


“The problem is the vast production of sperm”: conceptions of body in the field of male contraception¹


“O problema é a enorme produção de espermatozoides”:
concepções de corpo no campo da contracepção masculina

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Abstract

Since the late 1960s, attempts have been made to produce a reversible male contraceptive with efficacy equivalent to that of the contraceptive pill. To date, this product has not been launched and the justifications for this are based on political, economic, cultural and biological barriers. The argument of a physiological obstacle has a lot of prominence in these explanations and will be our focus in this article. From the perspective of gender and science studies, we aim to understand how this argument appears in current efforts to promote this technology by a prominent actor in the field, the US NGO Male Contraception Initiative (MCI). By using the document analysis technique and the methodology of discourse analysis, we aim to understand how the male body is represented and, thus, how it is materialized in this process of developing a “male pill”, and to discuss the gendered character of biomedical conceptions and interventions in the field of contraception. We observed that the reproductive function of cisgender men is constructed as complex and, in a sense, as resistant to pharmacological interventions. Such characterization occurs in comparison with the female cisgender body, which is seen as more accessible for contraception. The traditional association between women and reproduction and men and sex is easily recognized in these perspectives.

Keywords: Contraception; Male Contraceptive Devices; Gender; Body; Technology.

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Resumo

Desde o final dos anos 1960, há tentativas de produção de um contraceptivo masculino reversível com eficácia equivalente à da pílula anticoncepcional. Até hoje, esse produto não foi lançado, e as justificativas para tal baseiam-se em entraves de ordem política, econômica, cultural e biológica. O argumento do obstáculo fisiológico tem bastante proeminência nessas explicações e será o nosso foco neste artigo. Com base nos estudos de gênero e ciência, buscamos compreender como esse raciocínio aparece no trabalho de viabilização dessa tecnologia por um ator de destaque no campo, a organização não governamental (ONG) estadunidense Male Contraception Initiative. Por meio da técnica de análise de documentos e com base na metodologia de análise do discurso, buscamos compreender como o corpo masculino é representado e, consequentemente, materializado nesse processo de viabilização de uma “pílula masculina”, e debater o caráter generificado das concepções e intervenções biomédicas. Observa-se que a função reprodutiva dos homens cisgêneros é construída como complexa e, em certo sentido, resistente a intervenções farmacológicas. Tal caracterização se dá em comparação com o corpo feminino cisgênero, que é configurado como mais acessível para a realização da contracepção. A tradicional associação entre mulheres e reprodução e homens e sexo é facilmente reconhecida nessas perspectivas. **Palavras-chave:** Anticoncepção; Dispositivos Anticoncepcionais Masculinos; Gênero; Corpo; Tecnologia.

Introduction

Why is there no reversible contraceptive available for men to date with the efficacy of the oral contraceptive pill? This question has been answered in a number of ways, but the answers have one conclusion in common: the “male pill”² is a difficult technology, whether for physiological, economic and/or cultural reasons. Recent reports in mass-media vehicles point in this direction:

A pill, or any oral treatment for men, is very unlikely, because the testicles produce a huge amount of sperm per day. Therefore, halting this production demands a very strict treatment, with many unwanted side effects. (Por que..., 2015)

The female pill uses hormones to block the production of one egg per month. The production of sperm is much higher, which makes a male pill somewhat more complex. (Fábio, 2016)

Money is often the guiding word for decision making in all industries. The cost of developing new drugs reaches hundreds of millions of dollars, and in the case of a *male contraceptive pill*, pharmaceuticals find the market insufficient, they do not believe men would opt for the pill. (Moraes, 2017, emphasis added)

Since the late 1960s, scientists around the world have been conducting research to make this product available, but to this day, almost 50 years later, it still is not available in any country. Despite its absence at pharmacy counters and doctor’s or reproductive planning offices, the “male pill” is a well-known technology. The 1970s already saw global announcements that such a product would be on the market in a short time. In Brazil, Josilene da Silva (2004) informs that one of the first news on the subject was published in 1970 in *Jornal do Brasil*. Until then, no other product had so much

2 A number of contraceptive technologies are currently being developed for men and many of them are not in pill form. We used this expression, imprecise in a certain sense, due to its circulation in the field analyzed. Several reports dealing specifically with other methods, even when not in pill form, use this term, demonstrating its symbolic value in the field of contraception due to the history and impact of the female birth control pill. The use of quotation marks is just to indicate that not all cases involve a pill.

promotion before being released for purchase (Oudshoorn, 2003).

Nowadays, we are witnessing another wave of announcements of the availability of this new (old) technology. The media announce the development of different contraceptives for men and again indicate that their release will occur in the coming years, without agreement on how close this is. Hormonal pills similar to the female oral contraceptive pill are being announced, but also several non-hormonal methods focused on sperm production, maturation or mobility, as well as mechanical approaches that focus on the occlusion of the vas deferens by using some device, similar to the idea of a reversible vasectomy.

Based on gender and science studies, male contraceptives in development interest us as “gender-making” objects, in the sense that they produce sexed bodies. As Oudshoorn (2003) points out, technologies are conditioned by gender relations at the same time and to the same extent that they condition them. Thus, we argue that, even if we could not find in the next few years a “male pill” for purchase, the efforts to develop these technologies have symbolic and discursive effects that deserve our attention. The discourses and practices of the actors involved directly or indirectly in their development involve the relationships between men and women, their bodies and the meanings they impart, for example, to notions of risk and safety, reproduction, contraception, contraceptive responsibility, reproductive rights and paternity.

From this perspective, this line of physiological reasoning regarding male contraception seem to us an interesting object of analysis to reflect on how the bodies of men and women are conceived and accessed by biomedicine. As previously noted, media reports state that there is yet no “male pill”, among other factors, because men’s bodies make fertility interventions complex, contrary to women’s bodies, which would not be. This article aims to present how

this physiological justification for the difficulty of developing the product appears in the operation of a prominent player in the area of male contraception, the US non-governmental organization (NGO) Male Contraception Initiative (MCI).

Founded in 2014 in North Carolina, MCI promotes male contraception by fostering the development of non-hormonal contraceptive technologies. In addition to engaging in the production of certain male contraceptives by campaigning for its financing, the organization works by publicizing other non-hormonal contraceptive projects for men and seeks to raise public awareness of their importance and need, developing actions and promotional materials. MCI is one of five institutions composing the International Consortium for Male Contraception³ and, together with other organizations and scientists, is one of the main sources of national and international newspapers and magazines on the subject.

To analyze how the physiological difficulty justification appears in the operation of this entity, we used the technique of document analysis based on a socio-anthropological approach. We selected texts published on the organization’s website⁴, on its Facebook page⁵ and videos posted on YouTube⁶, as well as media written reports that mention MCI or are authored by one of its members.

We did a discourse analysis of the texts and videos, a method that seeks to understand the association between oral, textual or imagery communication and its social, political, historical and cultural dimension. Discourses are viewed, from a Foucaultian perspective, as inseparable from relations of power, practices and institutions; they are seen not only as representative of or mirrors that reflect social organization, but also as producers of social reality. This methodology mainly focuses the production and reception of discourses and their relation to the reproduction of social relations, ideologies and hegemonies (Lupton, 1992).

3 Founded in September 2013, the Consortium aims to create an international network focused on the promotion of contraceptives for men. It is currently under the auspices of five institutions: European Society of Contraception and Reproductive Health, Male Contraception Initiative (MCI), Population Council, European Society of Endocrinology and Société Francophone de Contraception.

4 MALE CONTRACEPTION INITIATIVE. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 July, 2018.

5 MALE CONTRACEPTION INITIATIVE. Facebook: @malecontraceptive. Available at: <<https://bit.ly/2UoAxX8>>. Accessed on: 8 July, 2018.

6 MALE CONTRACEPTION INITIATIVE. YouTube. Available at: <<https://bit.ly/2I12xsc>>. Accessed on: 8 July, 2018.

MCI website's blog contains the largest number of documents. Since September 2014, there has been at least one new text per month, totaling 34 until December 2016. We focused these publications because they are the NGO's main medium for presenting its arguments and debates on male contraception. MCI's Facebook page was created in September 2014, and 395 publications have been posted as of January 2, 2017. At that time, only MCI's publications were posted; the public had their participation restricted to commenting on those posts. In general, posts included links to articles on male contraception published by the media, with emphasis on texts mentioning the NGO or its members, in addition to the monthly information on the activities carried out by the organization. Due to the large volume of material, we selected publications posted only in 2016, between January and July, totaling 76 analyzed posts. On YouTube, in turn, were uploaded, as of January 2017, 10 short organizational videos, usually between one and four minutes long; all were included in the analysis.

The physiological-difficulty justification in the field of male contraception

The supposed existence of a physiological impediment to masculine contraception is not something new in the field. Nelly Oudshoorn in her biography of the "male pill" (2003), which encompasses several attempts to develop this technology between the late 1960s and the late 1990s, points out that the difficulty of suppressing sperm production in a reversible manner and the side effects involved - that is, aspects related to body functioning - were traditionally identified as obstacles to the launching of this product, both in scientific and lay environments. The aim of this author is precisely to overcome such essentialist explanations, which indicate the body of cisgender men⁷ as the reason for the gender asymmetry embodied in contraceptive technologies.

As for the identified complexity of intervening in the spermatogenesis, Oudshoorn (2003) states that scientists disagree about whether it is more difficult than suppressing egg production. While some experts point out the difference between male and female bodies, arguing that targeting the continuous production of "billions" of spermatozoa is far more tricky than targeting the production of "just" one egg per month, others argue that the amount of gametes produced is not relevant, focusing on the similarities of the mechanisms in men and women and highlighting the similitude of the reproductive systems' hormonal regulation. Some argue that it is easier to suppress sperm production because it is a continuous process, whereas egg production is discontinuous. The author points out that this controversy in the field illustrates the flexibility of interpretations of biological facts, since the same phenomenon can be understood as a facilitator or a barrier to interfere in human bodies.

As for the side effects, Oudshoorn (2003) points out that these are, in many cases, similar to those caused by the female contraceptive pills - that is, in the case of women's bodies, such effects did not represent an impediment, making clear that notions such as safety and risk are associated with the gender of individuals. Josilene da Silva (2004), in her analysis of national press material in the 1970s and 1980s on male contraceptives, shows that in these reports side effects were the central justification presented to the general public for the nonexistence of oral contraceptives for men. In the period studied, national newspapers pointed to side effects similar to those of the female contraceptive pill as obstacles to the availability of the product, emphasizing that men would not be willing to face the same inconveniences as women, as is clear in this segment, cited by the author:

Contraceptive pills for men have not reached the public because they cause side effects that have not been eliminated as yet. [...] Fattening 4 or 5 kg for a year for those who would take the pill for many years is something that women can agree on, but

⁷ In this article, we will deal with biomedical conceptions of cisgender bodies - thus, references to men and women specifically address cis bodies.

not men. (Jornal de Santa Catarina, 1978, page 5, cited by Silva, 2004, p.161)

Several projects aimed at developing contraceptives for men, especially hormonal contraceptives, were suspended because of the side effects of the technologies tested. Although the results of many of these studies with hormonal methods were considered effective, the issue of safety and side effects appeared to be an impediment to the advancement of testing.

Risk assessment of contraceptives seems to give more weight to side effects when related to male use, with emphasis on interferences in sexuality, which has become the effects most debated and highlighted. Since the first male contraceptive researches conducted in the United States in the late 1950s, there has been a growing concern about male sexuality, the production of seminal fluid and loss of libido and erection difficulties. Although there have been reports of loss of sexual desire by women since the introduction of the contraceptive pill, it was only in the 1990s that researchers focused on their impact on sexuality. However, this was not the only difference, since risk tolerance regarding men's bodies was much lower overall (Oudshoorn, 2003).

Taking into account this differentiated and gender-related risk concept let us now turn to how these issues of side effects and difficulty in interfering with spermatogenesis are addressed by MCI in its promotion of non-hormonal contraceptives for men. Our focus is on the conceptions that this NGO produces and reproduces regarding male bodies, especially regarding their reproductive system.

Complex bodies for hormonal contraceptive interventions

MCI views reversible male contraceptives as viable and necessary technologies that are not available in

the market due to various social, political, cultural and economic issues; it also recognizes, accessorially, technical and physiological difficulties⁸ for the development of this kind of contraceptive product.

To answer the question that opens our article - "Why do we still have no reversible contraceptive available for men with the efficacy of the female contraceptive pill?" - MCI does not put biology first, as do many articles published in the media. Lack of funding is presented as the major problem for the development of these technologies.

In a video - "*Why did you become interested in male contraception?*" - David Sokal, then the NGO's president, says that one of the reasons for founding MCI was the shame he felt as a doctor when he realized that there was more investment in animal contraception than in male contraception (Why did ..., 2015). The high cost of drug development is constantly underscored by the organization:

Getting real alternatives into the hands of men who want them won't be easy or cheap. [...] The male contraceptive nearest to market [...] is languishing in clinical trials for lack of research funding.⁹

Research is expensive and there is a need for funds to make progress happen.¹⁰

MCI also emphasizes the omission of the pharmaceutical industry, reluctant to invest in innovations in the field of contraception, for both men and women. The NGO explains that research and development of contraceptives involves high financial risk, complex regulations and many years of work, as well as high risk of lawsuits related to safety and efficacy, and is thus not attractive to large pharmaceutical companies. In the case of technologies for men, the rejection of the industry is even greater, due to doubts regarding consumer interest.

8 We do not conceive technique and physiology as separate and distinguishable from the social world; these dimensions are mutually conditioned, and there is no precise separation. However, we use the terms in this passage according to the conceptions of the field analyzed, more specifically the non-governmental organization (NGO) studied, which uses these terms according to common sense.

9 HANLIM, A. Better birth control for men: how would it work? What's in the pipeline? May 17, 2016. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

10 HANLIM, A. International consortium on male contraception. 31 May 2016. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

Physiological considerations, however, are not absent from the NGO discourse. In various online media texts published on the MCI Facebook page, the amount of sperm produced daily by men's bodies is presented as a challenge to the development of reversible male contraceptives when compared to the production of one egg per month by the bodies of women.

Finding a male birth control option besides vasectomies and condoms has proved difficult because men are capable of producing an astounding 1,500 sperm cells in a single second. (Schubert, 2016)

The biology is the biggest hurdle ... at every heartbeat men produce thousands of sperm (Senthilingam, 2016).

MCI does not deny this, but presents the physiological impediment as a problem specifically related to hormonal approaches. In a video - "*Why is making a male contraceptive so difficult?*" - Sokal claims that hormones are extremely effective in controlling pregnancy - but he points out that there is a difference between female and male bodies, since it is possible to prevent contraception in women with low doses, whereas for men it would take high hormonal doses, producing many side effects (Why is ..., 2015). Sokal explains that the ovaries stop producing eggs during pregnancy, a natural state that could be mimicked by using hormones to simulate a gestation; in the case of men, there is no natural state in which there is no production of spermatozoa, so it would require large amounts of hormones to affect male gametes. Explaining that higher hormone levels are needed to interfere with spermatogenesis, the NGO argues that the side effects of hormonal methods in men would be worse than the effects on women who use the pill or other hormonal methods. MCI's comments about the suspension in 2011 of a clinical study of a hormonal

method sponsored by the World Health Organization go in this direction:

To be clear, every drug has side effects. Those side effects, for instance, are the top reasons for discontinuation for both Depo-Provera and the Pill. While sometimes exasperating, most of those risks aren't actually fatal. Even in the worst case scenario with smokers aged 35-44, the annual attributable risk of death for those using oral contraceptives is less than one in 5,000. In this study, however, there was an actual suicide and an attempted suicide within a sample of just over a few hundred in only a year. That's on top of the issues already mentioned. We may partly be seeing these more severe side effects simply because it takes a higher hormonal dosage to stop sperm production than to stop ovulation.¹¹

There are constant mentions to problems related to the use of hormones to interfere with male fertility. In a blog post on November 28, 2016, the following problems are listed: severe side effects; delay in the contraceptive effectiveness; need for men to perform repeated sperm counts; presence of nonresponders - i.e. individuals in whom hormones are not effective for contraception; and the risk that sperm count will not return to normal levels after discontinuation of the use of the drug - that is, no reversibility of the method.¹²

Dangerous side effects, a recurring theme in the field of contraception, for both sexes, are brought to the fore by the NGO in association with hormonal methods. Non-hormonal technologies fostered by the institution are often presented as safe, potentially effective and without worrying side effects. It is also mentioned that studies will be carried out to solve side effects of possible contraceptive drugs that are in the initial phases of research.

Based on these criticisms, MCI advocates a change in the field of male contraceptives, so investments and efforts will focus on non-hormonal

11 HANLIM, A. Male contraception begs for a paradigm shift. Nov 28 2016. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

12 HANLIM, A. Male contraception begs for a paradigm shift. Nov 28 2016. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

methods and preferably on long-term methods, since they present lower pregnancy rates because they do not depend directly on the correct administration by the user.

We could be wrong, but we would feel much better if other approaches for developing male contraceptives were getting as much attention and funding as male hormonal methods - even though there are more unknowns for non-hormonal methods, because they are at earlier stages of research". received as much attention and funding as male hormonal methods - although there are more unknowns to non-hormonal methods because they are in the early stages of research.¹³

It's time to focus on a new paradigm - non-hormonal male contraceptives.¹⁴

MCI uses the notion of physiological difficulty to explain why we do not have a male contraceptive available today, but circumscribes this difficulty to hormonal technologies, rather than the non-hormonal technologies it promotes. The quantity of gametes produced by men's bodies is often compared to the quantity produced by women's bodies to illustrate the ease of preventing pregnancy by using hormones in their case.

Sperm production begins in puberty and continues through adulthood, maintained by high levels of testosterone within the testes. The entire process takes between 74 and 120 days, and the testes produce 200 to 300 million sperm each day. That's about 1000 sperm for every heartbeat! (Think of this in contrast with the monthly ovulation cycle of women and the relative ease of targeting a single egg issued by a woman each month by comparison.)¹⁵

Thus, while female bodies are portrayed as favorable to contraception, male bodies are

treated as inconvenient to hormonal contraceptive interventions. It is interesting to note that, regarding sexuality, we observe exactly the opposite. Historically, sexuality seems to have been one of the main focuses for transforming men into patients (Rohden, 2012). This tendency seems to remain in place, since the extent of (bio)medicalization of men in the last decades of the twentieth century and at the beginning of the twenty-first century is marked by an emphasis on sexuality reduced to the sexual organ (Azize, 2011; Rohden, 2009, 2012). Female sexuality, on the contrary, is conceived as encompassing the whole body of the woman, being more diffuse and complex (Tramontano; Russo, 2015).

Russo et al. (2011) show how this perspective was illustrated in sexology congresses by the image of an airplane panel full of buttons representing female sexuality, while male sexuality was represented by a single button, in the simple form of an on/off power switch. This last idea was precisely the image used, now in the opposite direction, to characterize the ease of interrupting egg production in women's bodies and ensuring contraception. It appeared in Tiven's text (2016), shared on MCI's Facebook page on July 25, 2016: "It only takes small doses of hormones to flip the 'on-off switch' in women that stops the ovaries from producing eggs."

Tramontano (2017) gives another example of the materialization of this conception of female sexuality as something complex. By analyzing science manuals used in undergraduate health courses in Brazil, this author demonstrates how gender conceptions materialize in the differentiation between hormones termed masculine and those termed feminine. The author points out how one of these manuals, through figures and texts, presents the hormones considered feminine as weaker and less objective than the masculine, besides emphasizing their role in reproduction. He also analyzes figures comparing the functions of testosterone with those of estradiol, concluding

13 HANLIM, A. International consortium on male contraception. 31 May 2016. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

14 HANLIM, A. Male contraception begs for a paradigm shift. Nov 28 2016. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

15 HANLIM, A. 10 myths on male contraception debunked. Nov 29 2015. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 Mar, 2017.

that “the idea of female sexuality as diffuse, fluid, unstable, less visible, less potent and more amenable to reproduction is reiterated, even if unintentionally” (Tramontano, 2017, p.185).

Pharmacological treatments for the so-called sexual dysfunctions also demarcate this asymmetry between conceptions of male and female sexuality. Viagra and other pro-sexual drugs aimed at men act by facilitating the maintenance of erection, materializing a male sexuality focused on the penis. Mainly due to the success and diffusion of these drugs, there were attempts to extend the physiological anatomical model focused on the male genitalia to female sexuality. Tests carried out with Viagra on women have realized this project. Due to the failure of these studies, the focus of the (bio) medicalization of female sexuality fell on desire (Rohden, 2009). The drug flibanserin, released as the “female Viagra” and approved in 2015 by the Food and Drug Administration, acts on the central nervous system, thus reinforcing the idea of women’s sexuality as something more complex and diffuse.

It is thus possible to draw an interesting parallel: while the female body is conceived as complex in relation to pharmacological interventions in sexuality, the masculine is constructed as complex in relation to reproductive interventions. Conversely, the female body seems quite accessible, at least since the 1960s, to contraceptive hormonal interventions, while male bodies seem to have had their sexual/erectile biology unraveled by the “Viagra phenomenon.” In other words, the naturalization of the relationship between contraception and the female body has a scientific expression, which in turn enhances the relationship itself. The same is true of the relationship between men and their supposedly more sexual nature, which was “discovered” to be based on a purely mechanical relationship, taking us back to the starting point. These techniques, their metaphors and their representations are always fraught with our broader cultural conceptions regarding gender and sexuality.

The traditional association between women and reproduction and between men and sex - as if the former were made for motherhood and the latter for sex (Oliveira; Bilac; Muszkat, 2011) - is easily recognized in these biomedical perspectives.

The complexity associated with interventions in male reproduction is (re)produced by MCI when it explains the lack of a male contraceptive based on the difficulty of controlling sperm production through hormones.

It is necessary to emphasize that the strength of the woman-reproduction versus man-sex associations goes beyond the biomedical sciences and their technologies and can also be identified in social sciences’ studies on sexuality and reproduction. Fonseca (2004, p.16) points out that the earliest masculinity studies focused mainly on non-reproductive sexuality in their approach to men, and thus “in the absence of any mention of reproduction, this remained a subject almost exclusively female. (Sexuality was for men as reproduction was for women - ‘natural’).”

We can thus say that the approach to the male body became, at least at first, the model for pharmacological interventions in female sexuality; while the approach to the female body, primarily hormonal, has become, in the same sense, the model for contraceptive interventions in the male body. On the other hand, it is interesting to note that such models, when transposed to the opposite sex, find resistance. Although still widespread, both the “Viagra model” for interventions in female sexuality and the “hormonal model” for contraception in male bodies are widely criticized and often turned down in favor of other approaches; see, for example, the New View of Women’s Sexual Problems campaign, led by Leonore Tiefer, which opposes the medicalization of female sexuality (Rohden, 2009), and MCI’s criticisms of the hormonal paradigm of male contraception and its support to non-hormonal approaches (Pereira, 2017).

The development and launching of a “male pill,” a technology that could break with the relative invisibility of the reproductive body of men, as opposed to the advancement of the (bio) medicalization of their sexual body, has precisely the complexity of this body as one of the main justifications for its non-availability. MCI (re) produces the notion of the male reproductive body as resistant to hormonal biomedical interventions, but argues that advances in biotechnology have opened up and would open up new perspectives.

It is with this argument that they advocate a “new non-hormonal paradigm” for the development of male contraceptives.

We are not advocating here a hormonal paradigm for male contraception neither disregarding the warnings about the side effects of using hormones for contraception in men or women. However, it is worth noting that the refusal to use contraceptive hormones occurs simultaneously with the expansion of its use in the treatment of androgen deficiency in the aging male - popularly known as andropause - and in biomedical treatments - increase of muscle strength and mass, improvement of sports performance and of libido, among others (Hoberman, 2005). One might question whether there would be greater tolerance for possible side effects of hormonal “treatments” linked to sexuality, aesthetics and physical performance than for those arising from contraception. Would contraceptive doses necessarily be so different from those used for widespread treatments and enhancements?

In MCI’s explanations regarding the physiological difficulty to interfere with male gametes, it is worth mentioning the emphasis, almost in a complimentary tone, on the quantity of sperm produced by men; it is inevitable to recall Emily Martin’s (1991, 2006) analysis of how gender conceptions permeate scientific descriptions of male and female bodies and their functioning. In the article *“The egg and the sperm: how science has constructed a romance based on stereotypical male-female roles,”* this author points out how physiological phenomena in the bodies of men and women are unequally portrayed, both in scientific and lay circles, and based on stereotypes related to our cultural definitions of the masculine and the feminine. By analyzing the description of sperm and eggs in scientific texts, she shows that the female gamete is characterized as large and passive, while the masculine is portrayed as small, aerodynamic and active. The verbs used to describe the spermatozoa in the fertilization process are usually in the active voice (“penetrates,” “crosses”), whereas in the case of ovules, they appear in the passive voice (“is penetrated,” “is transported”). Differences between gametes are emphasized, and sperm and eggs are configured with characteristics associated, respectively,

to masculinity and femininity. Moreover, the phenomena in the male bodies are more valued and presented as more meritorious, mirroring and, in a sense, materializing widespread notions about men and women in a social context of gender inequality. Descriptions of sperm production use positive adjectives, mainly emphasizing the large quantity of these cells produced by the men, in comparison to the smaller production of eggs by women; thus, male bodies, in the descriptions, appear as more productive than female ones. Another central point raised by Martin is precisely the fact that reproductive systems, both male and female, are represented by metaphors related to industrial production, being portrayed as systems that produce valuable substances. In fact, the author points out how conceptions of the body as a whole relate to the current political-economic system, and there are many manufacturing metaphors, among others, in the descriptions of physiological phenomena (Martin, 1991, 2006).

Her interest lies in how culture shapes the way scientists describe what they discover about the “natural world”; she points out that the “facts” of biology may not always be constructed in cultural terms, but she argues that in this case gametes and the process of fertilization are shaped by gender conceptions. Thus, she says that new findings regarding the fertilization role of the egg did not change the approach to gametes or conception, not affecting the notion of the egg as passive and the sperm as active. That is, new data did not lead to the elimination of gender stereotypes in scientific descriptions.

Although this new version of the saga of the egg and the sperm broke through cultural expectations, the researchers who made the discovery continued to write papers and abstracts as if the sperm were the active party who attacks, binds, penetrates, and enters the egg. The only difference was that sperm were now seen as performing these actions weakly. (Martin, 1991, p. 493)

The flexibility of biological facts interpretations emphasized by Oudshoorn (2003) is also addressed by Martin (1991), who warns that the way in which

scientists interpret their data can have important social effects. In the case of gametes, she states that gender stereotypes are inscribed in the cellular constitution of organisms, making them appear so natural as to not be amenable to change.

The negative way in which the female body and its functioning are interpreted and described is emphasized by the author, who questions the celebration of sperm production because it is continuously produced from puberty to old age, while the production of the female gamete is, in a sense, conceived as inferior, since it ends at the birth of the female child. This phenomenon is interpreted by portraying the female body as unproductive, but Martin questions why the vast production of sperm is not seen as an unsuccessful production, a waste, as menstruation is interpreted in many medical texts (Martin, 1991, 2006).

The way MCI describes the functioning of male contraceptive technologies in men's bodies, as well as the way it explains the physiological difficulty associated with the complexity of controlling the production of male gametes using hormones, is an ethnographic case similar to Martin's observations (1991). The portrayal of sperm as an active ingredient, the emphasis on the higher quantity of sperm produced by men in relation to egg production by women, and the manufacturing metaphors are a constant in the material analyzed.

Researchers say the final *burst* of the sperm approaching an egg is a key to boosting, or even suppressing, male fertility. (Schneiderman, 2018, emphasis added) and our translation)

This binding inhibits the *movement* of the sperm until a particular enzyme, PSA, removes the semenogelin protein. After the enzyme removes this protein, the sperm can *swim* toward the egg.¹⁶

The MCI discourse, thus, (re)produces lay and scientific conceptions that present both male and female bodies, more specifically the gametes of both, based on gender stereotypes widely disseminated

in our society. The force of industrial production metaphors used to explain the reproductive systems is also explicit; such metaphors are constantly found in the reports of MCI aimed at explaining the functioning of technologies or the notion of physiological difficulty. The use of the expressions "sperm production" and "egg production" is almost a rule when it comes to these topics.

Two sexes, two contraceptions

The analysis of the physiological difficulty in the MCI discourse brings to the fore the question of gender permeating scientific production, a central debate for gender and science studies. What nature, what physiology, what bodies are these that are explanatory of the difficulty in producing a reversible contraceptive for men?

Since the end of the 1980s, the conception that sex and nature are given elements, prior to culture, has been questioned (Piscitelli, 2009). In *Bodies That Matter*, the philosopher Judith Butler (1993), central to this debate, states that it is necessary to return to the materiality of bodies. However, in attempting to apprehend the body as something prior to socialization, prior to distinct discourses on males and females, we "discover that matter is fully sedimented with discourses on sex and sexuality that prefigure and constrain the uses to which that term can be put" (Butler, 1993, p.29). In this context, there was an effort to situate historically and socially the emergence of the contemporary understanding of sexual dimorphism, that is, the existence of two biological sexes, one male and the other female. The work of Laqueur (2001) is exemplary of this perspective. In the eighteenth century, this author describes the invention of sex - or, more specifically, the emergence of the "two sex models," which is based on the existence of two bodies with opposite, stable and incommensurable biological sexes: man body/woman body.

This perspective of radical dissimilarity between the sexes, which places the differences between men and women in the body, has replaced the "single sex

16MALE CONTRACEPTION INITIATIVE. Emphasis added. Available at: <<https://www.malecontraceptive.org>>. Accessed on: 8 July, 2018.

model” that has prevailed for thousands of years. “Single sex” because until then bodies differed only in degree and levels of perfection, a hierarchy between inverted symmetries. Both had the same genitalia, except that in men the genitalia was on the outside of the body, while in women it was inverted, inside. Based on a hierarchy that placed the body of men as the model, as the most perfect, there was differentiation in the amount of body heat that was associated with this exteriorization or internalization of the genitalia. Such a difference did not characterize the existence of two radically distinct and opposing entities, man body/woman body; and it was even less the basis for the conception of what a woman was and what a man was. Thus men and women had in one sense a single body with only a difference in the degree of perfection - even their reproductive organs received the same name in many contexts. However, in no way women were conceived as socially equal to men; the point is that the difference was not in the body but in social issues. On the single sex model, Laqueur (2001, p.19, emphasis added) states:

To be male or female was to maintain a social position, a place in society, to assume a cultural role, not to *be* organically one or the other of two incommensurable sexes. In other words, sex before the seventeenth century was still a sociological rather than ontological category.

This author demonstrates that the shift from the single sex model to the two-sex model cannot be explained just by the scientific progress, by the “discovery” of bodily differences between men and women. He states that before the notion of sexual dimorphism became dominant there was already technical evidence of sexual differences. On the other hand, he also points to other evidence consonant with the “single sex model” contemporaneous with the diffusion and consolidation of the model of the two sexes - for example, the conception of the common origin of the two sexes from a morphologically androgynous embryo in the nineteenth century. Thus, the invention of sex, with the passage from the single sex to the model of the two sexes, can only be understood in the context of epistemological and

socio-cultural changes, especially transformations in gender politics. In this context, especially from the nineteenth century onwards, scientists and physicians endeavored to prove that men and women were radically different, and that such differences could be found beyond sexual and reproductive organs and functions. Tramontano (2017) points out that the anatomical justification for this model of sexual dimorphism varied throughout history; he underscores that the question of where specifically the difference between men and women is found has already been answered in a number of ways: in the gonads, the muscles and the nerves, and the brain. However, he argues that in hormones is the answer that holds true as of today.

Final considerations

We believe that the explanation of the physiological difficult to answer why we still do not have a male contraceptive equivalent to the birth control pill can be put in the context of the biomedical knowledge that emphasizes differences between men and women, not similarities. Although there are dissenting voices in the field of male contraception regarding the supposed higher difficulty of interfering with spermatogenesis compared with the ease of interfering with ovulation, what prevails and is disclosed to the lay public is the notion that male bodies are more resistant to contraception because their reproductive processes are different from the female one, a conception that agrees with the model of two sexes.

Male bodies are understood as radically distinct from female bodies not only, but mainly, in terms of sexuality and reproduction. Following Oudshoorn (2003) and Martin (1991), one wonders what would be the risks and possible consequences of biological interpretations based on homologous descriptions of sexual and reproductive processes in the bodies of men and women. Such homologous descriptions and conceptions of organisms could result in approaches and biomedical interventions that are more symmetrical, which would differ a lot from current standards, in which the process of (bio) medicalization affect them unevenly. What is (bio) medicalized in male bodies? And in female bodies?

Besides being different, such bodies are understood as being more amenable to biomedical interventions in certain phenomena, as if a division of labor or a propensity for certain activities materializes in the organisms. Male bodies are complex for contraceptive interventions, but they are not for interventions in sexuality, whereas in female bodies the opposite is true. That is, the association between women and reproduction/contraception and between men and sexuality would be inscribed in the very “nature” of their bodies. The promotion of a “male pill” by MCI, with its proposal for a non-hormonal paradigm of male contraception, reinforces the conception of such bodies as naturally complex for hormonal contraception, in contrast to female bodies. It is based on a “natural” motive to justify why the path taken for intervention in the fertility of women since the 1960s, although highly criticized, has not been successful in men.

MCI, thus, tries to break with gender roles materialized in contraceptive technologies: contraception is a woman’s responsibility and women’s bodies are the place par excellence for contraceptive interventions. On the other hand, such a rupture is built without confronting the radical dissimilarity between male and female bodies proposed by the two-sex model, a bastion for the gender politics of modernity. According to the NGO, men want and have the right to have access to reversible and effective contraceptive technologies, which we do not have until today mainly due to lack of investment in methods that can overcome the physiological difficulties presented by male bodies to hormonal modes of contraception, modes that are effective in women’s bodies.

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Authors' contributions

Pereira collected data and prepared the first version of the article. Pereira and Azize contributed to the data analysis, writing, critical review and approval of the final version.

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