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# The French pill scare and the reshaping of social inequalities in access to medical contraceptives

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## ABSTRACT

While the consequences of various "pill scares" have been relatively well-documented in the public health literature revealing a drop in pill use and a rise in unplanned pregnancies and abortion rates, researchers rarely considered that these controversies would affect women contraceptive practices differently according to their social background. Indeed, social differentiations in reaction to "pill scares" could contribute to reinforce the social gradient in the use of contraceptive methods and choice of visiting the health professionals who prescribe them. These could contribute to an increase in health inequalities on access to contraceptive methods. Using data from three state nationally representative cross-sectional surveys conducted in France in 2010, 2013 and 2016, we studied the changes in women's contraceptive uses around the French "pill scare" that occurred in 2012–2013. We focused on the changes in the use of all contraceptives available under medical prescription (called medical contraceptives) on one hand, and on each specific method (pill, IUD, implant, patch or vaginal ring, and female sterilization) on the other hand according to the women's social background. We saw a social gradient in contraceptives changes. The decline in the use of contraceptive methods available under medical prescription was particularly marked for women from lower and higher classes in which we observe a decrease in pill use between 2010 and 2013, whereas it was observed only between 2013 and 2016 among middle class women. Moreover, while some women from upper class shifted from pill to IUD between 2010 and 2013, this was not the case for their less privileged counterparts. As a consequence, it seems that the French "pill scare" led to the reshaping of social inequalities in access to medical contraceptives.

## 1. Introduction

Public health crises around oral contraceptives, called "pill scares", are quite frequent since the spread of oral contraceptives in the United-states. They occur each time a new cardiovascular or cancers risk associated with the use of these contraceptives is revealed on the public space. As a consequence to the controversy, pill use decreases and unplanned pregnancies and abortion rates increase (Jones, Beniger, & Westoff, 1980; Watkins, 2001). In Europe, "pill scares" are less common

than in the US. The most important one occurred in October 1995 (Marks, 2001), following the publication of several studies revealing that the use of third generation<sup>1</sup> pills is associated with a two to three times higher risk of deep vein thrombosis compared to second generation oral contraceptives (Bloemenkamp, Rosendaal, Helmerhorst, Büller, & Vandenbroucke, 1995; Jick, Jick, Gurewich, Myers, & Vasilakis, 1995; Spitzer, Lewis, Heinemann, Thorogood, & MacRae, 1996; Farley, Meirik, Chang, Marmo, Poulter, 1995). At that time, several countries saw a decrease in pill use such as the United Kingdom (Balasch, 1997;

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<sup>1</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.

Barnett & Breakwell, 2003; Martin, Hilton, & Kerry, 1997), Norway (Skjeldestad, 1997) and the Netherlands (de Vries, van den Berg, & de Jong-van den Berg, 1998). In France, no decrease in pill use has been observed since the public authorities. The medical community and the media have been quite silent (Rouzaud-Cornabas, 2019) and method mix remained largely centralized on the pill use (Roux, 2020). 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, Rouzaud-Cornabas, Panjo, Bohet, & Moreau, 2014).

The occurrence of a “pill scare” following the media coverage of the associated health risks to pill use depends on the way various actors interact and are involved and structure the field of contraception (Marks, 2001; Rouzaud-Cornabas, 2019). The lack of media coverage of the specific risks associated with new-generation pills over nearly 20 years in France can 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. Indeed, contraceptive uses in France follow a contraceptive standard defining good practices in terms of birth control and a certain temporality (Bajos, Ferrand, & Giné, 2002; Bajos & Ferrand, 2004). It thus urges to use condoms at first sexual intercourse and at the start of any new relationship because of the risk of sexually transmitted infection. As soon as the women's relationship life gets stabilized, contraceptive pill becomes the reference. Finally, when women already had the number of children they wanted, the IUD need to be preferred. French public health insurance reimburses 65% of the cost of the medical consultation and the purchase of contraceptives (IUDs, implants, hormone injections and most pills<sup>2</sup>). Reimbursement for sterilization (tubal ligation or vasectomy) is 80%. Individuals have the possibility of taking out private health insurance to access reimbursement of the remaining costs. There are also some possibilities to have free access to contraceptives by consulting in health centers managed by the French Planned Parenthood.

The interest of French practitioners recognized as experts by the media in promoting the pill throughout the 1970s–2010s has been a way to maintain a monopoly of the expertise they held on contraception (Roux, 2020; Rouzaud-Cornabas, 2019). 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, practitioners recognized as experts by the media have largely contributed to the minimization of risks associated with new generations of oral contraceptives (Roux, 2020) and, consequently, to a late change of prescribers' prescriptions and users' contraceptive practices. The decline in pill use observed between 2000 and 2010 in France (Bajos, Bohet, Le Guen, & Moreau, 2012) seems to have highlighted a reconfiguration of the social forces at stake in the field of contraception, leading other actors (media, feminists, scientific actors or other health professionals) to be able to question the risks associated with the use of new generation pills. Indeed, this change has occurred without changes in French health system and without being explained by changes in the practices of professionals until then. Although the National Health Authority (the Haute Autorité de Santé) issued several new recommendations (in 2004 on the possibility of prescribing IUDs to nulliparous women; and in 2007 on the fact

that new generation pills should only be prescribed in cases of intolerance to second generation pills), they did not seem to have been followed by prescribers (Bajos et al., 2012; Moreau, Bohet, Hassoun, Ringa, & Bajos, 2014; Roux, Ventola, & Bajos, 2017). One major reason being that prescribers' autonomy in France and the lack of independent training make them less compliant to recommendations issued by the State and the National Health Authority (Ventola, 2017).

Similarly, the magnitude of changes observed in the trend in contraceptive practices after the public debates in the different countries affected by the “pill scares” also depended on how oral contraceptives are used and how their access is controlled. First, changes in contraceptive practices depend on the contraceptive models and standards enforced in each country insofar as the use of oral contraception is not the same everywhere (Bongaarts & Johansson, 2002; Le Guen et al., 2017; Mauldin & Segal, 1988). The higher the pill use rate among contraceptive users is, the higher the “pill scare” would affect method mix. Secondly, it also depends on how controversy around pills is received, and perceived, differently among the population of the different types of media is not the same according to the social background (Chan & Goldthorpe, 2007; Katz, Lazarsfeld, & Roper, 1955; Ohlsson, Lindell, & Arkhede, 2017). In France, women with higher social background have been more informed about the over-risks associated with new generation pills than their less privileged counterparts (Bajos et al., 2014). However, women from disadvantaged background who were aware of the debate perceived it as more “worrying” regarding the information delivered during the controversy. They were also more likely to highlight the vagueness of the information provided by the media, researchers and public institutions (Bajos et al., 2014). Third, the possibilities of shifting from the pill to another method may depend on access to other contraceptives (Marks, 2001). Because the use of some contraceptive methods is subject to medical prescription in France, their access necessarily requires consultation with a health professional qualified to prescribe them, i.e. in order of importance, gynaecologists, general practitioners and midwives since 2009. Access to these different health professionals depend on women's social background (Bajos et al., 2012). While women from higher background consult a gynaecologist more often than those from working-class background, the latter tend to see general practitioner more often. Moreover, due to their different training, particularly with regard to IUD insertion, gynaecologists are more likely to recommend and prescribe the IUD than general practitioners to their patients (Gelly, 2006; Roux et al., 2017). However, the critics towards the pill should not make us forget that women choose their contraceptive mean according to a wide range of properties as effectiveness, desirable or undesirable side effects and financial costs. The determinants of contraceptive method choice differ according to social background. The most educated women seem to attach greater importance on the effectiveness of the method, while those with lower levels of education choose their contraception based on more practical arguments: the cost of the method and its free access (Rouzaud-Cornabas, 2019).

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 & Breakwell, 2003; de Vries et al., 1998; Martin et al., 1997; Skjeldestad, 1997). However, changes in oral contraceptive use in a “pill scare” context according to women's social background was less investigated. Because there is a social gradient in the reception of media controversy, access to health professionals or to different methods, we can make the hypothesis that a “pill scare” could lead to a shift in social inequalities in access to different contraceptive methods. In this article, we propose to study the changes in women's contraceptive practices in metropolitan France around the “pill scare”, i.e. between 2010 and 2016, according to women's social background to analyze eventual reshaping of unequal access to contraceptives.

<sup>2</sup> In September 2012, the French government had announced the end of reimbursement by the national health insurance of all third generation pills (which had been reimbursed since 2009) from September 2013. Due to the 2012 French “pill scare”, the government decided to bring forward the end of reimbursement of these pills by April 2013.

## 2. Methods

### 2.1. Data surveys used

Data used for this analysis come from the FECOND national fertility surveys conducted in 2010 and 2013 and the 2016 National Health Barometer Survey, a periodic national health survey conducted among the general population in France.

The two FECOND surveys are national cross-sectional surveys exploring fertility intentions, childbearing and contraceptive practices along with other Sexual and Reproductive Health topics (sexual violence, sexual dysfunctions and STIs). The two surveys followed the same study design, using random digit dialing to select a national probably sample of respondents' aged 15 to 49. Women were over-sampled to ensure adequate statistical power to study infrequent events, such as recent experiences of unintended pregnancy, and changes in contraceptive practices following the "pill scare" of 2012 for the 2013 survey. A more detailed description of sampling and study procedures is published elsewhere (Bajos et al., 2014, 2012). The sample of FECOND surveys included 5231 women aged between 15 and 49 years old in 2010 and 4424 women between the ages of 15–49 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 2016 health Barometer included 4314 female participants aged 15–49 years.

The refusal rates to respond the surveys were 20.0% in 2010 and 35.9% in 2016. The differences in the refusal rates between the first survey and the third one is mainly due to a difference in how they were calculated. Comparable refusal rate for the survey conducted in 2013 is not available due to the possibility for the interviewees to respond by phone (cell and landline) or by internet.<sup>3</sup>

### 2.2. Measures

In all three surveys, data were collected by phone interviews with trained interviewers once women provided their oral consent. Questionnaires collected information on a set of sociodemographic characteristics as well as women's sexual and reproductive histories.

#### *Women's socio-demographic characteristics*

The FECOND and health Barometer surveys included a set of socio-demographic questions such as 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 background measure is based on combined information related to educational attainment and occupation in order to define a reduced number of homogeneous socioeconomic groups (latter called social classes). Education level consisted of several categories merged in four: no diploma or less than a high school diploma; high school diploma, including high school or vocational diploma; two to three year university degree; and graduate education, including masters and

doctoral degrees. Occupations are ranked in categories based on the French socio-economic classification/nomenclature, called PCS. We considered the following categories: managerial positions, intermediate occupations, small employer/self-employed, farmers, lower technician occupation, lower services occupations and inactive.<sup>4</sup> The use of these two pieces of information makes it possible to distinguish between lower-skilled and higher-skilled jobs that fall under the same PCS, e.g. separating cashiers from secretaries, both included in the PCS "lower service occupations". Our composite social class measure defines four categories along a social gradient, reflecting differences in economic and cultural capitals and access to material resources. A first class called 'lower class' includes women with lower technician or lower services occupations and inactive women with no diploma or a level of diploma lower than high school. The second class, called 'lower-middle class', is composed of women with lower technician or lower services occupations and inactive women with a level of diploma equal to high school or two to three year university degree. 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 'upper class' includes women with managerial positions and inactive women who have obtained a university degree at the graduate level.

Women still studying at the time of the survey (907 women in 2010, 495 in 2013 and 478 in 2016) were considered inactive by the PCS nomenclature. Moreover, like other women, only the highest level of qualification obtained was known, which is subject to changes because they were still students. Although 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 & 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 lower class. 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, & Lydié, 2017). 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 15–49 years (5191 in 2010, 4402 in 2013 and 4311 in 2016).

#### *Current contraceptive practices*

All three surveys collected the same information on current contraceptive behaviors by asking women whether and what they were currently doing with their partner(s) to prevent a pregnancy, including condoms or natural methods, as well as the reasons for non-use. Based on these 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 of contraception (condoms, withdrawal, period

<sup>3</sup> As noted below, the sample for the 2013 survey was limited to telephone respondents only to ensure comparability with the other two surveys.

<sup>4</sup> Unemployed people at the time of the survey were not considered as inactive people considering they pertain to active population since they were looking for a job. They were thus ranked in the occupation they practiced before being unemployed. Inactive people at the time of the survey remained in inactive category.

abstinence or no method).<sup>5</sup> When women reported more than one method, the most effective contraceptive was retained, based on method specific typical-use failure rates (Moreau, Trussell, Rodriguez, Bajos, & Bouyer, 2007; Trussell, 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 an heterosexual intercourse in the last 12 months, not pregnant, not trying to conceive, and not sterile. A total of 10,610 women (3937 women in 2010, 3365 in 2013 and 3308 in 2016) met these inclusion criteria.

## 2.3. Analysis

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

Then, we studied the changes in contraceptive uses. First, we analyzed the trend in the use of contraceptives methods available under medical prescription (latter called medical contraceptives), i.e. the pill, IUD, implant, patch, ring, hormonal injections, diaphragm, cervical cap, and sterilization (tubal ligation or vasectomy).<sup>6</sup> Then, we analyzed the trend in pill, IUD, implant, vaginal ring or patch,<sup>7</sup> and female sterilization use.<sup>8</sup> We 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<sup>9</sup>) in order to take into account the individual characteristics on which contraceptive use depends and the sample gaps between the different surveys in the changes in contraceptive uses<sup>10</sup>. By including the terms of interaction between social class and survey year, and excluding student women<sup>11</sup> in new models, we estimated the social gradient in the changes in contraceptive uses.

We presented the results in two ways. First, we presented predicted probabilities expressed as percentages (latter called estimated

percentages) of medical contraceptives use after modeling it using logistic regression models. The use of estimated percentages allows us to take into account sample differences between the surveys, and to observe effects of social background on the use of each method independently of the structural effects (including age and parity) (Toulemon, 1992), i.e. as all other things being equal. We used linear parameter combination tests, which are post-estimation tests to check whether the changes of contraceptive use estimated in the three surveys differs according to women's social background (global p). We also checked if estimated percentages in each social class for each contraceptive method differs between two surveys (p). Then, we estimated risk-ratios between social classes for the same survey for each contraceptive method derived through logistic regressions models and checked if they were significantly different using nonlinear hypothesis tests.

All analyses performed using Stata software version 16.1, and were weighted to take into account the complex survey designs of each survey and post-stratification adjustments based on census data to correct for non-response.

## 3. Results

### 3.1. Slightly different socio-demographic characteristics across the three samples

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 were older than those surveyed in 2010 and 2013, and more likely to have more than two children ( $p < 0.05$ ). However, they were less likely to have a regular partner ( $p < 0.05$ ), remembering that all have had

**Table 1**

Characteristics of women aged 15–49 of the three samples according to survey year.

	2010	2013	2016	
Sample	3937	3365	3308	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	
Upper-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 15–49 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.

Interpretation: 32% of the women in the 2010 sample were grouped into the social class 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).

<sup>5</sup> In the 2010 and 2013 surveys, respondents who initially reported not using any method were subsequently asked again whether they used condoms, avoided sex on risky days, or used withdrawal. This precaution was not taken in 2016. Although it was possible to construct a variable that take into account on the differences in how people were questioned on their contraceptive uses, in order to obtain comparable trends over the study period, the risk was to underestimate the uses of condom, periodic abstinence and withdrawal. Consequently, we chose to reduce our analysis to the use of prescribed methods.

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

<sup>7</sup> We chose to separate implant from the vaginal ring and patch uses since preliminary analyses showed a social gradient in the use of these methods: the implant appears to be more used in lower class, while the vaginal ring and patch seem to be a more frequent method in upper class.

<sup>8</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.

<sup>9</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.

<sup>10</sup> Adjusted variables are age (in five-year classes from 15 to 34 years old then a class from 35 to 49 years old), relationship situation (having a partner or not 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 classes.

<sup>11</sup> Indeed, since this category is not comparable to the other social classes previously constructed, we have developed specific logistic regression models for the latter in order to confirm the changes in contraceptive practices, all other things being equal.



heterosexual intercourse within the year.

The social composition of our sample varies between the three surveys. 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 (57% compared to 44% and 41% respectively,  $p < 0.001$ ), while inactive women made up a larger share of the sample in 2013 than in 2010 and 2016 ( $p < 0.001$ ). Moreover, women from the upper-middle class were over-represented in the 2016 survey compared to the two other surveys ( $p < 0.001$ ), and women from the upper class were less included ( $p < 0.001$ ).

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

Between 2010 and 2016, the use of medical contraceptives decreased in France. While we estimated 75% of women used a medical method in 2010, only 70% used it in 2016 (Table 2). Moreover, the drop in the use of medical contraceptives was more pronounced among women from lower and upper classes than among middle-classes women ( $p < 0.05$ ). Estimated percentages decrease from 75% to 68% ( $p < 0.05$ ) among lower class women, from 74% to 68% ( $p < 0.05$ ) among upper class women, and from 75% to 72% among upper-middle classes women ( $p < 0.1$ ). Among student women, the drop in medical contraceptives uses between 2010 and 2016 (from 73% to 71%) appears to be not significant.

### 3.3. The shift to other methods was different depending on women's social background

Between 2010 and 2016, the decline in pill use appears to have affected all social classes and students women (estimated percentages: from 69% to 59%,  $p < 0.01$ ). The shift to other medical methods was mainly towards implants for student women (estimated percentages: from 2% to 6%,  $p < 0.01$ ) and towards IUD for those from 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: from 22% to 24%,  $p > 0.1$ ), or any other medical contraceptive.

When looking the trends between 2010 and 2013, the drop in pill use differed depending on women's social background, with a decline more pronounced among lower and upper classes women than among middle-classes women (global  $p < 0.001$ ). Estimated percentages of pill use for the whole women decreased from 47% to 40% during the period ( $p < 0.001$ , Table 2). The figures drop from 44% to 36% ( $p < 0.001$ ) among lower class women, from 44% to 33% ( $p < 0.001$ ) among upper class women and from 43% to 39% ( $p < 0.1$ ) among lower-middle class women. The shift to IUD appeared also to depend on women's social background (global  $p < 0.001$ ). While women from more privileged background were more likely to shift to IUD (from 23% to 31%,  $p < 0.01$ ), it was not the case for their less privileged counterparts (from 22% to 23%,  $p > 0.1$ ).

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 was 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%,  $p < 0.1$ ).

### 3.4. Higher social inequalities in access to contraceptive methods?

While in 2010, women used the pill, IUD and implant in the same proportions regardless of their social position, this was no longer the case in 2013. Upper class women were less likely to use oral contraception than their lower-middle class counterparts were ( $RR = 0.86$ ,  $p < 0.05$ , Table 3), more likely to use IUD than their lower class counterparts were ( $RR = 1.36$ ,  $p < 0.001$ ) and less likely to use implant than their lower ( $RR = 0.31$ ,  $p < 0.01$ ) and lower-middle ( $RR = 0.43$ ,  $p < 0.05$ ) class counterparts were. In 2016, no more significant

differences appeared in pill and implant uses across women's social background. The absence of significant differences in implant use in 2016 across women's social background could probably due to a lack of statistical power. Still in 2016, lower class women had lower IUD use compared to upper-middle class ( $RR = 1.30$ ,  $p < 0.01$ ) and upper class ( $RR = 1.25$ ,  $p < 0.05$ ) women.

Conversely, although differences were observed in the use of the vaginal ring and patch according to women's social background in 2010, with women from the lower class using it less than their more privileged counterparts, this was no longer the case in 2013 and 2016.

Finally, our results reveal that the use of female sterilization pursues a social gradient. In 2010, this method was more used by lower class women than their more privileged counterparts, especially those from the upper class who used it very little ( $RR = 0.37$ ,  $p < 0.01$ ). 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 2). In 2016, however, sterilization became once again a method mainly used by lower class women.

## 4. Discussion

Our analyses reveal a decrease in medical contraceptives use between 2010 and 2016 due to a drop in the pill use that has not fully been compensated by an increase in IUD or implant use, as previously shown (Bajos et al., 2014; Rahib et al., 2017). While a renewed interest in oral contraception in the years following the controversy was observed in other countries that have experienced "pill scares", such as the United States or the United Kingdom (Barnett & Breakwell, 2003; Jones, 1979; Jones et al., 1980), this was not the case in France. Indeed, a further decline in oral contraceptives use was observed between 2013 and 2016 (Rahib et al., 2017), but also in other countries, such as in Belgium (Charafeddine, 2019). During the 1971 pill scare in Britain, a shift from pill to more effective methods, such as IUD and sterilization, has been observed (Murphy, 1993). In France, it seems that women have mainly turned to the IUD, as sterilization is not widely presented by health professionals as a contraceptive option (Ventola, 2017). Moreover, it seems that the French "pill scare" tended to lead to a reshaping in social inequalities in the access to medical contraceptives. The decrease in pill use was observed between 2010 and 2013 among lower and upper classes women, whereas it was observed among upper-middle class women between 2013 and 2016 only. And while some women from upper class shifted from pill to IUD between 2010 and 2013, this was not the case for their less privileged counterparts. It is also interesting to note that lower class women were more likely to use female sterilization, a result also observed in other high income countries (Anderson et al., 2012; Dereuddre, Van de Putte, & Bracke, 2016; Eeckhaut & Sweeney, 2013; Mosher & Jones, 2010; Oddsens, Visser, Vemer, & Everaerd, 1994a, 1994b).

Our study has some limitations. First, although we have observed a change in contraceptive practices over time, we would be wrong to forget that it was never the same women who were interviewed. The formation of social classes has enabled us to observe changes over the period 2010–2016, particularly because of the stability of social classes over time. However, this analysis should not be considered as a longitudinal analysis, i.e. the observation of contraceptive practices of the same 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. The construction of our social classes also needs to be discussed. We did not take into account the difference in the value of diplomas across generations of women. The progressive increase in the proportion of people who have obtained a diploma has tended to increase over time in France. Thus, women graduated from higher education when few people had access to higher education were mixed with those who have benefited from the democratization of access to university since the 1970s. However, as our study

**Table 2**

Estimated percentage of the use of medical contraceptives by survey date and women's social position.

	2010	2013	2016	p			Global p
				2010–2013	2013–2016	2010–2016	
Medical Contraceptives							
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				
Upper-Middle class	75.5	73.8	72.1			+	
Upper class	74.4	70.8	67.7			*	
Students	72.8	70.9	70.8				
Pill							
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	+		**	
Upper-Middle class	42.0	38.8	33.0		*	***	
Upper class	44.4	33.3	32.2	***		***	
Students	69.4	64.8	58.8			**	
IUD							
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	+		*	
Upper-Middle class	25.1	26.4	31.0		+	**	
Upper class	23.4	31.2	29.8	**		*	
Students	0.7	1.4	2.6			+	
Implant							
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				
Upper-Middle class	2.8	2.3	3.6				
Upper class	2.1	1.4	1.5				
Students	1.5	3.2	6.2			**	
Patch/Ring							
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			+	
Upper-Middle class	1.9	1.4	0.8			+	
Upper class	2.2	1.5	1.5				
Students	1.1	1.6	2.9				
Female sterilization							
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				
Upper-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 15–49 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: p-value significant 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.

Interpretation: 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).

focuses on women aged 15 to 49, this bias seems to be reduced. In addition, we did not take into account the fact that some women worked full-time while others worked part-time, which is more common among working-class women in France (Pak, 2013). Although people in part-time jobs are more likely to have lower incomes than full-time workers, the level of national health insurance remains the same. Finally, due to the absence of information available in the three waves of surveys, it was not possible to define precisely the students' social background and this class had to be analyzed separately.

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. The shift observed from third-to second-generation pills

between 2010 and 2013 (Bajos et al., 2014) may also vary according women social backgrounds, especially after the French government decided to stop reimbursing third-generation pills. We would also have liked to include in our study the medical specialty of the practitioner women have consulted for contraception, since contact with professionals trained in different ways influence contraceptive practices (Bajos et al., 2012, 2004). For example, some professionals are poorly

**Table 3**

Differences in the use of a medical contraceptives method by social classes and survey date.

	Lower class	Lower-Middle class	Upper- Middle class	Upper class	2/1		3/1		4/1		3/2		4/2		4/3	
	1	2	3	4	RR	p	RR	p	RR	p	RR	p	RR	p	RR	p
Pill																
2010	44.1	43.3	42.0	44.4	0.98		0.95		1.01		0.97		1.02		1.05	
2013	35.5	38.7	38.8	33.3	1.09		1.09		0.94		1.00		0.86	*	0.86	+
2016	31.5	36.7	33.0	32.2	1.17	+	1.05		1.02		0.90		0.88		0.97	
IUD																
2010	21.5	22.7	25.1	23.4	1.06		1.17	+	1.09		1.10		1.03		0.93	
2013	22.9	27.0	26.4	31.2	1.17	+	1.15		1.36	***	0.98		1.16	+	1.18	+
2016	23.8	27.7	31.0	29.8	1.16		1.30	**	1.25	*	1.12		1.08		0.96	
Implant																
2010	3.1	2.5	2.8	2.1	0.81		0.93		0.68		1.14		0.84		0.73	
2013	4.5	3.3	2.3	1.4	0.72		0.50	+	0.31	**	0.70		0.43	*	0.61	
2016	4.7	3.9	3.6	1.5	0.83		0.78		0.32	+	0.93		0.39		0.41	
Patch/Ring																
2010	0.5	2.2	1.9	2.2	4.48	*	3.98	*	4.45	*	0.89		0.99		1.11	
2013	1.3	1.2	1.4	1.5	0.93		1.07		1.13		1.16		1.22		1.05	
2016	0.5	0.9	0.8	1.5	1.78		1.61		2.92		0.90		1.64		1.82	
Female sterilization																
2010	5.9	3.7	3.6	2.2	0.62	*	0.61	*	0.37	**	0.98		0.60		0.61	
2013	6.2	4.2	5.0	3.4	0.68		0.80		0.55	+	1.17		0.80		0.68	
2016	7.0	3.4	3.6	2.6	0.48	*	0.52	*	0.36	**	1.08		0.76		0.70	

Sample: Women aged 15–49 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: p-value significant at: +: 10%, \*: 5%, \*\*: 1%, \*\*\*: 0.1%. RR: risk-ratio.

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.

Interpretation: In 2013, when age, relationship status, number of children, place of birth and social position are taken into account, 23% of lower class women used the IUD compared to 31% of upper class women. In other words, upper class women are 1.36 more likely to use IUD than lower class women. This difference is significant at the 0.1% threshold.

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

trained in IUD or implant insertion and consequently do not prescribe them. However, problems of comparability between questionnaires<sup>12</sup> and the selection of women interviewed about it<sup>13</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 information on the differential of social position between partners. Some women could belong to a social environment different from the one they are supposedly required to belong because they are in a relationship with a partner who is more endowed than they are. They could thus adopt uses and practices conveyed therein, but also benefit from the shared 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 users' social background.

#### 4.1. Social inequalities in contraceptive uses before the French "pill scare"

Between 2010 and 2013, following the media controversy surrounding third- and fourth-generation oral contraceptives, pill use declined, and this drop was more pronounced among women from lower

and upper classes, while their middle classes counterparts continued to use oral contraception in the same way during this period.

Upper class women have probably felt more involved in the debate on oral contraceptives than those of middle-classes have. Before the controversy, new generation pills were more prescribed to women from higher social background (Bajos et al., 2004): they were more likely to go to a gynaecologist for contraception, and gynaecologists were more likely to prescribe them these new generation pills. We can also make the hypothesis that upper class women were more informed and more sensible about the health risks associated by the use of the pill. Indeed, upper class women did hear more about the debate and seemed to have questioned more their own contraceptive practices and choices (Rouzaud-Cornabas, 2019).

Among lower class women, the effects of the media crisis would have been combined with the effects of the economic crisis of the late 2000s and the deepening of social and area inequalities in matters of health care access. Indeed, previous analyses had already shown a decrease in pill use between 2000 and 2010 (Bajos et al., 2012), which was more marked among young women with no graduate school diploma (Bajos et al., 2012). We can also assume that lower class women have been more affected by the consequences of the decline in number of gynaecologists (Chevallard, Lucas-Gabrielli, & Mousques, 2018) in both urban and rural areas in the recent period. The intersection between social inequalities and area 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,<sup>14</sup> lower class women have

<sup>12</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>13</sup> In 2010, 2013 and 2016, only women who used the ring, IUD, implant, patch or pill were asked about the medical training 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.

<sup>14</sup> Indeed, 5% of lower class women benefit from national health insurance without private health insurance compared to 3% of their wealthiest counterparts ( $p < 0.01$ ). In addition, 16% of lower class women were beneficiaries of state health covers for people in low income or immigrants waiting for regularization or were without coverage compared to 2% of upper class women ( $p < 0.001$ ).



received less reassuring information about the risks associated with oral contraceptives use during the French “pill scare”. It then may 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 discourses towards physicians and pharmaceutical companies within the working-classes, leading some individuals to prefer medication considered as more “natural” (Arborio & Lechien, 2019) or which do not require medical mediation.

#### 4.2. Health professionals' roles in the reshaping in social inequalities in access to contraceptive methods

The prescription of contraceptive methods is not the exclusive domain of a single medical specialty since it concerns in France, in order of importance, gynaecologists, general practitioners (Bajos et al., 2012) and midwives since 2009, and their recommendations for methods vary according to the type of training course they received (Roux et al., 2017). General practitioners, who have generally received little training in IUD insertion (Gelly, 2006), recommend this contraceptive method less frequently to their patients than gynaecologists. As women from lower class were more likely to consult a general practitioner for contraception (Bajos et al., 2012, 2004), they could have been excluded from IUD use during the French “pill scare”. It is also possible that health professionals' recommendations were different according to women's social background. Analyses have shown that practitioners' practices differed according to their patients' social background (Paillet, 2016): they seemed to be less prolific in terms of information delivery (Lang, Kelly-Irving, Delpierre, & Lauwers, 2008) and less specific about the risks associated with health treatment (Fainzang, 2006) when addressing working-class people. These findings could also be valid in the more specific field of contraception (Bajos et al., 2004; Bretin & Kotobi, 2016; Gelly & Pitti, 2016). Lower class women may have received less reassuring information about the health risks associated with pill use and other possible contraceptive options from their practitioners than their more privileged counterparts.

Another hypothesis needs to be discussed. Because of a shorter social distance from the health professional, upper class women may have a greater ability to question medical authority than their less privileged counterparts, and thus to better negotiate the prescription of the contraceptive method they wish to use (Bourdelaïs & 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 in comparison with those saying that they have chosen their contraception mean after the practitioner introduced them to the methods (Rouzaud-Cornabas, 2019). Similarly, women with higher diplomas or with managerial positions reported choosing their contraceptive method more on their own or with the prescriber than their less privileged counterparts who reported more letting the prescriber choose for them (Rouzaud-Cornabas, 2019). Faced with doctors' hostility to prescribe the IUD (Luchowski et al., 2014; Moreau et al., 2014; Wellings, Zhihong, Krentel, Barrett, & Glasier, 2007), women from higher background would have been better able to mobilize their social resources and thus be able to access to IUD,<sup>15</sup> thereby creating the path for middle-class women who benefited from it later, between 2013 and 2016. Thus, the social gradient in the use of various medical contraceptives 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.

<sup>15</sup> In 2011, 85% of general practitioners and 68% of gynaecologists said that the IUD was not recommended for women who had never had children (Moreau et al., 2014).

Finally, when considering the whole period, i.e. between 2010 and 2016, the decline in the use of medical contraceptives among lower and upper class women (and maybe also among upper-middle class women), suggests that, as a result of the French “pill scare”, some women have turned away from the medical institution for contraceptive issues. While the determinants of contraceptive method choice differ according to women's social background (Rouzaud-Cornabas, 2019), the converging use of prescription methods between lower and upper classes women questions. Would we then see a questioning of the medicalization of contraception in France following the controversies surrounding oral contraception in the early 2010s?

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 (Rahib et al., 2017). While the French “pill scare” 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 (Roux, 2020; Roux et al., 2017; Ventola, 2017).

#### Author statement

**Mireille Le Guen:** Funding acquisition - Conceptualization, Methodology, Writing - Original Draft, Writing - Review & Editing.

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#### Ethical statement

Both FECOND surveys received approval from the relevant French government oversight agency (CNIL, the Commission Nationale de l'Informatique et des Libertés).

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.

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