–9	26.9	14.6	29.2	22.7	31.8
10+	20.9	37.2	15.9	29.5	15.0
Parity					
0	18.5	10.9	21.7	17.7	15.6
1	18.8	16.0	22.1	15.3	16.8
2–4	47.2	46.2	45.4	50.0	48.3
5+	15.5	26.8	10.7	17.1	19.3
Previous abortions					
0	68.6	54.9	77.5	63.2	72.0
1	21.9	29.8	16.2	26.2	19.9
2+	9.5	15.3	6.3	10.6	8.1
Contraceptive method					
None	60.5	70.1	55.8	60.7	65.9
Modern: effective*	26.8	9.7	36.2	13.6	29.2
Modern: less effective†	3.0	0.8	4.1	3.8	0.9
Traditional	9.7	19.5	4.0	21.9	3.9
Wanted pregnancy					
Yes	32.4	42.0	33.1	25.5	34.5
No	67.6	58.0	66.9	74.5	65.5
Wants more children					
Yes	33.8	27.7	36.7	27.5	37.3
No	66.2	72.3	63.3	72.5	62.7
Wanted pregnancy or more children					
Yes	16.6	14.4	20.5	11.6	14.2
No	83.4	85.6	79.5	88.4	85.8
Total	100.0	100.0	100.0	100.0	100.0

*Sterilization, pill, IUD and injectables. †Condom, diaphragm and spermicides.

weeks vs. 10.5 weeks). All women with less than 10 years of schooling had a greater likelihood of sepsis than did women with 10 or more years of education.

Differences in medical risk according to marital status were more extreme. Unmarried women were clearly at far greater medical risk of complications than were married women. Their average hospital stay was 2.19 days, compared with 1.88 days among married women, and they were much more likely than married women to have had a septic abortion (34% vs. 20%). However, there was no difference between these two groups in the average length of gestation, which suggests that the higher medical risk incurred by single women is associated with the method used to induce the abortion and the delay in seeking hospital care when complications arise.

When the likelihood of sepsis was examined by age and education combined,

as shown in Table 7 (page 140), increased education had a beneficial effect on older women (especially those aged 25 and older), but had little effect on younger women (particularly teenagers). Among women aged 15–19 who were hospitalized for abortion complications, the proportion with sepsis fluctuated by educational level, suggesting that there is no clear relationship between the two factors: Among teenagers with less than five years of schooling, 33% had had sepsis, and among those with 10 or more years, the proportion was 36%. In contrast, among women aged 35–39, the proportion with sepsis decreased from 19% among those with the least amount of education to 5% among those with the most education. Among women older than 40, the pattern was erratic, but women in this age-group were generally less likely to have had sepsis, regardless of their educational level.

Table 5. Percentage distribution of hospitalized patients classified as having had an induced abortion, by health and medical characteristics, according to country

Characteristic	All (N=5,788)	Bolivia (N=536)	Colombia (N=2,696)	Peru (N=1,342)	Venezuela (N=1,214)
Complication at admission					
None	88.2	83.3	89.7	86.1	89.3
Trauma	1.8	3.0	1.8	2.0	1.1
Excessive blood loss	8.3	11.6	6.8	11.1	7.0
Other	1.7	2.1	1.7	0.8	2.6
Gestation (weeks)					
0-10	28.5	38.0	26.8	29.9	26.3
11-12	40.9	37.2	41.6	43.1	38.6
13-16	19.5	13.8	20.1	17.1	23.5
17-20	11.1	11.0	11.5	9.8	11.6
Days hospitalized					
0-1	50.4	33.8	59.2	50.2	37.6
2-3	37.6	49.5	31.0	37.1	48.4
4-5	8.3	9.7	7.1	9.1	9.6
6+	3.7	7.0	2.7	3.6	4.4
Anesthesia					
None	3.5	7.4	2.2	4.5	3.4
General	63.1	90.8	69.2	17.8	87.5
Other	33.4	1.8	28.6	77.7	9.1
Procedure					
Observation only	2.6	6.0	1.9	3.1	2.0
D & C	94.9	91.0	94.5	94.8	97.4
Hysterectomy	0.8	0.8	1.0	1.0	0.3
Other	1.7	2.2	2.6	1.1	0.3
Sepsis or infection					
Yes	23.2	11.0	31.5	16.5	17.8
No	76.8	89.0	68.5	83.5	82.2
Blood transfusion					
Yes	7.2	12.1	7.9	6.0	4.7
No	92.8	87.9	92.1	94.0	95.3
IV liquids transfusion					
Yes	84.9	86.4	96.0	57.7	89.6
No	15.1	13.6	4.0	42.3	10.4
Fever after treatment					
None	89.3	94.9	85.9	89.3	94.5
In first 24 hours	7.1	2.6	9.0	7.5	4.3
In first 24 hours continuing	1.8	0.4	2.7	2.0	0.3
After first 24 hours	1.8	2.1	2.5	1.1	0.9
Total	100.0	100.0	100.0	100.0	100.0

Discussion

Although the WHO methodology cannot provide a definitive estimate of the incidence of induced abortion, it provides useful information that allows countries where abortion is illegal to distinguish between abortions that were probably spontaneous and those that were probably induced. While the unlikely group is expected to contain only women who had had a spontaneous abortion, it may also contain some women who had had an induced abortion but did not show obvious symptoms of trauma and did not say that they did not want the pregnancy or that they had had a contraceptive failure. Conversely, some women who were classified as having had an induced abortion because of contraceptive failure or because they did not want the pregnancy might have had a spontaneous abortion. It is likely that these biases would result in a larger proportion of spontaneous abortions among hospitalized

older women than is shown in Table 1, and a smaller proportion of spontaneous abortions among younger women.

The important differences found between women classified as likely to have had an induced abortion and those classified as having had a spontaneous abortion suggest that the WHO method classifies most women appropriately. The large proportion of the women in the latter group who were childless (39%), or childless and married (33%, not shown), compared with the induced abortion group (19% and 8%, respectively), indicates that this group contains a substantial proportion of women who are highly likely to have wanted the pregnancy and unlikely to have chosen an induced abortion.

In a previous study of abortion in Brazil, Colombia and Peru, we used a different approach to calculate the proportion of all hospitalized abortion cases that are likely to have been spontaneous abortions.⁹

We assumed that the number of spontaneous abortions as a proportion of all live births is relatively constant in most societies. This assumption was based on acceptance of a broad biological basis for spontaneous abortions occurring in the reproductive lives of women. To estimate the number of women hospitalized for the treatment of a spontaneous abortion, we multiplied the number of live births in a given year in three Latin American countries by 2.48%—the proportion of live births believed to result in spontaneous abortion at 16-27 weeks of gestation.* Our assumption is that spontaneous abortion this late in pregnancy would probably require hospitalization.

Since we have previously analyzed two of the countries—Colombia and Peru—included in the FLASOG study, we can compare the findings of these two analyses. The earlier analysis showed that 29% of all hospitalized women in Peru and 30% of those in Colombia were likely to have had a spontaneous abortion. These two estimates are very similar to the corresponding estimates from the current study (31% for Peru and 33% for Colombia).

Some health professionals in the region think that the proportion of hospitalized abortion cases that result from spontaneous abortions is very low (5-10%),¹⁰ although researchers believe the proportion is more likely to be 20-25%.¹¹ This consensus opinion is supported by our study, which found that, at most, 33% of hospitalized women had had a spontaneous abortion, but probably somewhat less had had one, because more women in the unlikely group were probably incorrectly

*All induced abortions lower the absolute levels of spontaneous abortion because some of the pregnancies that would have been lost as a result of natural causes later in the gestation have already been terminated. This relationship affects the underlying relationship of spontaneous abortions to live births. However, most spontaneous abortions occur at an early gestational age: about 75% occur at 4-11 weeks (see J. Bongaarts and R. G. Potter, *Fertility, Biology and Behavior*, Academic Press, New York, 1983, pp. 38-41). Even in Latin American settings, where induced abortions are performed later than in developed countries, slightly less than one-third occur in the second trimester (in this sample, about 20% occurred at 13-16 weeks and 11% occurred at 17 weeks or later). Thus, the impact of induced abortion on the likelihood of spontaneous abortion at later gestations will be less than its effect on spontaneous abortion at earlier gestations. The slight impact of induced abortion on levels of late spontaneous abortion will lower the number of spontaneous abortions, resulting in a conservative estimate of the number of induced abortions. (See C. Hammett, "Estimating the Probability of Spontaneous Abortion in the Presence of Induced Abortion and Vice Versa," *Public Health Reports*, 107:269-277, 1992; and I. Figa-Talamanca and F. Repetto, "Correcting Spontaneous Abortion Rates for the Presence of Induced Abortion," *American Journal of Public Health*, 78:40-42, 1988.)

Table 6. Measures of severity of medical risk among patients classified as having had an induced abortion, by demographic characteristics

Characteristic	N	Mean days hospitalized	Mean weeks gestation	% with sepsis
All women	5,788	1.96	11.1	23.2
Age				
<20	689	2.09	11.3	32.8
20-24	1,404	1.91	11.0	27.5
25-29	1,462	1.94	10.9	24.6
30-34	1,067	2.05	11.2	20.9
35-39	787	1.92	11.2	15.1
40+	372	1.77	10.5	7.8
Education (years)				
0-4	1,323	2.01	11.3	22.7
5-6	1,590	1.97	11.2	24.1
7-9	1,499	1.89	11.1	23.3
10+	1,168	1.96	10.5	20.6
Marital status				
Married	4,352	1.88	11.0	19.8
Unmarried	1,436	2.19	11.1	33.6

Note: Mean values exclude patients with missing data.

classified as a result of inaccurate reporting by the women.

The data from the FLASOG four-country study raise a number of medical questions. Given that large numbers of women are admitted to hospitals for an incomplete induced abortion, it is questionable whether the most efficient form of treatment is being utilized. Vacuum aspiration or manual vacuum aspiration would require fewer hospital resources than does D&C with general anesthesia, the current treatment of choice. Although a majority of women seeking treatment claimed that they had had a spontaneous abortion, almost all were given a D&C.

Even though they are not nationally representative of hospitalized abortion cases, the FLASOG data provide information about differences and similarities among countries that have implications for women and for health care resources. The proportion of hospitalized abortion cases estimated to be induced did not vary greatly among the four countries, but we found some differences in the demographic characteristics and health risks of women with complications, according to country.

Since Colombia represents a more advanced stage of demographic transition than does Bolivia,¹² we expected these women to have a different demographic profile. We found that Colombian women with abortion complications were younger, more likely to be single and of lower parity than were Bolivian women. Colombian women were also more likely than Bolivian women to have used an effective contraceptive method at the time of conception, although differences in the proportion of

women who said they wanted the pregnancy were not significant.

Hospitalized Bolivian women were much less likely to have had sepsis or major complication than were Colombian women, yet they had a lower average gestation and were more likely to have stayed in the hospital longer than one day. One explanation of these differences is that the small number of Bolivian hospitals sampled (five) may be treating women of higher socioeconomic status, while the 15 Colombian hospitals sampled may be providing services to

the general population. The characteristics of hospitalized Colombian women suggest that even in more demographically advanced developing countries, the consequences of induced abortion are likely to be serious as long as the procedure remains illegal.

We also found that younger women have a greater medical risk from abortion complications. We speculate that because younger women are less likely to be married, they are more likely to delay seeking care to conceal an out-of-wedlock pregnancy. Another explanation is that they are less familiar than older women with the health system and, as a result, are less likely to know where to go for treatment. It is probable that younger women are poorer and are more desperate to end the pregnancy; thus, they may resort to inexpensive but risky methods of abortion. Additional research is needed to explore these hypotheses.

The health consequences of abortion appear to be less serious today than they were 10-30 years ago.¹³ Along with the relatively low incidence of serious complications, only about 23% of women classi-

fied as having had an induced abortion had had sepsis. This suggests that most women seek hospital treatment very soon after bleeding starts—before infection or sepsis develops. Induced abortion, and ensuing complications, may be so common now that most women know what to do when complications occur. Another explanation is that women are using antibiotics, which may be purchased over the counter, as a precaution against infection.¹⁴

Comparison with the Demographic and Health Surveys in Bolivia, Colombia and Peru reveals that in terms of their age and union status, women likely to have been hospitalized for an induced abortion are very similar to all women who had had a child in the past five years. Moreover, the distribution of induced abortion patients by family size is similar to that of all women in the general population who have ever been in union, since most of this group have already started their child-bearing. These findings suggest that in Latin America, a representative cross-section of all women of reproductive age, not just the very young, or the unmarried, as is predominantly the case in other parts of the world, are resorting to induced abortion and, when complications arise, are going to hospitals to seek treatment. More recently, some investigators reported that a shift is occurring in the profile of women hospitalized with abortion complications, and probably in that of all women having abortions, from a representative cross-section of women having children, to a higher proportion of unmarried and young women.¹⁵ More research is needed to confirm this trend.

A large proportion of women seeking to terminate pregnancy had been using a contraceptive method at the time of conception. Even in Colombia, where use of modern effective methods is relatively high, a cross-section of women—not just the young or the unmarried—were admitted to the hospital for abortion complications; this finding implies that failure rates are high among all groups of women. These findings suggest that even

Table 7. Among hospitalized patients classified as having had an induced abortion, percentage who had sepsis, by age and education

Education (years)	N	Age						
		All (N=5,576)	<20 (N=666)	20-24 (N=1,366)	25-29 (N=1,400)	30-34 (N=1,029)	35-39 (N=759)	40+ (N=356)
All	5,580	22.8	32.1	27.2	23.9	20.8	14.8	7.3
0-4	1,323	22.7	32.5	30.1	25.7	22.0	19.3	5.7
5-6	1,590	24.1	35.1	26.3	27.8	20.2	17.8	7.6
7-9	1,499	23.3	28.3	27.3	22.5	21.6	11.3	14.0
10+	1,168	20.6	35.5	26.0	19.4	19.1	5.1	6.0

after contraceptive prevalence rates in developing countries rise in response to an increased preference for smaller families, method failure rates or nonuse continue to result in unintended pregnancies that couples are becoming less inclined to accept. Therefore, a proportion of all women, and even of regular contraceptive users, will continue to seek the termination of such pregnancies by abortion.

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Resumen

La aplicación del método de clasificación del aborto de la Organización Mundial de la Salud (OMS) para datos sobre 8.589 mujeres hospitalizadas por complicaciones del aborto en Bolivia, Colombia, Perú y Venezuela revela que un 67% de dichas mujeres pueden haber experimentado sus complicaciones como resultado de un aborto inducido, comparado con el 9% indicado por las mujeres. Según el criterio de la OMS, el 13% de las mujeres en estos cuatro países, con certeza, habían tenido un aborto inducido, el 6% probablemente habían experimentado uno, y el 49% posiblemente habían tenido uno. Las mujeres solteras tienen probabilidades significativamente mayores que las casadas de ser clasificadas como seguras de haber tenido un aborto inducido (24% contra 10%). Comparado con las mujeres que eran propensas de haber tenido un aborto espontáneo, aquellas que eran propensas de haber experimentado un aborto inducido tendían a tener más hijos (16% contra 2% habían tenido cinco nacidos vivos o más) y a ser de mayor edad (39% contra 22% tenían 30 años de edad o más). Entre las mujeres que probablemente hubieran sido hospitalizadas por complicaciones del aborto inducido, el 40% habían estado usando un método anticonceptivo en el momento de la concepción, y un 31% dijeron que habían tenido por lo menos un aborto anterior. Cerca de un 23% de las mujeres que probablemente hayan tenido un aborto inducido tenían una infección séptica, 31% de éstas habían llegado a la 13ª semana de la gestación o más, y cerca de un 50% de ellas permanecieron en el hospital durante dos días o más.

Résumé

L'application de la méthode OMS (Organisation mondiale de la santé) de classification des avortements aux données portant sur 8.589 femmes hospitalisées en raison de complications d'avortement en Bolivie, en Colombie, au Pérou et au Venezuela révèle que 67% de ces femmes peut-être fait l'expérience de ces complications par suite d'un avortement provoqué, bien que 9% seulement aient déclaré avoir subi un avortement. Selon les critères de l'OMS, 13% des femmes de ces quatre pays ont certainement eu un avortement provoqué, 6% en ont probablement eu un, et 49% en ont

éventuellement eu un. Les femmes célibataires sont significativement plus susceptibles que les femmes mariées d'être classifiées comme ayant certainement eu un avortement provoqué (24% par rapport à 10%). Par rapport aux femmes qui étaient susceptibles d'avoir eu un avortement spontané, celles qui étaient susceptibles d'avoir eu un avortement provoqué avaient généralement eu un nombre plus élevé d'enfants (16%, par rapport à 2%, avaient eu au moins cinq naissances vivantes) et étaient plus âgées (39%, par rapport à 22%, étaient âgées de 30 ans ou plus). Parmi les femmes susceptibles d'avoir été hospitalisées en raison de complications attribuables à un avortement provoqué, 40% d'entre elles pratiquaient une méthode contraceptive au moment de la conception et 31% ont déclaré avoir eu au moins un avortement dans le passé. Environ 23% des femmes susceptibles d'avoir eu un avortement provoqué présentaient une septicémie, 31% en étaient à au moins 13 semaines de grossesse et environ la moitié furent hospitalisées pendant au moins deux jours.

Note to Authors

International Family Planning Perspectives is a peer-reviewed quarterly journal publishing research articles about the developing world that are intended to be of assistance to professionals in the fields of fertility and family planning, maternal and child health and population policy. The editors invite researchers, policymakers and program operators from around the world to submit articles on such topics as contraceptive practice and research; population growth; fertility levels, trends and determinants; childspacing; pregnancy termination; public policies and legal issues affecting family planning and childbearing; family planning program operation, development and evaluation; information, education and communication activities; sexually transmitted diseases; and reproductive, maternal and child health. Manuscripts should be sent to the address below, and should include the affiliation, address, telephone number and fax number of the corresponding author.

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