

# **Has the 2013 French pill scare led to a redefinition of social inequalities in accessing to medical contraceptives? Results from three population based surveys conducted between 2010 and 2016**

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## **ABSTRACT**

If the consequences of various pill scares have been relatively well documented revealing a drop in pill use and a rise in unplanned pregnancies and abortion rates, studies focusing on changes in medical contraceptive use in a pill scare context according to women's social backgrounds are few. However, the use of media tools is not the same according to the social background. Moreover, access to other medical contraceptives, which depend on access to several medical practitioners, is also socially differentiated. The determinants of contraceptive method choice also differ according to social background. For these reasons, pill scare could lead to accentuate social inequalities in accessing to medical contraception.

Using data from three national surveys conducted in France between 2000 and 2016, we studied the evolution of medical contraceptive use between 2010 and 2016 according to the women's social background. We showed that decrease in medical contraception and pill use and increase in IUD use were socially differentiated. This decline in medical contraceptive use is particularly relevant for women from lower and higher classes in which we observed a decrease in pill use since 2013, whereas it was

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observed only in 2016 among 'middle class' women. Moreover, while women from upper class switched from pill to IUD between 2010 and 2013, this is not the case for their less privileged counterparts. Consequently, it seems that the French pill scare led to redefine social inequalities in accessing to medical contraceptives.

## INTRODUCTION

In the United-states, public health crises around oral contraceptives, called "pill scares", are quite frequent. They occur each time a new cardiovascular or cancers risk associated with the use of these contraceptives is published into the media. As a consequence to the controversy, pill use decrease and unplanned pregnancies and abortion rates increase (Jones, Beniger et Westoff, 1980 ; Watkins, 2001). In Europe, pill scares are less frequent. The most important one occurred in October 1995 (Marks, 2001), following the publication of several studies revealing that the use of third generation<sup>2</sup> pills is associated with a two to three times higher risk of deep vein thrombosis compared to second generation oral contraceptives (Bloemenkamp et al., 1995 ; Jick et al., 1995 ; Spitzer et al., 1996 ; WHO, 1995). During this period, several countries saw a decrease in pill use such as United Kingdom (Balasch, 1997 ; Barnett et Breakwell, 2003 ; Martin, Hilton et Kerry, 1997), Norway (Skjeldestad, 1997) and the Netherlands (de Vries, van den Berg et de Jong-van den Berg, 1998). In France, public authorities, the medical community or the media following have been quite silent following this 1995 European controversy on the risks associated with third generation oral contraceptives (Rouzaud-Cornabas, 2019). As a consequence, no decrease in pill use has been observed. On the contrary, quite the opposite has been observed since the use of this method increased until 2000 (Bajos et al., 2012 ; Le Guen et al., 2017). It took almost twenty years for a real pill scare to happen when, in December 2012, a national newspaper reported the filing of a complaint by a young woman who had suffered from a stroke that she attributed to her new generation pill (Bajos et al., 2014).

The different contraceptive methods can be considered as biotechnologies whose mode of control is based on political, scientific and ontological considerations historically and socially constructed (Brickman, Jasanoff et Ilgen, 1985 ; Jasanoff, 1990, 2005). Thus, the occurrence of a pill scare following the media coverage of the associated health risks to pill use depends on the way the social

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<sup>2</sup> The term "generation" of pills refers to combined oral contraceptives (COCs), i.e. oestro-progestin pills, which contain both synthetic estrogens and progestin. There are four generations of oestro-progestin pills, each referring to a particular type of progestin used. The third and fourth generation pills use a progestin to reduce the dose of estrogen present in the pills, these hormones being presented as responsible for the adverse effects associated with the use of the pill such as weight gain, breast pain, etc.

forces and various actors interact, are involved and structure the field of contraception (Marks, 2001 ; Rouzaud-Cornabas, 2019). The confinement of the specific risks associated with new-generation pills over nearly 20 years in France could thus be explained by the combination of several different interests (industrial, professional, feminist or political). Those interests separately or jointly mobilized by different actors have contributed to the centrality of the pill within the French contraceptive model. One central and important actor in making the pill such a medical and social evidence are the medical gynaecologists. Their interest in promoting the pill has been a way to maintain a monopoly of the expertise they held on contraception. Their interest meets industrial ones, when they also work with pharmaceutical companies to find and promote new methods in order to maintain and increase users. It also meets feminist ones when promoting fertility control through oral contraceptive is deeply intertwined with women's empowerment (Rouzaud-Cornabas, 2019). As opinion leaders, they have largely contributed to the minimization of -risks associated with new generations of oral contraceptives and, consequently, to a late evolution of prescribers' and users' contraceptive practices. The decline in pill use observed between 2000 and 2010 in France (Bajos et al., 2012) seems to have highlighted a reconfiguration of the social forces at play in the field of contraception, leading other actors (media, feminist, scientific actors or other health professionals) to be able to question the risks associated with the use of new generation pills.

Similarly, the changes observed after the public debate about the risks associated with pill use on the evolution of contraceptive practices also depend on how these biotechnologies are used and their access is controlled. First, changes in contraceptives practices depend on the contraceptive models and standards enforced in each country, as the use of oral contraception is not the same everywhere (Le Guen et al., 2017). The higher the pill use rate, the higher the proportion of women likely to change methods following a pill scare. Secondly, it also depends on how controversy is received, and perceived, among the population. Indeed, because the use of media tools is not the same according to the social background (Bourdieu, 1979 ; Ohlsson, Lindell et Arkhede, 2017), women with higher social backgrounds have been more informed about the over-risks associated with new generation pills than their less privileged counterparts (Bajos et al., 2014 ; Rouzaud-Cornabas, 2019). However, women

from disadvantaged backgrounds who were aware of the debate perceived it more as "worrying" and more often highlighted the vagueness of the information provided by the media, researchers and public institutions (Bajos et al., 2014 ; Rouzaud-Cornabas, 2019). Third, the possibilities of switching from the pill to another method may depend on access to other contraceptives (Marks, 2001), as the need to use contraception to control fertility is not questioned in these media crises. Because the use of certain contraceptive methods is subject to medical prescription in France, their access necessarily requires consultation with a health professional qualified to prescribe contraception, i.e. in order of importance, gynaecologists, general practitioners and midwives. However, access to these different health professionals is socially differentiated (Bajos et al., 2012). While women from wealthier backgrounds consult a gynaecologist more often, women from working class backgrounds use a general practitioner more often. This affect access to contraceptives since the prescriptive practices differ among each medical specialties. Due to their different training, particularly with regard to IUD insertion, gynecologists are more likely to recommend and prescribe the IUD than general practitioners to their patients (Gelly, 2006; Roux, Ventola and Bajos, 2017). Finally, changing one method to another implies having access to a diversified contraceptive arsenal, both in terms of access and use. Indeed, the critics towards the pill because of its adverse effects should not make us forget that it was previously chosen by the user for other properties. However, the determinants of contraceptive method choice differ according to social background. If the most educated women who place more importance on the effectiveness of the method, those with lower levels of education consider the method more practical and less expensive or also the fact that they do not have to use the prevailing medical institution (Hardon, 1997). These differences in the determinants of contraceptive choice can lead to a process of distinguishing consumption practices according to women's background (Bourdieu, 1979).

The consequences of various pill scares on pill use, unplanned pregnancies and abortion rates have been relatively well documented. Studies that have examined the effects of pill scares on contraceptive use following the 1995 controversy in Europe noted that younger women were more likely to stop using it (Barnett et Breakwell, 2003 ; de Vries, van den Berg et de Jong-van den Berg, 1998 ; Martin, Hilton et Kerry, 1997 ; Skjeldestad, 1997). However, changes in oral contraceptive use in a pill scare context according to women's social backgrounds was less investigated. Because the reception of

media controversy, access to health professionals or to different methods appears socially differentiated, we can make the hypothesis that a pill scare can form or reform social inequalities in access to different contraceptive methods. In this article, we propose to study the evolution of women's contraceptive practices in metropolitan France around the pill scare, i.e. between 2010 and 2016, according to women's social backgrounds to analyze eventual reformation of unequal access to contraceptives.

## **METHODS**

### *Data surveys used*

This study is a secondary data analysis of data from three national surveys conducted between 2000 and 2016: the FECOND national fertility surveys conducted in 2010 and 2013 and the 2016 National Health Barometer Survey, a periodic national health survey assessing knowledge, attitudes and behaviors of the general population in France.

The two FECOND surveys are national cross sectional surveys exploring fertility intentions, childbearing and contraceptive practices along with other SRH topics (sexual violence, sexual dysfunctions and STIs). The surveys followed the same study design, using random digit dialing to select a national probably sample of respondents' ages 15 to 49. Women were over-sampled to ensure adequate statistical power to study infrequent events, such as recent experiences of unintended pregnancy or changes in contraceptive practices following the pill scare of 2012 (for the 2013 survey). One consenting individual per phone number was randomly selected to participate. A more detailed description of sampling and study procedures is published elsewhere (Bajos et al., 2012, 2014). Both studies received approval from the relevant French government oversight agency (CNIL, the Commission Nationale de l'Informatique et des Libertés). The sample of FECOND surveys comprised 5,231 women aged between 15 to 49 years old in 2010 and 4,424 women between the ages of 15 to 49 years in 2013.

The 2016 health Barometer is a national survey designed to track population health indicators in France every five years. The 2016 Health Barometer survey follows the same design as the FECOND surveys, using random digit dialing to select a random sample of individuals between the ages of 15 and 69 years. The sampling design and study procedures have been described in more detail elsewhere

(Richard et al., 2017). The Health Barometer Survey is deemed IRB exempt, as it falls under public health surveillance. De-identified data were made available for this analysis by Santé publique France, the French government agency for Public Health Surveillance. The 2016 health Barometer included 4,314 female participants aged 15 to 49 years.

### *Measures*

In all three surveys, data were collected by phone interviews with trained interviewers, after women provided oral consent. Questionnaires collected information on a set of sociodemographic characteristics as well as women's sexual and reproductive histories. Sexual and Reproductive Health questions generally used the same wording as the FECOND studies, which serve as a reference for tracking reproductive health indicators in France.

#### **Women's socio-demographic and reproductive health characteristics**

The FECOND and health Barometer surveys included a set of socio-demographic questions including age, level of education, professional situation, relationship status, number of children. Questions were identical in the 2010 and 2013 FECOND surveys, while formulations only slightly differed in the 2016 health Barometer survey.

Our key social position measure is based on combined information related to educational attainment and social occupation. Education level consisted of four categories (no diploma or less than a high school diploma, high school diploma, including professional or general branch, two to three year university degree and graduate education including masters and doctoral degrees). The social-occupational indicator distinguishes seven categories of professions based on the French Statistics Bureau (INSEE) classification of social professions. We considered the following categories: managerial positions, intermediate occupations, small employer/self employed, farmers, lower technician occupation, lower services occupations, inactive and students. Our composite social class measure defines four categories along a social gradient, reflecting differences in social capital and access to resources.

A first class called ‘lower class’ includes women with lower technician or lower services occupations, and inactive women with a level of diploma lower than high school. The second class, called ‘lower middle class’, includes women with lower technician or lower services occupations, and inactive women with a level of diploma equal to high school. A third class, called the ‘upper middle class’ includes farmers, small employer/self employed, women with intermediate occupations, and those with lower technician or lower services occupations who have obtained a university degree at the graduate level. Finally, a fourth class, called the ‘upper class’ includes women with managerial positions and inactive women who have obtained a university degree at the graduate level.

Women still in school at the time of the survey (907 women in 2010, 495 in 2013 and 478 in 2016) were considered inactive in the PCS nomenclature. Moreover, like other women, only the highest level of qualification obtained was known, which is subject to changes because they are in the process of training. If we can consider that women in studies under 18 years of age are randomly distributed within the four established social classes, this is not the case for their older counterparts, since the probability of accessing higher education depends on the social origin of individuals (Duru-Bellat et Kieffer, 2008). It seems reasonable to assume that women in education aged over 18 at the time they were interviewed are more likely to belong to the upper and middle classes than to the working classes. However, because these women are more often younger and childless than their non-student counterparts, they are heavy users of pills (Bajos et al., 2014), and therefore prone to change contraceptive practices (Rahib, Le Guen et Lydié, 2017). We could not therefore exclude them from our analysis. Unable to assign them a social class, we have kept them in a separate category called ‘students’.

Women who did not mention their PCS or diploma level were excluded from the analysis (40 women in 2010, 22 in 2013 and 3 in 2016).

The initial population therefore consists of 13,904 women aged 15 to 49 years (5,191 in 2010, 4,402 in 2013 and 4,311 in 2016).

### **Current contraceptive practices**

All three surveys collected the same information on current contraceptive behaviors by asking women if and what they were currently doing with their partner to prevent a pregnancy, including



condoms or natural methods and reasons for non-use. Based on this information, we constructed a dichotomized measure of effective method use distinguishing women who were using very effective methods inducing a prescription or medical intervention (pill, IUD, implant, patch, ring, hormonal injections, diaphragm, cervical cap, tubal ligation and vasectomy) from those who were using non-prescription methods (condoms, withdrawal, period abstinence or no method). If women reported more than one method, the most effective contraceptive was retained, based on method specific typical-use failure rates (Moreau et al., 2007 ; Trussel, 2011).

For the purpose of this analysis, we only considered women who were potentially exposed to the risk of an unintended pregnancy and were therefore in need of contraception. Women with a potential risk of unintended pregnancy are defined as having recently had sex with a man (sexual intercourse in the last 12 months), not pregnant or trying to conceive, and not sterile. A total of 10,610 women (3,937 women in 2010, 3,365 in 2013 and 3 308 in 2016) met these inclusion criteria.

### *Analysis*

We first described women's sociodemographic characteristics across the three survey years and assessed differences in population composition by survey year using Chi Square tests.

Then, we studied the evolution of contraceptive use in two ways. First we analyzed evolution of medical contraception use, i.e. the pill, IUD, implant, patch, ring, hormonal injections, diaphragm, cervical cap, and sterilization (tubal ligation or vasectomy)<sup>3</sup>. Then, we analyzed the evolution of pill, IUD, implant, vaginal ring or patch<sup>4</sup>, and female sterilization use<sup>5</sup>.

In order to take into account the individual characteristics on which contraceptive use depends and the sample gaps between the different surveys in contraceptive uses evolution, we estimated

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<sup>3</sup> Emergency hormonal contraception (or morning-after pill) and spermicides are not subject to medical prescription in France. Moreover, these methods extremely rarely reported by women as a method of avoiding pregnancy (2 women in 2010, 2 in 2013 and 1 in 2016 for the morning-after pill and 6 women in 2010, 7 in 2013 and 2 in 2016 for spermicides). For these reasons, we have chosen not to include them in medical contraceptive variable.

<sup>4</sup> We chose to separate implant from the vaginal ring and patch uses since preliminary analyses showed that their uses were socially differentiated: the implant being used more in the lower classes, while the vaginal ring and patch seem to be a more frequent method in the upper class.

<sup>5</sup> Other methods, such as hormonal injections, diaphragm, cervical cap or male sterilization, are too rarely reported to be the subject of a specific analysis.

percentages of medical contraceptives use after modeling it using logistic regression models (binomial one for medical contraceptive use, and multinomial one for use of each methods<sup>6</sup>). The use of estimated percentages allows us to observe social background effects on the use of each method independently of the structural effects (age, parity) (Toulemon, 1992). By taking into account sample differences, these estimated percentages can be compared between the three survey dates and between social classes, as all other things being equal.

We first modeled contraceptive uses for all women using two logistic regression models (a binomial one to estimate medical contraceptives use, and a multinomial one to estimate use of each method) adjusted on age (in five-year classes from 15 to 34 years old then a class from 35-49 years old), relationship situation (having a partner or no at the time of the survey), number of children (none, one, two or more), place of birth (in metropolitan France or elsewhere), and women's social background (in five classes). Then, two other models (a binomial one and a multinomial one) were constructed to estimate the differentiated evolution of contraceptive uses according to social affiliation by including the terms of interaction between social class and survey year, and excluding student women. Indeed, since this category is not comparable to the other social classes previously constructed, we have developed two specific logistical models for the latter in order to confirm the evolution of contraceptive practices, all other things being equal.

Finally, we used linear parameter combination tests, which are post-estimation tests, a) to check whether the evolution of contraceptive use differs according to women's background; and b) to check if the differences between the estimated percentages i) between survey years in each group for each contraceptive method or ii) between groups for the same survey year for each contraceptive method are significant.

All analyses were weighted to account for the complex survey designs of each survey and post-stratification adjustments based on census data to correct for non-response. Analyses were performed using Stata software version 15.1.

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<sup>6</sup> The variable to be explained is constructed as follows: use of i) pill, ii) IUD, iii) implant, iv) vaginal ring or patch, v) female sterilization, and vi) another situation that includes women without contraception and those using a method not mentioned above.

## Results

### *Three samples with slightly different socio-demographic characteristics*

The women considered for this analysis do not have the same socio-demographic characteristics depending on whether they were interviewed in 2010, 2013 or 2016 (Table 1). Women in the 2016 sample are older than those surveyed in 2010 and 2013, mainly because the proportion of women aged 15-19 is lower (7% in 2016 compared to 9% in 2010 and 2013). In fact, the proportion of women with two children is higher in 2016: 52% compared to 48% in 2010 and 49% in 2013 respectively. Women in the 2016 sample are also less likely to have a regular partner, remembering that all have had heterosexual intercourse within the year. Finally, the social position distribution of our study population differs between the three survey dates. In the 2013 sample, women from the lower class or lower middle class represent a larger share of the population than in 2010 and 2016 (60% compared to 48% and 50% respectively), while inactive women were more likely to have responded to the 2013 survey. On the other hand, women from the upper middle classes were over-represented in 2016 compared to other years, and women from the upper classes were less, mostly because people in intermediate occupations were more represented in the sample of the Health Barometer survey.

**Table 1: Characteristics of women 15-49 years in need of contraception in France according to survey year**

	2010	2013	2016	
<b>Sample</b>	3 937	3 365	3 308	p
<b>Age</b>				*
15-19	9.1	9.0	6.9	
20-24	11.6	13.2	12.6	
25-29	13.2	13.4	15.2	
30-34	14.4	14.1	15.1	
35-49	51.7	50.4	50.2	
<b>Place of birth</b>				
Metropolitan France	87.1	88.1	88.9	
Other	12.9	12.0	11.1	
<b>Social position</b>				***
Lower class	31.5	35.3	30.5	
Lower Middle class	16.9	24.9	19.7	
Higher Middle class	21.8	13.3	30.8	
Upper class	15.4	15.9	9.3	
Students	14.4	10.7	9.7	
<b>Relationship status</b>				*
With a regular partner	86.4	86.9	84.0	
No partner	13.6	13.1	16.0	
<b>Number of children</b>				*
None	36.0	34.0	32.0	
One	16.0	17.1	16.1	
Two or more	48.0	48.9	51.9	

Sample: Women aged 15 to 49 years residing in metropolitan France who have had heterosexual intercourse within twelve months, who are not sterile, not pregnant and who are not seeking to become pregnant.

Lecture: 32% of the women in the 2010 sample were grouped into the social position designated as lower class, compared to 35% in 2013 and 31% in 2016.

Legend: Significant distribution difference at +: 10%, \*: 5%, \*\*: 1%, \*\*\*: 0.1%.

Sources: FECOND 2010 and 2013 (Inserm/Ined) and Health Barometer 2016 (SpF).

### *A decrease in the use of medical methods between 2010 and 2016*

Between 2010 and 2016, the use of medical contraception decreased in France. While we estimated 75 % of women used a medical method in 2010, only 70 % of women used it in 2016 (Table 2). Moreover, decrease in use of medical contraception appear to be socially differentiated ( $p < 0.05$ ). Indeed, the drop in medical contraceptive use is more pronounced among women from lower- and upper-classes (estimated percentages respectively from 75 % to 68 %,  $p < 0.05$ ; and from 74 % to 68%,  $p < 0.05$ ) than among middle- -classes' women (estimated percentages from 75 % to 72 %). Among student women, while we estimated a decrease in medical contraceptives uses between 2010 and 2016 (from 73 % to 71 %), the drop is not significant. Could we see any other changes in contraceptive use, particularly with regard to the use of different methods?

**Table 3: Estimated percentage of medical contraceptives use by survey date and women's social position**

	2010	2013	2016	P			Global p
				2010-2013	2013-2016	2010-2016	
<b>Medical Contraception</b>							
All women	74.6	72.1	70.1	+		***	
Lower class	74.7	70.4	67.7	+		*	*
Lower Middle class	74.6	74.5	72.5				
Higher Middle class	75.5	73.8	72.1			+	
Upper class	74.4	70.8	67.7			*	
Students	72.8	70.9	70.8				
<b>Pill</b>							
All women	46.5	39.8	36.3	***	*	***	
Lower class	44.1	35.5	31.5	***		***	***
Lower Middle class	43.3	38.7	36.7	+		**	
Higher Middle class	42.0	38.8	33.0		*	***	
Upper class	44.4	33.3	32.2	***		***	
Students	69.4	64.8	58.8			**	
<b>IUD</b>							
All women	20.3	23.2	24.4	**		***	
Lower class	21.5	22.9	23.8				***
Lower Middle class	22.7	27.0	27.7	+		*	
Higher Middle class	25.1	26.4	31.0		+	**	
Upper class	23.4	31.2	29.8	**		*	
Students	0.7	1.4	2.6			+	
<b>Implant</b>							
All women	2.6	3.3	4.1			**	
Lower class	3.1	4.5	4.7				
Lower Middle class	2.5	3.3	3.9				
Higher Middle class	2.8	2.3	3.6				
Upper class	2.1	1.4	1.5				
Students	1.5	3.2	6.2			**	
<b>Patch/Ring</b>							
All women	1.4	1.4	1.1				
Lower class	0.5	1.3	0.5				
Lower Middle class	2.2	1.2	0.9			+	
Higher Middle class	1.9	1.4	0.8			+	
Upper class	2.2	1.5	1.5				
Students	1.1	1.6	2.9				
<b>Female sterilization</b>							
All women	3.8	4.4	4.2				
Lower class	5.9	6.2	7.0				
Lower Middle class	3.7	4.2	3.4				
Higher Middle class	3.6	5.0	3.6				
Upper class	2.2	3.4	2.6				
Students	0.1	0.1	0.6		***	***	

Sample: Women aged 15 to 49 years residing in metropolitan France who have had heterosexual intercourse within twelve months, who are not sterile, not pregnant and who are not seeking to become pregnant.

Legend: Significant distribution difference at +: 10%, \*: 5%, \*\*: 1%, \*\*\*: 0.1%.

The estimated percentages take into account age, relationship status, number of children, place of birth and the interaction between women's social affiliation and the survey date.

Lecture: In 2010, 47% of the women in our sample used the pill compared to 40% in 2013. This significant difference at the 0.1% threshold is not explained by differences in age, relationship status, number of children, place of birth or social position between the samples.

Sources: FECOND 2010 and 2013 (Inserm/Ined) and Health Barometer 2016 (SpF).

### *Transfers to other methods were socially differentiated*

Between 2010 and 2013, the decline in pill use (estimated percentages 47 % and 40 %,  $p < 0.001$ , Table 3) were socially differentiated ( $p < 0.001$ ), with a decline more pronounced among lower and upper class women (estimated percentages respectively: from 44 % to 36 %,  $p < 0.001$  and from 44 % to 33 %,  $p < 0.001$ ). While women from a more privileged background were more likely to switch to IUD (from 23 % to 31 %,  $p < 0.01$ ), it was not the case for their less privileged counterparts ( $p < 0.001$ ). Among lower-middle-class women, the decrease in pill use appears to have been less significant (estimated percentages: 43 % to 39 %,  $p < 0.1$ ) and offset by an increase in IUD use (estimated percentage: 23 % to 27 %,  $p < 0.1$ ). While upper-middle-class women continued to use the pill in the same proportions between 2010 and 2013 (estimated percentages: from 42 % to 39 %,  $p > 0.1$ ), this is no longer the case between 2013 and 2016. We observed a decrease in the use of this method over that period (estimated percentages: from 39 % to 33 %,  $p < 0.05$ ), partly offset by an increase in IUD use (estimated percentages: from 25 % to 26 %,  $p < 0.1$ ). Finally, if we look at trends in the use of medical contraceptive methods over a broader period, i.e. between 2010 and 2016, the decline in pill use appears to have affected all social categories and also students (estimated percentages: from 69 % to 59 %,  $p < 0.01$ ). The switch to other medical methods was mainly towards implants for women still in school (estimated percentages: 2 % to 6 %,  $p < 0.01$ ) and the IUD for those in the middle and upper classes. The decline in pill use among lower class women does not appear to have resulted in greater IUD use (estimated percentages: 22 % to 24 %,  $p > 0.1$ ), or any other medical method.

These divergent trends in contraceptive use between 2010 and 2016 depending on women's social position raise questions about the potential reappearance of social inequalities in access to different contraceptive methods.

### *Higher social inequalities in access to contraceptive methods?*

While in 2010, women regardless of their social position used the pill in the same proportions, this is no longer the case in 2013. Women in upper classes were less likely to use oral contraception than their lower and upper middle classes counterparts (respectively  $p < 0.05$ , and  $p < 0.1$ , Table 4). In

2016, the difference in oral contraceptive use is only observed between lower class and lower middle class women ( $p < 0.1$ ).

While IUD use was socially undifferentiated in 2010, this is no longer the case in 2013. Lower class respondents were less likely to use this method than their lower-middle class and upper class counterparts ( $p < 0.1$  and  $p < 0.001$  respectively), who themselves seem to use this method more than their lower-middle class ( $p < 0.1$ ) and upper-middle class ( $p < 0.1$ ) counterparts. In 2016, only lower class women have a lower use of this method compared to upper middle class ( $p < 0.01$ ) and upper class ( $p < 0.05$ ) women.

Similarly, if in 2010 the implant was used in the same proportions by respondents regardless of their social position, this is no longer the case in 2013, as lower class women have a greater use of this method, compared to their upper-middle ( $p < 0.1$ ) and upper ( $p < 0.05$ ) class counterparts. Similarly, lower-middle-class women use the implant more than their upper-middle-class counterparts ( $p < 0.05$ ). In 2016, the differences persist and has increased in a certain sense since only women in the upper classes are less likely to use implants ( $p < 0.05$ ), those in the upper middle classes having reached a level of use of this method equal to their less endowed counterparts. Conversely, if differences were observed in the use of the vaginal ring and patch according to women's social affiliation in 2010, with women from the lower classes using it less than their more privileged counterparts, this is no longer the case in 2013 and 2016.

Finally, our results reveal that the use of female sterilization is socially differentiated. In 2010, this method was more used by lower class women than their better endowed counterparts, especially those in the upper classes who used it very little ( $p < 0.001$ ). As a reminder, these differences take into account the age of women and the number of children they have, and cannot therefore be explained by a difference in social age at the time of the survey. In 2013, there was a weakening of this trend, particularly due to the increase in the use of this method among all women, although these changes were not significant (Table 4). In 2016, however, sterilization remains a method mainly used by lower class women.

**Table 4: Changes in the use of a medical contraceptive method by social affiliation and survey date**

	Lower class	Lower Middle class	Higher Middle class	Upper class	p					
	1	2	3	4	1 versus 2	1 versus 3	1 versus 4	2 versus 3	2 versus 4	3 versus 4
<b>Pill</b>										
2010	44.1	43.3	42.0	44.4						
2013	35.5	38.7	38.8	33.3					*	+
2016	31.5	36.7	33.0	32.2	+					
<b>IUD</b>										
2010	21.5	22.7	25.1	23.4		+				
2013	22.9	27.0	26.4	31.2	+		***		+	+
2016	23.8	27.7	31.0	29.8		**	*			
<b>Implant</b>										
2010	3.1	2.5	2.8	2.1						
2013	4.5	3.3	2.3	1.4		+	**		*	
2016	4.7	3.9	3.6	1.5			*		*	*
<b>Patch/Ring</b>										
2010	0.5	2.2	1.9	2.2	**	*	*			
2013	1.3	1.2	1.4	1.5						
2016	0.5	0.9	0.8	1.5						
<b>Female sterilization</b>										
2010	5.9	3.7	3.6	2.2	*	*	***			
2013	6.2	4.2	5.0	3.4			*			
2016	7.0	3.4	3.6	2.6	*	*	**			

Sample: Women aged 15 to 49 years residing in metropolitan France who have had heterosexual intercourse within twelve months, who are not sterile, not pregnant and who are not seeking to become pregnant.

Legend: Significant distribution difference at +: 10%, \*: 5%, \*\*: 1%, \*\*\*: 0.1%.

The estimated percentages take into account age, relationship status, number of children, place of birth and the interaction between women's social position and the survey date.

Lecture: In 2013, when age, relationship status, number of children, place of birth and social affiliation are taken into account, 23% of lower class women used the IUD compared to 31% of upper class women. This difference is significant at the 0.1% threshold.

Sources: FECOND 2010 and 2013 (Inserm/Ined) and Health Barometer 2016 (SpF).

## Discussion

The purpose of the study presented here was to see whether the contraceptive practices of women living in France had undergone different changes depending on their social background following the “pill scare” that occurred in 2012-2013. Our analyses reveal a decrease in medical contraceptive use between 2010 and 2016 due to the decrease in pill use not fully compensated by an increase in IUD or implant use, as previously shown (Bajos et al., 2014 ; Rahib, Le Guen et Lydié, 2017). This decline in medical contraceptive use is particularly relevant for women from lower and higher classes in which we observed a decrease in pill use since 2013, whereas it was only observed in 2016 among middle class’ women. If in other countries that have experienced pill scares, such as the United States or the United



Kingdom (Barnett et Breakwell, 2003), a renewed interest in oral contraception in the years following the controversy were observed, this was not the case in France. Indeed, a further decline in the use oral contraceptives was observed between 2013 and 2016 (Rahib, Le Guen et Lydié, 2017) among upper-middle-class women. Finally, it seems that the French pill scare led to redefine social inequalities in the access to medical contraceptives. While women from upper class switched from pill to IUD between 2010 and 2013, this is not the case for their less privileged counterparts.

Our study has some limitations. First, in the absence of information available in the three waves of surveys, it was not possible to define precisely the social background of student women, and had to be analyzed separately. Moreover, if we have observed a change in contraceptive practices over time, we would be wrong to forget that it is never the same women who were interviewed. The formation of social classes, if it has enabled us to observe changes over the period 2010-2016, particularly because of the stability of social groups over time, should not be considered as a longitudinal analysis, i.e. the observation of contraceptive practices of the same group of women at different times. Similarly, a generational analysis could have been relevant, by constructing fictitious generations based on women's year of birth. Unfortunately, this information was not available in 2016, where only age was collected. Other information, not available, could have made it possible to deepen the analysis, such as the generation of the pill used by women in each survey in order to observe the transfer to older generations' pills according to women's social background. We would also have liked to include in our study the type of contraceptive follow-up women benefited from, since contact with professionals trained in different ways influence contraceptive practices (Bajos et al., 2004, 2012). For example, some professionals are poorly trained in IUD or implant insertion and consequently do not prescribe them. However, problems of comparability between questionnaires<sup>7</sup> and the selection of women interviewed about it<sup>8</sup> did not allow this information to be included in our analyses. Finally, it would have been interesting to include the social background of the women's partner if in a relationship, or any other variable providing

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<sup>7</sup> Questions about women's gynaecological follow-up for contraceptive questions were asked differently in 2010 and 2013, and were not included in the 2016 questionnaire.

<sup>8</sup> In 2010, 2013 and 2016, only women who used the ring, IUD, implant, patch or pill were asked about the medical formation of the person who prescribed the non-permanent medical method. This question did not give information on the type of follow-up provided to women who were not using these methods at the time of the survey.

information on the differential of social position between partners. Because they are in a relationship with a partner who is better endowed than they are, some women could belong to a social environment different from the one they are supposedly required to belong. They thus could adopt uses and practices conveyed therein, but also benefit from the sharing of economic resources within the couple to access to a broader contraceptive choice (better trained health professionals, other methods).

Several hypotheses can be put forward to understand the differentiated changes in contraceptive use according to women's social background: social inequalities that pre-existed before the French pill scare, and medical practices that vary according to the social background of users.

### *Socially differentiated contraceptive uses before the French pill scare*

Between 2010 and 2016, the decline in the use of a medical method of contraception concerns both lower and higher classes' women.

Following the media controversy surrounding third- and fourth-generation oral contraceptives, pill use declined, and the drop in is more pronounced among women from lower and higher classes, while their middle-class counterparts continued to use oral contraception in the same way between 2010 and 2013. Considering that before the controversy, third- and fourth-generation pills were more prescribed to women from higher social backgrounds (Bajos et al., 2004), upper class women probably have felt highly involved in the debate on oral contraceptives than middle-class women.

Among lower class women, the effects of the media crisis seem to have been combined with the effects of the economic crisis of the late 2000s and the deepening of social and territorial inequalities in matters of health care access (Chevillard, Lucas-Gabrielli et Mousques, 2018). Indeed, previous analyses had already shown a decrease in pill use between 2000 and 2010 (Bajos et al., 2012), and more precisely between 2005 and 2010 (Moreau et al., 2013). While the lower use of oral contraceptives was generally offset by the use of other hormonal methods such as, in order of importance, implants, vaginal rings and patches, this was only partially the case for women aged 20-24 years. In addition, the decline in pill use among this age group is more prevalent among women no longer living with their parents, i.e. potentially female students but also young working women, facing financial difficulties (Bajos et al., 2012). We can also assume that women from lower class have been more affected by the consequences of the

decline in number of gynaecologists (Chevillard, Lucas-Gabrielli et Mousques, 2018) and, more broadly, in trained health professionals (general practitioners, midwives) in some territories, which has led to difficulties in accessing healthcare in both urban and rural areas. The intersection between social inequalities and territorial inequalities in access to contraception could be a particularly interesting area of research to develop. It is also possible that, because of less protective health coverage that leads them to have difficulty accessing a health professional, lower class women have received less reassuring information about the risks associated with oral contraception use. Indeed, 5 % of lower class women benefit from health coverage without complementary coverage compared to 3 % of their wealthiest counterparts ( $p < 0.01$ ). In addition, 16 % of lower class women are beneficiaries of state health covers for people in low income or immigrants waiting for regularization or are without coverage compared to 2 % of upper class women ( $p < 0.001$ ). It may also be that the concerns created by the media controversy over pills have spread to all medical contraceptives and led to mistrust on the part of lower class women of health professionals who prescribe contraception, but also medical procedures. Previous studies have highlighted the existence of critical discourse towards doctors and pharmaceutical companies within the working classes, leading some individuals to prefer methods considered more “natural” (Arborio et Lechien, 2019) and which do not require medical mediation. The effects of the economic crisis and the pill crisis thus seem to combine to reinforce social inequalities in access to and use of contraception.

Our analyses also highlight socially differentiated transfers to other methods around the pill crisis. While women from upper class have turned massively to the IUD, women from lower class seem to have more often abandoned all medical contraception. More frequently followed by gynaecologists (Bajos et al., 2004, 2012), and perhaps better able to challenge medical authority (Rouzaud-Cornabas, 2019), women of the upper class seem to have been able to obtain IUD prescriptions, generally presented by professionals as contraindicated for nulliparous women (Moreau et al., 2014).

### *Health professionals' roles in redefining social inequalities in access to contraceptive methods*

While health professionals were once presented as being neutral towards their patients (Parsons, 1964), analyses have shown that their practices differed according to their patients social backgrounds

(Paillet, 2016), which could lead to health social inequalities. Indeed, health professionals seemed to be less prolific in terms of information delivery (Lang et al., 2008) and less specific about the risks associated with health treatment (Fainzang, 2006) when addressing people from working-class backgrounds.

These findings also seem to be valid in the more specific field of contraception. The prescription of contraceptive methods is not the exclusive domain of a single medical specialty since it concerns in France, in order of importance, gynecologists, general practitioners (Bajos et al., 2012) and midwives since 2009, and their recommendations for methods vary according to the type of training they have received (Roux, Ventola et Bajos, 2017). Thus, general practitioners, who have generally received little training in IUD insertion (Gelly, 2006), recommend this contraceptive method less frequently to their patients. However, medical follow-up related to contraception is socially differentiated, women from lower class visiting a general practitioner more often for these questions. As a result, they could have been excluded from IUD use during the pill crisis. On the other hand, upper-class women seemed to have been the first to be concerned by the media controversy over the pills. Indeed, before the pill scare, they were more likely to use new-generation contraceptives. First because they were more likely to go to a gynecologist for contraception, and secondly because these practitioners were more likely to prescribe these new generation pills on the other hand (Bajos et al., 2004). They would then have quickly consulted their gynaecologist to change methods and possibly use the IUD. It is also possible that health professionals' recommendations were different according to the social background of the women (Bretin et Kotobi, 2016), those from lower class, considered less able to have regular contraceptive compliance, being more often oriented to implants or sterilization use.

A final hypothesis needs to be discussed, that of the greater capacity of women from upper class, because of a shorter social distance from the health professional, to question the medical authority and negotiate the prescription of the contraceptive method they wish to use (Bourdelaïs et Faure, 2004 ; Rouzaud-Cornabas, 2019 ; Strauss, 1992). Between 2010 and 2013, the decrease in pill use and the increase in IUD use were more pronounced among women who considered choosing contraception alone (Rouzaud-Cornabas, 2019). Similarly, those with higher diplomas or those with managerial positions reported choosing their contraceptive method more on their own or with the prescriber than

those with less education or lower technician occupation, lower services occupations, the latter reporting more letting the prescriber choose than their counterparts. Faced with doctors' hostility to prescribe the IUD, women from higher backgrounds would have been better able to mobilize their social resources and thus be able to access to IUD<sup>9</sup>, thereby creating the path for middle-class women who benefited from it later, between 2013 and 2016. Thus, the socially differentiated use of different contraceptive methods reflects the fact that the gradual shift from imposed or forced medicalization to “negotiated medicalization” depends on the social resources that continue to influence the importance and forms of these negotiations.

Despite these developments, it is important to note that the pill remains the most widely used contraceptive in France in 2016, followed by the IUD and the condom. While the pill crisis has certainly led many women to question their contraceptive practices, and for some of them to change their contraceptive use, the French contraceptive standard governing contraceptive uses remains strongly entrenched. In France, the difficulties in effectively promoting diversified contraceptive practices, regardless of women's age or social background, testify to the robustness of that standard, but also to the impregnation of the hormonal pattern that prevents people from thinking differently about the availability and use of contraceptive methods, other than hormonal options.

Finally, the decline in the use of medical methods between 2010 and 2016 among upper class women and, to a lesser extent, among those from the upper middle classes, suggests that, as a result of the pill scare, some of them have turned away from the medical institution for contraceptive issues. While the determinants of contraceptive method choice differ according to social background (Hardon, 1997), the converging use of prescription methods between the lower classes and the upper classes question. Would we then see a questioning of the medicalization of contraception in France following the controversies surrounding oral contraception in the early 2010s?

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<sup>9</sup> In 2011, 85% of general practitioners and 68% of gynecologists said that the IUD was not recommended for women who had never had children (Moreau et al., 2014).

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