

# Emergency Contraceptive Knowledge and Use among Urban Women in Nigeria and Kenya

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*Rates of emergency contraceptive (EC) use in sub-Saharan Africa are highest in Kenya and Nigeria, although little is known about user characteristics and use dynamics in these countries. To better meet women's emergency contraceptive needs and to contribute to the limited knowledge base regarding this method in Africa, this study examines data from a sample of EC users drawn from a large, representative household survey that included sexually experienced women in urban Kenya and Nigeria. Bivariate and multivariate analyses reveal greater knowledge of EC among these urban women than was reported in other nationally representative surveys. Recent users of EC were more likely to be in their 20s, unmarried, and more highly educated than never users or ever users of EC in both countries. Results contradict public perceptions of EC users as young adolescents and indicate the importance of strengthening EC provision in Africa, including targeting information and services to unmarried women and supporting private pharmacies in delivering quality services. (STUDIES IN FAMILY PLANNING 2014; 45[1]: 59–72)*

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**E**mergency contraceptive (EC) pills are an essential, although often underused, family planning (FP) option. EC methods, which include both oral contraceptives and intra-uterine devices, represent the only reliable postcoital FP option available to women, and have been recommended by numerous professional associations as safe and effective for use following both consensual and nonconsensual sex (FIGO 2009; WHO 2012). In sub-Saharan Africa, where access to formal health care and FP services remains limited, dedicated EC pills—often accessed through private-sector pharmacies—have emerged to play an important role in preventing unwanted pregnancies. Demographic and Health Surveys (DHSs) from across the continent demonstrate that, although limited, knowledge and use of EC has increased in nearly all the African countries where data regarding EC is available: Ghana, Kenya, and Uganda (GSS, GHS, and ICF Macro 2009; KNBS and ICF Macro 2010; UBOS and ICF International 2012).

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Based on Demographic and Health Surveys conducted in sub-Saharan Africa, rates of EC use are highest in Kenya and Nigeria, although only 1.7 percent of all Kenyan women and 2.8 percent of Nigerian women have ever reported using the method (NPC and ICF Macro 2009; KNBS and ICF Macro 2010). Despite Nigeria's greater use rate, knowledge of the method has remained largely unchanged in recent years, at 15 percent of all women surveyed in the DHS, whereas more than 40 percent of women in Kenya are now aware of the method—a proportion that has increased significantly in recent years. In Kenya, this increase in awareness exists within the context of a relatively robust FP program, which has helped achieve a national contraceptive prevalence rate (CPR) of 46 percent (KNBS and ICF Macro 2010). Conversely, Nigeria's FP efforts have been hampered by political instability, commodity shortages, and significant regional variations, resulting in a CPR of 15 percent (NPC and ICF Macro 2009). In both countries, EC is accessible in urban and peri-urban private-sector pharmacies, ensuring its availability beyond the traditional outlets for FP services (PSI 2007; Lang, Keesbury, and Karlyn 2012).

EC has been the subject of increased public debate in Kenya and Nigeria, despite the paucity of reliable data available regarding the characteristics of users and the factors that influence their decision to use this method. Across the continent, African media have consistently portrayed EC users as being very young adolescents who use the method “like chocolates” and engage in frequent, risky sexual behavior (Wesangula 2004; Okwemba 2008; *Punch* 2012). Available research, although very limited, suggests that this characterization is not accurate. One study of Kenyan women who purchased EC in urban areas found that EC users had a mean age of 25 years, and that 61 percent had attended college and were employed. The study also found that 58 percent (unadjusted rate) of these women reported purchasing EC at least two times during the past month (Keesbury, Morgan, and Owino 2010). Another study, conducted in urban Kenya, indicated that 94 percent of those who purchased EC did so from a private-sector pharmacy. Study participants reported that they preferred the convenience and confidentiality of pharmacies over lower-cost public-sector outlets (PSI 2007). EC access in Nigeria has been less closely studied, although research conducted among university women has consistently found that their level of knowledge of EC (58 percent at the University of Benin and 51 percent at the University of Port Harcourt) substantially exceeds that of the general population (Aziken, Okonta, and Ande 2003; Akani, Enyindah, and Babatunde 2008). In the Port Harcourt study, of the 35 percent of those surveyed who had used EC, the product was most likely to have been purchased from a pharmacy or drug shop (also known as a “patent medicine store” in Nigeria) (Akani, Enyindah, and Babatunde 2008). Many providers, including social marketers, continue to express concern that the method is being used by young women too often (Lang, Keesbury, and Karlyn 2012).

These studies provide a coarse snapshot of EC use in Kenya and Nigeria, but the picture is grainy and of questionable accuracy as a result of small and unrepresentative samples. Nationally representative surveys, such as the DHS, capture only a small number of EC users because of the relatively low levels of EC use across the general population. These small samples are useful for estimating national usage rates, but their ability to detect important characteristics of EC users is fundamentally limited. The present study significantly adds to the understanding of EC knowledge and use in Kenya and Nigeria by presenting data from the largest representative sample to date of EC users, which was collected through household surveys in five purposively selected urban areas of Kenya and six purposively selected urban areas of Nigeria.

These data provide much needed information concerning the characteristics of urban EC users in two important countries, and provide the basis for further comparative work across the continent. This study makes possible the validation of previous smaller studies, the examination of new dimensions of use, and ultimately the further understanding of this increasingly popular method.

## METHODS

Collecting data from urban Kenya and Nigeria provides the opportunity for a potentially large sample of users. To accomplish this, and to permit in-depth analysis into use patterns, an emergency contraception module was included in the baseline data collection for Urban Reproductive Health Initiative (URHI) activities in Kenya and Nigeria, where large-scale representative household surveys among women and men from five cities in Kenya and six cities in Nigeria were undertaken. Baseline data collection was conducted in Kenya between September and November 2010 and in Nigeria from October 2010 to April 2011. Multistage sampling methods were used. In the first stage, national census enumeration sampling frames were used. In both countries, a total of 400–500 clusters were sampled in five to six cities in each country. The cities were purposively selected by the URHI implementing consortia. In the second stage, a household listing for all sampled clusters was undertaken. A representative sample of households (30 in Kenya and 41 in Nigeria) was selected for interview using pretested questionnaires. All women aged 15–49 in selected households were eligible for interview. (For complete sampling information, see MLE, NURHI, and DRMC 2011; MLE, Tumpange, and KNBS 2011).

In Kenya, of the 13,140 households selected for inclusion, 12,565 were occupied and eligible for interviews. Of these, 10,992 households were interviewed successfully, yielding a household response rate of 87 percent. A total of 10,502 were eligible, of which 8,932 consented and participated in an interview, yielding an individual response rate of 85 percent in Kenya. For these analyses, we include only sexually experienced women (weighted  $n = 7,785$ ). In Nigeria, a total of 19,556 households were selected and 16,935 were successfully interviewed, yielding a household completion rate of 87 percent. Among the interviewed households, a total of 16,957 women were eligible for individual interviews and 95 percent (16,144) were successfully interviewed. For these analyses, we include only sexually experienced women (weighted  $n = 12,652$ ).

In both countries, interviews took place in a location where respondents could be assured some level of privacy. Interviews were conducted by a same-sex interviewer using a paper-and-pencil questionnaire, following the receipt of informed consent. Using a structured questionnaire, respondents answered questions concerning demographic characteristics, current and past FP method use, fertility desires and intentions, health-seeking behaviors for themselves and their children, how they pay for health care services, exposure to FP messages, and migration patterns. Kenya data collection was approved by the Kenya Medical Research Institute (KEMRI) and by the University of North Carolina at Chapel Hill Institutional Review Board. Nigeria data collection was approved by the National Health Research Ethics Committee (NHREC) in Nigeria and by the University of North Carolina at Chapel Hill Institutional Review Board.

Key variables for this analysis include knowledge of, ever use of, source of, and repeat use of EC. These questions were all asked in a specific EC module included in the Kenya and Nigeria surveys. All descriptive analyses were stratified by marital experience (never married and ever married) to examine how use patterns differ by marital status.

We examined the association between use of EC and sociodemographic variables using multinomial logistic regression analysis. For this multivariate analysis, a three-category outcome variable was created to classify experience with EC: never used EC, ever used EC but not in the past 12 months (“nonrecent use”), and ever used EC and used in the past 12 months (“recent use”).

In addition to socioeconomic status, we included a number of other demographic characteristics as control variables in the multivariate analyses. (See Table 1 for a list of all control variables and their classification in the two countries.) To control for wealth quintiles calculated across the cities within countries, we used principal components analysis on household assets, an approach similar to that used in Demographic and Health Surveys (Gwatkin et al. 2000). In each country, analyses control for city variables. For standardization, the capital city was selected to be the reference group. The education variable was coded slightly differently in the two countries, reflecting the varying education levels and education systems. Where appropriate, our models of EC use examined interactions. The statistical significance level for each covariate effect on each dependent variable was examined. All p-values were two-sided and considered to be significant at the  $p \leq 0.05$  level. Stata 12.0 was used to produce bivariate and multivariate results of characteristics of EC users and patterns of use.

## RESULTS

Table 1 presents the demographic characteristics (control variables) of sexually experienced women aged 15–49 years in the selected urban areas of each country. Sexually experienced women in urban Kenya were younger, on average, than their counterparts in urban Nigeria. Sixty percent of sexually experienced Kenyan women were younger than age 30, compared with 43 percent among sexually experienced Nigerians. Urban sexually experienced women in both countries had a relatively high level of education; 56 percent of women in Kenya and 60 percent of women in Nigeria had a secondary or higher level of education. Nearly all (89 percent) of Kenya’s sexually experienced women aged 15–49 years reported being Christian, whereas Nigerian women were fairly evenly split between Christians (49 percent) and Muslims (50 percent). The samples also differed with regard to marital status. In Kenya nearly one-fourth (24 percent) of the women interviewed were never married, and less than two-thirds (64 percent) were currently married or living with a partner. In Nigeria only 16 percent had never been married and 80 percent were currently married or living with a partner.

The distribution of women by city reflects the different city population sizes and related sampling and weighting schemes used to select women in each sample. Kenya’s largest city is Nairobi; the other four Kenyan cities and towns included in this study are much smaller than Nairobi. Thus, after weighting, 73 percent of sexually experienced women aged 15–49 years were based in Nairobi. In contrast, the population distribution of the six selected Nigerian cities was more even, and the sampling and sample-weighting scheme reflected this. Distribu-

**TABLE 1** Weighted percentage and number of women aged 15–49 who reported ever having sex, by demographic characteristics, selected urban sites in Kenya (2010) and Nigeria (2010–11)

Characteristic	Kenya (N = 7,785)		Nigeria (N = 12,652)	
	Percent	(n)	Percent	(n)
Age (years)				
15–19	6.7	(519)	4.0	(512)
20–24	27.1	(2,106)	16.1	(2,033)
25–29	26.4	(2,055)	22.9	(2,901)
30–34	16.3	(1,272)	20.7	(2,623)
35–39	11.7	(910)	16.4	(2,075)
40+	11.9	(923)	19.8	(2,508)
Education (Kenya / Nigeria)				
None / Quranic	3.4	(263)	14.4	(1,806)
Primary incomplete / Primary	14.0	(1,088)	17.1	(2,152)
Primary complete or vocational / Junior secondary	27.1	(2,106)	8.9	(1,120)
Secondary or higher / Senior secondary	55.6	(4,326)	34.0	(4,267)
nc / Higher	nc	nc	25.6	(3,219)
Employment status in past 12 months				
Did not work	35.1	(2,735)	36.3	(4,591)
Worked	64.9	(5,051)	63.7	(8,061)
Religion				
Protestant or other Christian	65.8	(1,837)	44.7	(5,633)
Catholic	23.6	(5122)	4.6	(582)
Muslim	9.1	(711)	50.1	(6,305)
Other or none	1.4	(109)	0.6	(72)
Marital or relationship status				
Never married	24.3	(1,887)	16.3	(2,039)
Married or living together	63.7	(4,948)	79.5	(9,927)
Divorced or separated	9.1	(707)	2.1	(260)
Widowed	2.9	(222)	2.1	(261)
Has at least one living child				
No	21.4	(1,669)	22.4	(2,840)
Yes	78.6	(6,117)	77.6	(9,812)
Wealth quintile				
Lowest	18.5	(1,439)	19.8	(2,505)
Second	19.1	(1,488)	20.4	(2,583)
Middle	20.4	(1,590)	20.9	(2,650)
Fourth	20.5	(1,596)	19.9	(2,524)
Highest	21.5	(1,671)	18.9	(2,390)
City (Kenya / Nigeria)				
Nairobi / Abuja	72.9	(5,674)	13.4	(1,694)
Mombasa / Benin City	18.6	(1,446)	13.0	(1,651)
Kisumu / Ibadan	5.3	(416)	20.6	(2,611)
Machakos / Ilorin	1.4	(112)	16.6	(2,101)
Kakamega / Kaduna	1.8	(137)	24.4	(3,082)
nc / Zaria	nc	nc	12.0	(1,514)

nc = Not collected.

NOTE: Some n's do not sum to total as a result of missing observations.

tion by city ranged from 24 percent of sexually experienced women in Kaduna to 12 percent based in Zaria.

Participating women answered questions concerning their knowledge of various modern and traditional FP methods, including EC. Table 2 shows the proportion of women who had awareness and correct knowledge of EC, either spontaneous or probed, by their marital status and country. Knowledge of EC was greater in Kenya (58 percent) than in Nigeria (31 percent). Never-married sexually experienced women in both Kenya and Nigeria were significantly

**TABLE 2** Among women aged 15–49 who reported ever having sex and having heard of emergency contraception, percentage having accurate knowledge, according to marital status, selected urban sites in Kenya (2010) and Nigeria (2010–11)

Characteristic	Kenya (N = 7,785)			Nigeria (N = 12,487) <sup>a</sup>		
	Never married (n = 1,887)	Ever married/ in union (n = 5,898)	Total	Never married (n = 2,039)	Ever married/ in union (n = 10,448)	Total
Heard of EC (spontaneous or probed) (% and n)	64.8 (1,224)	55.3*** (3,262)	57.6 (4,486)	49.8 (1,016)	27.5*** (2,874)	31.2 (3,890)
Correctly reported that EC packets contain two pills	64.6	49.3***	53.5	57.7	46.4***	49.3
Correctly reported that EC can be taken within 120 hours of unprotected sex	66.8	57.4***	60.0	65.3	52.9***	56.1
Correctly reported both of the above types of EC knowledge	56.7	41.2***	45.4	51.5	39.0***	42.2

\*\*\* F-test significant at  $p \leq 0.001$ . EC = Emergency contraception.

<sup>a</sup>N for Nigeria is smaller than 12,652 because of missing data.

more likely to be aware of EC than were ever-married women in their respective countries (65 percent versus 55 percent in Kenya, 50 percent versus 28 percent in Nigeria).

In addition to gauging women's awareness of EC, this study also measures women's level of correct knowledge of EC use. Two dimensions of such knowledge were probed among women who had ever heard of EC: (1) knowledge of the number of pills in a dedicated EC product (to distinguish from women who might be confusing the daily combined oral contraceptive with EC), and (2) knowledge of the timeframe after sex within which EC may prevent pregnancy, a key indicator of effective use of the product. Among sexually experienced women who knew of EC, approximately half (54 percent in Kenya, 49 percent in Nigeria) knew that one package of emergency contraceptives contains two pills.<sup>1</sup> The majority of sexually experienced women in both countries who had heard of EC knew that EC can be taken within 120 hours of unprotected sex (60 percent in Kenya, 56 percent in Nigeria). Among never-married women aged 15–49 who had ever had sex and who had ever heard of EC, more than half in both Kenya (57 percent) and Nigeria (52 percent) knew that one package of EC includes two pills and that EC can be taken within 120 hours of unprotected sex. Knowledge of both of these features of EC was significantly lower for ever-married women in both countries (41 percent in Kenya; 39 percent in Nigeria).

Table 3 presents data concerning use of emergency contraceptives. The majority of respondents who had ever had sex reported that they had ever used a modern contraceptive method<sup>2</sup> (80 percent in Kenya, 52 percent in Nigeria). In Kenya, currently or previously married women were much more likely (83 percent) than never-married women (69 percent) to have ever used a modern method of FP. The opposite holds true in Nigeria, where never-married, sexually experienced women were more likely to have ever used a modern contraceptive method than were ever-married women (68 percent versus 49 percent). Never-married, sexually experienced women in both countries were significantly more likely than were ever-married women to have ever used EC, to have used EC during the past year, and to have used

1 Single-pill formulations of EC are available in other markets but were not available in Kenya and Nigeria at the time of the survey.

2 Modern methods included diaphragm, EC, female and male condoms, female and male sterilization, foam/jelly, implants, IUDs, pills, and lactational amenorrhea method (LAM).

**TABLE 3** Percentage of women aged 15–49 who have ever had sex, by use and source of contraceptives, according to marital status, selected urban sites in Kenya (2010) and Nigeria (2010–11)

Characteristic	Kenya (N = 7,785)			Nigeria (N = 12,487)		
	Never married	Ever married/ in union	Total	Never married	Ever married/ in union	Total
Ever had sex (n)	(1,887)	(5,898)	(7,785)	(2,039)	(10,448)	(12,487)
Ever used modern FP <sup>a</sup>	69.4	83.2***	79.9	68.4	48.5***	51.8
Ever used EC	20.8	8.5***	11.5	14.0	4.8***	6.3
Used EC in past year	12.5	3.1***	5.4	6.9	1.5***	2.4
Used EC more than once per month anytime in past year	1.7	0.7*	1.0	3.0	0.8***	1.2
Consider EC primary method	1.4	0.4***	0.6	2.3	0.7***	0.9
Used EC in past year (n)	(237)	(183)	(420)	(141)	(159)	(300)
Current use of non-EC modern FP method	37.6	47.8	44.4	40.3	33.1**	35.3
Used EC more than once per month anytime in past year	13.9	23.0	17.5	43.5	51.5	47.8
Considers EC primary method	11.4	11.6	11.5	32.4	42.1	37.6
Preferred source of EC (among women who have ever used EC) (n)	(393)	(502)	(895)	(286)	(496)	(782)
Drug shop or chemist	98.5	94.2	96.1	96.5	90.0	92.4
Hospital, clinic, or dispensary	0.0	4.1	2.3	1.6	8.2	5.8
Other	0.1	0.1	0.1	0.3	0.2	0.2
Missing or does not know	1.5	0.9	1.1	1.6	1.6	1.7

\*F-test significant at  $p \leq 0.05$ ; \*\* $p \leq 0.01$ ; \*\*\* $p \leq 0.001$ . FP = Family planning. EC = Emergency contraception.

<sup>a</sup>Modern methods include diaphragm, EC, female and male condoms, female and male sterilization, foam or jelly, implant, intrauterine device, lactational amenorrhea method, oral contraceptives.

EC more than once per month at any time during the past year. Few respondents in Kenya (5 percent) and Nigeria (less than 2 percent) reported using EC during the past year. Even fewer women reported using EC more than once per month during the past year (slightly less than 1 percent in both countries). In both countries, never-married, sexually experienced women were significantly more likely than were ever-married women to consider EC to be their primary method of FP, although these proportions were similarly quite low.

Table 3 also presents data regarding the subset of women who had used EC at least once during the previous year of the survey. This subset, although small ( $n = 420$  in Kenya, 300 in Nigeria), is large enough to examine behaviors associated with use of FP and EC. EC is sometimes viewed as a “bridge” or “gateway” toward use of more permanent methods of FP. Among women who used EC at least once during the past year, 44 percent in Kenya and 35 percent in Nigeria reported currently using a non-EC modern method of FP. Also of interest is whether women use EC as a regular method of FP. Among Kenyan women who used EC at least once during the past year, 18 percent reported using EC more than once per month at any time during the past year, and 12 percent reported that they used EC as their primary method of contraception. Recent users of EC in Nigeria were much more likely than were those in Kenya to use EC regularly (48 percent) and as a primary method of FP (38 percent).

Finally, Table 3 presents information regarding the preferred source of EC among women who had ever used EC. Nearly all women in both Kenya (96 percent) and Nigeria (92 percent) reported that if they needed to obtain EC, they would most likely obtain it from a pharmacy or a drug shop. Approximately 2 percent of the women in Kenya and 6 percent in Nigeria reported that they would likely obtain EC from a hospital, clinic, dispensary, or other source.

**TABLE 4** Percentage of women aged 15–49, by selected demographic characteristics, according to use of emergency contraceptives, selected urban sites in Kenya (2010) and Nigeria (2010–11)

Characteristic	Kenya			Nigeria		
	Never used EC (N = 6,891)	Ever used EC but not in past year (N = 475)	Used EC in past year (N = 420)	Never used EC (N = 11,861)	Ever used EC but not in past year (N = 488)	Used EC in past year (N = 302)
Age (years)		***			***	
15–19	7.1	1.8	5.3	4.2	1.9	3.5
20–24	26.2	22.9	45.6	15.7	17.3	28.0
25–29	25.4	40.6	26.0	22.2	31.5	35.9
30–34	16.7	15.1	11.9	20.8	23.6	14.1
35–39	12.1	9.7	7.8	16.7	13.0	10.9
40+	12.5	9.9	3.4	20.4	12.7	7.6
Education (Kenya / Nigeria)		***			***	
None / Quranic	3.8	0.0	0.5	15.2	1.6	2.7
Primary incomplete / Primary	15.2	5.3	4.1	17.7	10.2	7.3
Primary complete or vocational / Junior secondary	29.4	9.8	8.4	8.9	8.2	12.0
Secondary or higher / Senior secondary	51.7	84.9	87.0	34.1	28.8	34.9
nc / Higher	nc	nc	nc	24.1	51.3	43.1
Employment status in past 12 months		***				
Worked	63.1	82.6	74.3	64.0	60.5	59.2
Religion					***	
Protestant or other Christian	65.5	69.3	67.6	43.8	54.2	64.4
Catholic	23.6	23.9	23.6	4.4	8.5	5.4
Muslim	9.5	5.6	6.8	51.1	36.8	29.3
Other or none	1.4	1.2	2.0	0.6	0.5	1.0
Marital or relationship status		***			***	
Never married	21.8	32.9	56.4	15.0	30.0	46.9
Married or living together	66.3	53.8	32.4	80.8	66.1	50.6
Divorced, separated, or widowed	11.9	13.3	11.2	4.2	3.8	2.6
Has at least one child		***			***	
	81.2	65.2	50.6	78.8	63.5	51.5
Wealth quintile		***				
Lowest	19.8	7.7	9.8	19.8	17.8	22.1
Second	19.9	8.8	17.4	20.7	17.2	14.8
Middle	21.0	15.3	17.5	21.1	18.3	20.6
Fourth	20.1	26.4	20.8	19.9	20.4	22.1
Highest	19.3	41.9	34.5	18.5	26.3	20.4
Coital frequency (sex at least on weekly basis in past three months)		**				
	38.5	38.4	23.04	22.4	21.9	21.8
More than one sex partner in past year		***			***	
	5.4	6.2	18.2	4.9	11.8	12.9
Exchanged gifts for sex in past year		*			***	
	3.4	3.9	7.4	6.7	16.0	14.1
Urban site		**			***	
Nairobi / Abuja	71.7	82.2	81.1	13.2	15.6	18.4
Mombasa / Benin City	19.3	12.7	13.3	12.8	16.7	15.7
Kisumu / Ibadan	5.6	3.0	3.2	20.4	20.4	30.0
Machakos / Ilorin	1.5	1.2	1.5	16.1	27.2	18.3
Kakamega / Kaduna	1.9	0.9	0.9	24.8	18.5	16.6
nc / Zaria	nc	nc	nc	12.7	1.6	1.0

\* F-test significant at  $p \leq 0.05$ ; \*\*  $p \leq 0.01$ ; \*\*\*  $p \leq 0.00$ . nc = Not collected..

This large urban study of women and contraceptive use allows for comparisons between women who have never used EC, have used EC but not during the past year (“nonrecent

users”), and have used EC during the past year (“recent users”). Table 4 presents the proportions of sexually experienced women aged 15–49, by their demographic characteristics, according to these three different categories of EC use. Women in their 20s constituted the majority of recent and past EC users in both countries. In Kenya, the largest proportion of recent users of EC was women aged 20–24 (46 percent), whereas the largest proportion of nonrecent users was women aged 25–29 years (41 percent). In Nigeria, about one-third of recent and of nonrecent EC users were in their late twenties (36 percent and 32 percent, respectively).

Among recent and nonrecent EC users in both countries, a greater proportion had a secondary or higher level of education, compared with never users. In Kenya, employment status was associated with ever having used EC; those who had never used EC were significantly less likely to have worked in the past 12 months. Religious affiliation was associated with EC use in Nigeria but not Kenya. In Nigeria, 51 percent of never users were Muslim, compared with only 37 percent of nonrecent users and 29 percent of recent users. In both countries, marital status was inversely correlated with EC use; those who were never married were significantly more likely than those who were ever married to have used EC. In both countries, those who had at least one child were more likely to have never used EC (roughly 80 percent) than to have used nonrecently (approximately 65 percent) or recently (roughly 51 percent). In Kenya, EC users had a greater likelihood of being in the highest wealth quintile (35 percent among recent users, 42 percent among nonrecent users) than did nonusers (19 percent).

Table 4 also examines the association between some sexual behavior characteristics and never, ever, and recent use of EC. Kenyan women who used EC during the past year were significantly less likely to have had sex at least on a weekly basis, compared with never users. Recent users of EC in Kenya and both recent and nonrecent users in Nigeria were more likely to report having more than one sexual partner during the past year (18 percent in Kenya, 13 percent and 12 percent in Nigeria, respectively) than were never users of EC (5 percent in Kenya and Nigeria). In Kenya, recent EC users were more likely to report having exchanged gifts or money for sex during the past year than were never users (3 percent). In Nigeria, both recent and nonrecent users were more likely to report having exchanged gifts or money for sex than were never users (14 percent and 16 percent, respectively, compared with 7 percent).

The findings from Table 4 are confirmed in the multivariate analyses presented in Table 5. In particular, we compare recent users (those who used EC during the past year) to never users, and recent users to ever users who did not use during the past year. In Kenya, compared with never users, recent users were significantly more likely to be aged 20–24 years than to be 40 or older. Moreover, recent users were significantly more likely to have a higher level of education and/or to be never married or formerly married than are never users. Recent users were significantly less likely to have at least one child than were never users. Finally, recent users were significantly more likely than were never users to have had more than one partner during the past year.

The second column for Kenya in Table 4 presents the comparison between recent and nonrecent users. The main difference between recent and nonrecent users is that recent users were significantly more likely to be never married. Interaction effects between marital status, coital frequency, number of sexual partners during the past year, and having exchanged gifts or money for sex during the past year were tested. None of the interactions was found to be significantly associated with EC use among urban Kenyan women.

**TABLE 5** Coefficients from multinomial logistic regression analysis of women aged 15–49 who ever had sex, by sociodemographic characteristics, according to emergency contraceptive use in the past year, selected urban sites in Kenya (2010) and Nigeria (2010–11)

Characteristic	Kenya		Nigeria	
	Used EC in past year versus never used EC	Used EC in past year versus ever used but not in past year	Used EC in past year versus never used EC	Used EC in past year versus ever used but not in past year
Age (years)				
15–19	0.38	1.50	0.16	0.90
20–24	1.14*	0.87	0.97**	0.77
25–29	0.75	0.10	1.00**	0.45
30–34	0.67	0.67	0.38	-0.11
35–39	0.38	0.54	0.31	0.25
40+ (r)	—	—	—	—
Education (Kenya / Nigeria)				
None or primary incomplete / Quranic or primary (r)	—	—	—	—
Primary complete or vocational / Junior secondary	-0.05	0.26	1.06***	0.14
Secondary and higher / Senior secondary nc / Higher	1.54***	0.44	0.50	-0.30
	nc	nc	0.84**	-0.72*
Employment status in past 12 months				
Did not work (r)	—	—	—	—
Worked	0.42	-0.20	0.13	0.16
Religion				
Protestant or other Christian	-0.25	-0.37	0.48	-0.31
Catholic	-0.15	-0.23	0.56**	0.48
Muslim (r)	—	—	—	—
Other or none	0.40	0.38	1.29*	1.18
Marital / or relationship status				
Never married	1.34***	0.99**	1.30***	1.07**
Married or living together (r)	—	—	—	—
Divorced, separated, or widowed	1.41***	0.52	1.16	0.18
Has at least one child versus no children	-0.52*	-0.02	0.06	0.22
Wealth quintile				
Lowest (r)	—	—	—	—
Second	0.29	0.19	-0.39	-0.30
Middle	0.40	0.04	-0.24	-0.04
Fourth	0.24	-0.29	-0.06	0.13
Highest	0.51	-0.67	-0.15	0.01
Coital frequency (sex on at least a weekly basis in past three months versus less frequent)	-0.23	-0.43	0.15	-0.02
More than one sex partner during past year versus only one	0.74**	0.79	0.37	-0.37
Exchanged gifts for sex during past year versus did not	0.09	-0.02	-0.07	-0.52
City (Kenya / Nigeria)				
Nairobi / Abuja (r)	—	—	—	—
Mombasa / Benin City	-0.12	0.01	-0.40	-0.60
Kisumu / Ibadan	-0.46*	-0.04	0.47	0.21
Machakos / Ilorin	0.04	0.23	0.37	-0.46
Kakamega / Kaduna	-0.57	0.04	-0.30	-0.27
nc / Zaria	nc	nc	-1.92**	-0.59

\*Significant at  $p < 0.05$ ; \*\* $p < 0.01$ ; \*\*\* $p < 0.001$ . — = Not applicable. nc = Not collected. (r) = Reference category.

In Nigeria, compared with never users, recent users were significantly more likely to be aged 20–29 than to be 40 or older. Recent users in Nigeria, as in Kenya, were significantly more likely to have higher education and to be never married than were never users. Nigerian Catholic women were significantly more likely to have used EC during the past year than were

Muslim women, who were more likely to be never users. No differences were noted between never and recent users with regard to employment status, wealth, coital frequency, or sexual behaviors during the past year.

The second column for Nigeria in Table 5 demonstrates that the main difference between recent and nonrecent users is that recent users were significantly more likely to be never married. Furthermore, compared with women having less education, college-educated women were less likely to be recent users than to be nonrecent users.

Interaction effects (not shown) were tested between marital status, coital frequency, having more than one sexual partner during the past year, and having exchanged gifts or money for sex during the past year. No significant interaction effect was observed between marital status and either coital frequency or exchanging gifts or money for sex during the past year. An interaction between marital status and having more than one sexual partner during the past year was observed to be significant, however. Interactions indicated that divorced/separated women who also reported having more than one sexual partner during the past year were significantly more likely to have used EC recently than were divorced women who did not report having had multiple partners during the past year. All other variables remained the same among the models with these interactions.

## DISCUSSION

These findings counter the public perception in both Kenya and Nigeria that adolescents are the primary users of EC, a myth that has colored much of the debate concerning access to the method (Wesangula 2004). Instead, the data confirm the findings of previous studies that the majority of users in urban areas are in their 20s, educated, employed, and unmarried (Keesbury, Morgan, and Owino 2010). Few significant differences were found between those who had ever used EC during their lifetime and recent users (within the past year), perhaps because the method is relatively new in each country. The data suggest a slight generational shift, in that nonrecent users were more likely than recent users to be married. Thus, some of the users may have simply “aged into” marriage (and perhaps now have stopped using FP or rely on other methods).

Also refuted by these findings is the presumed association between EC use and sexual-risk taking. In the bivariate analysis, EC users in both countries were significantly more likely to have exchanged gifts or money for sex than were those who never used EC. These differences disappeared in the multivariate analysis for Kenya, however, even after testing for interaction, which controls for marital status and age. This drop off suggests that such risky behavior is more closely associated with age and marital status than with EC use. One exception is that recent EC users in Kenya were significantly more likely than never users to report having multiple sexual partners during the past year, even after controlling for age and marital status. A second exception is that divorced women in Nigeria having more than one sexual partner during the past year were also significantly more likely to be recent users than were divorced women having one or no sexual partners during the past year. Nonetheless, on the whole these data suggest that whereas unmarried women are more likely to use EC, EC users are no more likely than non-EC users to engage in frequent or risky sexual behavior.

These data clearly demonstrate that private-sector pharmacies are the primary preferred point of access among nearly all EC users in Kenya and Nigeria. Previous research highlighted

this trend in Kenya; however, the trend has been less widely confirmed in Nigeria. Our findings indicate the important role the private sector plays across Africa in delivering FP services that are not dependent on a provider, and EC's unique suitability for pharmacy or drug-shop provision. By offering EC services in a quick, convenient, and confidential manner, pharmacies and drug shops can meet the needs of most women who want to avoid pregnancy following unprotected sex and who can afford the method. In Kenya, this remains the case despite access to lower-cost EC in public-sector clinics.

One surprising finding is the relatively high proportion of women in Nigeria who identify EC as their primary method of FP. Of those who used EC during the past year, a greater proportion of Nigerian women identify EC as their primary FP method, compared with their Kenyan counterparts (38 percent versus 12 percent), and a greater proportion of recent users in Nigeria than in Kenya report using EC more than once per month during the past year (48 percent versus 18 percent). These rates are likely to reflect a response to the more limited access and use of other contraceptive options in Nigeria, where far fewer urban women have ever practiced modern contraception (80 percent in Kenya versus 52 percent in Nigeria). In this context, women may be using the more readily available EC as a replacement for more difficult to obtain or less familiar FP methods.

When interpreting the results of these data, several limitations should be considered. Sexual-behavior data are self-reported, and respondents may provide socially accepted or expected responses, especially concerning a sensitive topic such as EC, which is often confused with abortion. Furthermore, these two samples are representative of neither the general Kenyan or Nigerian population nor of all urban areas in each country. These data come from a purposively selected set of five or six cities in each country and are derived from baseline surveys, which have the characteristic limitations of cross-sectional data with regard to causal direction and interpretation of predictors. Finally, recent EC use among sexually active women remains relatively rare (5 percent or less among both samples); therefore, this study is unable to examine in more depth specifics regarding use (such as dual use and transitioning to or from other methods of FP). The study also raises questions regarding user preferences and behaviors that may be best answered through qualitative studies.

## CONCLUSION

This study deepens our understanding of when, how, and by whom emergency contraceptives are used in urban Kenya and Nigeria. Many myths concerning this increasingly popular method are dispelled, and an empirical foundation is provided for other African countries that are grappling with similar questions concerning use dynamics. Findings regarding the high proportion of recent EC users who report using EC more than once per month and as a primary method of contraception (particularly in Nigeria) indicate the need for greater understanding of the dynamics of repeated use and the importance of ensuring availability and access to effective, short-term, woman-controlled barrier and hormonal methods.

Clear recommendations for strengthening EC provision in similar contexts across Africa are identified in this study. Highlighted in the study is the need to adequately target information and services concerning EC to unmarried urban women, a demographic group that ap-

pears increasingly to view this method as an important element of their contraceptive toolkit. Although the private sector is well placed to help ensure service availability, the public sector and civil society must complement these efforts through activities that raise awareness.

The experience of Nigerian women suggests that EC can serve as an especially important element of the contraceptive method mix when public-sector provision of modern contraceptives is limited. Their experience also suggests that legal and procedural barriers to pharmacy and drug-shop access should be minimized to ensure broad access. Given the importance of private-sector provision, ensuring the delivery of quality EC services in private-sector pharmacies and drug shops is essential, while at the same time not undermining the convenience and confidentiality that make such outlets appealing. Social marketing initiatives that provide poorer women access to subsidized EC pills at a lower cost than commercially available EC are also important in contexts where price may be a barrier for poorer women.

Increasing access to a broad range of quality FP services and methods, including EC, is critical for Kenya, Nigeria, and many other African countries as they strive to meet the ambitious goals laid out at the 2012 London Family Planning Summit.

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