

Emergency Contraceptive Pills: Dispensing Practices, Knowledge and Attitudes of South Dakota Pharmacists

CONTEXT: *Despite a decision by the Food and Drug Administration to deny over-the-counter status to emergency contraceptive pills, pharmacists play a critical role in a woman's access to this medication, especially in areas with large rural populations. Pharmacists' knowledge about and attitudes toward emergency contraceptive pills may affect whether pharmacies carry the medication and whether individual pharmacists dispense it.*

METHODS: *In October 2003, all registered pharmacists living and working in South Dakota were mailed a survey to assess their dispensing practices for, knowledge about and attitudes toward emergency contraceptive pills. Data for 501 respondents were analyzed through chi-square testing and multivariate logistic regression.*

RESULTS: *Fifty-four percent of respondents worked in pharmacies that carried emergency contraceptive pills. Of these, 67% had dispensed the medication in 2003, and 24% were not comfortable providing customer counseling about the method. Thirty-seven percent of all pharmacists did not understand its mechanism of action; 43% and 21%, respectively, incorrectly answered questions about the medication's link to birth defects and health risks. Only 5% correctly answered all three questions. Eighty-four percent of surveyed pharmacists believed that the medication should not be made available over the counter. Multivariate analysis showed that knowledge of emergency contraception and support for over-the-counter status were relatively low among pharmacists working in small communities.*

CONCLUSIONS: *The education of pharmacists about emergency contraceptive pills must be strengthened to ensure that women receive accurate medical information and access to all contraceptive services.*

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Emergency contraceptive pills are most effective within the first 24 hours after unprotected intercourse.¹ Women who must wait for clinic or physician appointments to gain access to the medication could face significant delays in treatment, which in turn would compromise the efficacy of the medication. For this reason, pharmacies have been identified as important access points for emergency contraceptive pills. Because they are open on weekends and for more hours than are typical clinics and physicians' offices,² pharmacies are uniquely available to the public. Additionally, with appropriate training, pharmacists are qualified to provide education about and access to contraceptive options, including emergency contraception.

In response to the need for immediate access to emergency contraceptive pills, several legislative and regulatory proposals and actions have aimed at increasing pharmacists' role in dispensing them. In December 2003, a Food and Drug Administration (FDA) advisory committee reviewed a petition from Women's Capital Corporation and numerous contraceptive advocates requesting that Plan B, a dedicated emergency contraceptive pill, be approved for over-the-counter status. Although the committee endorsed over-the-counter sale of emergency contraceptive pills with a vote of 23–4,³ the FDA ruled in May 2004 that they would not be available over the counter in the United States.⁴

State laws, as well as FDA rules, determine the role of

pharmacists in dispensing emergency contraception. In states with large rural populations, pharmacists may be important gatekeepers to emergency contraception because residents may have limited access to health clinics, especially family planning clinics. South Dakota is one of 43 states that allow collaborative agreements—voluntary agreements through which health care professionals with prescribing privileges delegate authority to pharmacists to write prescriptions, following a written protocol.⁵ What is allowed under these agreements varies considerably among states.⁶ Six states allow women to obtain emergency contraceptive pills directly from pharmacists: Alaska, California, Hawaii, Maine, New Mexico and Washington.⁷ An evaluation from Washington and Oregon found that the greatest advantage to establishing emergency contraceptive pill agreements was that convenient services improved access.⁸

According to the Pharmacy Access Partnership, South Dakota has an optimal environment for pharmacist provision of emergency contraception, because it already has legislation to establish collaborative agreements.⁹ However, the state also has obstacles to providing access to emergency contraceptive pills: It is one of three states that have a “conscience clause” law for pharmacists.¹⁰ This law, passed in 1998, states that “no pharmacist may be required to dispense medication if there is reason to believe that the medication would be used to destroy an unborn child.” It fur-

ther defines “unborn child” to include a fertilized egg even if it has not yet been implanted in the uterus.¹¹

The statewide availability of emergency contraception through pharmacies in South Dakota is unknown. However, the knowledge and attitudes of the state’s pharmacists may affect whether pharmacies carry the medication and whether individual pharmacists dispense it. Because pharmacists in South Dakota are professionally organized at the state level, and are licensed by the state, they could be influential in framing state laws about access to emergency contraception.

BACKGROUND

Each year, 3.5 million unintended pregnancies occur in the United States.¹² Because contraceptive failure and discontinuation rates are high,¹³ women need a backup method when unprotected sexual intercourse occurs. Emergency contraceptive pills can serve as that backup and can reduce the number of unintended pregnancies and abortions.¹⁴ Emergency contraceptive pills are a short course of a high dose of oral contraceptives that should be taken within 72 hours after unprotected intercourse.¹⁵ Some studies have shown that the method is effective up to 120 hours after intercourse.¹⁶ Plan B is on the market, but other oral contraceptives may be used.

The exact mechanism of action of emergency contraceptive pills is unknown, but the medication is thought to inhibit ovulation, fertilization, transportation of the fertilized egg to the uterus or implantation of the blastocyst in the endometrium.¹⁷ The hypothesized mechanism of action is most similar to that of oral contraceptives, which inhibit ovulation and fertilization.¹⁸

Because emergency contraceptive pills are a relatively new medication and because they have attracted the attention of individuals who are opposed to some contraceptive choices, several unfounded concerns have arisen about the consequences of their use. For example, like oral contraceptives, emergency contraceptive pills taken by pregnant women are not associated with birth defects.¹⁹ Repeated use of the method does not appear to pose increased health risks, nor is there evidence that women are at risk of habitual use.²⁰ Further, because emergency contraceptive pills do not act on a previously implanted embryo, they do not cause abortions;²¹ they can, in fact, reduce the need for induced abortions.²²

Even individuals who should be informed, such as those who prescribe the medication and pharmacists who dispense it, may not understand the presumed mechanism of action of emergency contraceptive pills.²³ In a 1999 Planned Parenthood of New York City survey of 100 pharmacists, 97 provided incorrect information or no information at all about how emergency contraception works, and 38 did not know that it was available.²⁴ Other obstacles to access arise when pharmacists refuse to dispense emergency contraceptives because of their morals, values or incorrect perception that this type of medication causes abortions.²⁵ In some states, pharmacists are legally protected from dis-

persing a drug if they feel a moral objection to doing so.²⁶

Another controversial issue is whether women should be provided with advance prescriptions for emergency contraceptive pills, thus allowing them to use the medication immediately following unprotected intercourse.²⁷ Jackson et al. found that an advance supply of emergency contraceptive pills was associated with an increased use of the medication but did not affect routine contraceptive use.²⁸

Pharmacists play a critical role in a woman’s access to emergency contraceptive pills, but few studies have examined their dispensing practices, knowledge and attitudes. Because South Dakota has both a liberal collaborative agreement and a restrictive “morals” clause, and because it appears to be moving toward restricting abortion, we surveyed the state’s pharmacists to assess their dispensing practices, as well as their knowledge and attitudes about the method. To our knowledge, this is the first state survey about emergency contraceptive pills that includes pharmacists from a variety of practice settings.

METHODS

Study Design

A 14-item survey about dispensing practices, knowledge and attitudes about emergency contraceptive pills was mailed to the 810 pharmacists who lived in the state and were registered with the South Dakota Board of Pharmacy. No identifiers were placed on either the survey or the return envelopes, to assure confidentiality. Some survey questions were adapted from an Advocates for Youth survey of pharmacists about adolescent use of the method.²⁹ The survey and a cover letter signed by the primary author were mailed in October 2003, with a self-addressed stamped envelope. A follow-up letter was mailed three weeks later. The institutional review board at the University of Minnesota approved the study protocol. The study was conducted without external funding or sponsorship.

Of the 810 pharmacists, 544 returned surveys, yielding a 67% response rate. Upon review of the completed surveys, 39 pharmacists were deemed ineligible for the following reasons: Twenty-one were retired, seven were not currently practicing pharmacy, seven worked in occupations with no direct patient or customer contact, two did not specify their workplace, one was deceased and one worked out of state. Another four pharmacists were excluded from analysis because their primary workplace was unclear. Thus, 501 surveys were available for analysis (62%). Differences between the sample frame and respondents included in the analysis could not be assessed because information on nonrespondents was unavailable.

Data and Analysis

Pharmacists were asked to report their sex and pharmacy practice characteristics (i.e., years of practice, community size and type of pharmacy). To measure the extent of emergency contraceptive pill dispensing in South Dakota, we asked respondents if their pharmacy dispensed the medication (i.e., Plan B or oral contraceptives). Those who re-

TABLE 1. Percentage distribution of registered pharmacists, by selected characteristics, according to sex, South Dakota, 2003

Characteristic	All (N=501)	Female (N=269)	Male (N=232)
Yrs. of practice***			
≤10	31.9	42.0	20.3
11–20	23.4	29.4	16.4
>20	44.7	28.6	63.4
Community size**			
≥50,000	46.7	51.1	41.6
8,000–49,999	29.3	31.0	27.3
≤7,999	24.1	17.9	31.2
Type of pharmacy			
Retail	58.5	55.0	62.5
Hospital	22.2	26.4	17.2
Government	8.0	8.2	7.8
Mail order	6.0	5.2	6.9
Other†	5.4	5.2	5.6
Emergency contraceptive pills carried at pharmacy‡			
Yes	54.0	55.2	52.6
No	45.6	44.4	46.9
Don't know	0.5	0.5	0.5
Pharmacist dispenses§			
Yes	67.3	62.3	73.3
No	32.7	37.7	26.7
No. of prescriptions respondent filled since January 2003§			
0	32.7	37.7	26.7
1–2	33.6	33.6	33.7
3–5	16.6	12.3	21.8
>5	17.0	16.4	17.8
Total	100.0	100.0	100.0

p≤.01. *p≤.001. †For example, academic institution, home infusion service, or long-term care or nuclear facility. ‡N=417. §N=223; asked only of those whose pharmacy carries the medication.

ported they worked in a pharmacy that carried emergency contraceptive pills were also asked the number of such prescriptions they had filled since January 1, 2003.

Knowledge of emergency contraceptive pills was assessed by three questions that reflected common misconceptions, and that pharmacists may be asked in the course of dispensing or counseling about the medication. Pharmacists were asked which medication type has the most similar mechanism of action to emergency contraceptive pills. The closed-ended response options were “spermicidal products,” “oral contraceptives,” “mifepristone,” “none of the above” and “not sure.” We created a dichotomous variable by categorizing responses as incorrect (including “not sure”) or correct answer (i.e., oral contraceptives). Pharmacists were also asked if they agreed that emergency contraceptive pills taken by pregnant women may cause birth defects, and that repeated use of the method poses health risks. The responses were coded into three categories: incorrect if the respondent agreed with the statement, uncertain if the pharmacist chose that response and correct if the respondent disagreed with the statement. A dichotomous variable was created from these three knowledge questions to reflect the proportion of pharmacists who answered all of them correctly.

Attitudes were assessed by two items. The first concerned agreement with the statement “Emergency contraceptive pills should be available over the counter, without prescription.” The five response options ranged from “strongly agree” to “strongly disagree,” including an option of “uncertain.” The responses were coded into three categories: disagree if the respondent somewhat or strongly disagreed with the statement, uncertain if the pharmacist responded as such and agree if the respondent somewhat or completely agreed with the statement.

The second attitude question asked them how comfortable they felt in counseling women about emergency contraceptive pills. The response options, on a six-item scale, ranged from “very uncomfortable” to “very comfortable” (including “depends on the situation” and “never has come up”). A dichotomous variable was created from this question by categorizing responses as comfortable or uncomfortable.

Finally, pharmacists who worked in pharmacies that dispensed emergency contraceptives were asked a closed-ended question about their main source of continuing education (i.e., live presentations, paper-based education, Web-based education and a combination of the three).

Frequency distributions were described using chi-square analysis; significance was defined as a two-tailed p≤.05. Adjusted odds ratios and 95% confidence intervals were derived from multivariate logistic regression models to identify variables associated with dispensing practices, knowledge and attitudes; adjusted odds ratios were considered significant at p≤.05. Intercooled Stata 8 statistical software³⁰ was used to analyze the data.

For multivariate analyses, variables were dichotomized in the following manner: The correct response to the statements about birth defects and repeated use was “disagree,” and all other responses were coded as incorrect. For over-the-counter availability responses, “disagree” included all those who disagreed, strongly disagreed or were uncertain.

RESULTS

Sample Characteristics

Fifty-four percent of the respondents were female, and 45% had practiced for more than 20 years (Table 1). Forty-seven percent worked in cities with populations of 50,000 or more, and 59% worked in retail pharmacies. Females and males differed significantly by years of practice: Whereas 29% of females and 63% of males had practiced for more than 20 years, 42% and 20%, respectively, had 10 or fewer years of experience. There were also sex differences in the size of the community in which pharmacists worked, with a greater proportion of women than of men working in larger communities, but not in type of pharmacy.

Dispensing Practices

Fifty-four percent of respondents were employed at pharmacies that carried emergency contraceptive pills. Of these, 67% had dispensed the medication since January 1, 2003; 34% had dispensed it once or twice, 17% had dispensed it 3–5 times and 17% had done so more than five times

TABLE 2. Percentage of pharmacists giving selected responses to survey questions on knowledge and attitudes about emergency contraceptive pills, by selected characteristics

Characteristic	Incorrect about:			Oppose over-the-counter status
	Mechanism of action	Link to birth defects	Health risks from repeated use	
All	36.6	43.3	20.6	84.4
Sex				
Female	36.0	46.4	21.2	86.9**
Male	37.2	39.6	19.9	81.4
Yrs. of practice				
≤10	34.0**	46.2	22.5	88.8
11–20	26.1	51.7	23.9	84.6
>20	44.0	36.7	17.5	81.1
Community size				
≥50,000	37.2*	44.7	24.5	85.8
8,000–49,999	29.1	46.9	16.4	80.1
≤7,999	43.7	36.8	18.5	86.6
Type of pharmacy				
Retail	35.8	43.4	17.1*	85.9
Hospital	34.0	46.9	20.7	83.8
Government	27.5	33.3	22.5	72.5
Mail order	57.1	44.4	33.3	86.7
Other†	48.0	40.7	40.7	85.2
Emergency contraceptive pills carried at pharmacy‡				
Yes	27.4***	39.3*	16.0**	78.6**
No	46.2	48.9	23.3	91.0
Don't know	0.0	50.0	100.0	100.0
Pharmacist dispenses§				
Yes	23.7	36.2	15.3	76.0
No	35.6	45.2	17.8	86.1
Level of comfort with customer counseling				
Comfortable	28.9**	42.7*	15.8**	85.4
Uncomfortable	40.5	57.3	23.1	83.8

*p≤.05. **p≤.01. ***p≤.001. †For example, academic institution, home infusion service, or long-term care or nuclear facility. ‡N=417. §N=223; asked only of those whose pharmacy carries the medication. Notes: Significance levels indicate that all distributions for a characteristic are statistically different from each other. Response options to the mechanism of action question were “spermicidal products,” “oral contraceptives,” “mifepristone,” “none of the above” and “not sure”; the only correct response was “oral contraceptives.” For the questions about birth defects and health risks with repeated use, incorrect response was “agree.” Responses categorized as uncomfortable about counseling included “never has come up” and “depends on the situation.”

(Table 1). Male and female pharmacists did not differ in dispensing practices.

In response to a closed-ended question about why their pharmacy did not dispense emergency contraceptive pills, the 190 respondents who worked in such pharmacies reported various, not mutually exclusive, reasons: Fifty-six percent reported low customer demand, 37% reported moral or conscientious convictions, 26% reported management or administrative decisions, 3% reported space or inventory constraints, 1% reported (incorrectly) state law and 16% reported other reasons. The other, open-ended responses were Catholic institution, maintenance medications only, not on formulary, no evening hours, rape only, no stock, given to patient directly by medical provider, type of pharmacy and patient anonymity.

Knowledge and Attitudes

Thirty-seven percent of the surveyed pharmacists did not know that emergency contraceptive pills and oral contraceptive pills have a similar mechanism of action (Table 2): Nineteen percent incorrectly responded that the mechanism of action is most similar to that of mifepristone, 6% incorrectly responded that it does not resemble that of spermicidal products, oral contraceptives or mifepristone, and 12% responded they were not sure (not shown). Forty-three percent incorrectly agreed with, and 31% were uncertain about, the statement that emergency contraceptive pills can cause birth defects if taken by a pregnant woman, while 21% incorrectly agreed that repeated use of emergency contraceptive pills can pose health risks, and 64% were uncertain.

Knowledge and attitudes varied by sex and by practice characteristics. Larger proportions of respondents with more than 20 years of practice and of those who practiced in a community with fewer than 8,000 residents responded incorrectly to the question about the mechanism of action of emergency contraceptive pills (Table 2). Smaller proportions of those who worked in pharmacies that dispensed the medication, as well as of those who were comfortable counseling patients about the method, gave incorrect responses to the questions about mechanism of action, birth defects and health risks. Only 5% of respondents correctly answered all three knowledge questions (not shown).

Six percent of surveyed pharmacists agreed that emergency contraceptive pills should be available over the counter, 84% disagreed and 10% were uncertain. Higher proportions of female pharmacists and of those whose pharmacies did not dispense the medication opposed over-the-counter availability.

Level of Comfort

Thirty-four percent of pharmacists working in pharmacies that carried emergency contraceptive pills reported that they were comfortable counseling women about the method, 42% reported that their comfort level depended on the situation or that the issue had never come up in their pharmacy, and 24% reported that they were uncomfortable with such counseling. Reported comfort varied significantly for each of the questions on mechanism of action and link to birth defects and health risks, with less knowledge correlating with less comfort. Comfort level did not vary significantly by sex, community size, type of pharmacy or opinion about whether emergency contraceptive pills should be available over the counter.

Continuing Education

The 223 pharmacists who worked in dispensing pharmacies were asked about their main source of continuing education. Printed materials (e.g., journals and newsletters) were most often cited (45% of respondents) as a main source, followed by live presentations (25%), Web sources (18%) and a combination of sources (11%). Main sources of continuing education did not differ by pharmacists' experience in dispensing emergency contraceptive pills; knowl-

edge of the mechanism of action, birth defects risk and health risks associated with repeated use; or opinion about over-the-counter status.

Multivariate Analyses

Few of the measured variables were associated with emergency contraceptive pill dispensing in multivariate analyses. Compared with retail pharmacists, hospital pharmacists were more likely to report that their worksite carried emergency contraceptive pills (odds ratio, 3.4; 95% confidence interval, 1.6–7.2); the odds were reduced for those who worked for mail-order pharmacies (0.1; 0.1–0.3) or other types of pharmacies (0.1; 0.1–0.7). Pharmacists who had practiced for 11–20 years were more likely than those who had practiced fewer than 11 years to have dispensed the medication (2.6; 1.0–6.5). Pharmacists working in government facilities were less likely to have done so than were retail pharmacists (0.2; 0.1–0.6). Similarly, only one of the measured variables was associated with comfort in counseling: Hospital pharmacists were less comfortable counseling than were those working in retail settings (0.5; 0.3–0.9).

Multivariate analysis of knowledge and attitudes regarding emergency contraceptive pills also revealed few associations. Pharmacists who worked in government facilities were more likely than retail pharmacists to believe that repeated use of the method poses health risks (odds ratio, 4.7; 95% confidence interval, 1.5–15.2). Respondents who had not dispensed the medication had increased odds of not knowing the mechanism of action (2.0; 1.0–4.0) and of believing that repeated use poses health risks (2.5; 1.0–5.9). Those who believed that emergency contraceptive pills can cause birth defects or who were unsure had an increased likelihood of believing that repeated use poses health risks (2.2; 1.1–4.5). Similarly, those who thought that repeated use poses health risks or were uncertain had elevated odds of believing that the medication can cause birth defects if taken by a pregnant woman (2.2; 1.1–4.4). Finally, compared with pharmacists who worked in communities of 50,000 or more, those who worked in communities of fewer than 8,000 were less likely to have correctly answered all three knowledge questions (0.2; 0.1–0.8) and were less likely to favor over-the-counter availability (0.2; 0.1–0.9).

DISCUSSION

The purpose of this study was to identify dispensing practices, knowledge and attitudes of South Dakota pharmacists regarding emergency contraceptive pills. Only 54% of surveyed pharmacists worked at pharmacies that carried the medication, and two-thirds of these individuals had dispensed it in the study period. Of the latter group, only one-third, or about 50 pharmacists, had dispensed the method more than twice.

Knowledge about emergency contraceptive pills was low: Thirty-seven percent of respondents did not know that the method has a mechanism of action similar to that of oral contraceptive pills, and only 5% correctly answered this

question and two questions about its health effects. Despite the geographic differences, the 1999 Planned Parenthood of New York City pharmacists' survey reported similar findings: Only 3% of New York City pharmacists correctly provided all key facts about emergency contraceptive pills.³¹ Because South Dakota pharmacists working in smaller communities demonstrate less knowledge and less support for over-the-counter availability, women in the state's rural areas may have less access to this medication.

This was the first statewide survey of registered South Dakota pharmacists about emergency contraceptive pills. No similar state survey was found for comparison. Other studies have been conducted in urban settings, but such settings are not comparable to South Dakota, which has a significant rural population. A unique element of our study is that we surveyed all pharmacists in all practice settings (not solely retail pharmacies), thus assuring a broad professional sample. Other studies have focused on retail pharmacists exclusively, although emergency contraceptive pills may be available in a variety of practice settings, and even mail-order pharmacists may be called upon to counsel clients about this medication.

Sample and information biases could limit the validity of this survey. Sixty-seven percent of all registered pharmacists in South Dakota responded to the survey; the potential impact of not having data from 33% is difficult to ascertain because our survey collected limited demographic and practice data. We note, for example, that almost half of the pharmacists who responded practiced in the state's largest communities (i.e., Rapid City and Sioux Falls), but only about one-third of South Dakota residents live there.³² Thus, these urban centers may have been overrepresented in the sample; no data exist to determine whether half of the state's pharmacies are in these two areas.

Also, the pharmacists who responded may have been highly motivated to respond because of their attitudes (positive or negative) about emergency contraceptive pills. Given respondents' low level of knowledge, it is unlikely that our data are biased toward supporters of the method. Furthermore, because the reported knowledge levels of pharmacists in our sample were so close to those reported for New York City pharmacists,³³ we feel that any sample biases are unlikely to have resulted in a significant misestimate of knowledge or attitudes. Had we included more questions about attitudes toward the method—including whether the pharmacist had personal moral concerns associated with dispensing the medication—we would know more about the sample, but we would still not know if the sample was biased. Our survey was brief, in order to achieve a good response rate, and thus many important questions were not asked, including questions about general knowledge of contraceptive medications.

The political climate in South Dakota is moving toward restricting reproductive choices. During the 2003 legislative session, both the House and the Senate passed legislation that banned abortion within the state and defined life as beginning at conception, but Gov. Mike Rounds vetoed the bill

in March 2004. In the summer of 2004, Governor Rounds closed a state-funded Web site because it included a link for teenagers to a Planned Parenthood site (<<http://www.teenwire.com>>). It is unclear how proposed abortion restrictions—in South Dakota and elsewhere—will affect demand for and access to emergency contraceptive pills.

CONCLUSIONS

It is remarkable, given the political climate surrounding emergency contraceptive pills, that more data are not available at the state level. Our survey demonstrated that it is feasible to conduct a statewide survey of pharmacists efficiently and in a timely manner. We would encourage further surveys, at both state and regional levels, to identify geographic and demographic gaps in pharmacy practices.

Pharmacists are unique gatekeepers to access of emergency contraceptive pills. In many cases, they are also significant educational resources for health care consumers. The results of this study demonstrate that South Dakota pharmacists do not have the requisite knowledge or comfort level to adequately counsel customers about emergency contraceptive pills. We have no evidence that pharmacists in South Dakota are different from pharmacists elsewhere in the country. For emergency contraceptive pills to be an accessible option for women, our data suggest that pharmacists must dramatically improve their knowledge about, and comfort with, this medication.

Given our findings of gaps in knowledge even among pharmacists who entered practice in the last 10 years, one way to improve the knowledge of future pharmacists is to review and strengthen the curricula of pharmacy schools as they relate to reproductive medicines. Because pharmacist knowledge did not vary by main type of continuing education method, programs using a variety of media are necessary to reach practicing pharmacists. Our data also show that only one-third of respondents in pharmacies that carried the medication felt comfortable counseling women about emergency contraception. This suggests a need to offer opportunities for practice counseling in both formal and continuing education training.

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