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Post-abortion and induced abortion services in two public hospitals in Colombia☆,☆☆,★

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Abstract

Objective: Until 2006, legal induced abortion was completely banned in Colombia. Few facilities are equipped or willing to offer abortion services; often adolescents experience even greater barriers of access in this context. We examined post abortion care (PAC) and legal induced abortion in two large public hospitals. We tested the association of hospital site, procedure type (manual vacuum aspiration vs. sharp curettage), and age (adolescents vs. women 20 years and over) with service type (PAC or legal induced abortion).
Study design: Retrospective cohort study using 2010 billing data routinely collected for reimbursement (N=1353 procedures). We utilized descriptive statistics, multivariable logistic regression and predicted probabilities.
Results: Adolescents made up 22% of the overall sample (300/1353). Manual vacuum aspiration was used in one-third of cases (vs. sharp curettage). Adolescents had lower odds of documented PAC (vs. induced abortion) compared with women over age 20 (OR=0.42; 95% CI=0.21–0.86). The absolute difference of service type by age, however, is very small, controlling for hospital site and procedure type (.97 probability of PAC for adolescents compared with .99 for women 20 and over). Regardless of age, PAC via sharp curettage is the current standard in these two public hospitals.
Conclusion: Both adolescents and women over 20 are in need of access to legal abortion services utilizing modern technologies in the public sector in Colombia. Documentation of abortion care is an essential first step to determining barriers to access and opportunities for quality improvement and better health outcomes for women.
Implications: Following partial decriminalization of abortion in Colombia, in public hospitals nearly all abortion services are post-abortion care, not induced abortion. Sharp curettage is the dominant treatment for both adolescents and women over 20. Women seek care in the public sector for abortion, and must have access to safe, quality services.

Keywords: Adolescents; Family planning; Reproductive health services

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1. Introduction

Until May 2006, legal induced abortion was completely banned in Colombia, one of only three countries in the world with such bans [1]. After decades of attempts to change the law, abortion was decriminalized for three indications: threat to the pregnant woman's life or health, fetal malformations incompatible with life, or if the pregnancy was the results of rape, incest, or unwanted insemination [2]. A *medical* certificate from a physician noting the applicability of one of these circumstances is required, and if rape is given as the indication, a *legal* certificate from the police is necessary unless the adolescent is under 14, in which case rape is assumed [3]. No gestational age limit is specified in the law, and the signature of a specialist physician is not required [3]. In the months following the law change, the Colombian Ministry of Health and Social Protection endorsed technical norms for the provision of safe abortion [2], and misoprostol was included as an essential medication in the social insurance plan [4].

Unfortunately, a change in legal status does not translate seamlessly into increased access to abortion services for women, especially the most vulnerable populations, such as adolescents, the poor, and women in rural areas [5]. Abortion remains highly stigmatized in Colombia, and the process for obtaining legal abortion is cumbersome [2]. Despite legal reform, the vast majority (an estimated 99%) [6] of the over 400,000 estimated annual induced abortions [7] in Colombia occur outside the narrow legal criteria, under a range of safe and unsafe conditions [6]. Abortions that are self-induced are significantly more likely to be associated with acute and chronic complications [8,9]. A third of women experiencing complications from unsafe abortion access the health system for post abortion care [6]. Making safe abortion services accessible to all women, including adolescents, following legal reform is a health, rights and policy priority [1,9,10].

Improving access to and quality of abortion care in Colombia is limited by scant patient and facility level data on abortion services [6]. While technical norms have been endorsed by the Colombian Ministry of Health and Social Protection the level of their dissemination, uptake, and impact on practice is not known. Few facilities, especially in the public sector, are equipped or willing to offer abortion services. Currently, only 11% of facilities eligible to offer abortion services in Colombia do so [6] and most of these facilities are specialized private reproductive health clinics. Most abortion research relies on indirect estimates or provider and facility reports due to underreporting of abortion by women [7,11]. While indirect estimates can provide invaluable population level data, there is a need to understand what is occurring at the patient and facility levels. Many women, especially the urban poor, seek care at large public hospital facilities. Examining the data documented by public institutions can provide information about the experiences of women who present for care and identify opportunities for improvement. It is important to know about documented abortion services in the public sector in order to improve access and quality of services for women who seek care at these facilities.

The purpose of this study was to describe the proportion of abortion services in public hospitals in Colombia that were documented as post abortion care (PAC) or legal induced abortion. Given the potential long-term impact of unsafe abortion for young women [10], we focused on the experience of adolescents with abortion care in Colombia. We assessed whether age (adolescents compared with women 20 years and over) was associated with service type (PAC or legal induced abortion).

2. Methods

This is a retrospective cross-sectional cohort of women who received documented PAC or induced abortion services in two large public hospitals in Colombia in 2010.

2.1. Setting

We used data from two large public hospitals in Colombia, one on the Caribbean coast (Bolivar region) and one inland (Antioquia region). One hospital is a high volume (~9000 deliveries each year) Maternity Hospital and the other a large General Hospital with a busy maternity unit (~4500 deliveries each year). Both hospitals serve predominately poor patient populations and do procedures on an outpatient basis in hospital-based clinics.

2.2. Data

Colombia has nearly universal health insurance coverage (80% coverage) via a system of insurance subsidies for the poor and over sixty insurance plans [12]. The Registro Individual de Prestación de Servicios de Salud, or RIPS [13], is the government-mandated system to capture and transmit billing data from facilities to insurers for reimbursement. Our two sites extracted all variables from the existing RIPS database into a de-identified dataset for this study. The study was declared exempt from ethical review at the World Health Organization, Oregon Health and Science University, and both Colombian hospitals.

2.3. Variables

Our study outcome is service type, defined as post-abortion care (PAC) or legal induced abortion, as documented in the RIPS system. Our key independent variable is age; we collapsed patient age into less than or greater than 20 years to focus the analysis on adolescents. Secondary variables include procedure type, legal indication, and hospital site. Procedure type was recorded as either dilation and curettage (D&C) with sharp curettage or manual vacuum aspiration (MVA). There was no documented medical abortion in these two hospitals [14]. Legal indications for induced abortions were documented in the RIPS:

endangerment of maternal health or life, fetal anomalies incompatible with life, or the pregnancy resulted from criminal acts reported to the authorities (rape). Finally, we created an indicator variable for the hospital where the procedure took place.

2.4. Analyses

Our a priori analysis plan focused on the relationship of age and service type (PAC vs. legal induced abortion). We used descriptive statistics and multivariable logistic regression to estimate the odds of receiving PAC vs. induced abortion (service type) by age group (<20 or not), controlling for procedure type (D&C vs. MVA) and hospital. We tested for the existence of effect modification of the association of age and service type by hospital. We did this by including an interaction term (adolescent and hospital) and using the likelihood ratio test [15]. In post hoc analyses, we also examined effect modification of procedure type (MVA vs. sharp curettage) and service type by hospital, but were unable to estimate models due to zero cell sizes (no induced abortion procedures done using D&C/sharp curettage at one site). Finally, we used CLARIFY, a set of macros for the Stata software program [16], to calculate the predicted probability of service type by age group and by hospital controlling for procedure type. Predicted probabilities of absolute effect are more intuitive to interpret than estimates of relative effect [17]. CLARIFY first estimates a specified model (our logistic model in this case), generates random draws from the multivariable normal distribution, and stores simulated values of all model parameters [17]. Next, the analyst sets the value of specified variables (e.g., adolescent=1); other variables are held at the mean. Estimated predicted probabilities can therefore be interpreted as the probability (and 95% uncertainty estimate) of the event of interest (e.g. PAC) occurring, given the specified variable values and controlling for covariates. We calculated estimates of error (95% confidence intervals) for all results.

3. Results

3.1. Descriptive results

Our sample includes 1353 procedures identified in 1 year of data (2010) at the two participating hospitals. Fewer cases overall came from the General Hospital (Table 1: 376 of 1353), but a majority of the documented induced abortions occurred there (28 of the 38). Only 10 induced abortions (out of 986 procedures) were documented at the Maternity Hospital during the study period; 17 (out of 376) were documented at the General Hospital. Adolescents made up 22% of the overall sample (Table 1: n=300); 78% of them were seen at the Maternity Hospital, compared with 72% of women older than 20 (p<.05). In bivariate analyses, adolescents and women age 20 and over were similar on other covariates, including service type (PAC vs. induced abortion) (Table 1). Overall, the most common indication for induced abortion was fetal anomaly (17/37 cases). Among adolescents, 8 out of 12 indications were for anomalies while for women 20 and over, rape was the most common indication (12/15). Differences in indication by age are qualitatively different (Table 1) but did not reach statistical significance, likely due to small sample size.

Table 1
Sample characteristics by age, N=1353 cases

	Full sample	Adolescents (10–19)	Over 20 years old
	N=1353	n=300	n=1053
	n (%)	n (%)	n (%)
Hospital			
General hospital	376 (27.1)	67 (22.3)	300 (28.5)*
Maternity hospital	986 (72.9)	233 (77.7)	753 (71.5)
Procedure type			
MVA	451 (33.3)	112 (37.3)	339 (32.2)
D&C with sharp curettage	902 (66.7)	188 (62.7)	714 (67.8)
Service type			
Induced abortion	38 (2.8)	13 (4.3)	25 (2.4)
PAC	1315 (97.2)	287 (95.7)	1028 (97.6)
Indication (induced abortions, n=37; 1 abortion missing indication data)			
Health of the woman	5 (13.2)	1 (7.8)	4 (16.0)
Rape	15 (39.5)	3 (25.1)	12 (48.0)
Fetal anomaly	17 (44.7)	8 (61.5)	9 (36.0)

* p<.05 (chi-square) for difference by age.

3.2. Multivariable analyses

We used a logistic regression model to estimate the odds of receiving PAC (vs. induced abortion) by age. Adolescents had lower odds of PAC compared with women over age 20 (Table 2: OR=0.42; 95% CI=0.21-0.86). MVA is also associated with lower odds of PAC (Table 2: OR=0.34; 95% CI=0.15–0.79). This finding is likely driven by differences in service provision by site: all 10 induced abortion procedures at the Maternity Hospital were done using MVA. The Maternity Hospital had higher odds of PAC, compared with the General Hospital (Table 2: OR=13.84; CI=5.85, 32.75). This finding is consistent with the noted uneven distribution of abortion cases between hospitals.

We then examined the association of hospital and service type. Given the unequal distribution of abortion cases by hospital, we tested whether an interaction between age and

Table 2
Association of age, procedure type, and hospital with service type (PAC or induced abortion), Colombia, two public hospitals, 2010, N=1353

	OR for PAC	(95% CI)
Adolescent (vs. women 20 and over)	0.42	(0.21–0.86)
Procedure type MVA (vs. D&C with sharp curettage)	0.34	(0.15–0.79)
Maternity hospital (vs. general hospital)	13.84	(5.85–32.75)

Note: Logistic regression model for the binary outcome of service type. OR, odds ratio; CI, confidence interval.

Table 3
Multivariable predicted probability of PAC (vs. induced abortion)

		Predicted probability of PAC	(95% CI)
Adolescent		0.971	0.949–0.985
Women 20 and over		0.987	0.979–0.993
Adolescent	General Hospital	0.828	0.722–0.907
Women 20 and over	General Hospital	0.920	0.879–0.951
Adolescent	Maternity hospital	0.985	0.969–0.994
Women 20 and over	Maternity hospital	0.994	0.988–0.997

Note: Multivariable predicted probabilities calculated using CLARIFY. In the first pair of probabilities, hospital and procedure type are held constant and age is varied. In the following rows, procedure type is held constant and age and hospital are varied.

hospital was present, but neither the interaction term of age and hospital nor the likelihood ratio test reached significance (likelihood ratio test chi-square p=.296).

Multivariable predicted probabilities (Table 3) show that the absolute difference in expected service type by age, controlling for covariates, is very small (.97 probability of PAC for adolescents compared with .99 for women 20 and over). At the General Hospital, adolescents do appear to have a lower probability of PAC compared with women 20 and over (.83 compared with .92). At the Maternity Hospital, both adolescents and women over 20 overwhelmingly receive PAC (.99 for both; Table 3). This is consistent with the relative strength of the association of hospital with service type in the logistic model and taken together, results suggest that hospital site, not age, is the stronger determinant of service type.

4. Discussion

Examination of patient level data is critical to understanding the experience of adolescents and women who present for abortion care and identifying opportunities to improve access and quality. Our study leverages routinely collected clinical data, and provides a patient level analysis of abortion care following partial decriminalization of abortion in Colombia. We found a small proportion of abortion services were documented in the electronic billing system as legal induced abortions (3%; 38/1353) — the vast majority were PAC. These findings have significant health and economic consequences: PAC is associated with higher rates of complications for women and higher health system costs [14].

Although our multivariable model suggested that adolescents had lower odds of receiving PAC when compared with women 20 and over, predicted probabilities of absolute effect support the conclusion that hospital site, not age, is the driver of these observed differences in service type (PAC vs. induced abortion). We also found that D&C with sharp curettage is common, performed in about two-thirds of identified cases. The use of sharp curettage where vacuum aspiration and misoprostol are available is in direct conflict with the current World Health Organization safe abortion guidelines [9]. These findings highlight the urgent need for improved service delivery and access to services for both PAC and induced abortion services in public Colombian hospitals.

The low proportion of documented legal induced abortion is consistent with previous work using indirect methods to estimate induced abortion and PAC in Colombia. For example, in 2008 and 2009, just a total of 657 legal induced abortions were reported to the Colombian National Public Health Agency [6]. In terms of the indications for legal abortion, we found a somewhat higher proportion of indications for rape (40% in our sample compared with 27% in previous literature) and a correspondingly lower proportion for fetal anomalies (45% compared with 57%) than previously reported in a sample of women that also included later term procedures [6]. It is important to interpret these differences with caution, however, as the samples may not be comparable.

Previous work that surveyed a large number of providers reported that only one-fifth of cases were treated using MVA [6], while we found a full third of cases (PAC and induced abortion) were. Our two hospital sites may not be fully comparable with these earlier data, which also include women hospitalized and with late term procedures. Alternatively, our two hospitals may not reflect average practice, or may indicate higher quality of care as measured by procedure type. There are likely multiple reasons for the persistence of D&C with sharp curettage, including lack of physician training in vacuum aspiration, scheduling or space limitations, and potentially a perverse incentive through higher costs, and thus higher reimbursement rates, for D&C than for MVA [14,18]. Our data, however, do not allow us to examine these potential mechanisms in this study.

The hospital setting has been found to be more costly place to provide PAC and legal abortion care, compared with an outpatient or clinic setting [18]. Our data show, however, that women do seek care in the public hospital setting — at both a General and a Maternity hospital — and it is therefore imperative that hospitals be prepared to provide quality legal induced abortion and PAC services on both an in-patient and out-patient basis. Given the delivery volume (roughly 13,500 deliveries for both hospitals combined) and estimates of the abortion ratio, or number of abortions per 100 live births in Colombia [5], these two large public hospitals could be expected to provide between roughly 5400 and 8700 legal induced abortions (depending on the multiplier used) if women who deliver at the hospitals followed the average ratio and sought care at the hospital. These rough calculations (of total procedures, not hospitalizations) highlight how few abortion services are provided given the volume of deliveries.

Full legalization of abortion in other countries has resulted in reductions in serious abortion morbidity [19]

and abortion-related maternal mortality [1] and thus significant progress towards the Millennium Development Goal 5, decreasing maternal morbidity and mortality. Marked increase in access to abortion services has been seen in Mexico City following full legalization of first trimester abortion [20]. The full health impact of partial decriminalization of abortion in Colombia is not yet known. Remaining legal restrictions, narrow implementation of the law, and ignorance of the ruling, are ongoing barriers to access legal abortion in Colombia [1,2]. Regional differences in implementation of the law and technical standards may make it difficult to measure changes in safe and unsafe abortion and associated morbidity and mortality. Abortion policy reform must be implemented in the public sector. Public sector hospitals that provide maternity care must provide safe and legal abortion services.

4.1. Limitations

Electronic data collected for routine clinical care or billing purposes are important sources of information for health research. However, our data have not been independently validated against the medical chart, nor are the data from these two large public hospitals necessarily representative of all public hospitals in Colombia. The data abstracted from the chart into the electronic RIPS system are required by the Ministry of Health, and are routinely done for all discharges. The Ministry of Health has engaged in quality improvement efforts to improve the quality of the RIPS database [13]. In addition, we did a site visit to both hospitals and observed data entry by trained coders at one. It is important to examine what is reported to the Ministry, despite potential limitations of the data

Abortion services recorded as PAC may represent women who seek care following self-induction with misoprostol, or a reluctance to document an induced abortion. Our data do not allow us to untangle this, only to report what is documented. The low absolute number of documented induced abortion cases limits our ability to fully analyze important aspects of abortion in the public hospital setting. Our results must be interpreted with the small number of abortion cases in mind. However, the small absolute number of documented cases is also an important finding. Finally, we are missing information on factors that could vary by age and possibly influence procedure type: gestational age and parity. Lack of gestational age and parity information is a common limitation of billing or other administrative data in reproductive health research, but limits comparability with previous data.

In conclusion, we found that patient-level data from public facilities generally supports indirect estimates of service type in Colombia: PAC is the overwhelming service provided in these two public hospitals (vs. legal induced abortion). Both adolescents and women over 20 are in need of access to legal abortion services in the public sector in Colombia. Abortion law must be fully implemented in public facilities. Strategies include disseminating information on the legal status of abortion to clinicians and to women and training physicians and other providers of health care. As increased knowledge of the right to, and availability of, safe abortion services in Colombia becomes widespread, a shift from PAC to induced abortion is expected. The health system must be ready to meet this need with high quality services that are available, accessible and acceptable to all individuals.

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