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WHO IS USING EMERGENCY CONTRACEPTION? Awareness and Use of Emergency Contraception Among California Women and Teens

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Introduction. **Emergency contraception (EC) reduces women's risk for pregnancy after unprotected intercourse, and women's awareness of the method is increasingly important for expanding access. However, knowledge of EC alone does not predict use, and few population data exist to describe EC use among those aware of the method.**

Methods. **Using data from the 2003 California Health Interview Survey, we measured EC awareness among 11,392 women ages 15–44, and EC use among 7,178 respondents who were aware of EC and at risk for pregnancy. Using χ^2 analyses and multivariable logistic regression, we examined population characteristics that epidemiologically predict EC awareness and use, including age, race/ethnicity, income, health insurance status, usual source of health care, immigration status, languages spoken at home, and urban versus rural residence.**

Results. **Nearly 76% of respondents had heard of EC, but awareness was lower among teens, women of color, poor women, women with publicly funded health insurance, those without a usual source of care, immigrants, non–English-language speakers, and rural residents. Among women aware of EC, about 4% reported having used the method in the previous year; young age, low income, attending a community/government clinic for care or not having a source of care, and living in an urban area significantly increased the odds for using EC.**

Conclusions. **Among California women in 2003, awareness and use of EC remained low. However, similar rates of use were reported among racial, ethnic, and linguistic subgroups. Those most likely to report use of the method included population groups at high risk for unintended pregnancy.**

Introduction

US health policy objectives, as codified by the Center for Disease Control and Prevention's (CDC) *Healthy People 2010* targets, include the goal of reducing unintended pregnancy by 70% (CDC, 2000). Diffuse utilization of emergency contraception (EC) could help to reduce the incidence of unplanned pregnancies in the United States, estimated at 3.1 million per year (Finer & Henshaw, 2006). Although studies performed to date have failed to demonstrate a statistically significant reduction in unintended pregnancy and abortion rates among EC users (Raymond, Trussell, & Polis, 2007), estimates of the efficacy of progestin-only EC pills range

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from 49% to 94% (Task Force on Postovulatory Methods of Fertility Regulation, 1998; Trussell & Raymond, 2007; Raymond, Taylor, Trussell, & Steiner, 2004).

In 2006, the US Food and Drug Administration (FDA) licensed progestin-only EC for behind-the-counter sales, allowing US consumers ages ≥18 to purchase EC directly from pharmacists, without a doctor's prescription. Before the FDA's decision, 9 states already allowed women to obtain EC directly from pharmacists, eliminating the barriers inherent to prescription use.[1]

In California, women have had direct pharmacy access to EC since 2002, without age restrictions, in approximately 22% of the state's pharmacies (Foster et al., 2006). Access to EC has also been enhanced through the state's publicly funded family planning program, Family Planning, Access, Care, and Treatment (Family PACT). Through Family PACT, uninsured individuals with incomes at or below 200% of the federal poverty level are eligible to receive a variety of reproductive health care services, including access to all FDA-approved forms of contraception. Clinicians at both public clinics and private offices throughout the state participate in the program and may provide patients EC free of charge (Bixby Center for Reproductive Health Research and Policy, 2006; CA Family PACT, 2007).

With progestin EC now available behind the counter, at least for adults, women's awareness of the method is increasingly important for achieving widespread access. However, knowledge of EC alone does not predict use, and few population data exist to describe EC use among those aware of the method. Therefore, we undertook this study to identify the population characteristics that predict both awareness and use of EC among women and teens in California. We used data from the California Health Interview Survey (CHIS), the largest state-based health survey in the United States, to evaluate these characteristics.

Methods

Data Source and Survey Population

The study consisted of a secondary data analysis from the 2003 CHIS, which results from collaborative efforts by the UCLA Center for Health Policy Research, the California Department of Health Services, and the Public Health Institute. CHIS is conducted by telephone utilizing random digit dialing and a computer-assisted telephone interview system, which interviews 1 adult from each household selected, and if present in the household, 1 adolescent aged 12–17. The survey is conducted in English, Spanish, Korean, Vietnamese, Mandarin, and Cantonese, with the sample geographically stratified and intricately weighted to represent the population of California. CHIS 2003 was conducted between August of 2003 and February of 2004, surveying a total of 42,044 adults and 4,010 adolescents.

CHIS 2003 had a response rate of 33.5% for adults, calculated as the ratio of households interviewed to the entire number of households randomly selected for the sample. The cooperation rate for the adult interview, reflecting the adults who participated in the survey once successfully contacted by phone, was 61%. The overall adolescent CHIS response rate, calculated as the overall adult response rate times the percentage of adults who allowed their teenager to participate (57%), was 19%. Fully 83% of sampled adolescents cooperated once contacted. CHIS interviewers estimated that 94% of adolescents participating in the survey were interviewed privately, 2% had a parent listening on another extension, and 3.6% had a parent present in the room with them during the interview.

EC Survey Items

In 2003, CHIS queried female respondents about their awareness and use of EC. All women under age 65 were asked, "Have you heard of emergency contraception or the 'morning after pill?'" Participants were asked to provide a yes or no response.

Women <50 years old who had heard of EC were then queried, "In the past 12 months, have you used EC pills or the 'morning after pill?'" When the respondent asked for clarification, the interviewer added, "Emergency contraception, also known as the 'morning after pill,' contains the same medication of regular birth control pills and can prevent pregnancy if taken within 72 hours of unprotected sex or contraceptive failure. It is not RU486, also known as the 'abortion pill.'"

Independent Variable Selection

We examined the associations between EC awareness and use and demographic, social, economic, and geographic variables. We based variable selection on the Behavioral Model for Vulnerable Populations, which asserts that people's use of health services is a function of their predisposition to use services, factors that enable or impede their use, and their need for health care (Andersen, 1995; Gelberg, Andersen, & Leake, 2000). CHIS includes many survey items applicable to this conceptual model. Predisposing variables we included in our analyses of women 15–44 included age, ethnicity, language(s) spoken at home, language of

[1]Prescription use often requires that, after unprotected intercourse (owing to failed or forgotten contraception or rape), a woman must contact her doctor (if she has one) or find a provider who will see her immediately, obtain a prescription, find a pharmacy that carries EC, and acquire the means to purchase it, all as quickly as possible. The efficacy of EC declines with time passed since intercourse, and is most effective within the first 72 hours.

interview, immigration status, and country of birth. Enabling factors we examined included income, health insurance, regular source of care, geographic region of the state, level of urbanization of residence (population density), and 3 measures of distance to the nearest pharmacy (as described below). We were unable to assess true need for EC because the survey did not measure desire for pregnancy or history of unprotected intercourse.

Our variable selection was also influenced by the design of CHIS questionnaires, which vary for adolescent (those 12–17 years old) and adult (those ≥18 years old) respondents. To examine EC awareness and use among 15- to 44-year-olds overall, we limited our analyses to variables common to both surveys. Some information, such as whether the woman had an abortion in the previous year, was asked only of adult respondents, whereas other items, like use of other specific forms of contraception, were only included in the teen questionnaire. The level of educational attainment was included in both surveys but clearly could not be interpreted uniformly across the adult and teen populations. For example, the ecologic significance of a "less than high school" education varies greatly depending whether the respondent is a 16-year-old high school sophomore or a 30-year-old high school drop-out. Therefore, the education variable was not incorporated into the combined 15–44 analyses. We excluded teens under age 15 from the analyses because <0.5% of sampled girls 12–14 years old reported sexual activity.

One of the factors we examined is the effect of race/ethnicity on reported awareness and use of EC. We followed the standardized Center for Health Policy Research algorithm for assigning race/ethnicity to study participants reporting mixed heritage (UCLA Center for Health Policy Research, 2005). We classified women as Latina if they self-described as Latina/Hispanic, even if they reported an additional racial/ethnic identity. Women describing themselves as members of ≥2 other groups (e.g., African American and Asian American) were assigned to the minority group with which they self-identified (including the choice of a category called "other."). When examining EC use, small sample sizes led to unstable population estimates for certain ethnic subgroups. To increase statistical power in these cases, we grouped Pacific Islander women with Asian American women and Native American women with women of "other" race/ethnicity.

We considered the effect of women's insurance coverage and their usual source of care, grouping women with employer-provided or privately purchased insurance under the category "private insurance" and those with Medicaid (Medi-Cal), Children's Health Insurance Program, Medicare, and Indian Health Service coverage under "public insurance."

Independent Variables: Geographic Characteristics

Because the number of study participants in some counties was too small to perform a county-by-county analysis of EC awareness and use, we included in our analyses 7 groups of California counties, or regions of the state. Another variable we examined is level of urbanization, or population density. Areas of the state were categorized into 4 groups depending on their concentration of residents: urban areas/large cities; small cities; suburban areas, similar in density to small cities but contiguous with an urban center; and towns and rural areas, encompassing the most sparsely populated regions of the state (Claritas PRIZM Urbanization model; www.claritas.com).

To investigate the relationship between use of EC and the geographic distribution of pharmacies that prescribe and stock EC, we used geographic information systems technology to map the residences of all study participants. The Pharmacy Access Partnership of the Public Health Institute supplied a list of California pharmacies that provided direct pharmacy access to EC in 2003, and we incorporated this information into a geocoding program linked with the CHIS database. We examined geographic access to pharmacies providing EC by assessing the presence of pharmacies in the community at radii of 1, 3, 5, 10, 20, 30, and 60 miles from each respondent's residence. We also considered the effect of proximity of the nearest pharmacy to the residence, employing distance as both a continuous and categorical value. We examined interactions between pharmacy density or distance and population density (to determine, for example, if distance to pharmacy with direct access significantly predicted EC use among women in rural areas).

Analysis Plan and Statistical Methods

For the questions pertaining to awareness of EC, we included in our analyses responses from all women ages 15–44. When examining reported EC use, we included in the denominator only women 15–44 who had heard of EC and who reported having sexual intercourse with a male partner during the previous 12 months. By analyzing EC use only among those aware of the method, we were able to eliminate potentially confounding factors that would impact both knowledge and use of EC. We excluded women who were not at risk for pregnancy, either because they were not sexually active, reported only female partners during the last year, were menopausal, or had their uterus and or/ovaries surgically removed.

We used Statistical Analysis Software (SAS) Version 9 (Cary, NC) for statistical analyses. We began our analyses by assessing the distribution of the sample, comparing unweighted and weighted distributions and compiling summary statistics. All the missing responses for independent variables had already been imputed for the final CHIS data file using hot-deck

imputation technique, with quality controls (Aday & Cornelius 2006; Rao & Shao, 1992).

Using weighted results, we conducted χ^2 analyses to assess the association between the 2 EC outcomes and the social, economic, and geographic variables described above. For all analyses, we set significance levels at $p < .05$. We then employed multiple logistic regressions to assess the effects of independent variables on awareness and use of EC, and to find the most parsimonious model that best predicted these outcomes. When building the models, we identified colinear relationships between certain variables, such as health insurance and usual source of care. When this occurred, we included in the model only the variable more closely associated with the outcome. For the model predicting whether women had heard of EC, some variables were deleted because of high colinearity (language of interview and country of birth) or because they were not predictive at the $p < .05$ level (pharmacy distance variables and region of the state). For the model predicting EC use, some variables were deleted because of high colinearity (health insurance status, language of interview, country of birth) or because they were not predictive at the $p < .05$ level (pharmacy distance variables and region of the state).

Based on the multivariable model for each of the EC outcomes, we calculated odds ratios and 95% confidence intervals for characteristics associated with awareness and use of EC.

Results

Figure 1 demonstrates the flow of 11,408 study participants through the EC items of the CHIS questionnaire. Because of the survey design, the denominator changed for each EC outcome. The participants represent >7 million California females of reproductive age. Table 1 shows the distribution of characteristics of adult (ages 18–44) and teen (ages 15–17) participants, reflecting the heterogeneity of the state's population.

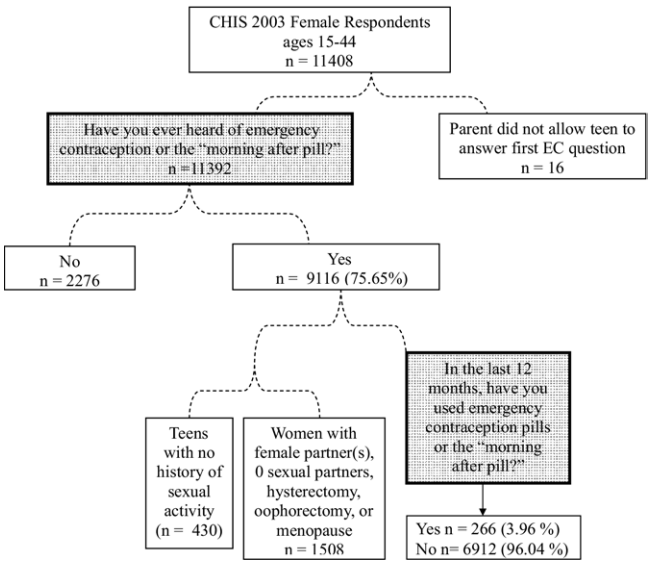

Figure 1. Flow chart of CHIS female participants of reproductive age through emergency contraception questionnaire items.

Table 1. Study Population Characteristics, Women and Teens 15–44 (n = 11,392)

	Unweighted n	Weighted %
Age (yrs)		
15–17	896	9.72
18–24	1,852	21.93
25–34	3,643	31.99
35–44	5,001	36.37
Race/ethnicity		
Non-Latina White	5,824	43.13
Latina	3,000	33.38
African American	831	6.74
Asian	1,178	12.04
Pacific Islander	51	0.43
American Indian/Alaska Native	169	1.18
Other single or multiple race	355	3.09
Income (% FPL)		
0–99	1,897	20.47
100–199	2,259	21.16
200–299	1,655	13.98
≥300	5,597	44.39
Health insurance		
Uninsured	1,784	18.76
Medicaid	1,750	16.67
Employment-based	6,798	54.87
Privately purchased	818	6.96
Other public (including CHIP)	258	2.75
Usual source of care		
Doctor's office/HMO/Kaiser	7,669	63.24
Community/government clinic or hospital	2,123	21
No usual source of care/ ER/urgent care/other place	1,315	13.13
Immigration status		
US born	8,021	64.97
Naturalized citizen	1,205	11.06
Non-citizen with Green Card	1,128	11.75
Non-citizen without Green Card	1,054	12.22
Language(s) spoken at home		
English only	6,725	51.35
Spanish only	866	10.79
English and Spanish	2,199	23.13
Asian language only	219	1.85
Asian language and English	634	6.43
Other	764	6.44
Population density		
Urban/large city	4,939	45.51
Small city	3,133	26.74
Suburban	1,779	18.29
Town and rural	1,541	9.46

Note. Unweighted sample may not add up to 11,392 owing to missing values.

A large majority of California women and teens, 75.7%, expressed awareness of EC. Among adults, 76.5% had heard of EC, compared with 67.6% of teens (t-test; $p < .001$). Among women and teens aware of

EC, 4.0% used it in the previous year—3.6% of adult women and 14.1% of teens (*t*-test; $p = .002$).

Table 2 shows awareness and use of EC by various characteristics. In bivariate analyses, awareness of EC was significantly associated with age, race/ethnicity, income, health insurance status, usual source of care, immigration status, language(s) spoken at home, and population density. Reported use of EC was significantly associated with age, income, health insurance status, usual source of care, and population density. Although reported EC use was highest among African-American women, immigrant women without Green Cards and women from households where only an Asian language is spoken, in χ^2 analyses, differences in EC use between racial-ethnic, linguistic, and immigration subgroups were not statistically significant.

Table 2. Awareness and Use of Emergency Contraception (EC) by Various Characteristics

	Heard of EC (%)	Used EC among those who heard of it (%)
Age (yrs)	$p < 0.001$	$p < 0.001$
15–17	67.62	14.09
18–24	80.48	7.84
25–34	75.79	3.73
35–44	74.77	0.77
Race/ethnicity	$p < 0.001$	$p = 0.145$
Non-Latina White	92.09	3.19
Latina	57.63	4.94
African American	80.00	5.60
Asian	62.57	4.43
Pacific Islander	71.36	1.07
American Indian/Alaska Native	76.36	4.45
Other single or multiple race	82.65	4.29
Income (%FPL)	$p < 0.001$	$p < 0.001$
≥300	88.32	2.40
200–299	82.01	4.61
100–199	67.55	5.49
0–99	52.20	7.16
Health insurance	$p < 0.001$	$p < 0.001$
Private	84.58	2.89
Public	61.42	6.05
Uninsured	60.95	6.87
Usual source of care	$p < 0.001$	$p < 0.001$
Doctor's office/HMO/Kaiser	82.70	2.68
Community/government clinic or hospital	61.16	7.23
No usual source of care	66.03	7.26
Immigration status	$p < 0.001$	$p = 0.057$
US born	87.84	3.92
Naturalized citizen	65.35	4.33
Non-citizen with Green Card	51.75	2.11
Non-citizen without Green Card	43.18	5.96
Language(s) spoken at home	$p < 0.001$	$p = 0.081$
English only	90.97	3.41
Spanish only	39.52	4.33
English and Spanish	65.33	5.56
Asian language only	38.60	6.86
Asian Language and English	59.97	4.18
Other	79.54	3.38
Population density	$p < 0.001$	$p < 0.001$
Urban (large city)	72.06	5.41
Small city	78.02	3.25
Suburban	80.85	2.60
Town and rural	76.17	2.47

Note. *P* values refer to results of χ^2 analyses of differences between groups.

Awareness of EC

Table 3 identifies factors that independently predict awareness of EC. Teens were the least likely to have heard of EC, and young adults 18–24 years the most likely. Women who had heard of EC were more likely to be non-Latina white, of higher income, US born, and from English-speaking households. Women with publicly funded health insurance, those without a usual source of health care, and those living in rural areas were less likely to express awareness of EC.

EC Use

Table 4 shows that among women aware of EC, the factor that most dramatically predicted use of the method was age. Although teens were the least likely to have heard of EC, those aware of the method were much more likely to use it than were adult women. Other factors that predicted use of EC included having a lower annual income, having no usual source of care or attending a community or government clinic (compared with women who visited private doctors or managed care organizations), and living in a large urban area (compared with those living in small cities, suburban areas, and towns/rural/exurban areas).

Neither the presence of direct access pharmacies in the community nor distance to the nearest pharmacy affected women's likelihood of using EC once population density was controlled for. Although 10% of our survey population (and 10% of California's estimated population) are considered residents of rural or exurban areas, 94% of our population lived within 10 miles (as the crow flies) of a pharmacy that during 2003 provided EC during at least some business hours. Tests for interactions between pharmacy distance variables and the population density variable did not yield any significant findings.

Race/ethnicity, language spoken at home, and immigration status did not predict use of EC among those aware of EC.

Table 3. Independent Predictors of Emergency Contraception (EC) Awareness Among Women and Teens

	Adjusted Odds Ratio*	95% Confidence Interval
Age (yrs)		
35–44	1	Reference
25–34	1.52	1.29–1.80
18–24	1.8	1.46–2.23
15–17	0.48	0.36–0.65
Race/ethnicity		
Non-Latina White	1	Reference
Latina	0.46	0.35–0.61
African American	0.37	0.27–0.50
Asian	0.54	0.36–0.81
Pacific Islander	0.24	0.06–1.02
American Indian/Alaska native	0.49	0.26–0.93
Other single/multiple race	0.86	0.53–1.38
Income (% FPL)		
≥300	1	Reference
200–299	0.76	0.60–0.97
100–199	0.57	0.46–0.71
0–99	0.4	0.31–0.52
Health insurance		
Private	1	Reference
Public	0.74	0.59–0.93
Uninsured	0.8	0.64–1.00
Usual source of care		
Doctor's office/HMO/Kaiser	1	Reference
Community/government clinic or hosp	0.84	0.69–1.03
No usual source of care	0.74	0.59–0.94
Immigration status		
US born	1	
Naturalized citizen	0.49	0.38–0.62
Non-citizen with Green Card	0.41	0.32–0.53
Non-citizen without Green Card	0.4	0.30–0.52
Language(s) spoken at home		
English only	1	Reference
English and Spanish	0.53	0.40–0.70
Spanish only	0.35	0.25–0.50
English and Asian language	0.31	0.20–0.48
Asian language only	0.19	0.11–0.32
Other single or multiple languages	0.51	0.38–0.70
Population density		
Urban/large city	1	Reference
Small city	0.93	0.77–1.12
Suburban	0.94	0.75–1.16
Town or rural	0.72	0.56–0.93
c** = 0.832.		

*Adjusted for all other variables in table.
**The c statistic measures the discriminative power of the logistic equation to predict outcome; a c index of 0.5 indicates that a model performs no better than chance alone, whereas a value of 1 indicates that the model perfectly predicts outcome for any given pair of yes–no responses.

Discussion

These analyses from CHIS 2003 indicate that although the majority of California women and teens had heard of EC by 2003, few utilized the method. Notably, these data demonstrate that among women and teens who are aware that EC exists, use does not vary by race/ethnicity or language spoken at home, and those most likely to report use include population groups at high risk for unplanned pregnancy.

The high reported use of EC among adolescents—14.1% of those aware of EC in 2003 compared with 3.6% of adults—indicates that EC can be relatively popular among young women aware of its availability. Because 87% of pregnancies among 15- to 17-year-olds are unintended (Finer & Henshaw, 2006), EC use

Table 4. Independent Predictors of Emergency Contraception (EC) Use Among Women and Teens Aware of EC

	Adjusted Odds Ratio*	95% Confidence Interval
Age (yrs)		
35–44	1	Reference
25–34	4.32	2.57–7.27
18–24	8.8	5.16–15.01
15–17	18.28	9.06–36.89
Race/ethnicity		
Non-Latina White	1	Reference
Latino	0.79	0.40–1.55
African American	1.26	0.68–2.31
Asian/Pacific Islander	0.88	0.33–2.31
American Indian/Alaska native	1.1	0.22–5.51
Other single/multiple race	0.6	0.23–1.55
Income (% FPL)		
≥300	1	
200–299	1.55	0.95–2.52
100–199	1.62	1.05–2.51
0–99	1.85	1.18–3.00
Usual source of care		
Doctor's office/HMO/Kaiser	1	Reference
Community/government clinic or hospital	1.93	1.29–2.91
No usual source of care	1.68	1.10–2.57
Immigration status		
US born	1	Reference
Naturalized citizen	1.53	0.89–2.63
Non-citizen with Green Card	0.51	0.26–0.99
Non-citizen without Green Card	1.16	0.62–2.17
Language(s) spoken at home		
English only	1	Reference
English and Spanish	1.24	0.64–2.40
Spanish only	0.96	0.35–2.58
English and Asian language	1.31	0.44–3.89
Asian language only	1.8	0.41–7.89
Other single or multiple languages	0.91	0.48–1.71
Population density		
Large city/urban	1	Reference
Small city	0.54	0.37–0.81
Suburban	0.56	0.33–0.92
Town or rural	0.4	0.21–0.73
c** = 0.769.		

*Adjusted for all other variables in the table.
**The c statistic measures the discriminative power of the logistic equation to predict outcome; a c index of 0.5 indicates that a model performs no better than chance alone, whereas a value of 1 indicates that the model perfectly predicts outcome for any given pair of yes–no responses.

by this group may help adolescents to avoid unplanned pregnancies. Although access to EC by teens remains politically controversial, the safety of EC has been demonstrated for women of all ages (Harper, Cheong, Rocca, Darney, & Raine, 2005; Raine et al., 2005).

Our data on EC awareness reveal striking disparities in EC knowledge among women of color, immigrants, and those from households where languages other than English are spoken, including bilingual households. As was similarly reported by the California Women's Health Survey (CWHS; Foster et al., 2004b; Foster, Ralph, Arons, Bindis, & Harper, 2007), awareness of EC was low among Latina, African American, and Asian women compared with white women. Because of CHIS' larger sample size, we were also able to reveal lower levels of EC knowledge among Native American women, a group usually not represented in general population-based research.

Despite these large knowledge gaps, among women aware of EC we did not identify any significant differences in use of EC by race/ethnicity or by language(s) spoken at home. Nor did we identify meaningful differences in EC use by immigration status, among women aware of EC.

Although it concerns us that many sexually active women remain uninformed about EC, we find the lack of racial/ethnic disparities in EC use among women aware of EC encouraging. Because Latina and African American women in the United States typically demonstrate higher rates of contraceptive failure, irregular use, and non-use than do other women (Finer & Henshaw, 2006; Foster et al., 2004a; Fu, Darroch, Haas, & Ranjit, 1999; Peterson, Oakley, Potter, & Darroch, 1998), EC is an important unplanned pregnancy prevention option for these populations. Parity of use by informed women in immigrant communities is another unexpected finding that suggests that some vulnerable women in CA are achieving access.

Among women who knew of EC, lower income women were significantly more likely to use the method, even though poor women usually demonstrate lower rates of contraceptive use than women with higher incomes (Fu et al., 1999; Jones, Darroch, & Henshaw, 2002). Increased use of EC among informed low-income women (as well as among immigrant women) may reflect the success of Family PACT in highlighting the importance of EC, and in making it available free of charge to all uninsured California residents with incomes less than twice the federal poverty level (Bixby Center, 2006; Guttmacher Institute, 2006). With unintended pregnancy among the poorest U.S. women increasing 29% between 1994 and 2001, and these women reporting high and increasing use of abortion services (Finer & Henshaw, 2006), utilization of EC by low-income women may help to reduce worsening reproductive health disparities.

Our data also reveal that women and teens with publicly funded insurance were less likely to express awareness of EC than those with private insurance, consistent with findings from CWHS (Foster et al., 2007). Among women and teens aware of EC, those who cited a community or government clinic as their usual source of care, or who reported no usual source of care, reported increased use of EC. Again, it is likely that health care providers at government and community clinics—which in California include the large network of Family PACT as well as Title X clinics—played a role in increasing EC access among their patients by 2003.

Place is also important in understanding where women were most likely to use EC, in that women in the most densely populated places—large cities—were significantly more likely to report using EC than women in all other areas of the state. On the other hand, women in California's least densely populated places were significantly less aware of EC and less likely to use it. Nearly 10% of the state's reproductive age population lives in remote rural areas and small towns (albeit, increasingly, with a local strip mall housing a pharmacy of some sort). For some rural women in California, and rural women in other states, long travel distances to the nearest pharmacy may negate the potential advantages of obtaining EC directly from pharmacists, especially when a woman finds herself in a crisis. Despite the improved access that behind-the-counter EC licensing brings to some women in the United States, the best approach for improving utilization of EC among rural women may include advance provision of prescriptions by clinicians, along with targeted educational efforts.

Our study has several limitations. First, in this study we crudely define awareness of EC as "having heard of EC." Clearly, having heard of "the morning after pill" does not guarantee that a woman knows exactly what EC is, where she can obtain it, or that she can use it up to 5 days after having unprotected intercourse. Indeed, 3 previous studies on EC awareness have described this knowledge gap (Foster et al., 2007; Salganicoff, Wentworth, & Ranji, 2004; Schwarz, Reeves, Gerbert, & Gonzales, 2007). Second, it is possible that EC use has been underreported by survey participants because EC has been stigmatized in some communities.

Another limitation of this study is that the survey's low overall response rate, especially for the adolescent survey, may reduce the generalizability of our findings. However, a survey's response rate is not the only, or even the best, measure of how representative the sample is of the general population. Many surveys report only cooperation rates, calculations that are intrinsically higher because they exclude sampled households that were not successfully contacted

(American Association for Public Opinion Research, 2006). CHIS' cooperation rates of 61% for adults and 83% for adolescents compare favorably with rates reported by other large, random digit dial telephone surveys. In any case, comparisons with census data and other sources have demonstrated that the CHIS sample generally represents the California population (UCLA Center for Health Policy Research, 2003).

We acknowledge that CHIS is a telephone-based survey, and as such omits women without home telephones, including the homeless, who are among the most vulnerable in our society and who could be most in need of EC. Also, although CHIS is conducted in 6 languages, certain subpopulations may be excluded from the sample because of linguistic barriers to participation. Finally, we note that the analyses presented herein do not control for education, marital status, or use of a regular method of birth control. These factors can greatly affect women's knowledge of and need for EC, but were not uniformly assessed among CHIS adult and teen respondents. Because young women are more likely to be unmarried and enrolled in school, factors that potentially make pregnancy and childbirth less desirable in the short term, our analyses may overestimate the effect of age as a predictor.

Nonetheless, the research described herein provides population-based data about EC use in a diverse population, information valuable to reproductive health advocates and providers alike. Although many groups remain uninformed about EC, and only a small percentage of women and teens in California utilized the method in 2003, the parity of reported use among informed women from diverse backgrounds implies broad acceptance of, and need for, postcoital contraception. Increased use of EC by informed teens, low-income women, and women without a usual source of health care suggests that EC may act as an important pregnancy prevention strategy among these vulnerable populations. Future research should explore this finding while we continue to address the challenge of improving EC awareness among all who may benefit from its use.

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