Determinants of contraceptive discontinuation for method-related reasons: results from a population based cohort of French women

Caroline Moreau, James Trussell, Nathalie Bajos, German Rodriguez, Jean Bouyer

Introduction

Contraception is highly medicalized in France, where 82 % of contraceptive users use very effective methods (pill or IUD) (Bajos et al, 2003). The use of these highly effective reversible contraceptive methods is one of the highest in the world. In the same time, unintended pregnancies remain frequent: one in three pregnancies is reported to be unplanned, 62% ending in an abortion (Bajos et al, 2004). The abortion rate in France (14.8 per 1000 women aged 15 to 49) is among the highest in Western Europe.

These figures, drawn from the Cocon study, a population based cohort of women of reproductive age conducted in France in 2000, reveal the difficulties women experience with their daily use of contraceptives. Such difficulties translate into substantial differences between typical use and perfect use contraceptive failure rates, mostly due to inconsistent or incorrect use of the methods (Trussell, 2004; Moreau *et al.*, 2007; Kost *et al.*, 2008). Typical-use failure rates generally decline over time, reflecting the weeding out of the most fecund women over time and perhaps an improvement in the consistency of method use (Ranjit *et al.*, 2001; Moreau *et al.*, 2007). In addition to contraceptive failure, discontinuation of contraceptive use may be a significant contributor to unintended pregnancies in industrialised countries.

In a first analysis of contraceptive discontinuation, based on a 4 year follow-up of women in the Cocon study, we found that the probabilities of contraceptive discontinuation for method-related reasons varied widely by method: IUDs were associated with the lowest probabilities of discontinuation (9% within 12 months), followed by the pill (21%). Discontinuation rates were significantly higher for all other methods (condoms, withdrawal, fertility awarness methods and spermicides). While the study shows no differences in discontinuation rates by type of IUD (levonorgestrel-IUD *versus* copper-IUD), result indicate increasing rates of pill discontinuation with decreasing dosage in estrogen.

Such differentials may reflect differences in user characteristics (women's age, partner relationship, sociol-economical circumstances) or previous experience with contraceptive methods which we would like to elucidate in this next step of our analysis.

This study explores the factors associated with early contraceptive discontinuation for method-related reasons for the principal methods of contraception used by french women.

Population and methods

This study is drawn from the COCON survey, a population-based cohort exploring contraceptive practices and abortion in France. An 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).A 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 included 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 the

main social demographic composition (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) (Razafindratsima, 2004). 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, described as a series of contraceptive episodes (including episodes of non contraceptive use) since the last interview.

- For each "episode", women described the contraceptive method used, the start date 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 of end, whether the pregnancy was intended or not and in contraceptive use at the time the pregnancy started if the pregnancy was unintended.

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

We first explore the determinants of contraceptive discontinuation for method-related reasons (excluding discontinuation because women were planning to get pregnant or had no partner) according to 3 types of contraceptive methods (IUD, oral contraceptives, and condoms). We further explore the determinants of oral contraceptive discontinuation for method-related reasons according to the pill composition (by dosage of oestrogen).

A description of these contraceptive 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	1,872	42,177.38	1011	557
IUD	702	20,429.77	206	137
Condom	793	12,188.95	534	363

Discontinuation rates were estimated using piecewise-constant hazards models to take 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 introduced a shared frailty term (a random effect) at the woman's level to take into account the intra-woman correlation of contraceptive episodes. Contraceptive episodes which begun before the starting date of the follow-up period

(or calendar= between 2000 and 2004) were entered in the life table at their duration at the time of start of the calendar.

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