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Reasons for rejecting hormonal contraception in Western countries: A systematic review

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ABSTRACT

Over the past decade, women in Western countries have taken to various social media platforms to share their dissatisfactory experiences with hormonal contraception, which may be pills, patches, rings, injectables, implants or hormonal intrauterine devices (IUDs). These online testimonials have been denounced as spreading “hormonophobia”, i.e. an excessive fear of hormones based on irrational causes such as an overestimation of health risks associated with their use, that was already aroused by the recurring media controversies over hormonal contraception. In order to move toward a reproductive justice framework, we propose to study the arguments that women and men (as partners of female users) recently put forward against hormonal contraception to see whether they are related to hormonophobia. The aim of this article is to conduct a systematic review of the recent scientific literature in order to construct an evidence-based typology of reasons for rejecting hormonal contraception, in a continuum perspective from complaints to choosing not to use it, cited by women and men in Western countries in a recent time. The published literature was systematically searched using PubMed and the database from the French National Institute for Demographic Studies (Ined). A total of 42 articles were included for full-text analysis. Eight main categories emerged as reasons for rejecting hormonal contraception: problems related to physical side effects; altered mental health; negative impact on sexuality; concerns about future fertility; invocation of nature; concerns about menstruation; fears and anxiety; and the delegitimization of the side effects of hormonal contraceptives. Thus, arguments against hormonal contraception appeared complex and multifactorial. Future research should examine the provider-patient relationship, the gender bias of hormonal contraception and demands for naturalness in order to understand how birth control could better meet the needs and expectations of women and men in Western countries today.

1. Introduction

Over the past decade, women in Western countries have taken to various social media platforms to share their dissatisfactory experiences with the contraceptive pill (Kissling, 2016; Vondráčková, 2020) and their decision to stop using it (Kissling, 2014). Their criticism focuses on hormone intake, which suggests that their distrust may be directed at all forms of hormonal contraception: pills, patches, rings, injectables, implants and hormonal intrauterine devices (IUDs). These online

testimonials have been denounced as spreading “misinformation and scaremongering” and exacerbating “hormonophobia”, i.e. an excessive fear of hormones based on irrational causes such as an over estimation of health risks associated with their use, already aroused by the recurring media controversies over hormonal contraception (Foran, 2019).

The first hormone-based contraceptive method, the pill, was first marketed for birth control purposes in the 1960s. Its release was followed by controversies in the United States (Jones et al., 1980; Scrimshaw, 1981; Watkins, 2001) and in Britain (Wellings, 1986) when the

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media reported cancer risks and cases of cardiovascular incidents among users. Rapidly called “pill scares”, these events contributed to inform people of the adverse side effects of hormones on women’s health (Watkins, 2001). As a consequence of these criticisms, pharmaceutical companies updated hormonal contraception by developing products (pills, patches and rings) with a lower dose of estrogens, the molecule associated with discomfort and health risks arising from the use of oral contraceptives, as well as progestin-only contraceptives such as injectables, implants and hormonal IUDs. They also progressively updated their marketing strategies in order to differentiate their new products from those of their competitors and to gain new consumers in a crowded marketplace (Watkins, 2012). Some secondary effects of hormonal contraception were thus reassessed as a marketing argument: it was no longer associated only with birth control but was also proposed to treat acne, to reduce the number of menstrual cycles or to alleviate premenstrual syndrome. Through these marketing claims, pharmaceutical companies promised women that they would be more comfortable with themselves as women, by being free from the constraints of menstruation and hormonal imbalances (Roux, 2020; Watkins, 2012). In this respect, hormonal contraception gradually became a “lifestyle drug” (Watkins, 2012, 2016). However, while the new estrogen-progestin contraceptives were described as less dangerous for health, several studies found that they had a higher thromboembolic risk than the older pills. This led to a major pill scare in Europe in 1995 (Marks, 2001). Progestin-only methods also faced several media controversies related to their adverse physical side effects (Foran, 2019; Glasier et al., 2007) and increased risks of depression (Skovlund, 2016), a finding previously cited with pill use (Kulkarni, 2007).

Health professionals generally perceive these media controversies as “false alarms” (Hooker, 2010) since the health risks associated with the use of the various hormone-based methods reported by the media are not great enough to reverse the benefit/risk balance, which still remains clearly positive due to the high effectiveness of hormonal contraception in preventing pregnancies (Foran, 2019). As a result, health professionals often position themselves as “mythbusters” of the adverse side effects of hormonal contraceptives, leading them to dismiss patients’ complaints and to encourage the use of these methods because of their effectiveness (Stevens, 2018). When hormonal IUDs and implants were found to be even more effective than the pill (Moreau et al., 2007b; Trussel, 2011), they were enthusiastically presented as the unexpected solution to reduce the rate of unintended pregnancies (Speidel et al., 2008) and related public expenditure (Trussell et al., 2013). They were thus promoted as a “first-line contraceptive option” (Kaunitz, 2001; Secura et al., 2010; Westhoff, 2003). However, the craze for these methods solely on the basis of their high contraceptive efficacy has been criticized (Gomez et al., 2014; Higgins, 2014) and a call to consider them within a reproductive justice framework emerged to point out the limitations of an approach focused on promoting these methods solely because of their effectiveness (Higgins, 2014).

When the primary health goals are to reduce the rate of unintended pregnancies and abortions, as currently being discussed (Potter et al., 2019), health providers often have an incentive to promote the most effective contraceptive methods (Wale and Rowlands, 2020) rather than adopting a patient-centered approach (Dehlendorf et al., 2016). When the effectiveness of a contraceptive method is the only criterion that is taken into consideration, women seem to face a “choiceless choice” (Ross and Solinger, 2019), since the most effective methods will be considered the “good choice” while the least effective ones will appear to be the “bad choice” which could lead to “lifestyle mistakes” (Ross and Solinger, 2019; Zucker, 2014). Consequently, women’s contraceptive autonomy (Senderowicz, 2020), which requires access to an informed choice, a full choice and a free choice, appears to be compromised. The reproductive justice framework, by merging the notions of reproductive rights and social justice (Ross and Solinger, 2019), helps to take into account the fact that the criteria for contraceptive method selection are multiple and different for each woman (Higgins et al., 2020).

In order to move toward a reproductive justice framework, we propose to study the current arguments that women and men (as partners of female users) put forward against female hormonal contraception in order to examine whether these arguments are related to homophobia. The aim of this article is to conduct a systematic review of the recent scientific literature in order to construct an evidence-based typology of reasons for rejecting female hormonal contraception, in a continuum perspective ranging from complaints to choosing not to use it, cited by women and men in Western countries over the past decade.

2. Methods

The systematic literature review was conducted in compliance with the PRISMA (Preferred Reporting Items for Systematic Review and Meta-Analysis) statement (Moher et al., 2009), following its associated guidelines (see Appendix 1).

2.1. Inclusion criteria

Five inclusion criteria were applied: 1- Studies exploring arguments against female hormonal contraception or reasons for choosing non-hormonal contraception (excluding references with no clear distinction between hormonal and non-hormonal IUDs), 2- Original research (excluding letters to the editor, editorials, commentaries, committee opinions, literature reviews and duplicate studies) from selected geographical zones: Europe (except Turkey), Northern America (the United States and Canada) and Oceania (Australia and New Zealand), 3- General study population (excluding references targeting specific populations, such as women with mental disorders, women living with HIV, women with diabetes, etc.) due to possible interaction with other medical treatments, 4- References written in English or French, 5- References published from January 1st, 2010 onwards.

2.2. Search strategy

The published literature was systematically searched using the Medline database in PubMed and then completed by the database from the French National Institute for Demographic Studies (Institut National d’Etudes Démographiques, Ined). In conjunction with a librarian, we developed an electronic search strategy that offered sensitive and specific captures of the following terms: (“Contraception”[Mesh] OR “Contraception Behavior”[Mesh] OR “Contraception/methods”[Mesh]) AND (“Attitude”[Mesh] OR “Choice Behavior”[Mesh] OR “Decision Making”[Mesh]). The search was conducted in April 2021. It was completed by a search of the references included in the reference section of the selected publications.

2.3. Reference selection

The references identified then underwent a three-step selection process. Firstly, two independent reviewers screened each title and excluded references that did not meet inclusion criteria. Secondly, they screened the abstract of each of the selected references to exclude further references that did not meet inclusion criteria. Thirdly, they read the full text of the remaining references and assessed compliance with the five inclusion criteria. Only the references that remained after this three-step selection process were included in this review.

2.4. Quality assessment

The quality of selected references was assessed applying the GRADE-CERQual approach (Grading of Recommendations Assessment, Development and Evaluation - Confidence in Evidence from Reviews of Qualitative Research) which provides guidance for assessing the degree of confidence in the results of systematic reviews of qualitative research (Lewin et al., 2018a). Confidence in evidence from qualitative evidence

syntheses is an assessment of the extent to which the results of a review are a rational representation of the phenomenon of interest (Lewin et al., 2018b). The GRADE-CERQual includes four components: methodological limitations, coherence, adequacy of data and relevance. Each component is evaluated on a four-degree scale: no concerns, minor concerns, moderate concerns or high concerns (see Appendix 2).

2.5. Analysis

First, a detailed summary was made of each selected reference and

included the following information: country, study design, population and sample characteristics, objectives, data collection, main results and the four CERQual components. Then, the full text of the references was scrutinized following an inductive thematic analysis methodology (Boyatzis, 1998; Braun and Clarke, 2006) in order to produce a typology of the arguments against hormonal contraception found in the selected articles. Content analysis involved reading and examining the articles included in order to identify themes related to the research objectives. The typology was developed with a two-order descriptive grading of themes leading to first- and second-order themes. We began by

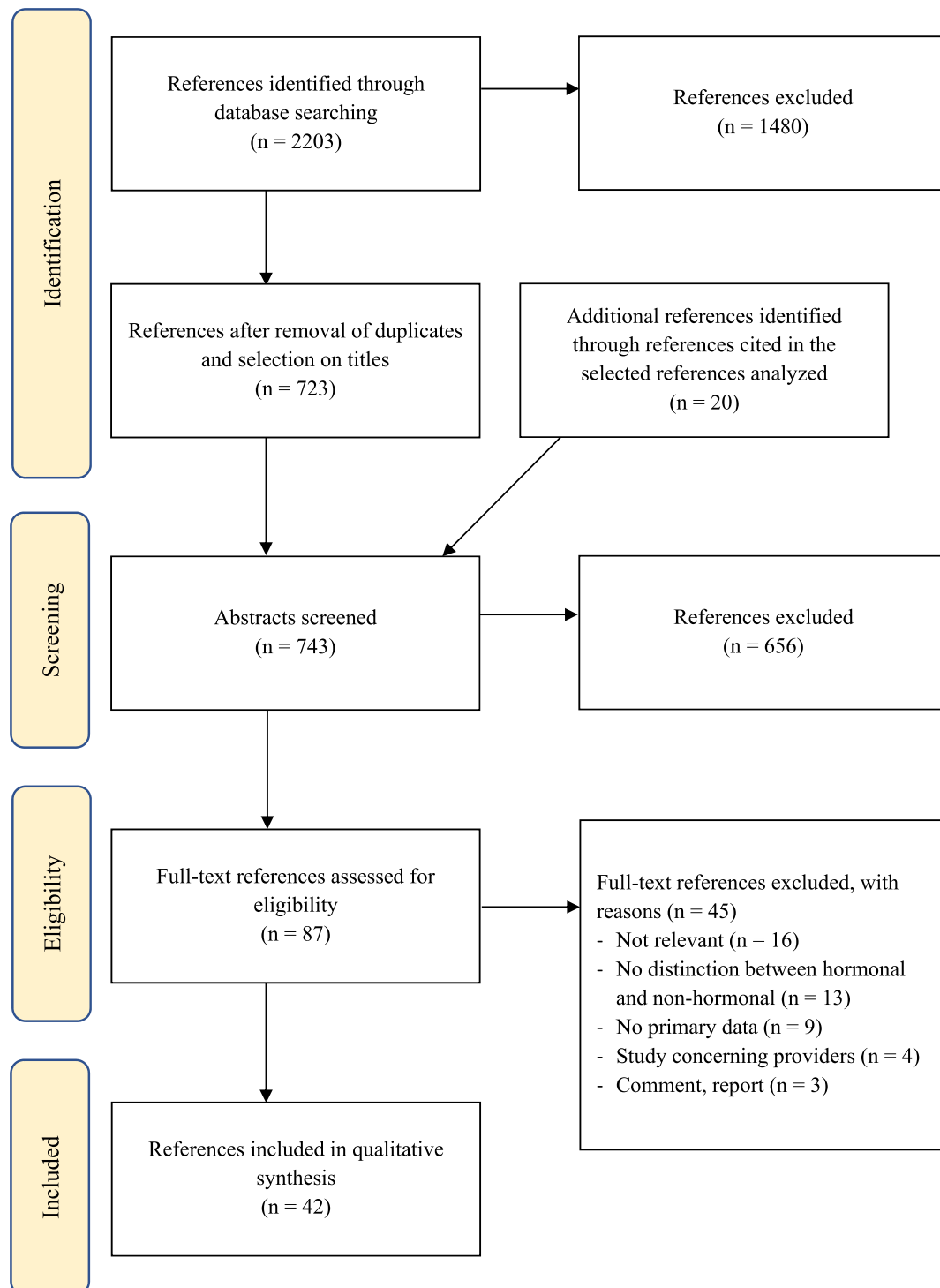


Fig. 1. Flow diagram of the search and study inclusion process.

Table 1

Characteristics of the selected studies (n = 42).

Ref. n°	Authors	Setting	Interviewees	Study design
1	Amouroux et al. (2018)	France	Men and women	Questionnaire
2	Arora et al. (2020)	United States	Women	Questionnaire
3	Arteaga and Gomez (2016)	United States	Women	Interviews
4	Cabral et al. (2018)	United States	Men and women	Interviews
5	Caetano et al. (2020)	Western Europe + Poland	Women	Questionnaire
6	Campo et al. (2010)	United States	Women	Focus groups
7	Carter et al. (2012)	United States	Men and women	Focus groups + interviews
8	Chernick et al. (2015)	United States	Women	Interviews
9	DeMaria et al. (2019)	Italy	Women	Interviews
10	Dixon et al. (2014)	Australia	Women	Open-text analysis of a questionnaire
11	Duchêne-Paton and Lopès (2015)	France	Women	Questionnaire
12	Falk et al. (2010)	Sweden	Women	Interviews
13	Fennell (2014)	United States	Men and women	Interviews
14	Galloway et al. (2017)	United States	Men and women	Focus groups
15	Garbers et al. (2013)	United States	Women	Questionnaire
16	Gomez et al. (2015)	United States	Women	Questionnaire
17	Gomez et al. (2020)	United States	Women	Interviews
18	Gunson (2010)	Australia	Women	Interviews
19	Gunson (2016)	Australia	Women	Interviews + online comments analysis
20	Hall et al. (2014)	United States	Women	Questionnaire
21	Hollá et al. (2011)	Czech Republic + Romania	Women	Questionnaire
22	Johnson et al. (2013)	Western Europe + United States	Women	Questionnaire
23	Kavanaugh and Jerman (2018)	United States	Women	Questionnaire
24	Landersoe et al. (2019)	Denmark	Women	Questionnaire
25	Littlejohn (2012)	United States	Women	Questionnaire
26	Littlejohn (2013)	United States	Women	Interviews
27	Malmborg et al. (2016)	Sweden	Women	Questionnaire
28	Marshall et al. (2016)	United States	Women	Questionnaire
29	Merki-Feld et al. (2018)	Switzerland	Men	Questionnaire
30	Monester et al. (2019)	Australia	Men and women	Open-text analysis of a questionnaire
31	Nappi et al. (2015)	Italy	Women	Questionnaire
32	Newton and Hoggart (2015)	United Kingdom	Women	Focus groups + interviews
33	Ong et al. (2013)	Australia	Women	Questionnaire
34	Pozzi-Gaudin et al. (2015)	France	Women	Questionnaire
35	Sedlecky et al. (2011)	Serbia	Women	Questionnaire
36	Sundstrom (2012)	United States	Women	Interviews
37	Thomé and Rouzaud-Cornabas (2017)	France	Men and women	Interviews
38	Torres et al. (2016)	France	Women	Questionnaire
39	Walker (2012)	United Kingdom	Men and women	Questionnaires + interviews
40	Wellings et al. (2015)	United Kingdom	Women	Questionnaire
41	Whittaker et al. (2010)	United States	Men and women	Interviews
42	Wigginton et al. (2016)	Australia	Women	Open-text analysis of a questionnaire

identifying the major themes and then categorized the information into sub-themes within each major theme. Each identified sub-theme was then globally assessed in terms of “confidence in evidence” based on the GRADE-CERQual evaluation of references.

3. Results

The electronic search strategy identified 2203 records through database searching (Fig. 1). Among these 2203 references initially selected, 1480 were excluded as they were not relevant to the subject based on title screening, and 20 additional studies were identified through references cited in the publications analyzed. Then, 656 were excluded as they did not meet inclusion criteria based on abstract screening, and 45 were excluded as they did not meet inclusion criteria based on full-text assessment. Ultimately, 42 references were included in the data synthesis.

Table 1 presents the characteristics of the 42 studies included. They were carried out in the United States (19/42), Western Europe (16/42), Eastern Europe (3/42), and Australia (6/42). No Canadian or New Zealand study was identified. Thirty-two studies interviewed women only, one study interviewed men only and nine studies interviewed both women and men. Studies generally followed a quantitative approach through questionnaires (22/42), while the majority of others followed a qualitative approach through in-depth interviews (16/42) or focus groups (4/42). Three studies extracted data from the answers given to a final open question from the questionnaires (“Have we missed

anything?”). One study analyzed data from both questionnaires and interviews, and one study analyzed data from both questionnaires and textual analysis found on the Internet.

Table 2 presents the typology of arguments against hormonal contraception developed from the thematic analysis of selected articles and an evaluation of confidence in evidence. Eight main categories (first-order themes divided into 22 second-order themes) emerged as reasons for rejecting hormonal contraceptives: problems related to physical side effects; altered mental health; negative impact on sexuality; concerns about future fertility; the importance given to nature; concerns about menstruation; fears and anxiety; and the delegitimization of the adverse side effects of hormonal contraception. Among the 22 second-order themes, three-quarters (16/22) had a high level of confidence in the evidence, four had a moderate level and two had a low level.

3.1. Physical side effects

In most studies (26/42), women and men mentioned the physical side effects of hormonal contraception on women’s bodies. In 25 studies, women and men (as partners of female users) reported experiences of adverse side effects when using hormonal contraception and wished to avoid them (Amouroux et al., 2018; Arteaga and Gomez, 2016; Cabral et al., 2018; Carter et al., 2012; Chernick et al., 2015; Dixon et al., 2014; Duchêne-Paton and Lopès, 2015; Falk et al., 2010; Garbers et al., 2013; Gomez et al., 2020; Hall et al., 2014; Johnson et al., 2013; Landersoe

Table 2
Summary of qualitative findings.

First and second themes	Contributing studies (reference number of Table 1)	Confidence in evidence	Explanation of confidence in evidence assessment
PHYSICAL SIDE EFFECTS	26 studies		
Avoiding adverse side effects as a reason to avoid hormones: Women and men cited side effects related to the use of hormonal contraception. These side effects led to dissatisfaction, discontinuation, switches or avoidance of female hormonal contraception.	1, 3, 4, 7, 8, 10, 11, 12, 15, 17, 20, 22, 24, 25, 26, 27, 30, 31, 33, 35, 36, 37, 40, 41, 42	High	6 studies with minor and 2 with moderate methodological limitations. High coherence. 2 studies with moderate concern with adequacy of the data. 2 studies with moderate and 1 with minor concern with relevance.
Weight gain: Women cited increased hunger, appetite and weight gain as side effects of hormonal contraception. Women also cited anxiety and decrease in libido related to weight gain.	3, 4, 7, 8, 10, 11, 12, 22, 26, 27, 29, 31, 35, 36, 37, 42	High	3 studies with minor and 1 with moderate methodological limitations. High coherence. 2 studies with moderate concern with adequacy of the data. 1 study with minor concern with relevance.
Headaches, migraines: Women cited headaches and migraines as side effects of hormonal contraception.	3, 10, 22, 31, 42	High	1 study with moderate or moderate methodological limitations. High coherence, adequacy and relevance.
MENTAL HEALTH	12 studies		
Mood swings: Women reported mood swings and irritability or anger due to hormonal contraception.	3, 4, 9, 10, 13, 22, 26, 27, 31, 36, 37, 42	High	2 studies with minor and 1 with moderate methodological limitations. High coherence, adequacy and relevance.
Sadness: Women reported sadness, depression or anxiety when using hormonal contraception	9, 10, 26, 36	High	1 study with minor methodological limitations. High coherence, adequacy and relevance.
SEXUALITY	10 studies		
Decrease in libido: Women and men cited women's loss of libido, change in libido, negative impact on libido, low sex drive and libido issues when using female hormonal contraception.	3, 7, 11, 13, 27, 29, 31, 37, 42	High	2 studies with minor and 1 with moderate methodological limitations. Coherence could not be assessed as only one 1 contributing study. 1 study with minor concern with relevance.
Vaginal dryness: Women reported vaginal dryness or genital pain related to the use of	11, 27, 31	Moderate	1 study with minor methodological limitations.

Table 2 (continued)

First and second themes	Contributing studies (reference number of Table 1)	Confidence in evidence	Explanation of confidence in evidence assessment
hormonal contraception.			
Mastodynia: Two studies reported women with mastodynia due to hormonal contraception.	11, 22	Low	1 study with minor methodological limitations.
FUTURE FERTILITY	11 studies		
Fears of fertility changes: Women and men stated that female hormonal contraception could impact short- and long-term fertility. Some said that choosing a means of contraception without an impact on later fertility was important and some women did not even start hormonal contraception because of fertility concerns.	4, 5, 7, 8, 20, 24, 29, 30, 31, 35, 36	High	2 studies with minor or moderate methodological limitations. High coherence. Thin data for one study. 1 study with minor concerns with relevance.
NATURE	26 studies		
Demand for hormone-free contraception: Women and men wanted non-hormonal contraception, did not want to use hormones, stated that not taking hormones was a priority, and having a hormone-free method was a very or extremely important factor in decision-making.	1, 3, 5, 9, 15, 16, 17, 19, 22, 24, 26, 28, 29, 30, 33, 35	High	2 studies with minor and 2 with moderate methodological limitations. High coherence and adequacy. 2 studies with moderate concerns with relevance.
Hormones are unnatural: Women and men expressed a negative opinion of hormonal contraception, describing it as "unnatural" or stating that synthetic hormones were chemicals.	1, 4, 6, 8, 9, 17, 18, 19, 32, 35, 39, 41	High	3 studies with minor methodological limitations. High coherence. Thin data for one study (moderate concern). 1 study with moderate concerns with relevance.
Hormones disrupt the body: Women experienced a lack of control over their body saying that female hormonal contraception could ruin their body or disturb its natural balance; Women stated that they wanted to let their body "breathe" by stopping the use of hormones. Women's experiences appeared to be embodied through gender norms.	3, 4, 8, 9, 19, 24, 26, 30, 32, 39, 42	High	2 studies with minor or moderate methodological limitations. Thin data for one study (moderate concern). High coherence and relevance.

High

(continued on next page)

Table 2 (continued)

First and second themes	Contributing studies (reference number of Table 1)	Confidence in evidence	Explanation of confidence in evidence assessment
Use of non-hormonal methods as natural: Withdrawal, condoms, fertility awareness and sterilization were perceived as an alternative for women and men to avoid adverse side effects of hormonal methods, explaining a current increase in their use.	2, 3, 4, 9, 17, 23, 33, 39		2 studies with minor or moderate methodological limitations. 1 study with moderate concerns with relevance. High coherence and adequacy.
MENSTRUATION Having "normal" periods as a priority: Women stated that having their periods every month was important for them. Not having their periods was a sign of disruption of the balance of the body, or of a pregnancy.	18 studies 3, 6, 7, 8, 10, 11, 15, 19, 32, 36, 39	High	4 studies with minor and 1 with moderate methodological limitations. High coherence. 1 study with moderate concern with adequacy of the data. 2 studies with minor or moderate concerns with relevance.
Bleeding disturbances: Women cited bleeding disturbances or heavy periods as an adverse side effect of hormonal contraception	10, 11, 12, 17, 24, 25, 27, 32, 39, 42	High	2 studies with minor methodological limitations. Thin data for one study (moderate concern). High coherence and relevance.
Anxiety and ambivalence related to menstruation: Women expressed feelings of ambivalence related to menstruation and anxiety regarding the disruption of the menstrual cycle by some forms of hormonal contraception.	18, 39	Moderate	No concerns.
FEAR, ANXIETY Anxiety, ambivalence, mistrust, lack of confidence, worries: Women expressed mistrust, lack of confidence and worries regarding the safety of hormonal contraceptives, leading them to be anxious and ambivalent regarding hormonal contraception. Concerns and fear about the effect on normal bodily processes were expressed.	31 studies 6, 8, 12, 17, 18, 19, 21, 22, 32, 36, 39, 41	High	3 studies with minor methodological limitations. High coherence. Thin data for 2 studies (moderate concern). 1 study with minor concern with relevance.
Fear of side effects: Women expressed fears of short-term	3, 4, 5, 6, 7, 10, 11, 14, 25, 26,	High	2 studies with minor and 2 with moderate

Table 2 (continued)

First and second themes	Contributing studies (reference number of Table 1)	Confidence in evidence	Explanation of confidence in evidence assessment
side effects related to the use of hormonal contraception.	27, 30, 35, 40, 41		methodological limitations. 2 studies with minor consideration of relevance. High coherence and adequacy.
Fear of detrimental effect on health: Women and men reported fears of long-term side effects related to the use of hormonal contraception, saying that it is unhealthy, could harm their body and have a long-term impact such as an increased risk of cancer.	3, 4, 6, 8, 9, 12, 18, 21, 22, 24, 29, 30, 31, 32, 34, 35, 36, 38, 39, 40	High	3 studies with minor and 2 with moderate methodological limitations. High coherence. Thin data for 3 studies (moderate concern for 2 and minor concern for 1). 2 studies with minor and 1 with moderate concern with relevance.
Worries about teratogenic effects: Women reported being worried about a harmful effect of hormonal contraception on a child conceived only shortly after discontinuation.	8, 24, 31, 32	Moderate	1 study with moderate concerns with data adequacy. No methodological limitation. High coherence and relevance.
DELEGITIMIZATION Delegitimization of hormonal contraception side effects: Women felt they were not being listened to or taken seriously by healthcare practitioners when experiencing side effects, and this was distressing for them.	5 studies 7, 12, 18, 37	Moderate	1 study with minor methodological limitations. High coherence. Thin data for 1 study (moderate concern). 1 study with minor concern with relevance.
Invisibility of women's work in managing side effects: Women explained they learned to manage side effects related to hormonal contraception use by deploying emotional and bodily strategies.	26, 37	Low	1 study with minor methodological limitations. High coherence, adequacy and relevance.

et al., 2019; Littlejohn, 2012, 2013; Malmberg et al., 2016; Monester et al., 2019; Nappi et al., 2015; Ong et al., 2013; Sedlecky et al., 2011; Sundstrom, 2012; Thomé and Rouzaud-Cornabas, 2017; Wellings et al., 2015; Whittaker et al., 2010; Wigginton et al., 2016). In 16 studies, women also complained of increased hunger and appetite and of gaining weight when using hormonal contraception, which could be a source of anxiety (Arteaga and Gomez, 2016; Cabral et al., 2018; Carter et al., 2012; Chernick et al., 2015; Dixon et al., 2014; Duchêne-Paton and Lopès, 2015; Falk et al., 2010; Johnson et al., 2013; Littlejohn, 2013; Malmberg et al., 2016; Merki-Feld et al., 2018; Nappi et al., 2015; Sedlecky et al., 2011; Sundstrom, 2012; Thomé and Rouzaud-Cornabas, 2017; Wigginton et al., 2016). In five studies, women reported migraines and headaches following the use of hormonal contraception (Arteaga and Gomez, 2016; Dixon et al., 2014; Johnson et al., 2013; Nappi et al.,

2015; Wigginton et al., 2016).

3.2. Mental health

In 12 of the 42 studies, hormonal contraception was reported as having side effects on mental health, that is, a daily impact on women's psychological wellbeing. In these 12 studies, women reported that they were more irritable when taking hormonal contraceptives or that they had mood swings that made them feel they were going crazy (Arteaga and Gomez, 2016; Cabral et al., 2018; DeMaria et al., 2019; Dixon et al., 2014; Fennell, 2014; Johnson et al., 2013; Littlejohn, 2013; Malmberg et al., 2016; Nappi et al., 2015; Sundstrom, 2012; Thomé and Rouzaud-Cornabas, 2017; Wigginton et al., 2016). In four studies, women experienced sadness or symptoms of depression and anxiety when using hormonal contraception (DeMaria et al., 2019; Dixon et al., 2014; Littlejohn, 2013; Sundstrom, 2012).

3.3. Sexuality

In 10 of the 42 studies, women and men reported that the use of hormonal contraception affected their sexuality. In nine studies, women and men reported that hormonal contraception negatively affected women's sexual desire, expressed in terms of decreased libido or a lack of libido (Arteaga and Gomez, 2016; Carter et al., 2012; Duchêne-Paton and Lopès, 2015; Fennell, 2014; Malmberg et al., 2016; Merki-Feld et al., 2018; Nappi et al., 2015; Thomé and Rouzaud-Cornabas, 2017; Wigginton et al., 2016). In three studies, women reported vaginal dryness or genital pain (Duchêne-Paton and Lopès, 2015; Malmberg et al., 2016; Nappi et al., 2015) and in two studies, mastodynia (breast pain) when using hormonal contraception (Duchêne-Paton and Lopès, 2015; Johnson et al., 2013), which in some cases was described as having an impact on their sexuality.

3.4. Future fertility

In 11 of the 42 studies, women and men expressed concerns about the influence of hormonal contraception on women's future fertility (Cabral et al., 2018; Caetano et al., 2020; Carter et al., 2012; Chernick et al., 2015; Hall et al., 2014; Landersoe et al., 2019; Merki-Feld et al., 2018; Monester et al., 2019; Nappi et al., 2015; Sedlecky et al., 2011; Sundstrom, 2012). Some participants reported that they were no longer using hormonal contraception or had not even started using it precisely because of concerns about their future fertility (Cabral et al., 2018; Landersoe et al., 2019).

3.5. Nature

A wish to use more natural or hormone-free contraception was frequently cited in the literature reviewed (26/42). In 16 studies, women and men stated that a major factor in their contraceptive choice was that the method should be free of hormones (Amouroux et al., 2018; Arteaga and Gomez, 2016; Caetano et al., 2020; DeMaria et al., 2019; Garbers et al., 2013; Gomez et al., 2015, 2020; Gunson, 2016; Johnson et al., 2013; Landersoe et al., 2019; Littlejohn, 2013; Marshall et al., 2016; Merki-Feld et al., 2018; Monester et al., 2019; Ong et al., 2013; Sedlecky et al., 2011). In 12 studies, participants characterized hormonal contraception as "unnatural" or non-hormonal methods as more "natural", and stated that synthetic hormones are chemicals (Amouroux et al., 2018; Cabral et al., 2018; Campo et al., 2010; Chernick et al., 2015; DeMaria et al., 2019; Gomez et al., 2020; Gunson, 2010, 2016; Newton and Hoggart, 2015; Sedlecky et al., 2011; Torres et al., 2016; Whittaker et al., 2010). In 11 studies, women claimed that they lost control of their bodies when taking hormonal contraception, or that hormonal contraception disrupted the natural balance of their bodies, and that they wanted to "let their body breathe" by discontinuing its use (Arteaga and Gomez, 2016; Cabral et al., 2018; Chernick et al., 2015;

DeMaria et al., 2019; Gunson, 2016; Landersoe et al., 2019; Littlejohn, 2013; Monester et al., 2019; Newton and Hoggart, 2015; Walker, 2012; Wigginton et al., 2016). Such discourses were often incorporated into gendered norms associated with cultural standards of beauty, fear of gaining weight or the need to perform sexually. In eight studies, the use of non-hormonal methods also appeared to be related to the specific wish not to use hormonal contraception (Arora et al., 2020; Arteaga and Gomez, 2016; Cabral et al., 2018; DeMaria et al., 2019; Gomez et al., 2020; Kavanaugh and Jerman, 2018; Ong et al., 2013; Walker, 2012).

3.6. Menstruation

Hormonal contraception was described as having a negative impact on menstrual flow in 18 of the 42 studies we reviewed. In 11 studies, women stated that it was important for them to have regular periods, saying that having their periods was a sign of not being pregnant, of being healthy and without body imbalance (Arteaga and Gomez, 2016; Campo et al., 2010; Carter et al., 2012; Chernick et al., 2015; Dixon et al., 2014; Duchêne-Paton and Lopès, 2015; Garbers et al., 2013; Gunson, 2016; Newton and Hoggart, 2015; Sundstrom, 2012; Walker, 2012). These authors interpreted this finding as indicating that menstruation is part of a socially normalized representation of women's bodies. In 10 studies, bleeding disturbances and having heavy periods were perceived by women as an adverse side effect of hormonal contraception (Dixon et al., 2014; Duchêne-Paton and Lopès, 2015; Falk et al., 2010; Gomez et al., 2020; Landersoe et al., 2019; Littlejohn, 2012; Malmberg et al., 2016; Newton and Hoggart, 2015; Walker, 2012; Wigginton et al., 2016). In two studies, lack of menstruation due to the use of hormonal contraception was associated with anxiety and ambivalence (Gunson, 2010; Walker, 2012).

3.7. Fear and anxiety

In 31 of the 42 studies, we found a deep, though inconstant, fear associated with the use of hormonal contraception. In 12 studies, women expressed anxiety and ambivalence regarding its use due to mistrust, worry and a lack of confidence in these products (Campo et al., 2010; Chernick et al., 2015; Falk et al., 2010; Gomez et al., 2020; Gunson, 2010, 2016; Hollá et al., 2011; Johnson et al., 2013; Newton and Hoggart, 2015; Sundstrom, 2012; Walker, 2012; Whittaker et al., 2010). In 15 studies, women expressed fears of experiencing side effects due to hormonal contraception, making them reluctant to use it (Arteaga and Gomez, 2016; Cabral et al., 2018; Caetano et al., 2020; Campo et al., 2010; Carter et al., 2012; Dixon et al., 2014; Duchêne-Paton and Lopès, 2015; Galloway et al., 2017; Littlejohn, 2012, 2013; Malmberg et al., 2016; Monester et al., 2019; Sedlecky et al., 2011; Wellings et al., 2015; Whittaker et al., 2010). In 20 studies, women and men also stated that such products could damage women's health and body and could have a long-term impact on their health such as an increased risk of cancer (Arteaga and Gomez, 2016; Cabral et al., 2018; Campo et al., 2010; Chernick et al., 2015; DeMaria et al., 2019; Falk et al., 2010; Gunson, 2010; Hollá et al., 2011; Johnson et al., 2013; Landersoe et al., 2019; Merki-Feld et al., 2018; Monester et al., 2019; Nappi et al., 2015; Newton and Hoggart, 2015; Pozzi-Gaudin et al., 2015; Sedlecky et al., 2011; Sundstrom, 2012; Torres et al., 2016; Walker, 2012; Wellings et al., 2015). In four studies, women expressed concern about an adverse effect of the hormonal content of combined oral contraception on a child conceived shortly after discontinuation (Chernick et al., 2015; Landersoe et al., 2019; Nappi et al., 2015; Newton and Hoggart, 2015).

3.8. Delegitimation

In 5 of the 42 studies, women's experiences of adverse side effects while using hormonal contraception appeared to be delegitimized by healthcare practitioners and by women themselves. In four studies, women expressed a feeling that when they described such side effects to

healthcare practitioners, the latter did not take their concerns seriously, and this was a source of anxiety (Carter et al., 2012; Falk et al., 2010; Gunson, 2010; Thomé and Rouzaud-Cornabas, 2017). In two studies, women explained how they learned to manage the adverse side effects they attributed to hormonal contraception on their bodies, emotions, sexuality and mental health by deploying emotional and bodily strategies, a specific type of work that was generally invisible (Littlejohn, 2012; Thomé and Rouzaud-Cornabas, 2017).

4. Discussion

4.1. Findings

Based on a systematic review, arguments against hormonal contraception appeared to be complex and multifactorial since we developed a typology with eight major themes. Four of these were related to side effects: physical side effects, mental health, sexuality and future fertility. Two other themes covered women's feelings and wellbeing: menstruation and fear/anxiety. The last two themes can be seen as being more global, questioning the relationship between hormonal contraception and its impact on women's body functioning (nature) and on gender inequalities (delegitimization).

Only one of the eight themes in our thematic analysis directly refers to a fear of hormones. However, women and men did not express an excessive fear of hormones. Their main concerns related to the safety and the possible adverse side effects of hormones intake, and sometimes they regretted that they did not obtain clear answers to their questions when they approached their providers (Carter et al., 2012; Falk et al., 2010; Gunson, 2010; Thomé and Rouzaud-Cornabas, 2017). Instead, women and men mostly referred to concrete personal past experiences of adverse side effects with hormonal contraception to justify avoiding it or no longer wanting to use it, and to demand less "chemical" and more "natural" contraceptives. Therefore, our findings contradict the notion that people's aversion to female hormonal contraception is related to "hormonophobia" (Foran, 2019).

Conversely, our results highlighted that the arguments used by women and men to express their resistance to female hormonal contraception use are wide-ranging, suggesting that several criteria enter into consideration in selection of a contraceptive method (Higgins et al., 2020; Wyatt et al., 2014). Many arguments referred directly to health concerns, whether physical, mental, sexual or reproductive, suggesting that the main reason for not wanting to use hormonal contraception appears to be related to the wish to avoid adverse side effects, whether they are perceived or already experienced. Previous studies showed that past experience of side effects was the main cause of dissatisfaction with hormonal contraception among discontinuers (Moreau et al., 2007a) and that personal past experiences with hormonal contraception strongly influenced current contraceptive choice (Gomez et al., 2020). It could be that relatives' past experiences (family members and friends) are also determining factors (Wyatt et al., 2014) since social network connections influence the use of different contraceptive methods (Agadjanian, 2001; Kohler, 1997; Montgomery and Casterline, 1996).

These experiences of side effects, either personal or those of relatives, may lead some women to interpret hormone intake as disturbing the "natural female body balance", which steers them to use hormone-free methods. It could also be that these issues are part of "healthism" (Crawford, 1980) in which modern health worries, i.e. concerns about possible harmful effects of modern technologies (Petrie et al., 2001), and desire for naturalness are increasing, affecting consumption behaviors (Devich et al., 2007) and possibly altering health practitioner-patient relationships (Greenhalgh and Wessely, 2004; Welch Cline, 2003). Although highly criticized, these concerns need to be considered during contraceptive counseling in order to offer a patient-centered approach. Finally, our findings indicate that women's preferences regarding hormone use should be included as a criterion in the contraceptive

decision-making process in order to allow them to achieve their contraceptive autonomy (Senderowicz, 2020).

4.2. Limitations

4.2.1. Rejection or criticisms of hormonal contraception?

The notion of rejection of a technology generally refers to the fact that the user deliberately chooses to refrain from its use, in full or part (Rama Murthy and Mani, 2013). Within our corpus of articles, it was not always possible to determine whether the criticisms against hormonal contraception and preferences for non-hormonal methods came from women and men who had never used female hormonal contraceptives, who had stopped using them or who were still current users. When it was stated that women stopped taking a hormonal contraceptive, it was not always indicated whether they were still using another hormonal contraceptive or not, so the distinction between "stoppers" and "switchers", as they were termed by Wellings et al. (2015), was not always clear. Also, when it was known that women were no longer using hormonal contraception, the cross-sectional nature of some surveys did not make it possible to determine whether women had definitively stopped hormonal contraceptives or whether they were just "breakers". When a longitudinal perspective was adopted, which was mostly the case in qualitative surveys, the length of the "break" from hormonal contraception was not systematically detailed. In addition to this uncertainty regarding hormonal contraception discontinuation, it is noteworthy that the possibility for individuals to choose not to use such contraception depends, like other technologies (Beunza et al., 2006; MacKenzie and Wajcman, 1999), on material and social barriers. One important barrier is the scarcity of hormone-free reversible contraceptive options: "the desire for nonhormonal contraception left women with few options: condoms, withdrawal, and the copper intrauterine device (IUD)" (Arteaga and Gomez, 2016, p. 629). Moreover, these few contraceptive options appear to be further reduced by the reluctance of practitioners to prescribe IUDs to nulliparous women (Harper et al., 2012; Luchowski et al., 2014; Moreau et al., 2014; Wellings et al., 2007) and by the fact that women are urged to effectively control their fertility by using a hormonal method: "[women] felt that they should use hormonal birth control if they wanted to prevent pregnancy, but the discomfort associated with use made them reluctant to continue" (Littlejohn, 2013, p. 851). When they decided to challenge this pressure by stopping the use of hormonal contraception, they met with remonstrances from their practitioners and their entourage (Arteaga and Gomez, 2016; Gunson, 2010). As a consequence, our analysis is not limited to women who had decided not to use hormonal contraception; rather, it explores "rejection" of hormonal contraception in a "technology adoption continuum" (Gatignon and Robertson, 1989; Hoff, 1997), ranging from complaints about hormonal contraception to choosing not to use it.

4.2.2. No possible distinction between various hormonal contraceptive methods in published studies

Reasons for rejecting hormonal contraception referred to complaints and fears about a large range of side effects altering not only physical and mental health but also sexual and reproductive health, and affecting wellbeing. It could be expected that complaints and fears would be differently reported depending on the type of hormonal contraceptive used. For example, long-acting reversible contraceptives (LARCs) have a greater impact on menstrual periods than most of contraceptive pills. Moreover, fears of side effects could be greater with regard to new contraceptives than to older ones. Unfortunately, this is a major limitation of the current state of the art, as it was often not possible to determine to which specific hormonal contraceptives the complaints related: nearly one in two studies (20/42) referred to "hormones" or "hormonal contraception" without specifying the methods or chemical compounds, possibly because a large proportion of women do not know exactly what type of synthetic hormones their contraceptive contains. Moreover, one quarter (9/42) of the articles were focused on women's

experiences with the use of one or two specific hormonal contraceptives (pill only, or pill and IUDs only) and did not refer to any potential minor or major side effects (or fears of side effects) with the use of other hormonal devices.

4.2.3. Possible selection bias and blind spots in published results

Our results are based on a selection of articles in English and French referenced in two large databases of scientific articles. However, while our review covers different fields of study such as anthropology, demography, epidemiology, psychology and sociology, it cannot be ruled out that some articles were not referenced in these two databases.

In addition, the numbers of references on each theme should not be considered as reflecting the frequency of the themes among the women and men interviewed. The authors of the selected references may have decided to focus their analysis on specific themes such as physical side effects or menstruation, setting aside other complaints that may have been made against hormonal contraception by women and men. For example, the appearance of complaints such as those regarding “nature” in more recent references (9 before 2015, 14 between 2015 and 2019 and 3 in 2020), while the overall number of references selected did not increase substantially over the period, could reflect the possibility either that this issue is an emerging one or that although already present it was disregarded in older references (Rusterholz, 2015).

Moreover, while in recent studies some women questioned the fact that fertility control is under their responsibility (Grzanka and Schuch, 2020; Kissling, 2014) and asked for men’s involvement in contraceptive work (Thomé and Rouzaud-Cornabas, 2017), the absence of such complaints in our corpus could reflect a selection bias in analysis. The authors of the selected articles may have focused on women’s aspects and discarded those related to men, considering them as less important or even meaningless. This hypothesis is consistent with the relative absence of men in the study populations investigated (32 of the 42 studies interviewed only women). The objective of shared responsibility or shared decision-making between the partners appeared in four studies, including two that interviewed men (Amouroux et al., 2018; Arora et al., 2020; DeMaria et al., 2019; Merki-Feld et al., 2018). These findings indicate that contraception remains largely considered as a women’s issue, supporting feminist claims that fertility control is naturalized as feminine (Grino, 2014; Ventola, 2014, 2016; Kimport, 2018). This could have had an important impact on the grid of analysis developed in the literature and on published results.

Furthermore, it is worth noting that while the issue of the cost of contraception (medical consultations or devices) was investigated in 13 of the 42 studies, it did not appear as a reason for rejecting hormonal contraception. This could reflect the fact that the cost of contraceptives is partially reimbursed by healthcare insurance and that in several countries family planning structures deliver contraceptives free of charge. Possibly, women may also have incorporated the fact that they have to pay for contraception.

Lastly, among the studies examined in this review, it was not possible to identify whether interviewees were cisgender women and men, or to comment on possible differentials in arguments against hormonal contraception depending on locale, race or class. Only three articles were cross-national comparisons, and while several articles used data from studies specifically conducted with young, poor and/or racialized people, they did not state whether the findings were specific to the study groups.

4.3. Future directions

Despite the acknowledged limitations of the studies we reviewed, our analysis allowed us to highlight three major directions for future research in order to improve our understanding of how birth control could be more closely aligned with a reproductive justice framework, better meeting the needs and expectations of women and men in Western countries today.

4.3.1. Investigating the provider-patient relationship

Although the composition of hormonal contraceptives has changed in sixty years, adverse side effects on women’s physical and mental health have not disappeared and thus remain a major concern among female users and their male partners. The various “contraceptive scares” may have increased aversion to hormonal contraception by contributing to inform people about the adverse side effects of hormone intake on women’s health without counter-balancing them with information about positive effects (Foran, 2019; Ory et al., 1980; Wellings, 1986), such as lower risk of developing ovarian or endometrial cancer (Cibula et al., 2010). However, women’s fears about the side effects of hormonal contraceptives seem to be rooted in the fact that they feel that healthcare professionals do not inform them sufficiently (Dixon et al., 2014), do not involve them in the decision-making process (Falk et al., 2010) and often overlook their complaints as misconceptions about hormones (Carter et al., 2012; Falk et al., 2010; Stevens, 2018; Thomé and Rouzaud-Cornabas, 2017).

Although the pill has been presented as having weakened the healthcare providers’ power over women (Watkins, 1998, 2016), it appears that the provider-patient relationship too often remains inequitable (Dehlendorf et al., 2010, 2017; Dixon et al., 2014; Falk et al., 2010; Gunson, 2010; Monester et al., 2019; Sundstrom, 2012; Thomé and Rouzaud-Cornabas, 2017), as second wave feminists have denounced since the 1970s (Davis, 2007; Silies, 2015). Women’s failure to receive an adequate response to their questions and complaints from practitioners could result in their feelings of insecurity about hormonal contraception and lead them to seek other sources of information and help, particularly on the internet (Falk et al., 2010), which has been described as a place where inaccuracies and misinformation abound (Foran, 2019).

The fact that side effects, experienced or feared, are a major reason for rejecting hormonal contraception should therefore invite us to explore further the provider-patient relationship, which could be a cornerstone in helping women and men to choose the contraceptive that best fits their present needs, constraints, experiences and values.

4.3.2. Investigating the gendered bias of hormonal contraception and its impacts

Reasons for rejecting hormonal contraception are partly based on its impact on women’s sexual and reproductive health: fears of a negative impact on their future fertility, decrease in libido and side effects that indirectly affect sexuality such as mastodynia, vaginal dryness, mental health, or weight gain that alters body representation. The notion that hormonal contraception may negatively affect sexuality has been put forward in several studies (Higgins and Smith, 2016) even if the pill has been and remains collectively considered to improve women’s sexuality by allowing them to dissociate sexual intercourse from reproduction (Watkins, 2016). The hypothesis underlying this approach is that women’s sexual desire depends more on psychological factors (fear of becoming pregnant) than on physical/hormonal ones. This may explain why healthcare providers and pharmaceutical companies have paid little attention to the impact of hormonal contraception on women’s sexual desire (Higgins and Smith, 2016), contrary to contraceptive options developed for men (Kammen and Oudshoorn, 2002). Conversely, from an early date second wave feminists questioned the popular idea that hormonal contraception has led to women’s sexual liberation. They point to the potential decrease in libido caused by hormonal contraception of which women complain, and see it as a new form of control exercised by the pharmaceutical industry and health professionals over their bodies (Silies, 2015; Vandelac, 1981). More recently, feminists also pointed out that, because hormonal contraception drastically reduces the risk of unintended pregnancy, women could no longer give this reason to men if they wished to avoid heterosexual intercourse (Dardel, 2007; Ruault, 2019; Silies, 2015), thus highlighting unequal gender relations in the field of sexuality.

The pharmaceutical companies’ marketing update of the 1990s on

hormonal contraception, which led to its presentation as a “lifestyle drug” (Watkins, 2012), also appears to be based on gender stereotypes. Some studies pointed out that pharmaceutical companies used conventional gender and sex norms through a scientific discourse that portrays female bodies as pathological (Gardey and Löwy, 2000; Medley-Rath and Simonds, 2010) in order to promote their products as enabling women to access “super-citizen” status (Sanabria, 2010). Arguments given by women and men against hormonal contraception seem to challenge the pharmaceutical companies’ marketing strategy of a “lifestyle drug”. The freedom promised by pharmaceutical companies to women by using hormonal contraception as a “lifestyle drug” appears to be limited by the product itself. The daily management of its adverse side effects appeared to be invisible work done by the women themselves (Thomé and Rouzaud-Cornabas, 2017). Moreover, while pharmaceutical companies promoted the hormonal contraception side effect of suppressing or reducing the length of menstrual periods, some women claimed that they wanted to have them. While menstruation may be perceived as a discomfort by some women, for others it is intimately related to issues of femininity (Gunson, 2010) and is also evidence that they are not pregnant (Campo et al., 2010; Sundstrom, 2012) and that they are healthy (Campo et al., 2010; Newton and Hoggart, 2015).

While hormonal contraception has been presented as a means of women’s liberation and empowerment (Scrimshaw, 1981), it appears that it may also carry gender stereotypes that affect how it has been developed by the pharmaceutical industry, how it has been marketed, and how it has been prescribed by practitioners. At a time when women’s rights are receiving increasing attention in Western countries as well as appearing on the international policy agenda, it would be crucial to further explore the historical gender biases surrounding hormonal contraception and its current impacts.

4.3.3. Investigating demands for naturalness

Although probably not unprecedented, some of the critiques of hormonal contraception found in our typology seem to suggest a growing concern with naturalness. Some women and men in the selected articles seemed to deny hormonal contraception on principle, since they claimed they were no longer willing to use it precisely because of its hormonal compounds. This discourse could be part of an ecological commitment among some people (Rios Sandoval, 2019). The synthetic hormones of hormonal contraceptives have been denounced as endocrine disruptors by some ecologists, and could have devastating effects on the environment, particularly aquatic ecosystems (Ingerslev et al., 2003). People most sensitive to the ecological cause could be more likely to reject hormonal contraception and to rely on withdrawal, condoms or copper IUDs, or on self-observation methods aimed at determining the time of ovulation and at avoiding or protecting penetrative sex during these periods. Possibly, a wider public may also invoke nature to justify contraceptive behaviors. Women stated that by avoiding hormonal contraception they wanted to regain control of the natural balance of their bodies, which included recovering “natural” blood loss during their periods. Here the reference to nature could be related to an essentialist view of women’s bodies and gender differences (Gunson, 2016), and thus embedded in a “post-feminist” culture (Gill, 2007) where femininity is seen as an intrinsic bodily property. Nevertheless, such rejection of hormonal contraception could also refer to a desire to free oneself from medical and pharmaceutical power, and thus echo the feminist “self-help” movements of the 1970s that aimed at empowering women through knowledge of their own bodies (Davis, 2007; Löwy, 2005; Ruault, 2019; Silies, 2015; Watkins, 2016). People could then adopt a new lifestyle in which drugs and hormones occupy a minor place, if any, a life which is lived in a post-pharmaceutical/post-chemical society where environmental concerns are a more central issue in people’s habits and consumption.

The demand for more naturalness is clearly a growing concern in Western societies. It is likely to profoundly affect all aspects of everyday life in the coming decades, from buying habits and eating patterns to

means of transport. So it is not surprising that the demand for more naturalness also emerges in the field of reproductive health, from delivery preferences (Quagliarello, 2019; Schantz et al., 2021) to contraceptive use. We may expect it to become a growing concern in new generations. As such, it emerges as an important topic for our research agenda.

5. Conclusion

Sixty years after the first hormonal contraception was launched in Western countries, we are witnessing today a movement of reflective thinking about medical practices in the realm of reproduction, and about hormonal contraception in particular. This reflective thinking may particularly characterize not only a current generation of women who are taking up self-gynecology and ecofeminism in various theoretical and practical forms, but also a wider range of the population. We are witnessing a variety of syncretic and heterodox demands relating to hormones, demands that express women’s wish to regain control of their own bodies. While the availability of hormonal contraception was never called into question by feminist movements, feminists did not hesitate to criticize the impact of hormones on women’s health and the lack of reproductive autonomy women faced, notably because hormonal contraceptives were only available on prescription and also because they perceived pharmaceutical companies’ economic interests as incompatible with women’s wellbeing. Today, it seems that some of the criticisms of hormonal contraception made by second wave feminists have found an echo among women and men who do not necessarily claim to be feminists and who question hormonal contraception at the present time.

Authors’ contributions

Mireille Le Guen: Formal analysis, Validation, Writing - original draft. Clémence Schantz: Conceptualization, Methodology, Formal analysis, Validation, Writing - original draft. Arnaud Régnier-Loilier: Supervision, Writing - original draft. Elise de La Rochebrochard: Conceptualization, Supervision, Writing - original draft.

Declaration of competing interest

None.

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Appendix A. Supplementary data

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References

- Agadjanian, V., 2001. Religion, social milieu, and the contraceptive revolution. *Popul. Stud.* 55, 135–148. <https://doi.org/10.1080/00324720127691>.
- Amouroux, M., Mieusset, R., Desbriere, R., Opinel, P., Karsenty, G., Paci, M., Fernandes, S., Courbiere, B., Perrin, J., 2018. Are men ready to use thermal male contraception? Acceptability in two French populations: new fathers and new providers. *PLoS One* 13, e0195824. <https://doi.org/10.1371/journal.pone.0195824>.

- Arora, K.S., Zhao, X., Judge-Golden, C., Mor, M.K., Callegari, L.S., Borrero, S., 2020. Factors associated with choice of sterilization among women veterans. *J. Womens Health* 29, 989–995. <https://doi.org/10.1089/jwh.2019.8036>.
- Arteaga, S., Gomez, A.M., 2016. "Is that A method of birth control?" A qualitative exploration of young women's use of withdrawal. *J. Sex. Res.* 53, 626–632. <https://doi.org/10.1080/00224499.2015.1079296>.
- Beunza, D., Hardie, I., MacKenzie, D., 2006. A price is a social thing: towards a material sociology of arbitrage. *Organ. Stud.* 27, 721–745. <https://doi.org/10.1177/0170840606065923>.
- Boyatzis, R., 1998. *Transforming Qualitative Information: Thematic Analysis and Code Development*.
- Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77–101. <https://doi.org/10.1191/1478088706qp0630a>.
- Cabral, M.A., Schroeder, R., Armstrong, E.M., El Ayadi, A.M., Gürel, A.L., Chang, J., Harper, C.C., 2018. Pregnancy intentions, contraceptive knowledge and educational aspirations among community college students. *Perspect. Sex. Reprod. Health* 50, 181–188. <https://doi.org/10.1363/psrh.12081>.
- Caetano, C., Blikendaal, S., Engler, Y., Lombardo, M., 2020. From awareness to usage of long-acting reversible contraceptives: results of a large European survey. *Int. J. Gynecol. Obstet.* 151, 366–376. <https://doi.org/10.1002/ijgo.13363>.
- Campo, S., Askelson, N.M., Spies, E.L., Losch, M., 2010. Preventing unintended pregnancies and improving contraceptive use among young adult women in a rural, midwestern state: health promotion implications. *Women Health* 50, 279–296. <https://doi.org/10.1080/03630242.2010.480909>.
- Carter, M.W., Bergdall, A.R., Henry-Moss, D., Hatfield-Timajchy, K., Hock-Long, L., 2012. A qualitative study of contraceptive understanding among young adults. *Contraception* 86, 543–550. <https://doi.org/10.1016/j.contraception.2012.02.017>.
- Chernick, L.S., Schnall, R., Higgins, T., Stockwell, M.S., Castaño, P.M., Santelli, J., Dayan, P.S., 2015. Barriers to and enablers of contraceptive use among adolescent females and their interest in an emergency department based intervention. *Contraception* 91, 217–225. <https://doi.org/10.1016/j.contraception.2014.12.003>.
- Cibula, D., Gompel, A., Mueck, A.O., La Vecchia, C., Hannaford, P.C., Skouby, S.O., Zikan, M., Dusek, L., 2010. Hormonal contraception and risk of cancer. *Hum. Reprod. Update* 16, 631–650. <https://doi.org/10.1093/humupd/dmq022>.
- Crawford, R., 1980. Healthism and the medicalization of everyday life. *Int. J. Health Serv. Plan. Adm. Eval.* 10, 365–388. <https://doi.org/10.2190/3ZH2-3XJN-3KAY-G9NY>.
- Dardel, J. de, 2007. *Révolution sexuelle et mouvement de libération des femmes à Genève, 1970-1977*. Antipodes, Lausanne, Suisse.
- Davis, K., 2007. *The Making of Our Bodies, Ourselves: How Feminism Travels across Borders*. Duke University Press Books, Durham, North Carolina, United States.
- Dehlendorf, C., Fox, E., Sobel, L., Borrero, S., 2016. Patient-centered contraceptive counseling: evidence to inform practice. *Curr. Obstet. Gynecol. Rep.* 5, 55–63. <https://doi.org/10.1007/s13669-016-0139-1>.
- Dehlendorf, C., Grumbach, K., Schmittiel, J.A., Steinauer, J., 2017. Shared decision making in contraceptive counseling. *Contraception* 95, 452–455. <https://doi.org/10.1016/j.contraception.2016.12.010>.
- Dehlendorf, C., Rodriguez, M.I., Levy, K., Borrero, S., Steinauer, J., 2010. Disparities in family planning. *Am. J. Obstet. Gynecol.* 202, 214–220. <https://doi.org/10.1016/j.ajog.2009.08.022>.
- DeMaria, A.L., Rivera, S., Ramos-Ortiz, J., Meier, S., Wakefield, A.L., Basile, K., Evans, J. M., Zaininger, H.M., Clayton, A., 2019. 'It's just a very personal thing': contraceptive influences and decision making among women living in Italy. *Eur. J. Contracept. Reprod. Health Care* 24, 198–205. <https://doi.org/10.1080/13625187.2019.1615616>.
- Devich, D.A., Pedersen, I.K., Petrie, K.J., 2007. You eat what you are: modern health worries and the acceptance of natural and synthetic additives in functional foods. *Appetite* 48, 333–337. <https://doi.org/10.1016/j.appet.2006.09.014>.
- Dixon, S.C., Herbert, D.L., Loxton, D., Lucke, J.C., 2014. 'As many options as there are, there are just not enough for me': contraceptive use and barriers to access among Australian women. *Eur. J. Contracept. Reprod. Health Care* 19, 340–351. <https://doi.org/10.3109/13625187.2014.919380>.
- Duchêne-Paton, A.-M., Lopes, P., 2015. Sexualité et choix du mode contraceptif. *Sexologies* 24, 69–81. <https://doi.org/10.1016/j.sexol.2014.11.001>.
- Falk, G., Ivarsson, A.-B., Brynhildsen, J., 2010. Teenagers' struggles with contraceptive use – what improvements can be made? *Eur. J. Contracept. Reprod. Health Care* 15, 271–279. <https://doi.org/10.3109/13625187.2010.493623>.
- Fennell, J., 2014. "And Isn't that the point?": pleasure and contraceptive decisions. *Contraception* 89, 264–270. <https://doi.org/10.1016/j.contraception.2013.11.012>.
- Foran, T., 2019. Contraception and the media: lessons past, present and future. *Eur. J. Contracept. Reprod. Health Care* 24, 80–82. <https://doi.org/10.1080/13625187.2018.1563067>.
- Galloway, C.T., Duffy, J.L., Dixon, R.P., Fuller, T.R., 2017. Exploring african-American and latino teens' perceptions of contraception and access to reproductive health care services. *J. Adolesc. Health, Implementing Community-Wide Teen Pregnancy Prevention Initiatives* 60, S57–S62. <https://doi.org/10.1016/j.jadohealth.2016.12.006>.
- Garbers, S., Meserve, A., Kottke, M., Hatcher, R., Chiasson, M.A., 2013. Contraceptive history, unintended pregnancy, and contraceptive method choice among urban low-income women. *J. Womens Health* 22, 930–937. <https://doi.org/10.1089/jwh.2013.4247>.
- Gardey, D., Löwy, I., 2000. *L'invention du naturel : les sciences et la fabrication du féminin et du masculin*. Archives contemporaines, Paris, France.
- Gatignon, H., Robertson, T.S., 1989. Technology diffusion: an empirical test of competitive effects. *J. Mark.* 53, 35–49. <https://doi.org/10.1177/002224298905300104>.
- Gill, R., 2007. Postfeminist media culture: elements of a sensibility. *Eur. J. Cult. Stud.* 10, 147–166. <https://doi.org/10.1177/1367549407075898>.
- Glaser, A., Yan, Y., Wellings, K., 2007. How do health care professionals respond to advice on adverse side effects of contraceptive methods? The case of Depo Provera®. *Contraception* 76, 18–22. <https://doi.org/10.1016/j.contraception.2007.03.013>.
- Gomez, A.M., Arteaga, S., Aronson, N., Goodkind, M., Houston, L., West, E., 2020. No perfect method: exploring how past contraceptive methods influence current attitudes toward intrauterine devices. *Arch. Sex. Behav.* 49, 1367–1378. <https://doi.org/10.1007/s10508-019-1424-7>.
- Gomez, A.M., Fuentes, L., Allina, A., 2014. Women or LARC first? Reproductive autonomy and the promotion of long-acting reversible contraceptive methods. *Perspect. Sex. Reprod. Health* 46, 171–175. <https://doi.org/10.1363/46e1614>.
- Gomez, A.M., Hartofelis, E.C., Finlayson, S., Clark, J.B., 2015. Do knowledge and attitudes regarding intrauterine devices predict interest in their use? *Wom. Health Issues* 25, 359–365. <https://doi.org/10.1016/j.whi.2015.03.011>.
- Greenhalgh, T., Wessely, S., 2004. 'Health for me': a sociocultural analysis of healthism in the middle classes. *Br. Med. Bull.* 69, 197–213. <https://doi.org/10.1093/bmb/ldh013>.
- Grino, C., 2014. La pilule : biologisation de la contraception et régulation sociale. *Genre Sex. Société* <https://doi.org/10.4000/gss.3280>.
- Grzanka, P.R., Schuch, E., 2020. Reproductive anxiety and conditional agency at the intersections of privilege: a focus group study of emerging adults' perception of long-acting reversible contraception. *J. Soc. Issues* 76, 270–313. <https://doi.org/10.1111/josi.12363>.
- Gunson, J.S., 2016. Nature, menstrual suppression, and the value of material feminism. *Health Soc. Rev.* 25, 312–325. <https://doi.org/10.1080/14461242.2016.1198982>.
- Gunson, J.S., 2010. "More natural but less normal": reconsidering medicalisation and agency through women's accounts of menstrual suppression. *Soc. Sci. Med.* 71, 1324–1331. <https://doi.org/10.1016/j.socscimed.2010.06.041>.
- Hall, K.S., Castaño, P.M., Westhoff, C.L., 2014. The influence of oral contraceptive knowledge on oral contraceptive continuation among young women. *J. Womens Health* 23, 596–601. <https://doi.org/10.1089/jwh.2013.4574>.
- Harper, C.C., Henderson, J.T., Raine, T.R., Goodman, S., Darney, P.D., Thompson, K.M., Dehlendorf, C., Speidel, J.J., 2012. Evidence-based IUD practice: family physicians and obstetrician-gynecologists. *Fam. Med.* 44, 637–645. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3745306/>.
- Higgins, J.A., 2014. Celebration meets caution: LARC's boons, potential busts, and the benefits of a reproductive justice approach. *Contraception* 89, 237–241. <https://doi.org/10.1016/j.contraception.2014.01.027>.
- Higgins, J.A., Smith, N.K., 2016. The sexual acceptability of contraception: reviewing the literature and building a new concept. *J. Sex. Res.* 53, 417–456. <https://doi.org/10.1080/00224499.2015.1134425>.
- Higgins, J.A., Wright, K.Q., Turok, D.K., Sanders, J.N., 2020. Beyond safety and efficacy: sexuality-related priorities and their associations with contraceptive method selection. *Contraception X* 2, 100038. <https://doi.org/10.1016/j.conx.2020.100038>.
- Hoff, K.G., 1997. *Model of a Technology Adoption Continuum Incorporating Risk Factors (PhD Thesis)*. Oklahoma State University, Stillwater, Oklahoma, United States.
- Hollá, K., Weiss, P., Unzeitig, V., Cibula, D., 2011. Abortions and contraception use among Czech and Romanian women: comparison of representative national studies. *J. Sex. Med.* 8, 1083–1091. <https://doi.org/10.1111/j.1743-6109.2009.01645.x>.
- Hooker, C., 2010. Health scares: professional priorities. *Health (N. Y.)* 14, 3–21. <https://doi.org/10.1177/1363459309341875>.
- Ingerslev, F., Vaclavik, E., Halling-Sørensen, B., 2003. Pharmaceuticals and personal care products - a source of endocrine disruption in the environment? *Pure Appl. Chem.* 75, 1881–1893. <https://doi.org/10.1351/pac200375111881>.
- Johnson, S., Pion, C., Jennings, V., 2013. Current methods and attitudes of women towards contraception in Europe and America. *Reprod. Health* 10, 7. <https://doi.org/10.1186/1742-4755-10-7>.
- Jones, E.F., Beniger, J.R., Westoff, C.F., 1980. Pill and IUD discontinuation in the United States, 1970-1975: the influence of the media. *Fam. Plann. Perspect.* 12, 293–300. <https://doi.org/10.2307/2134660>.
- Kammen, J. van, Oudshoorn, N., 2002. Gender and risk assessment in contraceptive technologies. *Sociol. Health Illness* 24, 436–461. <https://doi.org/10.1111/1467-9566.00303>.
- Kaunitz, A.M., 2001. LunelleTM monthly injectable contraceptive. *Arch. Gynecol. Obstet.* 265, 119–123. <https://doi.org/10.1007/s004040100174>.
- Kavanaugh, M.L., Jerman, J., 2018. Contraceptive method use in the United States: trends and characteristics between 2008, 2012 and 2014. *Contraception* 97, 14–21. <https://doi.org/10.1016/j.contraception.2017.10.003>.
- Kimport, K., 2018. Talking about male body-based contraceptives: the counseling visit and the feminization of contraception. *Soc. Sci. Med.* 201, 44–50. <https://doi.org/10.1016/j.socscimed.2018.01.040>.
- Kissling, E.A., 2016. No justice, No pill/know (reproductive) justice, know the pill. *Womens Reprod. Health* 3, 109–112. <https://doi.org/10.1080/23293691.2016.1196085>.
- Kissling, E.A., 2014. What does not kill you makes you stronger: young women's online conversations about quitting the pill. In: Nash, M. (Ed.), *Reframing Reproduction: Conceiving Gendered Experiences, Genders and Sexualities in the Social Sciences*. Palgrave Macmillan UK, London, pp. 236–250. https://doi.org/10.1057/9781137267139_15.
- Kohler, H.-P., 1997. Learning in social networks and contraceptive choice. *Demography* 34, 369–383. <https://doi.org/10.2307/3038290>.
- Kulkarni, J., 2007. Depression as a side effect of the contraceptive pill. *Expet Opin. Drug Saf.* 6, 371–374. <https://doi.org/10.1517/14740338.6.4.371>.

- Landersoe, S.K., Petersen, K.B., Vassard, D., Larsen, E.C., Nielsen, H.S., Pinborg, A., Nøhr, B., Nyboe Andersen, A., Schmidt, L., 2019. Concerns on future fertility among users and past-users of combined oral contraceptives: a questionnaire survey. *Eur. J. Contracept. Reprod. Health Care* 24, 347–355. <https://doi.org/10.1080/13625187.2019.1639659>.
- Lewin, S., Bohnen, M., Rashidian, A., Munthe-Kaas, H., Glenton, C., Colvin, C.J., Garside, R., Noyes, J., Booth, A., Tunçalp, Ö., Wainwright, M., Flottorp, S., Tucker, J. D., Carlsen, B., 2018a. Applying GRADE-CERQual to qualitative evidence synthesis findings—paper 2: how to make an overall CERQual assessment of confidence and create a Summary of Qualitative Findings table. *Implement. Sci.* 13, 10. <https://doi.org/10.1186/s13012-017-0689-2>.
- Lewin, S., Booth, A., Glenton, C., Munthe-Kaas, H., Rashidian, A., Wainwright, M., Bohnen, M.A., Tunçalp, Ö., Colvin, C.J., Garside, R., Carlsen, B., Langlois, E.V., Noyes, J., 2018b. Applying GRADE-CERQual to qualitative evidence synthesis findings: introduction to the series. *Implement. Sci.* 13, 2. <https://doi.org/10.1186/s13012-017-0688-3>.
- Littlejohn, K.E., 2013. “It’s those pills that are ruining me”: gender and the social meanings of hormonal contraceptive side effects. *Gend. Soc.* 27, 843–863. <https://doi.org/10.1177/0891243213504033>.
- Littlejohn, K.E., 2012. Hormonal contraceptive use and discontinuation because of dissatisfaction: differences by race and education. *Demography* 49, 1433–1452. <https://doi.org/10.1007/s13524-012-0127-7>.
- Löwy, I., 2005. Le féminisme a-t-il changé la recherche biomédicale ? *Trav. Genre Soc.* 14, 89–108. <https://www.cairn.info/revue-travail-genre-et-societes-2005-2-page-89.htm>.
- Luchowski, A.T., Anderson, B.L., Power, M.L., Raglan, G.B., Espey, E., Schulkin, J., 2014. Obstetrician–Gynecologists and contraception: practice and opinions about the use of IUDs in nulliparous women, adolescents and other patient populations. *Contraception* 89, 572–577. <https://doi.org/10.1016/j.contraception.2014.02.008>.
- MacKenzie, D., Wajcman, J., 1999. *The Social Shaping of Technology*. Open University Press, Buckingham, United Kingdom.
- Malmborg, A., Persson, E., Brynhildsen, J., Hammar, M., 2016. Hormonal contraception and sexual desire: a questionnaire-based study of young Swedish women. *Eur. J. Contracept. Reprod. Health Care* 21, 158–167. <https://doi.org/10.3109/13625187.2015.1079609>.
- Marks, L., 2001. *Sexual Chemistry: a History of the Contraceptive Pill* (New Haven, Connecticut, United States).
- Marshall, C., Guendelman, S., Mauldon, J., Nuru-Jeter, A., 2016. Young women’s contraceptive decision making: do preferences for contraceptive attributes align with method choice? *Perspect. Sex. Reprod. Health* 48, 119–127. <https://doi.org/10.1363/48e10116>.
- Medley-Rath, S.R., Simonds, W., 2010. Consuming contraceptive control: gendered distinctions in web-based contraceptive advertising. *Cult. Health Sex.* 12, 783–795. <https://doi.org/10.1080/13691058.2010.489240>.
- Merki-Feld, G.S., Felder, S., Roelli, C., Imthurn, B., Stewart, M., Bateson, D., 2018. Is there a need for better sexual education of young men? Sexual behaviour and reproductive health in Swiss university students: a questionnaire-based pilot study. *Eur. J. Contracept. Reprod. Health Care* 23, 154–160. <https://doi.org/10.1080/13625187.2018.1458226>.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., PRISMA Group, 2009. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *PLoS Med.* 6, e1000097. <https://doi.org/10.1371/journal.pmed.1000097>.
- Monester, J., Fisher, J., Kirkman, M., Rowe, H., Holton, S., 2019. ‘If I had known the fertility health facts sooner...’ Knowledge gaps as a barrier to effective fertility management: findings from the understanding fertility management in contemporary Australia survey. *Eur. J. Contracept. Reprod. Health Care* 24, 274–279. <https://doi.org/10.1080/13625187.2019.1625326>.
- Montgomery, M.R., Casterline, J.B., 1996. Social learning, social influence, and new models of fertility. *Popul. Dev. Rev.* 22, 151–175. <https://doi.org/10.2307/2808010>.
- Moreau, C., Bohet, A., Hassoun, D., Ringa, V., Bajos, N., 2014. IUD use in France: women’s and physician’s perspectives. *Contraception* 89, 9–16. <https://doi.org/10.1016/j.contraception.2013.10.003>.
- Moreau, C., Cleland, K., Trussell, J., 2007a. Contraceptive discontinuation attributed to method dissatisfaction in the United States. *Contraception* 76, 267–272. <https://doi.org/10.1016/j.contraception.2007.06.008>.
- Moreau, C., Trussell, J., Rodriguez, G., Bajos, N., Bouyer, J., 2007b. Contraceptive failure rates in France: results from a population-based survey. *Hum. Reprod. Oxf. Engl.* 22, 2422–2427. <https://doi.org/10.1093/humrep/dem184>.
- Nappi, R.E., Pellegrinelli, A., Campolo, F., Lanzo, G., Santamaria, V., Suragna, A., Spinillo, A., Benedetto, C., 2015. Effects of combined hormonal contraception on health and wellbeing: women’s knowledge in northern Italy. *Eur. J. Contracept. Reprod. Health Care* 20, 36–46. <https://doi.org/10.3109/13625187.2014.961598>.
- Newton, V.L., Hoggart, L., 2015. Hormonal contraception and regulation of menstruation: a study of young women’s attitudes towards ‘having a period’. *J. Fam. Plann. Reprod. Health Care* 41, 210–215. <https://doi.org/10.1136/jfprhc-2014-100956>.
- Ong, J., Temple-Smith, M., Wong, W., McNamee, K., Fairley, C., 2013. Prevalence of and characteristics associated with use of withdrawal among women in victoria, Australia. *Perspect. Sex. Reprod. Health* 45, 74–78. <https://doi.org/10.1363/4507413>.
- Ory, H.W., Rosenfield, A., Landman, L.C., 1980. The pill at 20: an assessment. *Int. Fam. Plann. Perspect.* 6, 125–130. <https://doi.org/10.2307/2947919>.
- Petrie, K.J., Sivertsen, B., Hysing, M., Broadbent, E., Moss-Morris, R., Eriksen, H.R., Ursin, H., 2001. Thoroughly modern worries: the relationship of worries about modernity to reported symptoms, health and medical care utilization. *J. Psychosom. Res.* 51, 395–401. [https://doi.org/10.1016/S0022-3999\(01\)00219-7](https://doi.org/10.1016/S0022-3999(01)00219-7).
- Potter, J.E., Stevenson, A.J., Coleman-Minahan, K., Hopkins, K., White, K., Baum, S.E., Grossman, D., 2019. Challenging unintended pregnancy as an indicator of reproductive autonomy. *Contraception* 100, 1–4. <https://doi.org/10.1016/j.contraception.2019.02.005>.
- Pozzi-Gaudin, S., Deffieux, X., Davitien, C., Guerre, N., Faucher, P., Bacle, F., Teboul, M., Larmignat, P., Hatchuel, M., Benachi, A., 2015. Enquête concernant le retentissement des alertes médiatiques sur la pilule. *J. Gynécologie Obstétrique Biol. Reprod.* 44, 646–652. <https://doi.org/10.1016/j.jgyn.2014.08.006>.
- Quagliarello, C., 2019. Birth models in and between Italy and Senegal: a cross-cultural inquiry on the risks related to childbirth and birth technologies. *Health Risk Soc.* 21, 207–225. <https://doi.org/10.1080/13698575.2019.1640352>.
- Rama Murthy, S., Mani, M., 2013. Discerning rejection of technology, 3. *SAGE Open*. <https://doi.org/10.1177/2158244013485248>, 2158244013485248.
- Rios Sandoval, M., 2019. *There Is Politics in Your Shampoo: on Youth Activism, Endocrine Disruption, and Making Everyday Toxicity Visible in France* (PhD Thesis). University of Amsterdam, Amsterdam, The Netherlands.
- Ross, L., Solinger, R., 2019. *Reproductive Justice: an Introduction*. University of California Press. <https://doi.org/10.1525/9780520963207>.
- Roux, A., 2020. « Par amour des femmes » ? La pilule contraceptive en France, genèse d’une évidence sociale et médicale (1960-2000) (Thèse de sociologie). EHESS, Paris, France.
- Ruault, L., 2019. Libération sexuelle ou « pression à soulager ces messieurs » ? Points de vue de femmes dans les années 68 en France. *Ethnol. Fr.* 174, 373. <https://doi.org/10.3917/ethn.192.0373>.
- Rusterholz, C., 2015. Reproductive behavior and contraceptive practices in comparative perspective, Switzerland (1955–1970). *Hist. Fam.* 20, 41–68. <https://doi.org/10.1080/1081602X.2014.983139>.
- Sanabria, E., 2010. From sub- to super-citizenship: sex hormones and the body politic in Brazil. *Ethnos* 75, 377–401. <https://doi.org/10.1080/00141844.2010.544393>.
- Schantz, C., Pantelias, A.-C., de Loenzien, M., Ravit, M., Rozenberg, P., Louis-Sylvestre, C., Goyet, S., 2021. ‘A caesarean section is like you’ve never delivered a baby’: a mixed methods study of the experience of childbirth among French women. *Reprod. Biomed. Soc. Online* 12, 69–78. <https://doi.org/10.1016/j.rbms.2020.10.003>.
- Scrimshaw, S.C.M., 1981. Women and the pill: from panacea to catalyst. *Fam. Plann. Perspect.* 13, 254–262. <https://doi.org/10.2307/2134583>.
- Secura, G.M., Allsworth, J.E., Madden, T., Mullersman, J.L., Peipert, J.F., 2010. The Contraceptive CHOICE Project: reducing barriers to long-acting reversible contraception. *Am. J. Obstet. Gynecol.* 203, 115.e1–115.e7. <https://doi.org/10.1016/j.ajog.2010.04.017>.
- Sedlecky, K., Rasević, M., Topić, V., 2011. Family planning in Serbia – the perspective of female students from the University of Belgrade. *Eur. J. Contracept. Reprod. Health Care* 16, 469–479. <https://doi.org/10.3109/13625187.2011.614027>.
- Senderowicz, L., 2020. Contraceptive autonomy: conceptions and measurement of a novel family planning indicator. *Stud. Fam. Plann.* 51, 161–176. <https://doi.org/10.1111/sifp.12114>.
- Silies, E.-M., 2015. Taking the Pill after the ‘sexual revolution’: female contraceptive decisions in England and West Germany in the 1970s. *Eur. Rev. Hist. Rev. Eur. Hist.* 22, 41–59. <https://doi.org/10.1080/13507486.2014.983431>.
- Skovlund, C.W., 2016. Association of hormonal contraception with depression. *J. M. Psychiatry* 73, 1154–1162. <https://doi.org/10.1001/jamapsychiatry.2016.2387>.
- Speidel, J.J., Harper, C.C., Shields, W.C., 2008. The potential of long-acting reversible contraception to decrease unintended pregnancy. *Contraception* 78, 197–200. <https://doi.org/10.1016/j.contraception.2008.06.001>.
- Stevens, L.M., 2018. “We have to be mythbusters”: clinician attitudes about the legitimacy of patient concerns and dissatisfaction with contraception. *Soc. Sci. Med.* 212, 145–152. <https://doi.org/10.1016/j.socscimed.2018.07.020>.
- Sundstrom, B., 2012. Fifty years on “the pill”: a qualitative analysis of nondaily contraceptive options. *Contraception* 86, 4–11. <https://doi.org/10.1016/j.contraception.2011.10.016>.
- Thomé, C., Rouzaud-Cornabas, M., 2017. Comment ne pas faire d’enfants ? La contraception, un travail féminin invisibilisé. *Rech. Sociol. Anthropol.* 117–137. <https://doi.org/10.4000/rsa.2083>.
- Torres, L., Frapard, C., Daumas, A., Guibert, N., Lagouanelle-Simeoni, M.-C., Rakoto, J.-C., Villani, P., Sambuc, R., 2016. Controverse des estroprogestatifs de 3e et 4e génération : quelle influence sur le comportement des femmes ? *Presse Med.* 45, e68–e78. <https://doi.org/10.1016/j.jlpm.2015.10.024>.
- Trussell, J., 2011. Contraceptive efficacy. In: Hatcher, R., Trussell, J., Nelson, A., Cates, W., Kowal, D., Policar, M. (Eds.), *Contraceptive Technology. Bridging the Gap Communications* (New York, United States).
- Trussell, J., Henry, N., Hassan, F., Prezioso, A., Law, A., Filonenko, A., 2013. Burden of unintended pregnancy in the United States: potential savings with increased use of long-acting reversible contraception. *Contraception* 87, 154–161. <https://doi.org/10.1016/j.contraception.2012.07.016>.
- Vandelac, L., 1981. Contraception autoroute pour sexualité bolide. *Temps Fou* 13, 34–40.
- Ventola, C., 2016. Le genre de la contraception : représentations et pratiques des prescripteurs en France et en Angleterre. *Cah. Genre* 101–122. http://www.cairn.info/resume.php?ID_ARTICLE=CDGE_060_0101.
- Ventola, C., 2014. Prescrire un contraceptif : le rôle de l’institution médicale dans la construction de catégories sexuées. *Genre Sex. Société* <https://doi.org/10.4000/gss.3215>.

- Vondráčková, L., 2020. Internet discussions of uncertainties and risks of contraceptive pills in the Czech republic. *Pol. Socio. Rev.* 65–78. <https://doi.org/10.26412/psr209.04>.
- Wale, J., Rowlands, S., 2020. The ethics of state-sponsored and clinical promotion of long-acting reversible contraception. *BMJ Sex. Reprod. Health.* <https://doi.org/10.1136/bmjsex-2020-200630>.
- Walker, S., 2012. Mechanistic and “natural” body metaphors and their effects on attitudes to hormonal contraception. *Women Health* 52, 788–803. <https://doi.org/10.1080/03630242.2012.728190>.
- Watkins, E.S., 2016. Reconciling the Pill: from revolutionary therapeutic to lifestyle drug. In: Greene, J.A., Condrau, F., Watkins, E.S. (Eds.), *Therapeutic Revolutions: Pharmaceuticals and Social Change in the Twentieth Century*. University of Chicago Press, pp. 43–63.
- Watkins, E.S., 2012. How the pill became a lifestyle drug: the pharmaceutical industry and birth control in the United States since 1960. *Am. J. Publ. Health* 102, 1462–1472. <https://doi.org/10.2105/AJPH.2012.300706>.
- Watkins, E.S., 2001. *On the Pill: A Social History of Oral Contraceptives, 1950–1970*. JHU Press, Baltimore, Maryland, United States.
- Watkins, E.S., 1998. Expanding consumer information: the origin of the patient package insert. *Adv. Consum. Interest* 10, 20–26. <https://www.jstor.org/stable/23862430>.
- Welch Cline, R.J., 2003. At the intersection of micro and macro: opportunities and challenges for physician–patient communication research. *Patient Educ. Couns., Adv. Consumer/Provider Commun. Res.* 50, 13–16. [https://doi.org/10.1016/S0738-3991\(03\)00073-9](https://doi.org/10.1016/S0738-3991(03)00073-9).
- Wellings, K., 1986. Help or hype: an analysis of media coverage of the 1983 “pill scare.” In: Leathar, D.S., Hastings, G.B., O’reilly, K., Davies, J.K. (Eds.), *Health Education and the Media II*. Pergamon, pp. 109–115. <https://doi.org/10.1016/B978-0-08-032000-7.50022-2>.
- Wellings, K., Brima, N., Sadler, K., Copas, A.J., McDaid, L., Mercer, C.H., McManus, S., Stephenson, J., Glasier, A., 2015. Stopping and switching contraceptive methods: findings from Contessa, a prospective longitudinal study of women of reproductive age in England. *Contraception* 91, 57–66. <https://doi.org/10.1016/j.contraception.2014.09.008>.
- Wellings, K., Zhihong, Z., Krentel, A., Barrett, G., Glasier, A., 2007. Attitudes towards long-acting reversible methods of contraception in general practice in the UK. *Contraception* 76, 208–214. <https://doi.org/10.1016/j.contraception.2007.05.085>.
- Westhoff, C., 2003. Depot-medroxyprogesterone acetate injection (Depo-Provera®): a highly effective contraceptive option with proven long-term safety. *Contraception* 68, 75–87. [https://doi.org/10.1016/S0010-7824\(03\)00136-7](https://doi.org/10.1016/S0010-7824(03)00136-7).
- Whittaker, P.G., Merkh, R.D., Henry-Moss, D., Hock-Long, L., 2010. Withdrawal attitudes and experiences: a qualitative perspective among young urban adults. *Perspect. Sex. Reprod. Health* 42, 102–109. <https://doi.org/10.1363/4210210>.
- Wigginton, B., Harris, M.L., Loxton, D., Lucke, J.C., 2016. A qualitative analysis of women’s explanations for changing contraception: the importance of non-contraceptive effects. *J. Fam. Plann. Reprod. Health Care* 42, 256–262. <https://doi.org/10.1136/jfprhc-2015-101184>.
- Wyatt, K.D., Anderson, R.T., Creedon, D., Montori, V.M., Bachman, J., Erwin, P., LeBlanc, A., 2014. Women’s values in contraceptive choice: a systematic review of relevant attributes included in decision aids. *BMC Wom. Health* 14, 28. <https://doi.org/10.1186/1472-6874-14-28>.
- Zucker, A.N., 2014. Reproductive justice: more than choice. *Anal. Soc. Issues Public Policy* 14, 210–213. <https://doi.org/10.1111/asap.12059>.