How often and under which circumstances do Mexican pharmacy vendors recommend misoprostol?

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ABSTRACT

Background

In Mexican pharmacies recommendation of abortifacient drugs is frequent. We want to understand how often and when misoprostol is recommended as an abortifacient at pharmacies in eight Mexican cities.

Methodology

We randomly selected 192 pharmacies and sent three types of mystery clients to each of them, conducting a total of 576 client-vendor interactions. The clients asked for a drug to interrupt a pregnancy. If the vendor did not mention Cytotec (commercial name of misoprostol) spontaneously, the client asked directly about Cytotec. We conducted a multivariate analysis to assess the association between characteristics of the pharmacy and mystery clients with the requirement of a prescription to sell the drug and availability of Cytotec by individual pill in the pharmacy.

Results

In 23% of the client-vendor interactions the vendor spontaneously recommended a drug to interrupt a pregnancy. In 417 (72%) of the client-vendor interactions the vendors provided some information about Cytotec. In 17% (n=99) of the client-vendor interactions the vendors spontaneously recommended Cytotec, while in 55% (n=318) interactions the vendor reported he/she knew about the drug after the client asked directly for Cytotec. However, the vendor recommended an effective dose in only 16% (n=66) of the client-

vendor interactions in which Cytotec was mentioned. Pharmacies located in Mexico City have 65% less probability of asking for a prescription to sell Cytotec (OR 0.35, 95% CI 0.16-0.80) compared with other cities. Independent pharmacies have more probability of selling Cytotec by pill than chain pharmacies (OR 3.17, 95% CI 1.46-6.90); as well as pharmacies from low SES compared with those located in medium SES (OR 2.81, 95% CI 1.26-6.26).

Conclusions

There is extensive knowledge about and recommendation of misoprostol as an abortifacient but infrequent recommendation of effective doses to induce an abortion.

INTRODUCTION

Misoprostol is a prostaglandin analogue originally licensed for the treatment of gastric ulcers but it is also important for the treatment of gynecology and obstetric conditions because it stimulates uterine activity. The drug is used for labor induction, prevention and treatment of postpartum hemorrhage, missed abortion, induced abortion and incomplete abortion [1]. Specifically regarding its use for induced abortion, misoprostol is part of the medical abortion regimen recommended by the World Health Organization (WHO) that consists of the administration of mifepristone followed by misoprostol [2]. In countries where mifepristone is not available, misoprostol can be used alone to induce abortions with an effectiveness of 84 to 96% [3]. Doses of misoprostol alone recommended by WHO are 800 mcg vaginally repeated every 24 hours up to three doses [2].

There is evidence that information about misoprostol's abortifacient properties has spread from trained health providers to informal health providers and the general population.. A survey conducted among women admitted to hospitals in Fortaleza, Brazil, found that of the 48% who reported attempting to terminate a pregnancy, 66% said they had self-administered misoprostol to induce an abortion [4]. In an urban low-income neighborhood in Mexico City, 12% of the women reported they were aware of misoprotol, and 88% of them considered the pharmacy as the appropriate place to obtain the drug [5].

Misoprostol has been sold in Mexican pharmacies since 1985 under the commercial name Cytotec, with variations in prices and prescription requirement to purchase it [6]. Due to the sensitiveness of the topic and the legal implications of self-inducing abortions in

some countries, it is difficult to investigate the knowledge that pharmacy vendors have about the abortifacient properties of misoprostol as well as the information they provide to clients who ask for the drug. Some studies have reported that pharmacy vendors are aware of its abortifacient properties but have limited knowledge about effective doses to cause abortion and provide insufficient counseling and follow up instructions [7,8]. A study carried out in Mexico City reported that pharmacy vendors recommended misoprostol in 39% of the scenarios in which a mock client asked for a drug to bring down the period, but only in 17% of the total mystery client-pharmacy worker interactions did pharmacy workers actually provide correct information about an effective dosage [7]. A study conducted in the Dominican Republic found that mystery clients purchased misoprostol without a prescription in nearly 64% of pharmacies and that in 80% of the encounters the vendors did not advise the client to seek medical care for heavy bleeding, and that only in 10% of the encounters did they mention any risk of side effects [8].

In this study, using the mystery client methodology, we aim to learn more about the recommendation of Cytotec at pharmacies in eight Mexican cities, including Mexico City where a breakthrough change in the abortion law (April 24, 2007) now permits women to obtain elective abortions through the first 12 weeks of gestation [9]. This study was carried out six months after the law change in Mexico City. The other seven cities included in the study are located in states that still have restrictive abortion laws; and therefore, we do not reveal the names of the other cities.

METHODOLOGY

Selection of pharmacies

We used a database of pharmacies from a governmental department that contains information about businesses and services at the national level. The database has information from 2,994 pharmacies – 77% independent and 22% chain pharmacies. Chain pharmacies are member of a branded pharmacy with a central distributor, and have a high number of staff. In contrast, independent pharmacies have few staff, and is frequent that the owners or owners' relatives act as vendors. The cities included in the study were selected to represent the different socioeconomic levels and geographical regions in the country using the definition of major regions developed by the National Population Council (Consejo Nacional de Poblacion) [10]. The four regions are: Mexico City (the most developed region), North (more developed), Central (less developed) and South/East (least developed). We selected a simple random sample of 24 pharmacies in each of the eight cities. In each city the sample was stratified to include 12 independent pharmacies and 12 chain pharmacies. In each of these groups, we selected half of the pharmacies from low and very low socioeconomic status (SES) areas and half of them in middle SES areas. Thirty-nine pharmacies were substituted by a similar pharmacy during fieldwork because the contact information of the pharmacy was incorrect or the pharmacy was no longer located there.

Methodology

The mystery or simulated client methodology has been widely used in pharmacy-based studies though it can be applied to any client-provider interaction [11]. The methodology has advantages over interviews because reduces observation bias [12]. This methodology uses fieldworkers who are trained to pose as clients with a particular scenario and to follow a client-provider interaction. Providers are not aware that these clients are

involved in research. Simulated clients later report on the interaction and these data are analyzed.

We sent three types of clients to each of the pharmacies selected: a young woman (18 to 25 year old), an adult woman (26 and 35 years old), and a man. The clients acted out the following scenario: *"I have a delay of two weeks in my menstrual period. My last period was six weeks ago. I had a positive pregnancy test. Could you tell me what drug I could take to interrupt the pregnancy?"* If the vendor did not mention Cytotec (commercial name of misoprostol) spontaneously, the client would ask directly about Cytotec, telling the pharmacy vendor that a friend recommended the drug and asking if he /she knew if it was available in the pharmacy and if it worked. In the case of the man he modified the wording of the scenario to say that it was his girlfriend who was pregnant and he was requesting the drug for her. We trained four women and two men in each city to act out the scenarios. From September to December 2007, each of the three types of clients visited each of the 24 pharmacies in the eight cities for a total of 576 scenarios.

We decided that clients will approach the pharmacy vendors asking directly for a drug to interrupt a pregnancy instead of asking for a drug to induce or regulate menstruation since some recent qualitative research [5] suggest that women more often mentioned Cytotec when they were asked about drugs to interrupt a pregnancy than when they were asked about drugs to induce menstruation, and the same might apply to the population of pharmacy vendors. Additionally, we decided to use interruption of a pregnancy ("interrumpir un embarazo") because in Mexican culture the word abortion is stigmatized, and women and provider prefer to use the word "interrumpir un embarazo" to refer to an induced abortion.

In all scenarios, the mystery client approached the first pharmacy staff member available and described his/her situation. If the pharmacy worker did not offer spontaneous information regarding misoprostol dosage, route of administration, effectiveness, possible side effects, complications or where to go in case of complications, the mystery clients were instructed to request this information. Mystery clients were trained to provide standardized responses to potential pharmacy staff questions. To conclude the interaction, mystery clients told the pharmacy staff that they did not have enough money on hand to buy the drug, but would return later to make the purchase. Each mystery client was accompanied by another person of the same sex who was trained to pose as a friend. The job of this "buddy" was to quietly observe the pharmacy worker-mystery client interaction, but not interact directly with anyone. After each visit, both mystery client and the accompanying "buddy" filled out a specially designed data collection form with the information provided in the mystery client-vendor interaction, and also their opinion about the probably age and position of the vendor. This study was approved by the Internal Review Board (IRB) of the Population Council.

Analysis

We used SPSS version 14.0 for the data analysis. We conducted chi-square and Student's t-tests to evaluate differences in the proportions and means. We conducted chi-square tests to evaluate differences among characteristics of the vendor by type of mystery client. We performed a bivariate analysis looking at factors associated with spontaneous recommendation of Cytotec and provision of information after the client requested Cytotec. We did a bivariate and multivariate analysis looking at the associations between the characteristics of the pharmacy, type of client and sex of the vendor and two dependent

variables that are related with access to misoprostol to induced an abortion: requirement of a prescription to sell Cytotec and availability of the drug by individual pill in the pharmacy. Associations were considered statistically significant at the alpha <.05. Availability of Cytotec by individual pill in pharmacies is an indicator of the spread of the information about the abortifacient properties of the drug, and the availability of the drug to induce an abortion. We hypothesized that pharmacies that sell the drug by individual pill are selling them as abortifacients and not for prevention of gastric ulcers. Additionally, the sells by individual pill increase the availability of the drug to induce abortions since each bottle provides three to four effective doses to cause an abortion.

RESULTS

Characteristics of pharmacy staff

Sixty-one percent of the pharmacy staff were women. According to the information provided by the mystery clients, 50% of the pharmacy staff were between 20 and 30 years old, 32% between 31 and 40, 13% more than 40, and 4% less than 20 years old. In the opinion of the clients, 72% of the staff were vendors, 16% managers, and 11% pharmacy owners. We controlled for the distribution of scenarios by type of pharmacy (chain or independent) and SES, by sending each of the three types of mystery clients to each pharmacy. But we did not control the distribution of scenarios by characteristics of the vendor, since the client approached the first staff that was available. We found statistically significant differences by age and position of the vendor (Table 1). More mystery clients acting as the young woman were attended by vendors older than 40 (18%), in comparison to adult women (10%) and men (13%) clients ($p<.05$). A lower proportion of male clients

were attended by managers (6%), compared with young women (23%) and adult women (18%) clients ($p<.001$). We decided to not include these variables (age and position of vendor) in the bivariate and multivariate analysis in order to avoid confounding.

Recommendation of abortifacient drugs

Twenty-three percent of the pharmacy vendors spontaneously recommended a drug to interrupt a pregnancy (Table 2). Reasons for not recommending a drug mentioned by the vendors were: lack of knowledge (33%); not selling abortifacient drugs (28%); they recommended that the client see an Ob/Gyn or specialists (17%); said they do not see patients (11%); they recommended that the client to go to a public hospital to get the abortion (5%); they mentioned that abortion is legal (4%); they mentioned that it is prohibited to sell abortifacient (0.9%); and they said they were busy or acted as they were busy and did not interact with the client (0.7%).

Half of the vendors (53.8%) who spontaneously recommended a drug, suggested a combination of drugs to interrupt a pregnancy, some of them with abortifacient properties and others without such properties (see table 2). When the client asked the vendor which drug is most important, the one that would be most effective to induce an abortion, 81% of the vendors, recommended a product containing misoprostol or metotrexate and 19% of the vendors mentioned drugs that were not effective for inducing abortion. Cytotec was recommended as the best drug to take by 73% of the vendors, followed by emergency contraception (11%), products containing a combination of misoprostol and diclofenac (8%), hormonal injections (6%), syntoncynon which is a product that contains oxytocin (0.8%), and a natural product not specified by the vendor (0.8%).

Recommendation of Cytotec

In 75% (n=99) of the client-vendor interactions in which the vendors spontaneously recommended a drug, Cytotec was mentioned. Overall, Cytotec was spontaneously recommended in 17% of the 576 mystery client encounters. In 76% (n=318) of the cases in which the vendor did not spontaneously mention the drug, the vendor reported he/she knew about the drug after the client asked directly for Cytotec. Overall, in 417 (72%) of the client-vendor interactions the vendor provided some information about Cytotec.

Spontaneous recommendation of Cytotec was higher when the client was a young woman (80%), than when the client was an adult woman (75%) or a man (71%), but differences were not statistically significant (Table 3). Spontaneous recommendation of Cytotec was significantly higher ($p<.01$) in pharmacies located in low SES areas (88%) compared with those located in middle SES areas (64%). We did not find significant differences in recommendation of Cytotec by type of pharmacy (chain or independent) or region. More male vendors (77%) spontaneously recommended Cytotec than female vendors (73%), but the difference was not significant.

In the interactions where the client asked directly for the drug, provision of information about Cytotec was significantly higher ($p<.01$) among vendors from chain pharmacies (79%) than vendors from independent pharmacies (68%). Provision of information was most frequent in cities in the Central region (92%) compared with cities located in the North (65%), South/East (69%) and Mexico City (63%), and this difference was statistically significant ($p<.001$). Also, provision of information was higher in pharmacies located in medium SES areas compared with those in low SES areas and this

difference was almost statistically significant (p=0.058). We did not find significant difference in Cytotec knowledge by type of client and vendor gender.

Dosage, side effects and complications related with Cytotec

In the majority of the vendor-client interactions, vendors did not provide complete information about dosage, side effects, complications and other information related to Cytotec. Some of the vendors gave information about dose, but not about the number of doses per day or number of days of treatment (Table 4). Ninety vendors (22%) gave information about dosage, and number of doses per day; and 21% gave information about the number of days of treatment.

A total of 72 vendors (17.6%) gave complete information about how to take Cytotec (dose, number of doses per day, and number of days of treatment). Overall 16% of the vendors (n=66) who provided information about Cytotec (spontaneously or after request) recommended an effective dose of Cytotec (600 mcg) and only 3% (n=13) of the vendors who provided information about Cytotec recommended an effective dose in a safe period of time of one to three days. More than one third of the vendors did not give information about route of administration. The route of administration mentioned with the greatest frequency was oral (49%) followed by vaginal (15%).

The majority of the vendors provided some information about side effects. The side effects more frequently mentioned were bleeding (36%), cramps (26%), and nausea (11%). More than half of the vendors gave information about one or more potential complications from the use of misoprostol. Forty percent mentioned hemorrhage, 8% fetal malformations, and 3% that the implantation of the fetus would become even stronger ("se va a pegar más

fuerte"). Fifty-two percent of the vendors mentioned spontaneously, or when the client asked, at least one place to go in case of complications. Thirty-six percent mentioned the emergency room, 13% a clinic and 3% gave information about a specific clinic or doctor.

In 66% of the pharmacies Cytotec was available, and in 12% of the pharmacies the vendor did not give information to the client about its availability. Cytotec was sold by bottle in the majority of the pharmacies where it was available and in 9% of them was sold by pill. A prescription was required in 36% of the client-vendor interactions.

Requirement of prescription and sale by individual pill

We conducted a bivariate and multivariate analysis to assess the association between characteristics of the pharmacy, client and vendor with the requirement of a prescription to sell the drug and availability of Cytotec by pill in the pharmacy, since these variables can influence access to Cytotec (Table 5). In bivariate analysis we found that the requirement of a prescription was similar in chain (53%) and independent pharmacies (47%), and slightly higher in pharmacies located in areas of middle SES (55%), compared with those located in low SES areas (45%), but differences were not statistically significant. Requirement of a drug prescription was lower when the client was an adult woman (27%) compared with a young woman (34%) and male clients (39%), but differences were not significant. Female vendors (58%) asked more frequently for a prescription than male vendors (42%), but this difference was not statistically significant. Requirement of a prescription was statistically significantly lower ($p<0.001$) in Mexico City (7%) compared with cities from the South/East (42%), Central (35%), and North (17%) regions. The multivariate model shows the same pattern of relationships as the bivariate analysis. In the

logistic regression model, after controlling for type of client, type of pharmacy, SES and sex of the vendor, we found a statistically significant association between the region where the city is located and requirement of a prescription. Pharmacies located in Mexico City have 65% less probability of asking for a prescription to sell Cytotec (OR 0.35, 95% CI 0.16-0.80) compared with cities located in other regions.

In the bivariate analysis, the sale of Cytotec by individual pill was significantly different ($p<.01$) by pharmacy characteristics. Independent pharmacies (63%) sold the product more often by unit than chain pharmacies (37%); pharmacies located in low SES areas sold Cytotec more often by individual pill (68%) than pharmacies located in middle SES areas (32%); and pharmacies located in the South/East region sold Cytotec more frequently by individual pill (47%) followed by Mexico City pharmacies (29%), the North (16%) and Central (8%) regions. The logistic regression model supports the findings of the bivariate analysis. Independent pharmacies have two times more probability of selling the drug by pill than chain pharmacies (OR 3.17, 95% CI 1.46-6.90). Also, pharmacies from low SES have nearly two times more probability of selling the drug by pill than pharmacies from medium SES (OR 2.81, 95% CI 1.26-6.26). Pharmacies located in the North area have 91% lower probability of selling Cytotec by pill than pharmacies from the Central region (OR 0.09, 95% CI 0.02-0.37).

DISCUSSION

We found widespread knowledge and recommendation of Cytotec among pharmacy staff. Cytotec was the drug most frequently spontaneously mentioned when mystery clients requested a drug to interrupt a pregnancy. Previous studies conducted in Mexico reported

lower spontaneous recommendation of Cytotec. One study in Mexico City reported spontaneous recommendation by 39% of the vendors [7] and another conducted in a Mexican state reported spontaneous recommendation by 19% of the vendors [13]. Higher spontaneous recommendation of this particular drug might be due in part to a real increase in the awareness of the abortifacient properties of Cytotec, but also could be a result of the way our clients approached the pharmacy vendors asking directly for a drug to interrupt a pregnancy instead of asking for a drug to induce or regulate menstruation. This approach it might be linked with a low spontaneous recommendations of drugs in our study (23%) compared with other studies conducted before in which more than half of the vendors spontaneously recommended a drug [13, 7].

In contrast with other studies in Mexico [7,13,14] in which the drugs most frequently recomended as abortificatients were hormonal injectables, in our study a low proportion of vendors mentioned these drugs. The second most recommended drug in our study was emergency contraception, which was recommended even when our mystery clients were emphatic in saying that they already had a positive pregnancy test. Confusion about emergency contraception and medical abortion has been anecdotally reported and shown in research studies in Mexico [15] and this confirms the lack of training in reproductive health issues among pharmacy staff.

Another reflection of lack of training is the infrequent provision of any dosage information about Cytotec as well as the very uncommon recommendation of effective doses of Cytotec to cause abortion, which is consistent with findings reported in other studies among this population [7,13]. Another explanation for this result is the fear of the legal implications of recommending abortifacients in a country where abortion is legally

restricted outside the capital. This last point might help explain our finding that half of the vendors advised women where to go in case of complications, and the most frequent place mentioned was the emergency room. Recommending Cytotec without providing dosage information but advising women where to go in case of complications probably is the safest way for pharmacy vendors to help women who want to have an abortion.

Since we are not certain about the process that women follow when they ask for abortifacient drugs in the pharmacies, we hypothesized that two potential situations can happen—which we aimed to model with the mystery client scenarios: 1) that the client asks in general for some drug to interrupt a pregnancy and waits for the spontaneous recommendation of the vendor or 2) that the client asks specifically for Cytotec. Some studies indicate that the second hypothesis is more plausible, since women reported that their primary source of information about Cytotec is friends and relatives and not pharmacy vendors [5]. One of the strengths of our study is that it presents information in both potential situations by pharmacy characteristics. We found that spontaneous recommendation of Cytotec is more frequent in independent pharmacies, in those located in low SES areas and in Mexico City while the pattern of giving information after a client requests Cytotec is more common in chain pharmacies, medium SES areas, and cities located in the Central region. It is likely that in larger and more liberal cities it is less dangerous for vendors to give spontaneous information about Cytotec since it is easier to be anonymous. On the contrary, in smaller and more conservative cities it is more challenging to be anonymous and that is a possible reason why they choose to give information only if the client asked directly about Cytotec. In addition, recommending the drug after a client specifically request it might be higher in chain pharmacies than in independent ones since

probably there is more staff supervision and more potential negative consequences of recommending abortifacient products to clients in this type of pharmacies.

Cytotec is available in the majority of the pharmacies that the mystery clients visited, and in the majority of them off the label. Mexico city is the region with the minimal requirement of a prescription to buy the drug. Comparing our results with others reported before [7,13], the requirement of a prescription to sell the drug has increased in recent years and that might be related to the changes in abortion laws in Mexico as well as to the spread of information about the abortifacient properties of Cytotec through different information channels. Further, the sale of Cytotec by individual pill in our study is common and occurs more often than what has been reported in previous studies [7,13]. The higher sales of Cytotec on a per pill basis in independent pharmacies compared with chain pharmacies could be associated with less compliance of pharmacy regulatory procedures. There is anecdotally information that usually independent pharmacies in Mexico sell products at higher prices, have less trained staff and less government supervision than chain pharmacies, but there are not studies conducted in Mexico reporting on this. Nevertheless, researchers have reported that pharmacies with two to four staff offer low quality drug recommendation to mystery clients [16].

Also, the higher sales of Cytotec on a per pill basis in pharmacies located in poor areas could be associated with scarce regulation and supervision by government authorities, as well as poor access to abortion and widespread information about the abortificacient properties of misoprostol in these areas. Some studies have reported that retail pharmacies located in low-income neighborhoods and in distant areas provide low quality drug recommendations, have poor dispensing practices, and sell products at higher prices

[17,18]. Also, sales per pill are very common in Mexico City and in other cities in the South/East region, which can be related to more widespread information about Cytotec in these areas combined with an increasing black market for the drug.

It is noteworthy that in our study drugs containing misoprostol in combination with diclofenac was the third most recommended drug by the vendors. This is the first study that reports vendor's recommendation of these drugs. This is an important finding since these drugs can be effective as abortifacients and are considerably less expensive than Cytotec. There are several brands on the market such as Artrotec, Artrenac and Artrene, with variations in the number of pills by box (10 to 30 pills), and the amount of misoprostol by pill (50 to 200 mcg) as well as the amount of diclofenac by pill (50 to 150 mg). Due to the variations in the presentations and names of these drugs, it was difficult for the mystery clients to obtain accurate information as well as to remember the information provided by the vendor about dosage. Further investigation is needed in order to better understand the recommendation of these drugs as abortifacients by pharmacy vendors.

This study also has limitations. The major limitation of the mystery client methodology is that the mystery clients may not have been able to obtain sufficient in-depth information about misoprostol because they could only go so far as to inquire about the drug and could not purchase it. Also, because the mystery client spoke with the first pharmacy vendor they encountered in each pharmacy, it is possible that that vendor's views differed from others on staff. Finally, there may have been recall bias on the part of the mystery client.

This study highlights the need for more training and education on abortion and other reproductive health topics among pharmacy vendors in Mexico. Other studies have revealed the lack of knowledge among pharmacy vendors in Mexico about the recommendation of drugs for other reproductive health indications such as sexually transmitted infections [19] and contraception as well [20]. However little information exists on whether pharmacy vendors and pharmacist associations would be willing and interested in receiving comprehensive training about abortion and related topics. Studies and interventions looking at improving the knowledge and sensitivity of this population about reproductive health issues is an important step in helping increase women's access to abortion information and services in countries with restrictive abortion laws. This is especially true in countries with restrictive abortion laws and significant access barriers to safe abortion yet where misoprostol is available over the counter. Collaborative projects with the participation of the Minister of Health, physicians, pharmacy schools and associations have proven successful in the training of pharmacy vendors and provision of specific reproductive health information and medications to clients through pharmacy staff in other countries [21] and such projects could be replicated in Mexico. However, because abortion is legally restricted outside Mexico City, pharmacy training and information about Cytotec must be carried out with caution to avoid any backlash by conservative decision makers and potential withdrawl of the drug from the market as occurred in Brazil in the 1990s [22]. Regardless, in the light of the liberalization of abortion law in Mexico City, the launch of elective abortion services in public hospitals since May 2007, and the high demand of these services by Mexican women (even in legally restrictive states), it is necessary to improve pharmacy vendors' training in on the correct dosing of misoprostol for induced abortion.

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TABLES

Table 1. Characteristics of the vendors by type of mystery client (n=576 mystery client-vendor encounters)

Characteristics of the vendor	Type of mystery client		
	Young woman n (%)	Adult woman n (%)	Man n (%)
Sex of the vendor			
Female	119(62.0)	113 (58.9)	123 (64.1)
Male	73 (38.0)	79 (41.1)	69 (35.9)
Age of the vendor*			
Less than 20	8 (4.2)	5 (2.6)	9 (4.7)
21 - 30	100 (52.1)	109 (56.8)	80 (41.7)
31-40	50 (26.0)	59 (30.7)	77 (40.1)
More than 40	34 (17.7)	19 (9.9)	26 (13.5)
Position **			
Vendor	125 (66.5)	134 (70.2)	155 (81.2)
Manager	44 (23.4)	35 (18.3)	12 (6.3)
Owner	19 (10.1)	22 (11.5)	24 (12.6)

*$p<0.05$, **$p<0.001$

Table 2. Recommendation of abortifacient drugs (n=576 mystery client-vendor encounters)

Spontaneously recommended a drug		n (%)
Yes		132 (22.9)
No		444 (77.1)
Recommended a drug with abortifacient properties		
Yes		107 (81.0)
No		25 (19.0)
Drugs spontaneously recommended	Drug recommended[a]	The preferred-drug
Cytotec	99 (75.0)	97 (73.5)
Combination of misoprostol with diclofenac[b]	20(15.2)	10 (7.6)
Ledertrexate® (metotrexate)	4(3.0)	--
Hormonal injectables[c]	22 (16.7)	8(6.1)
Syntocinon	6(4.5)	1 (0.8)
Emergency contraception	23(17.4)	15(11.4)
Other	2(1.8)[d]	1(0.8)[e]

[a] Some of the vendors recommended more than one drug in the client-vendor interaction: 176 drugs were recommended by 132 pharmacy vendors.

[b] Artrene®, Artrotec®, Artrenac® are drugs that contain misoprostol and diclofenac

[c] Hormonal injectables include Metrigen Fuerte (a combination of estradiol benzoate plus progesterone), and Benzoginestril (estradiol benzoate only).

[d] Includes a contraceptive method not specified and a natural product not specified.

[e] Includes a natural product not specified.

Table 3. Recommendation of Cytotec, spontaneously (n=99) and after client's request (n=318)

	Spontaneous recommendation		After client's request	
	n	Percent	n	Percent
Type of client				
Young woman	28	80.0	121	79.1
Adult woman	36	75.0	98	70.0
Man	35	71.4	99	71.2
Type of pharmacy				
Independent	52	77.6	140	67.6*
Chain	47	73.2	178	79.1
Socioeconomic level				
Low	53	88.3*	155	70.1
Medium	46	63.9	163	77.3
Region				
North	27	75.0	68	64.8**
Central	9	64.3	112	91.8
South/East	48	75.0	104	68.9
Mexico City	15	83.3	34	63.0
Sex of the vendor				
Female	58	73.4	197	72.4
Male	41	77.4	121	75.6

* $p<0.01$

**$p<0.001$

Table 4. Dose and relevant information about Cytotec provided spontaneously or after request by pharmacy vendors (n=417)

	n	Percent
Dosage recommended		
Effective (3 or more pills per day)	66	15.8
Not effective (1 to 2 pills per day)	24	5.8
No information provided	327	78.4
Number of days that the pills has to be taken		
1-3 days	19	4.6
4 to 28 days	41	9.8
Until you finish the bottle	26	6.2
Until the period comes	1	0.2
No information provided	330	79.1
Recommended an effective and safe dose		
Yes	13	3.1
No	59	14.1
No information provided	345	82.7
Route of administration		
Oral	205	49.2
Vaginal	62	14.9
Bucal	1	0.2
No information provided	149	35.7
Side effects of the drug		
Diarrhea	10	2.4
Cramps	107	25.7
Nausea	45	10.8
Vomiting	30	7.2
Bleeding	152	36.5
No information provided	73	17.5
Complications		
Hemorrhage	168	40.3
Fetal malformations	34	8.2
The implantation would be stronger[a]	13	3.1
Other[b]	23	5.5
No information provided	179	42.9
Where to go in case of complications		
Emergency room	150	36.0
Clinic	55	13.2
Clinic or doctor with contact information	13	3.1
No information provided	199	47.7
The drug is available in the pharmacy		
Yes	275	65.9
No	90	21.6
No information provided	52	12.5
The drug is sold by unit in the pharmacy		
Yes	38	9.1
No	193	46.3

No information provided	186	44.6
Prescription required to buy it		
Yes	150	36.0
No	236	56.6
No information provided	31	7.4
Cost of Cytotec		
Bottle	216	140.0 (29.1)[c]
Pill	28	6.2 (2.3)[c]

[a]"se va a pegar mas fuerte"
[b] Other complications mentioned were infection, problems in the uterus, infertility and death.
[c] mean and standard deviation. Original information was collected in pesos. Exchange rate was 10.5 pesos per 1.00 USD as of March 28, 2008. In forty-one percent of the cases (n=173) there was no information about the cost of Cytotec.

Table 5. Bivariate and multivariate analysis of characteristics associated with the requirement of a prescription to sell the drug (n=386) and sale of Cytotec on a per pill basis (n=231).

	Required a prescription to sell the drug[a]		Cytotec sold by unit[a]	
	n (%)	OR[b] (95% CI)	n (%)	OR[a] (95% CI)
Type of client				
Young woman (R)	51 (34.0)	1.00	11 (28.9)	1.00
Adult woman	41 (27.3)	0.67 (0.40-1.14)	12 (31.6)	1.53 (0.58-4.04)
Man	58 (38.7)	1.16 (0.69-1.92)	15 (39.5)	1.58 (0.62-4.03)
Type of pharmacy				
Chain (R)	79 (52.7)	1.00	14 (36.8)	1.00
Independent	71 (47.3)	1.04 (0.67-1.59)	24 (63.2)*	**3.17 (1.46-6.90)**
Socio-economic level				
Medium (R)	83 (55.3)	1.00	12 (31.6)	1.00
Low	67 (44.7)	0.75 (0.49-1.15)	26 (68.4)*	**2.81 (1.26-6.26)**
Region of the city				
Central (R)	52 (34.6)**	1.00	3 (7.9)*	1.00
North	25 (16.6)	1.62 (0.90-2.91)	6 (15.8)	**0.09 (0.02-0.37)**
South/East	63 (42.0)	0.89 (0.51-154)	18 (47.4)	0.43 (0.16-1.13)
Mexico City	10 (6.7)	**0.35 (0.16-0.80)**	11 (28.9)	0.92 (0.31-2.74)
Sex of the vendor				
Male	63 (42.0)	1.00	16 (42.1)	1.00
Female	87 (58.0)	1.20 (0.77-1.86)	22 (57.9)	1.15 (0.53-2.52)

Note: OR= Odds Ratio; CI = confidence interval; (R) = reference group

[a] 150 pharmacies required a prescription to sell a drug; 38 pharmacies sold Cytotec per unit.

[b] Each variable was adjusted by the all independent variables included in the table.

* $p < 0.01$, ** $p < 0.001$