How often and why do women discontinue their contraceptive method? Results from a French population based survey

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In their analysis of the 1995 NSFG, Trussell and Vaughan estimate that the typical woman who uses reversible methods of contraception continuously from her 15th to her 45th birthday will discontinue contraceptive use for method-related reasons nearly ten times [1]. The authors conclude that "such high rates of discontinuation almost surely reflect dissatisfaction with current methods." While the vast majority of women resume contraceptive use shortly after discontinuing their previous method [1], the transition period between contraceptive methods leaves these women exposed to the risk of unintended pregnancy. This is concerning, especially since studies focusing on oral contraceptive users suggest that a significant proportion of women switch to less effective methods or to no method at all [2-4]. It is estimated that the discontinuation of oral contraceptives (OCs) alone accounts for 20% of unintended pregnancies that occur each year in the United States [5].

In France, despite data indicating that the vast majority of women (82%) use highly effective medical methods of contraception, unintended pregnancies still comprise an estimated 33% of pregnancies [6]. Among women experiencing an unintended pregnancy leading to an abortion, the same authors show that in 50% of the cases, women had changed their contraceptive method in the 6 months preceding the abortion. In most cases, women in that study switched to a less effective method or to no method at all [7].

In order to improve contraceptive adherence, it is critical to understand the motives underlying discontinuation. In this paper, we estimate probabilities of contraceptive method discontinuation and examine the reasons that women give for doing so, including side effects, method failure, dissatisfaction or frustration with a method, or a physician's recommendation.

Population and methods

This data for this study is drawn from the COCON survey, a population-based cohort exploring contraceptive practices and abortion in France. A national two stage probability sampling design was used to identify a representative sample of 2,863 French speaking women of reproductive age (18-44 years) [8]. An initial sample of households including at least one eligible woman between the ages of 18 and 44 years was selected at random from the telephone directory in 2000. The response rate was 74.6%. The sampling design specified unequal probabilities of inclusion in order to over-represent women who had an abortion or an unintended pregnancy in the 5 years prior to the survey (sampling fraction=100%, n =1,034), whereas only a fraction of the other women were selected at random (sampling fraction=19%, n =1,829). The results presented in this paper are weighted to reflect sample design and social demographic composition (by age, marital status, professional activity and level of education) of French women in the 1999 census.

Following the first telephone interview in 2000 upon entry into the cohort, women who agreed to participate were interviewed once per year for 4 years (2001–2004) to investigate contraceptive changes that had occurred since the previous interview. Of the initial sample, 2,217 women completed the first follow-up questionnaire in 2001 and 1,569 completed all 4 years of follow-up. While this substantial reduction in the sample size affects the precision of the statistical analysis, the attrition of the cohort studied between 2000 and 2002 was not found to suffer from selection bias on the variables of interest (contraceptive histories and current patterns of use) [9].

This analysis is based on data collected during the follow-up interviews (2001-2004).

Each follow-up questionnaire provided a detailed description of pregnancies and contraceptive use since the last interview, described as a series of contraceptive episodes (including episodes of no contraceptive use).

- For each "episode," women described the contraceptive method used, the start date and end date, and the reasons for stopping (including side effects and method failure) if the method was discontinued.
- For each pregnancy, women described the outcome, the date the pregnancy ended, whether the pregnancy was intended or not, and the contraceptive used at the time the pregnancy started if the pregnancy was unintended.

Using the above information, we were able to reconstruct a contraceptive use and reproductive history for each woman over the course of the 4 years of follow-up.

In the first part of the analysis, we estimate probabilities of discontinuation for any reason and for method-related reasons for the principal contraceptive method used (IUD, pill, condom, withdrawal, fertility awareness based methods, spermicides), regardless of the method composition (type of IUD or pill) or dual method use. Method-related discontinuation includes all reasons that a woman states for discontinuing a contraceptive method other than intention to become pregnant or being no longer at risk due to absence of a male partner.

- A woman describing the following 3 sequences of contraceptive use (pill alone─pill + condom─pill alone) will be considered to have a single episode of pill use in the analysis of pill discontinuation.
- A woman who switches from copper IUD to levonorgestrel-IUD with no time in between (described in the dataset as 2 continuous episodes of IUD), will be considered to have a single episode of IUD use in the analysis of IUD discontinuation.

A description of these contraceptive-use episodes is provided in Table 1.

Table 1. Description of contraceptive-use episodes and episodes discontinued

Contraceptive method	Episodes (n)	Total time of exposure (months)	Episodes discontinued for any reason (n)	Episodes discontinued for method-related reasons (n)
Pill	1,852	37237.31	987	570
IUD	695	19734.59	199	136
Condom	773	10281.74	514	363
Withdrawal	254	3480.88	157	123
Spermicides or sponges	56	758.918	35	28
Fertility awareness*	198	2661.02	124	98

We then expand the analysis to include subgroups of pills (by generation of progestin and dosage of estrogen) and IUDs (copper IUDs or levonorgestrel IUDs).

Probabilities of discontinuation were estimated using piecewise-constant hazards models that took into account "the woman effect" in the analysis. In these models, we first partition the time duration of method use into *n* time intervals assuming that the probability of contraceptive failure is constant within each time interval. We introduce a shared frailty term (a random effect) at the woman's level to take into account the intra-woman correlation of contraceptive episodes.

In the second part of the analysis, we examine possible variations in discontinuation rates for method-related reasons by women's social and demographic characteristics (age, children, marital status, and level of education).

Finally, we examine the reasons why women discontinue their method, drawing particular attention to the importance of side effects and contraceptive failures in driving contraceptive discontinuation.

Results

The risk of overall discontinuation and method-related discontinuation varied widely by contraceptive method (Tables 2 and 3): IUDs were associated with the lowest probabilities of discontinuation, followed by the pill. Condoms and fertility awareness-based methods exhibited the highest probabilities of discontinuation. Method-related reasons for stopping a contraceptive accounted for 71% of first-year IUD discontinuations and for 72% of first-year pill discontinuations. This proportion rose to 78% for condoms and fertility-based methods and 88% for withdrawal.

Our estimates of probabilities of method-related discontinuation among pill users in France are similar to those found in the U.S. However, there are slight differences between the contraceptive use patterns of French and American women. French women discontinue IUD use about half as often as American women. In contrast, French women discontinue using condoms and fertility-based methods more often than their American counterparts [1].

Table 2. Percentage of women discontinuing contraceptive use for any reason, by method, by duration of use.

Contraceptive method	n episodes	Duration of use				
		6 months	12 months	24 months	36 months	48 months
Pill	1,852	17.3 (13.9-21.3)	31.2 (27.0-35.8)	54.0 (49.2-59.0)	66.3 (61.2-71.3)	74.5 (69.2-79.4)
IUD	695	9.1 (5.2-15.8)	14.3 (9.1-22.2)	24.2 (18.0-32.1)	34.7 (27.6-43.1)	41.6 (34.6-49.6)
Condom	773	39.4 (33.2-46.2)	58.3 (50.6-66.2)	79.6 (69.3-88.2)	91.0 (81.2-96.9)	94.0 (85.6-98.3)
Withdrawal	254	43.5 (29.4-60.5)	50.3 (32.1-71.8)	78.03 (41.5-98.6)	86.3 (39.5-100	91.6 (44.8-100)
Spermicides/ sponges	56	75.1 (22.9-99.9)	88.7 (32.5-100)			
Fertility awareness	198	35.9 (24.3-50.9)	63.9 (44.2-83.0)	92.4 (74.0-99.3)	98.9 (79.8-100)	

Table 3. Percentage of women discontinuing contraceptive use for method-related reasons, by method, by duration of use.

Contraceptive method	n episodes	Duration of use				
		6 months	12 months	24 months	36 months	48 months
Pill	1,852	11.7 (9.2-15.0)	22.5 (18.9-26.6)	37.2 (32.4-42.4)	46.9 (41.0-53.1)	52.3 (46.1-58.9)
IUD	695	7.6 (4.1-13.7)	10.1 (6.2-16.2)	15.7 (10.9-22.3)	23.8 (16.9-32.9)	28.1 (20.4-37.8)
Condom	773	27.9 (22.1-35.0)	45.4 (36.8-55.0)	67.9 (53.6-81.3)	82.2 (65.8-93.8)	86.8 (71.2-96.3)
Withdrawal	254	31.3 (20.2-46.3)	44.3 (27.7-65.1)	71.0 (36.1-96.8)	81.8 (33.3-100.0)	87.4 (37.1-100.0)
Spermicides/ sponges	56	69.9 (1.4-100.0)				
Fertility awareness	198	29.4 (17.9-45.8)	49.7 (33.0-69.3)	89.9 (72.4-98.3)	98.9 (81.2-100.0)	

An analysis of IUD discontinuation by method composition (copper *versus* levonorgestrel) shows no significant difference in the rates of discontinuation for the two types of IUD available (Table 4).

Table 4. Percentage of women discontinuing the IUD or the pill for any reason and method-related reasons, by method composition, according to duration of use.

IUD	n	Duration of use				
		6 months	12 months	24 months	36 months	48 months
Copper IUD	452					
Any reason		14.0 (7.6-25.2)	18.7 (11.5-29.5)	33.7 (23.6-46.6)	47.7 (34.6-62.5)	58.8 (43.6-74.7)
Method-related reason		10.7 (5.0-22.2)	14.2 (7.7-25.4)	28.0 (17.3-43.3)	42.7 (28.1-61.0)	54.9 (36.6-75.1)
Levonorgestrel IUD	289					
Any reason		7.1 (3.6-13.8)	15.8 (10.1-24.4)	33.3 (25.0-43.4)	44.8 (35.3-64.9)	53.1 (42.2-64.9)
Method-related reason		7.1 (3.6-13.8)	15.8 (10.1-24.4)	31.4 (23.6-41.1)	36.0 (27.4-46.2)	40.6 (31.0-51.8)

In further analyses, we will examine (1) possible variations in discontinuation rates by pill composition (by generation of progestin and dosage of estrogen), (2) possible variations in discontinuation rates by women's socio-demographic characteristics and (3) the reasons for contraceptive disruption (including side effects and method failure) for each type of method used.

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