

Determinants of Contraceptive Acceptance Among Cambodian Abortion Patients

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Although Cambodia's total fertility rate is declining, limited access to and use of contraceptives has meant that some women rely upon induced abortion, legal since 1997, to achieve their fertility intentions. This study identifies factors that facilitate acceptance of postabortion contraception among women using Cambodia's public health facilities. Data were collected in all of Cambodia's hospitals with obstetric and delivery services (n = 71) and a representative sample of 115 of its 887 health-care centers, and from women seeking induced abortion or with abortion complications who presented to selected facilities during a three-week period (n = 933). Weighted data from 316 women who reported not wanting to become pregnant within the next few months and who presented to facilities that provide postabortion contraceptives were analyzed for bivariate and multivariate associations. Approximately 42 percent of women accepted contraceptives at the conclusion of care. After controlling for individual and facility characteristics, women who presented at facilities where a nurse/midwife managed abortion services, where contraceptives and abortions were provided in the same room, and where a larger range of methods were offered had significantly higher odds of contraceptive acceptance following abortion care. Improving contraceptive counseling and training for midwives and physicians, increasing contraceptive choices, and promoting access to contraceptives on site may reduce Cambodian women's risk of unwanted pregnancy and, potentially, unsafe abortion. (STUDIES IN FAMILY PLANNING 2009; 40[2]: 123–132)

Maternal health in Cambodia lags behind that of other Southeast Asian countries. The national maternal mortality ratio is 472 deaths per 100,000 live births, more than ten times higher than that of Thailand and more than three times higher than that of neighboring Vietnam (NIPH et al. 2006). Although postpartum hemorrhage (25 percent), sepsis (15 percent), and unsafe abortion (13 percent) are the most prevalent causes of maternal mortality worldwide, Southeast Asia faces a disproportionate burden of maternal deaths due to unsafe abortion (14–16 percent), a particularly noteworthy burden because several coun-

tries in the region allow abortion on request (WHO 2007). The World Health Organization defines an unsafe abortion as any procedure intended to terminate an undesired pregnancy that is provided by persons lacking the necessary skills and/or conducted in an environment lacking minimal medical standards (WHO 2003).

Abortion in Cambodia is increasingly common and potentially unsafe. The 2005 Cambodia Demographic and Health Survey (CDHS) estimates that 8 percent of Cambodian women of reproductive age have undergone an induced abortion, and almost half of those occurring in the past five years were induced in the home of the woman or of a provider untrained in performing safe abortion (NIPH et al. 2006). Despite legal reform in 1997 that allows for abortion on request, women continue to seek abortions from unskilled providers, herbalists, drug sellers, pharmacists, and traditional medical practitioners (Long and Ren 2001; Lester 2002 and 2003). Lack of access to safe and legal termination-of-pregnancy services (particularly outside of Phnom Penh), lack of awareness about abortion rights, expensive fees for safe abortions, and stigma concerning the procedure all contribute to women's reliance on unsafe

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means to terminate an unwanted pregnancy (Hemmings and Rolfe 2008). Approximately 10 to 50 percent of these women will require additional postabortion care (PAC) for complications resulting from unsafe abortion, depending on the procedures used and the availability, access to, and quality of services for the management of complications (Boonstra et al. 2006; Grimes et al. 2006; Rathavy et al. 2007; WHO 2007; Fetters et al. 2008). In a recent national study conducted in Cambodia, more than 40 percent of women seeking PAC services either told the health-care provider or showed strong clinical evidence that they or someone else had attempted to terminate the pregnancy, thereby indicating a strong and sometimes life-threatening desire not to carry the pregnancy to term (Fetters et al. 2008).

Effective family planning programs can prevent unintended pregnancies that may end in abortion. Although contraceptive use in Cambodia is increasing, contraceptive prevalence remains low; only 16 percent of all women and 27 percent of married women of reproductive age practice modern contraception, and 25 percent of married women who are not contraceptive-method users want to stop or space their childbearing (NIPH et al. 2006). Addressing contraceptive needs is important for all women who do not want to become pregnant, but it is especially critical for women who choose to have an abortion and demonstrate commitment to end a pregnancy via unsafe methods despite the inherent risks.

The World Health Organization asserts that all women should be offered nonjudgmental counseling and information about a variety of contraceptive options as part of abortion care (WHO 2003). For women who want to postpone or prevent subsequent pregnancy, contraception should begin immediately because fertility returns as early as two weeks following an abortion (Bongaarts and Potter 1983). Many women, however, particularly those in Southern countries who have an unmet need for postabortion contraception, either are not offered family planning methods, are referred elsewhere for contraceptive services, decline to accept any method, or opt for less effective technologies. Each of these situations represents potential lost opportunities to prevent unwanted pregnancies and repeat abortions.

An exploration and comparison of the characteristics and choices of women who do and do not accept postabortion contraception may help to provide recommendations for more effective and appropriate contraceptive counseling and services. This study assesses the individual and structural factors that facilitate women's acceptance of contraception following an abortion or postabortion care in Cambodian public hospitals and health-care centers among women who reported wanting to stop or delay childbearing.

Data and Methods

Facility Sample

The study presented here was conducted in 2005 in those of Cambodia's public health facilities that provide delivery services, and was part of a broader study on the presentation and treatment of abortion complications (Rathavy et al. 2007; Fetters et al. 2008). The sample included all 71 of the country's public hospitals and a nationally representative sample of 115 health-care centers. At the time, the Kingdom of Cambodia maintained 1,022 health-care facilities nationwide: 86 hospitals, 887 health-care centers, and 49 health posts. Of these facilities, 256 sites that either did not have a midwife or physician on staff, did not offer maternity services, or did not provide the Government's Minimum Package of Activities (standards determining the services that must be offered by a primary health-care facility) were excluded: 15 hospitals that did not provide obstetric services, 192 of the health-care centers, and all 49 health posts.

The health-care centers were drawn from a sampling frame of health-care facility and administrative data collected by the National Institute of Statistics in 2003 (NIS et al. 2005). Probability proportionate to size (PPS) sampling, based on the number of beds in the facility, was used to select health-care centers. Of the 695 eligible centers, 132 were randomly selected for participation using SAS statistical software, version 8.0. Ultimately, 100 percent of all eligible hospitals ($n = 71$) and 17 percent of all eligible health-care centers ($n = 115$) were included in the study (for further description of the study's sampling procedures, see Fetters et al. 2008).

In June and July of 2005, 186 maternal health officers responsible for abortion or postabortion services (one from each study facility) attended a data-collection training session. Prior to the training, the health officers completed a structured questionnaire concerning the facility's capacity to provide reproductive health services. Information was collected on current delivery of postabortion services, termination-of-pregnancy services, referral practices for PAC and induced abortion, abortion-care equipment, providers' responsibility for abortion procedures and follow-up care, and contraceptive availability and supplies.

Shortly after returning to their sites, the health officers used a structured data-capture form to record information on all induced abortions and all PAC cases of less than 22 weeks' gestation. The PAC cases resulted either from a spontaneous abortion (miscarriage) or an unsafely induced abortion. Patient data-capture forms contained standard questions about the patient's demographic char-

acteristics and reproductive history, symptoms that drew her to the facility, clinical management, and costs of care. The flow of the data-capture form approximated the continuum of care to facilitate efficient completion during or immediately following the woman's care.

Individual Sample

Data were collected from 933 women at 67 hospitals and 106 health-care centers (four hospitals and nine health-care centers had no patients who presented for abortion care during the data-collection period). For the current analysis, we excluded all women ($n = 164$) who wanted to become pregnant again immediately. We also excluded data from women ($n = 430$) who did not want to become pregnant within the next few months but who presented to facilities that did not provide postabortion care or postabortion family planning services (109 postabortion-care seekers who presented to facilities that do not provide it, 97 postabortion-care seekers who presented to facilities that provide PAC but that do not provide family planning services to PAC patients, 213 abortion seekers who presented to facilities that do not provide the procedure, and 11 abortion seekers who presented to facilities that provide the procedure but do not offer postabortion family planning services). Finally, 23 women were excluded because of missing information, either concerning the outcome variable (whether they accepted contraception at the conclusion of care) ($n = 4$) or about their clinical case management ($n = 19$). Thus, analysis beyond descriptive statistics was limited to 316 women: those who sought care in facilities that reported offering contraceptive services following an abortion (65 women attending 15 facilities) or following postabortion care (251 women attending 68 facilities). Information from almost two-thirds of cases ($n = 617$) was excluded from the analysis because the respondents did not fit the study inclusion criteria.

Data Entry

Although questionnaires were stripped of all patient identifiers, a unique facility code linked the client to her location of care. Data were entered twice and checked for consistency and completeness at the National Institute of Public Health (NIPH) in Phnom Penh, using EpiData statistical software version 6.0, then imported into SAS 8.0 and Stata 9.1 software for further analysis at Ipas. Facility-level data from the health officers and patient-level data were merged into a single data set. For each woman included in the study, data are available on the capacity and struc-

tural characteristics of the facility where she obtained either an induced abortion or care for complications of an unsafely induced or spontaneous abortion. The National Ethics Committee for Health Research for the Kingdom of Cambodia reviewed and approved the study.

Variables and Measures

Individual patient data for the analysis included information on demographic characteristics and reproductive history. Demographic data included a continuous measure of age and a categorical measure of parity (0, 1–2, and 3+ births). Reproductive history information consisted of dichotomous measures of services sought (PAC or induced abortion), gestational age (0–12 weeks or 13–21 weeks), and use of a contraceptive at the time of conception (yes or no).

Facility-level variables of interest included availability of and capacity to deliver PAC services, termination-of-pregnancy services, and postabortion contraceptive services. Facilities were categorized as either hospitals or health-care centers. Facility characteristics hypothesized to have an impact on women's acceptance of contraception following abortion care included a dichotomous measure describing the type of provider in charge of abortion services (physician/medical assistant or nurse/midwife), a dichotomous measure detailing the location of contraceptive service (the same room as or a different room or location from that of the abortion service), and a categorical measure of the number of contraceptive methods available at the facility (1–3 or 4–14). The study's primary outcome was patients' acceptance of contraceptive services after pregnancy termination.

In this study, the outcome of contraceptive acceptance was overemphasized by design and should not be considered generalizable to the entire population for several reasons. First, private health-care facilities and facilities that did not offer postabortion family planning information and services were excluded. Second, the study questionnaire encouraged providers to ask women whether they wanted to become pregnant again; this question could have prompted contraceptive counseling that may not be typical in some situations. Finally, categorization of a facility as a provider of postabortion family planning services was based solely on one provider's report. This study design does not allow for determination of the ability, quality, or consistency of multiple providers at the same facility in offering counseling and contraceptive services to postabortion clients. Similarly, without more information on the client-provider interaction, determining whether contraceptive services were routinely

offered to clients or whether clients themselves requested those services is not possible.

Analytic Procedures

Examination of the determinants of contraceptive acceptance was first conducted comparatively for PAC and abortion clients; later the two groups were combined into one group of postabortion clients when it was determined that no differences between the two groups achieved statistical significance. Two nonsignificant differences between the types of abortion-care seekers should be noted, however. First, provision of family planning in the location of the abortion services occurred more often for abortion clients than for postabortion-care clients, although the association between accepting contraception and receiving care in a facility that provides family planning and abortion in the same room was positive for both groups. Second, because the national abortion training program was still new, few public-sector midwives were authorized to perform the procedure at the study facilities. Those midwives providing this service were doing so without explicit Ministry of Health authorization, so that fewer abortion clients overall received care in facilities where midwives were in charge of abortion services.

Methods of variance estimation for survey data from patients were used to account for the complex sample design (stratified PPS sampling). Specifically, standard errors were obtained using the Taylor-series approximation. Unweighted data were used to describe facilities, whereas weighted data were used in the patient univariate analysis. We used weighted data in the bivariate analysis to describe the samples of women who accepted and did not accept contraception after the termination of their pregnancies, and included single-predictor logistic regression analyses to identify unadjusted associations between predictor variables and the outcome. Finally, we used weighted data in multivariate logistic regression analysis to model the effects of predictor variables simultaneously. Testing predictor variables for inter-item correlation identified age of patient and facility type as demonstrating multicollinearity. For variables associated with facility (namely, provider type, location in facility, and number of available methods), we considered inclusion of facility type only or inclusion of associated variables only and obtained similar findings for the adjusted model. As a result, we chose to include the associated variables because they provide more detailed family planning service-delivery information. Subsequently, all predictor variables included in the bivariate analyses were retained in the multivariate analysis except patient's age and facility type. Because the overall probability of

contraceptive acceptance was not a rare event, odds ratios are poor proxy measures for relative risk. Instead, we report the adjusted predicted percent and corresponding 95 percent confidence intervals of different subgroups, holding the other variables at their mean values. Statistical significance was defined a priori as $p \leq 0.05$.

Results

Women sampled in the larger study sought care at 67 hospitals and 106 health-care centers. Among the hospitals and health-care centers sampled, provision of postabortion care, termination-of-pregnancy services, and postabortion family planning was limited. Although all 67 hospitals that saw PAC patients during the data-collection period provided PAC services, only 55 percent ($n = 37$) offered contraceptive information and services to PAC patients (see Table 1). Only 41 percent ($n = 43$) of health-care centers provided PAC services; of the 63 centers that did not, 90 percent ($n = 57$) instead referred those clients to other facilities (not shown). All health-care centers that treated PAC patients ($n = 43$) provided contraceptive services to those patients. Of the hospitals that provided postabortion contraceptive services to PAC patients, the majority had a physician or medical assistant in charge of PAC services (65 percent), offered contraceptive services in a different room from that used for PAC services (62 percent), and offered four or more contraceptive methods (65 percent). In contrast, of health-care centers that provided postabortion family planning services to women seeking PAC, the overwhelming majority charged a midwife or nurse with managing PAC services (91 percent). Similar to hospitals, most of these health-care centers provided contraceptive services in a different room from the one used for PAC services (65 percent), and all health-care centers offered four or more contraceptive methods.

For women seeking an induced abortion, fewer than half of the hospitals ($n = 32$; 48 percent) and only nine health-care centers (8 percent) provided this service. The majority of the facilities that did not offer termination-of-pregnancy (TOP) services referred women elsewhere (60 percent of such hospitals; 76 percent of such health-care centers; not shown). Of the 32 hospitals where women could obtain an abortion, only 19 (59 percent) offered family planning services to TOP clients. All nine health-care centers providing TOP services offered family planning services to abortion patients, however. The characteristics of care for TOP services were similar to those for PAC services. In hospitals providing contraceptive services to women seeking induced abortion, nearly all (95 percent)

Table 1 Percentage of Cambodian public hospitals and health-care centers sampled that had a midwife or a physician on staff, offered maternity services, and met the Government's Minimum Package of Activities, by types of care provided to study population, 2005

Type of care provided	Hospitals		Health-care centers	
	Per-cent	(n)	Per-cent	(n)
Of all facilities sampled:		(71)		(115)
Saw TOP or PAC patients during data-collection period				
Yes	94	(67)	92	(106)
No	6	(4)	8	(9)
Of facilities that treated patients in the data-collection period:		(67)		(106)
Provides PAC services				
Yes	100	(67)	41	(43)
No	0	(0)	59	(63)
Provides TOP services				
Yes	48	(32)	8	(9)
No	52	(35)	92	(97)
Of facilities that provide PAC services:		(67)		(43)
Provides contraceptive services to PAC patients				
Yes	55	(37)	100	(43)
No	45	(30)	0	(0)
Of facilities that provide contraceptive services to PAC patients:^a		(37)		(43)
Provider in charge of PAC services				
Midwife or nurse	32	(12)	91	(39)
Physician or medical assistant	65	(24)	9	(4)
Offers contraceptive services where PAC care provided				
Yes	35	(13)	35	(15)
No	62	(23)	65	(28)
Number of contraceptive methods available to PAC patients				
1-3	32	(12)	0	(0)
4+	65	(24)	100	(43)
Of facilities that provide TOP services:		(32)		(9)
Provides contraceptive services to TOP patients				
Yes	59	(19)	100	(9)
No	41	(13)	0	(0)
Of facilities that provide contraceptive services to TOP patients:		(19)		(9)
Provider in charge of TOP services				
Midwife or nurse	5	(1)	67	(6)
Physician or medical assistant	95	(18)	33	(3)
Offers contraceptive services where TOP care is provided				
Yes	47	(9)	22	(2)
No	53	(10)	78	(7)
Number of contraceptive methods available to TOP patients				
1-3	32	(6)	0	(0)
4+	68	(13)	100	(9)

TOP = Termination of pregnancy. PAC = Postabortion care.

^a Data for one hospital are missing.

had a physician or medical assistant in charge of abortion services, more than half (53 percent) offered contraceptive services in a different room from that used for abortion care, and more than two-thirds (68 percent) offered four or more contraceptive methods. Of the nine health-care centers providing contraceptive services to abortion pa-

tients, six facilities had a midwife or nurse in charge of abortion services, seven facilities did not offer contraceptive services in the same room as abortion services, and all facilities provided four or more contraceptive methods to women seeking termination of a pregnancy.

Not surprisingly, women's limited access to abortion, postabortion care, and contraceptive services was one of the greatest barriers to their postabortion contraceptive acceptance. Most women in this study had to visit more than one health-care facility to obtain either postabortion care or the contraceptive method they sought after receiving this care. Of the 933 women who presented for PAC or induced abortion during the data-collection period, 53 percent (n = 497) presented to facilities that did not provide PAC, termination-of-pregnancy, or postabortion family planning services, and 82 percent (n = 769) informed providers that they did not want to become pregnant again in the near future (not shown). The 316 women included in the final analysis who did not want to become pregnant again and who presented to facilities that offered postabortion family planning were cared for at 70 health-care facilities, comprised of 33 health-care centers and 37 hospitals (not shown). Most of the women (n = 251) sought postabortion care; fewer (n = 65) sought legal pregnancy termination (see Table 2).

Women included in this analysis were well into child-bearing age. The mean age of patients was 33.2 years, and the majority of women had three or more children. An overwhelming proportion (90 percent) of women presented for care during their first 12 weeks of pregnancy. Nearly three-fifths of women reported using some type of modern contraceptive at the time of conception. A smaller proportion, however, accepted a modern contraceptive when their abortion care was concluded (42 percent). The demographic and reproductive histories of excluded and included women were similar; however, those excluded from the analyses because of their pregnancy intention were significantly younger and less likely to be using a contraceptive method prior to the current pregnancy (not shown).

Almost three-fourths of women presented at health-care centers rather than hospitals, and 62 percent of women received care at a facility where midwives or nurses held primary responsibility for abortion or postabortion-care services. Slightly less than a third sought care at facilities that provide contraceptive services in the same room as abortion services. Finally, most women received care from facilities that offered four or more contraceptive methods to abortion and postabortion care clients (90 percent).

Table 3 presents a bivariate analysis comparing demographic and facility characteristics of women who ac-

Table 2 Percentage of Cambodian women (n = 316) wanting to stop or space childbearing and seeking abortion services in facilities that offer postabortion contraceptive services, by selected demographic and clinical care characteristics, 2005

Characteristic	Weighted percent	Unweighted (n)
Patients' characteristic		
Mean age (years)	33.2	—
Parity		
0	10	(34)
1–2	30	(101)
3+	60	(181)
Service sought		
Postabortion care	80	(251)
Induced abortion	20	(65)
Gestational age		
0–12 weeks	90	(266)
13–21 weeks	10	(50)
Used a contraceptive method at time of conception		
Yes	57	(155)
No	43	(155)
Accepted a contraceptive method		
Yes	42	(122)
No	58	(194)
Facility characteristic^a		
Facility type		
Health-care center	73	(154)
Hospital	27	(162)
Provider in charge of abortion services		
Midwife or nurse	62	(172)
Physician or medical assistant	38	(141)
Offers contraceptive services where TOP care is provided		
Yes	31	(102)
No	69	(211)
Number of contraceptive methods offered		
1–3	10	(60)
4–14	90	(253)

— = Not applicable. TOP = Termination of pregnancy.

^aIndividual women are the unit of analysis for the facility characteristics presented in the table.

cepted and women who did not accept a modern contraceptive method before leaving the facility. Women who accepted a method at the conclusion of their care and women who did not were similar in age (33.5 versus 32.9 years, respectively). A greater proportion of women who accepted contraceptives than women who did not reported having three or more children (71 percent versus 53 percent), and higher parity (defined as having had three or more children) was strongly associated with the outcome. The majority of women who accepted (85 percent) and did not accept (76 percent) a modern contraceptive presented for postabortion care, but seeking such care was not significantly associated with accepting contraception after the pregnancy was terminated. Similarly, the vast majority of all women (92 percent of those who accepted contraception and 88 percent of those who did not) sought care during their first 12 weeks of pregnancy.

Table 3 Percentage of Cambodian women (n = 316) who sought care in facilities that offer postabortion contraceptive services, by demographic and clinical care characteristics and contraceptive acceptance after pregnancy termination, and odds ratios for contraceptive acceptance, 2005

Characteristic	Accepted a modern contraceptive method				Odds ratio
	Yes (n = 122)		No (n = 194)		
	Weighted percent	Un-weighted (n)	Weighted percent	Un-weighted (n)	
Patients' characteristic					
Mean age (years)	33.5		32.9		1.01
Parity					
0 (r)	5	(7)	13	(27)	1.00
1–2	24	(36)	34	(65)	1.86
3+	71	(79)	53	(102)	3.49**
Service sought					
Postabortion care	85	(100)	76	(151)	1.85
Induced abortion (r)	15	(22)	24	(43)	1.00
Gestational age					
0–12 weeks (r)	92	(108)	88	(158)	1.00
13–21 weeks	8	(14)	12	(36)	0.63
Used a contraceptive method at time of conception					
Yes	57	(68)	56	(87) ^a	1.03
No (r)	43	(54)	44	(101) ^a	1.00
Facility characteristic					
Facility type					
Health-care center	82	(78)	66	(76)	2.39
Hospital (r)	18	(44)	34	(118)	1.00
Provider in charge of abortion services					
Midwife or nurse	81	(89) ^a	48	(83)	4.52**
Physician or medical assistant (r)	19	(30) ^a	52	(111)	1.00
Offers contraceptive services where TOP care is provided					
Yes	48	(57) ^a	19	(45)	3.97**
No (r)	52	(62) ^a	81	(149)	1.00
Number of contraceptive methods offered					
1–3 (r)	4	(9) ^a	15	(51)	1.00
4–14	96	(110) ^a	85	(143)	4.53*

*Significant at $p \leq 0.05$; ** $p \leq 0.01$. (r) = Reference category. TOP = Termination of pregnancy.

^aDoes not sum to total because of missing values.

No significant difference was observed between women who accepted and women who did not accept contraception in terms of their use of contraceptives at the time of conception (57 percent versus 56 percent).

As shown in Table 3, the type of health-care facility (hospital or health-care center) to which women presented was not associated with their acceptance of contraception. However, the type of services that facilities offer to patients, and the provider who offers those services, were both associated with contraceptive acceptance. More than eight of ten women (81 percent) who accepted contraception after they obtained an abortion presented to facilities where a midwife or nurse was in charge of abortion ser-

vices, compared with 48 percent of women who did not accept contraception. Women who presented to facilities that offered contraception in the same room as abortion care also had a higher likelihood of accepting contraception than did women who were referred elsewhere for a contraceptive method; roughly half of all women who accepted contraception, compared with roughly one-fifth of women who did not, presented for care in such facilities. Lastly, offering a greater variety of contraceptive methods was associated with women's contraceptive acceptance.

Although having had three or more pregnancies was associated with contraceptive acceptance in the bivariate analysis, it did not remain statistically significant after controlling for other reproductive history characteristics (services requested, gestational age, and prior contraceptive use) (see Table 4). Moreover, none of the individual patient characteristics—including whether the woman sought TOP services, presented in her first or second trimester, or was using a contraceptive method at the time she conceived—predicted her postabortion contraceptive acceptance. All of the facility characteristics, however,

were predictive of accepting a contraceptive method, and they remained statistically significant upon bivariate and multivariate examination. Women seeking care in health facilities where the provider in charge of abortion services was a midwife or nurse (adjusted predicted percent = 50), where the facility offered family planning services in the abortion-procedure room (adjusted predicted percent = 62), or at a facility that offered a wider selection of contraceptive methods (adjusted predicted percent = 42) had a higher probability of accepting a contraceptive method after obtaining abortion care than did women served in facilities without these characteristics.

Discussion

Much has been written about the lessons of facility-based postabortion contraceptive programs (Wood et al. 2007). Enhanced postabortion family planning interventions have improved contraceptive acceptance (Solo et al. 1999; Johnson et al. 2002; Savelieva et al. 2003), increased access to and knowledge of family planning (Rasch et al. 2005; Wood et al. 2007), resulted in cost savings to facilities and to clients (Billings and Benson 2005; Johnston et al. 2007), and reduced repeat abortions (Karabacak et al. 2001; Johnson et al. 2002; Savelieva et al. 2003). Yet many patients who want to prevent future pregnancies are not offered postabortion contraception, and among those who are offered it, many continue to refuse family planning.

The purpose of this study was to identify facilitating factors for postabortion contraceptive acceptance among women who are in a position to receive those services. Although all women included in this analysis reported to the abortion or postabortion care provider that they did not want to become pregnant again soon and were in a position to receive family planning services, only 42 percent chose a contraceptive method before they were discharged. The study examines individual and institutional factors that affect contraceptive acceptance and that may further influence providers' opportunities to help Cambodian women meet their reproductive intentions.

Most women in this study were treated in a health-care center rather than a hospital, but women's facility choice did not predict postabortion contraceptive acceptance. Interestingly, all of the other facility characteristics examined in the study were associated with acceptance of a contraceptive method. Postabortion contraceptive acceptance was more common among women who sought care in facilities where a midwife was in charge of abortion services, where contraception was provided in the same room as abortion care, and where a wider range of contraceptive methods was offered.

Table 4 Adjusted predicted probabilities of contraceptive acceptance following abortion care, by patient and facility characteristics in facilities that provide postabortion contraception services, Cambodia, 2005

Characteristic	Predicted percent	(95% CI)
Patients' characteristic		
Parity		
0	29	(16.6–45.7)
1–2	36	(24.7–49.1)
3+	40	(27.6–54.6)
Service sought		
Postabortion care	40	(27.9–53.9)
Induced abortion	38	(19.9–59.2)
Gestational age		
0–12 weeks	40	(27.6–54.6)
13–21 weeks	33	(18.4–52.7)
Used a contraceptive method at time of conception		
Yes	42	(29.5–56.0)
No	36	(21.4–54.7)
Facility characteristic		
Provider in charge of abortion services		
Midwife or nurse	50	(35.6–65.3)
Physician or medical assistant	24	(11.3–45.2)
Offers contraceptive services where TOP care is provided		
Yes	62	(41.8–79.2)
No	30	(18.4–45.3)
Number of contraceptive methods offered		
1–3	18	(7.3–37.4)
4–14	42	(29.8–56.1)

F(6,61) = 2.85, p-value = 0.016. CI = Confidence interval. TOP = Termination of pregnancy.

Note: In the multivariate logistic regression, data were weighted to account for the complex sampling procedure. Data from 307 women were included in the model.

Almost three-fourths of these women were treated in a health-care center, thereby increasing the likelihood that they would be cared for in a unit managed by a midwife rather than by a physician. Such was the case for 62 percent of the women in this study. On average, four times more of these women accepted postabortion contraception than did the women who were treated in wards headed by physicians. This trend remained significant in the adjusted multivariate model, although it decreased slightly. This positive effect may reflect the fact that these women were seen in relatively small health centers that might have more time than larger facilities to attend to patients. Caregivers at these centers may be more empathetic, their staff more content, or they may simply have more time to counsel clients. Midwives may also provide higher-quality counseling and contraceptive provision in general, compared with physicians.

A review of contraceptive method mix conducted with data from 64 developing countries (Ross et al. 2001) found that those populations with consistent access to high levels of female sterilization, the IUD, the pill, and the condom reported the highest combined and individual mean prevalence of use of these four methods. Although the premise equating increased contraceptive choice with improved contraceptive acceptance is widely accepted among family planning experts (Simmons et al. 1997), this topic has never been researched in studies devoted exclusively to postabortion care. The present study's findings suggest that a more diverse method mix also improves contraceptive acceptance at the individual level. Having a range of contraceptive choices allows women to select a method that best meets their needs, whether long or short term, hormonal or nonhormonal, or woman-initiated or not.

Removing physical and temporal barriers has been shown to improve contraceptive acceptance (Wood et al. 2007). A study conducted in Kenya found that 75 percent of postabortion clients accepted a method when they were offered it in the ward, compared with only 41 percent of clients who were required to visit a separate site in the same health facility to obtain a method (Solo et al. 1999). This pattern of improved contraceptive acceptance associated with immediate access to methods at the location of the abortion service was also observed in our study, regardless of other facility characteristics.

Because none of the women in this study sample wanted to become pregnant again soon, and because requesting abortion or presenting for postabortion care can indicate a strong desire not to carry a pregnancy to term, the finding that most of the women's personal characteristics appeared to have little influence on whether they accepted contraception may not be surprising. No association was found

between the woman's age or the length of gestation and whether she accepted postabortion contraception. What is surprising, however, is that women's past use of a contraceptive method did not facilitate postabortion acceptance of a family planning method: little difference in contraceptive acceptance was found between women who reported that they were using a modern contraceptive method when they became pregnant and those who did not.

Among the patients' characteristics, only high parity appeared to affect whether women accepted postabortion contraception. When the relationship between high parity and postabortion family planning acceptance alone was examined, women with three or more children were found to have more than three times the likelihood of accepting a contraceptive method than women with no children. These findings are consistent with fertility trends in Cambodia. The country is in the process of a fertility transition; between 2000 and 2005 the total fertility rate declined sharply from 4 to 3.4 children per woman as the desired family size continued to decrease (NIPH et al. 2006). Although our findings suggest that as women achieve their desired family size they are more likely to terminate an unwanted pregnancy, this relationship was not found to be statistically significant when other characteristics of the woman and her type of care were controlled for (NIPH et al. 2006). These results suggest that when women receive care in an environment that does not facilitate acceptance of postabortion contraception, they are less likely to have their reproductive needs met, even when they have a strong personal desire to limit childbearing.

Surprisingly, women presenting for TOP services—indicating that they had an unwanted pregnancy and a desire to avoid pregnancy—did not have a greater probability of contraceptive acceptance than did women presenting for postabortion care. The population of PAC cases was comprised of women who had experienced complications of either spontaneous or unsafe abortions, a combination that suggests more diverse fertility intentions among women in this category. A related study (of which this study is a subset) of PAC cases treated in the public sector in 2005 reported that at least 40 percent of these cases were not related to spontaneous abortion (miscarriages); women either reported trying to end their pregnancy or showed strong clinical evidence of having done so (Fetters et al. 2008). Secrecy and stigma surrounding obtaining an abortion probably indicate that an even greater proportion of these PAC clients had attempted to terminate their pregnancies. Such a high level of complications related to unsafe abortion among PAC clients in Cambodia may begin to explain the strong motivation in this group to report wanting to avoid another unwanted pregnancy, but it contradicts the low level of method acceptance.

Study Limitations

This study has several limitations. First, a large proportion of patients were excluded from this analysis because either (a) they sought care in a facility that did not provide PAC services, provide induced abortion services, or offer contraceptive methods to PAC and/or abortion clients ($n = 430$); (b) they wanted to become pregnant in the next few months ($n = 164$); or (c) data were missing concerning their contraceptive acceptance or clinical management ($n = 23$). Demographic and reproductive histories were similar between excluded and included women, except that those excluded from the analyses were significantly younger and less likely to be using a contraceptive prior to the current pregnancy. These differences indicate a disparity compromising the generalizability of this study's results to Cambodian women who present for pregnancy terminations or postabortion care.

Facility characteristics such as location of family planning service and number of family planning methods offered were not externally assigned as part of the study design. As a result, these characteristics may reflect the demand for contraceptive services rather than contribute to contraceptive acceptance. We feel, however, that this possibility is unlikely, because women who were included in the larger study sought care explicitly for abortion services, not for postabortion contraception. In Cambodia, facility attributes are determined as a matter of policy standards and guidelines based on the level of care designated for each facility and provider type. As a result, organization of services is unlikely to result from demand for contraception; rather it reflects the strategic planning and guidance of the Ministry of Health.

Finally, the quantitative and cross-sectional nature of the data makes determining causal relationships between accepting contraception, women's reproductive histories, and the facility where they received care difficult. Longitudinal studies designed to estimate causality and qualitative research conducted to disentangle women's and providers' decisionmaking processes regarding contraceptive counseling and acceptance would be helpful follow-ups to the present study, allowing for more tightly drawn conclusions and suggesting potential strategies to improve contraceptive acceptance in Cambodia.

Conclusions

This study identifies several important factors that can affect maternal health. The findings indicate that guidance and training for improving contraceptive-method counseling and provision, especially for nurses and mid-

wives, and increasing contraceptive-method selection in the abortion procedure room may reduce Cambodian women's risk of unwanted pregnancy and unsafe abortion. The majority of women presenting for abortion-related services in Cambodia who do not want to become pregnant in the near future are not receiving contraceptive information and services after abortion care. One-third of the women in the study sample could not be included in this analysis because the facility where they were served did not routinely provide postabortion contraceptive services.

Several other recommendations for future action can be drawn from the study's findings. First, all types of patients seeking abortion and postabortion services must receive information about contraception. In this study, personal and socioeconomic characteristics—such as age, prior use of contraceptives, trimester of pregnancy, and type of service sought—which a provider might consider in a subjective assessment of contraceptive acceptance, were not associated with taking a method home. Training and information that dispel assumptions and preconceptions about family planning acceptors should be formulated to alter providers' attitudes and remove other barriers to the provision of high-quality contraceptive counseling.

Second, in facilities where abortion care is provided predominantly by physicians, doctors should be targeted for extra attention in order to improve deficits in their contraceptive services. Where these services are monitored and provided by midwives, these providers should be supported and encouraged to continue to offer and expand comprehensive abortion care, including postabortion contraceptive services. This study provides additional evidence of the importance of allowing, training, and supporting nurses and midwives to be able to provide abortion and postabortion services.

Finally, this study confirms the results of research conducted in other countries indicating that improving contraceptive acceptance requires removal of structural barriers. Providing a variety of contraceptive methods, providing those methods in the same location as the abortion care, and providing them in a service managed by a midwife all improved women's chances of meeting their reproductive goal of delaying or stopping childbearing. All women should be offered postabortion contraceptive counseling and be provided, if they wish, with a range of contraceptive options to prevent or space pregnancies and protect themselves from sexually transmitted infections. Universal provision in Cambodia of contraceptive information, counseling, and services would help greatly to prevent unintended pregnancy, unsafe abortion, and maternal mortality. Allowing women who have sought

termination-of-pregnancy or postabortion care services to leave the health-care facility without the capacity to control their own fertility puts them at risk of another unwanted pregnancy and unsafe abortion.

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