# Gender Inequality in Reproductive Health and the Prolonged Development of Male Contraception

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**Veda Raghu**

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

Advisor

Richard D. Jacques, Department of Engineering and Society

# STS Research Paper

## Introduction

Nearly half of all pregnancies are unintended (Nickels et al., 2022). The development of male contraceptives may allow for the decrease in unplanned pregnancy and the compensate for the gender inequality present in reproductive health. Unplanned pregnancies lead to devastating outcomes to women, including decreased educational attainment, and economic instability among families (Nickels et al., 2022). Male contraceptives carry the potential to have a staggering impact on the construction of both the masculine and feminine identity by bridging the gap in reproductive responsibility.

The overturning of Roe v. Wade has sparked a discussion regarding potential male contraceptive options. The American political climate is rapidly changing, and therefore, the lack of gender equality in the world of reproductive health is becoming more obvious. Male and female contraceptive methods are categorized by reproductive physiology to which the method is directed (Wallach et al., 1977). Numerous female contraceptive options are available on the market including the many short-term contraceptives- such as male or female condoms, and oral contraceptive pills- and long-acting reversible contraceptives (LARC)- such as intrauterine devices (IUD) and implants. However, the only approved method of male contraception on the market, other than the condom, is sterilization (United Nations, 2019). Women bear the burden of reproductive health, as evidenced by countless brochures and advertisements directed at women urging for pregnancy prevention. The social inequality surrounding reproductive health promotes the development of the feminine identity, and essentially how intertwined femininity is with motherhood (Szasz, 1993).

The history of female contraception has been dark and has hindered the development of male contraceptive options. Religious institutions, governing agencies, and the medical community have all played a hand in the subjugation of women and the lack of female sexual freedom (Bone, 2010). Although hormonal male contraceptive methods have been researched, none have reached the market further perpetuating the gendered role of parenthood and parental responsibility. Through the exploration of the history of male and female contraceptive development, the societal implications of said contraceptives, and the construction of the feminine identity, the ethics surrounding the prolonged development of male contraceptives will be clear.

## Methodology

### *Virtue Ethics Framework*

The sociotechnical framework that will be used to explain the reasoning behind the lack of gender equality in the realm of contraceptive use is Virtue Ethics. The founding of virtue ethics can be attributed to Plato and Aristotle. A virtuous person can be defined as one who exhibits an affinity toward a high moral character. This framework takes into account all parts of an individual's human experience, and the behavior that forms one's character. This framework uses the question, "What kind of person should I be (or try to be), and what will my actions show about my character" (Bond and Firenze, 2013). Analyzing an individual's nature can allow for a greater understanding of the moral basis surrounding why individuals behaved the way they did. It is undeniable that the world of reproductive health has suffered from egregious moral reasoning; it is important to explore the reasoning for this disparity in contraceptive methods while also exploring the manner in which to remedy it.

A virtue ethics framework is a useful approach because it allows for an understanding of the interaction between human motivation and ethical conduct. Through this framework, I will be able to analyze the qualitative and quantitative data and reasoning surrounding the male and female contraceptive options, and the studies conducted that both helped and hindered the progress of said methods.

My analysis of the ethics surrounding the gender inequality in reproductive health will use a literature review in which previous studies and surveys will be collected and analyzed to determine the causes and ethical discussions. As the measurements are primarily descriptive, the literature review will especially consider the societal issues surrounding contraceptive inequality. By interpreting patterns within the data and analyzing the history of hormonal and nonhormonal contraceptive options, the ethics regarding the delay in the production of male contraceptives can be observed. My capstone project involves working with the company, Contraline, to develop an anatomically accurate model of the vas deferens to help progress the development of a novel non-hormonal male contraceptive.

## Analysis

### *Early History of Contraception*

Although the act of reproduction requires two parties, historically, women suffer primarily from the consequences of such acts. Three dominant public spheres restricted the development and discussion of contraceptives and sexual education: the government agencies and legislation, religious institutions, and the medical community (Bone, 2010). Each of these entities acted to restrict the spread of contraceptive information in their own ways and proved successful for a period. In 1873, the Comstock Act was passed under the Grant administration,

which prohibited the sale, production, and transmission of medicines that were intended to prevent conception or induce abortion (Bone, 2010). This signaled the beginning of the legislation surrounding contraception and abortion. The Griswold v. Connecticut decision in 1965 ruled that married couples were protected under the United States Constitution to use contraceptives without government intervention (*The First Amendment Encyclopedia*, n.d.). The American Medical Association (AMA) were opposed to endorsing the public discussions on contraception due to the rhetoric that sexual topics were classified as (Bone, 2010). The One Package (1936) decision ruled that contraceptives were no longer categorized as obscene, and therefore, physicians could now prescribe them (Bone, 2010). The silence of the medical community deterred women from demanding contraceptive information and removed available information from public documents. Respected providers were unwilling to discuss such topics, therefore restricting access to reproductive education (Bone, 2010). The religious community also played a significant role in obstructing the transmission of contraceptive information (Bone, 2010). The Judeo/Christian community vehemently opposed abortion and conception inhibition and therefore only accepted the rhythm method as a means of contraception; the Vatican granted an official sanction in 1951 (Bone, 2010). The rhythm method relies on menstrual cycle tracking to prevent conception during ovulation; however, this requires the assumption that an individual's menstrual cycle is regular.

The early twentieth century marked a period in which sexual self-control among women was promoted, and promiscuity among men was tolerated (Bone, 2010). Female sexuality was to serve one purpose- reproduction. The only available forms of contraceptives were methods associated with individual sexual acts, i.e., withdrawal and condoms (Powderly, 1995). While the upper classes were more likely to use expensive methods of contraception, such as condoms and

spermicides, the lower classes only had access to the withdrawal and rhythm methods (Powderly, 1995). This led to a growth in abortions in the 1800s. Abortions were often self-induced, but they were often fatal. By the 1850s, it was estimated that one out of every five pregnancies in America ended with an abortion, and death from abortion was found to be fifteen times greater than maternal mortality rates (Powderly, 1995). By 1870, most states had declared abortion illegal (Powderly, 1995). The late 1900s saw a rise in feministic ideals; key players emerged in the field of reproductive health.

### *Margaret Sanger's Role in Contraceptive Education*

Margaret Sanger was a key figure in the fight for reproductive health rights. Sanger was an obstetrical nurse in New York City working with patients who were generally impoverished and suffered from large family sizes (Bone, 2010). Many of her patients felt remorseful at the thought of having more unexpected children (Bone, 2010). This period featured growth in the lower class and families below the poverty line, which in turn affected maternal and infant mortality rates (Bone, 2010). This led to a growing need for contraceptive, family planning, and sexual health information directed toward the lower class. Sanger was a firm believer that poverty and uncontrolled fertility were intricately linked and therefore she made it her goal to distribute reproductive information (Powderly, 1995). She used narratives to provide discourse to working-class women on sexual education, specifically reproductive health, and sexually transmitted infections (Bone, 2010). Through the course of her career, Sanger published numerous works that were distributed to working class women, and in 1914, she coined the term "birth control" in the *Woman Rebel* journal (Bone, 2010). This phrase was groundbreaking as it allowed women to challenge the moral and dominant authorities that were opposed to birth control, and essentially brought the topic of contraception into the public dialogue (Bone, 2010).

Between 1895 and 1925, the birth rate fell by 30% ("Facts and Ideas from Anywhere," 2015). Sanger founded the Birth Control League, and by 1930, was overseeing fifty-five clinics (Bone, 2010). Sanger paved the way for contraceptive development, working to demolish the societal barriers preventing the research into conception inhibition.

Through virtue ethics, it is clear that Margaret Sanger's contribution to gender equality in the realm of reproductive health was not marginal. Though there may have been potential eugenic intentions for the creation of planned parenthood, Sanger's actions and behaviors generally opened the door for sexual freedom among women and essentially, the potential freedom from the tether of motherhood. Sanger then set her sights on investing into a potential solution to the lack of effective contraceptives: the birth control pill.

*The Development of Enovid, "The Pill"*

The 1960s and 1970s brought forth many technological advances in female contraception. Henry Pincus was a biologist who had founded the Worcester Foundation for Experimental Biology ("Facts and Ideas from Anywhere," 2015). Margaret Sanger met Pincus and essentially asked him to begin formulating a contraceptive pill; she believed that the pill form was a necessity for convenience ("Facts and Ideas from Anywhere," 2015). Pincus recruited his colleague M. C. Chang, and they knew that progesterone injections had prevented ovulation in rabbits; however, this had yet to be attempted in humans ("Facts and Ideas from Anywhere," 2015). Pincus then recruited John D. Rock, a scientist that was more interested in the social implications of his work (Pendergrass and Raji, 2017).

During fertilization, progesterone naturally prepares the uterus for implantation and prevents the ovaries from releasing more eggs; therefore, Pincus recognized the potential

effectiveness of progesterone. He began by evaluating the effects of progesterone on ovulation in rabbits, which proved successful ("Facts and Ideas from Anywhere," 2015). He then moved on to rat subjects, which also proved fruitful. In 1952, Pincus contacted Planned Parenthood stating that the 10mg dose of progesterone had prevented ovulation in ninety percent of rabbits, which was the only justification necessary to proceed with human clinical trials ("Facts and Ideas from Anywhere," 2015). In the 1950s, there were no laws on informed consent, and therefore, it was not necessary to inform patients that they were participating in a clinical trial. Pincus and colleagues lied and told patients that this was a temporary medication that would shut down the ovaries, and following treatment, it would be easier to become pregnant ("Facts and Ideas from Anywhere," 2015). After a year of clinical trials, the dropout rate was 50% ("Facts and Ideas from Anywhere," 2015). The progesterone pill, named Enovid, had immense side effects that were unbearable to patients (Pendergrass and Raji, 2017*)*. In 1954, Pincus had an arrangement with the local hospital, Worcester State Hospital. He recruited sixteen female psych patients, suffering from alcoholism, Alzheimer's disease, schizophrenia, and more, and prescribed contraceptive pill prototypes; he later performed many invasive procedures in which he cut open their uteruses to observe the effects the pill had on ovulation. Pincus had already had a history using chronic patients with psychosis for his research (Pendergrass and Raji, 2017*)*. He continued testing on women, but only thirty patients had completed the trials and thus, Pincus and colleagues decided to look elsewhere ("Facts and Ideas from Anywhere," 2015).

*Puerto Rico Clinical Trials*

Puerto Rico was suffering from immense poverty and overpopulation. Over 8% of married Puerto Rican women volunteered for sterilization, even though abortion was illegal ("Facts and Ideas from Anywhere," 2015). Puerto Rico became internationally infamous for

abortions due to the rapid growth of abortion procedures conducted in clinics. ("Facts and Ideas from Anywhere," 2015). Pincus partnered with the pharmaceutical company, G.D. Searle Corporation to manufacture progesterone pills and fund the clinical trials (Pendergrass and Raji, 2017*)*. Puerto Rico was the ideal location for conducting unethical large -scale trials due to its lower -class Hispanic population. Approximately 16.5 percent of Puerto Rican women of childbearing age had been sterilized, and of this demographic, sixteen percent reported they had not made the decision themselves (Pendergrass and Raji, 2017*)*. Eugenic sentiment allowed for the justification of forced sterilization and the progression toward using these women for the pill's clinical trials.

In Puerto Rico, Pincus and colleagues recruited twenty female medical students into the initial study; however, more than half of the participants dropped out. ("Facts and Ideas from Anywhere," 2015). The side effects included blood clots, bleeding, and nausea. ("Facts and Ideas from Anywhere," 2015). There is some evidence that the medical students who dropped out faced consequences with their grades (Pendergrass and Raji, 2017*)*. Some patients also underwent laparotomies, which entailed a large incision that exposed the abdominal cavity (Pendergrass and Raji, 2017*)*. As the researchers formulated and developed a larger-scale study, they chose the Rio Piedras neighborhood in San Juan. Pincus and Rock chose this slum region due to its lower-class population and poor living conditions (Pendergrass and Raji, 2017*)*. The researchers recruited 265 women who were not compensated; however, they had no trouble convincing women to participate; it is undeniable that the tactics used were exploitative (Pendergrass and Raji, 2017*)*. Though recruiting women was simple, convincing women to continue using the pill was difficult as the side effects remained severe and the testing methods invasive twenty-two percent of women dropped out of the study ("Facts and Ideas from

Anywhere," 2015). Pincus claimed that the side effects were psychogenic, essentially implying that they lacked any physiological basis (Pendergrass and Raji, 2017*)*. The researchers continued, and in 1957, the Food and Drug Administration (FDA) approved the sale of Enovid for menstrual irregularities (Kao, 2000). In 1960, the FDA approved the sale and distribution of the Enovid as a contraceptive, and after two years, 1.2 million American women were using the birth control pill (Kao, 2000). The original dose contained 100-175 micrograms of estrogen and 10 mg of progesterone, which caused the extreme adverse effects, however modern contraceptive pills contain 30-50 micrograms of estrogen and 0.3-1g of progesterone (Kao, 2000). This dosage still induces similar side effects as the 10 mg progesterone pill, however to a significantly lesser extent.

Following the approval of Enovid, there was considerable progress in expanding both the nonhormonal and hormonal birth control options available for women. However, the advancement into male contraceptives has remained stagnant. From a virtue ethics perspective, the history of female contraceptives has been tainted with eugenic ideals and unethical clinical operations. The key figures, like Pincus, failed to see their test subjects as human, rather they were a means to an end. Therefore, the behaviors exhibited by Pincus and colleagues were unethical and exploitative. Had the main intent for developing a female birth control pill been virtuous, more steps would have been taken to ensure the safety and efficacy of the drug.

*Vasectomies*

The only approved forms of male contraception are the condom and sterilization. Condoms have a high failure rate during typical use, proving to be unreliable for pregnancy prevention. Approximately six percent of married men of reproductive age elect to have a vasectomy as a method of birth control (Murdoch & Goldberg, 2014). Although vasectomies are

advertised as reversible, the rate of reversibility is relatively low. Following fifteen years after a vasectomy reversal, the rate of pregnancy is only forty-four percent (Patel & Smith, 2016). Vasectomies reversal is relatively invasive and is technical, therefore reducing the number of urologists who are willing to perform this operation (Patel & Smith, 2016). The United States has a low level of use of vasectomies primarily due to social and cultural barriers (Murdoch & Goldberg, 2014). Since the approval of vasectomies in the early twentieth century, there have been no new forms of contraception available to men, forcing the burden of birth control to lay on women.

*History of Hormonal Male Contraceptives*

Following the development of female hormonal contraceptives, there was a surge in research on male contraceptives. Several studies have been conducted over the past few decades to evaluate the potential means of azoospermia (zero sperm count in the ejaculate), though none ever reached the market (*Azoospermia (Sperm Production)*, n.d.). All the studies conducted in the late twentieth century explored using testosterone as a means of inducing azoospermia.

The US National Institutes of Health began clinical trials in the 1970s using a testosterone formulation (Murdoch & Goldberg, 2014). In this study, healthy male volunteers were prescribed intramuscular administration of testosterone-in this case testosterone enanthate (TE)- which proved to suppress sperm levels (Murdoch & Goldberg, 2014). Two World Health Organization (WHO) studies were then conducted to explore the efficacy of the first study. In 1990, 271 volunteers received 200-mg TE on a weekly basis (Murdoch & Goldberg, 2014). Approximately sixty-five percent of participants achieved azoospermia after six months (Murdoch & Goldberg, 2014). The second study explored the impact of TE on 357 men, of which only 8% did not achieve a stop in spermatogenesis (Murdoch & Goldberg, 2014). Side

effects of the TE intramuscular injection included discomfort at the injection site, acne, weight gain, and psychological changes (Murdoch & Goldberg, 2014).

It was later discovered that testosterone plus progestin proved more efficient than simply testosterone administration. By adding progestin to the formulation, the testosterone dose can be lowered, and therefore, patients experienced a decrease in adverse side effects (Murdoch & Goldberg, 2014). Many pilot studies were conducted to explore the efficacy and safety of the testosterone progestin pill. Reported side effects from many studies included acne, increased libido, pain at the injection site, and mood changes (Murdoch & Goldberg, 2014). The administration of testosterone derivatives as mentioned was found to be undesirable due to the physiological changes associated with them (Murdoch & Goldberg, 2014). Therefore, none of these contraceptive methods progressed to FDA approval or the market.

Although different avenues of male contraception have been explored, none have been successful. The use of hormones, such as testosterone, to induce azoospermia is the most researched of any potential male contraceptive options (Murdoch & Goldberg, 2014). The side effects reported for the hormonal male contraceptives appear relatively equal to the female hormonal pill, yet the female pill was FDA approved relatively quickly. The birth control pill administered to women appeared to be a cure-all, after the pill was developed, it became a dependable option to prescribe to women and couples for pregnancy prevention.

*Construction of the Feminine Identity*

The topic of contraceptives only became a public discussion following the FDA approval of the birth control pill. Contraception, and consequently, family planning is generally shouldered by the female partner in relationships. This is due to the physiology, and the fact that

it is the woman who must bear the fetus and birth the child. Although Sanger's original intention of investing in a birth control pill was sexual freedom, this contraceptive method resulted in another responsibility asserted onto women. The construction of the feminine identity is centered around motherhood. Women face pressure regarding decisions on their reproductive health and sexuality, which results in psychological, affective, and financial consequences (Szasz, 1993). Female autonomy is limited, especially following the overturning of Roe v. Wade. Therefore, many women are pressured into early pregnancy, marital unions, and large families.

Societal expectations are a huge burden as they enforce gender and social positions. The fear of devaluation is constant and leads to a restriction in sexual autonomy (Szasz, 1993). As the only contraceptives available to males are the condom and vasectomies, the focus on conception inhibition lies almost solely on women. The societal standards that tolerate extramarital promiscuity among men but not women leave women especially vulnerable to violence, and sexually transmitted diseases (Szasz, 1993). Women are restricted in their sexuality further due to fear they may conceive (Szasz, 1993). The gender inequality exerted by the lack of male contraceptives on the market is further perpetuated by poverty. The exclusive focus on female contraceptive methods has proven fatal, especially given the overturning of Roe v. Wade as self-induced abortions are usually fatal.

Using the virtue ethics framework, the attempted development of male contraceptives in the late twentieth century was ethical. The safety and efficacy of a male birth control pill was explored fully, the researchers cared about both the effects on the patients and the societal implications of producing such a drug. Many of the male contraceptive studies were intended to provide more options for couples, and therefore have a cleaner history than their female contraceptive counterparts.

*Societal Opinion on Male Contraceptives*

The development of male contraception would benefit almost every aspect of society given the financial and social burden of unplanned pregnancies. However, it is important to explore whether both men and women actually want the creation of male birth control. In a study performed in the late 1970s, seventy percent of men responded positively toward using a male contraceptive pill if it was accessible and inexpensive (Wallach et al., 1977). This same study found that ninety percent of men felt that family planning services should be more accessible (Wallach et al., 1977). One study recruited a sample of 402 Spaniard men and presented them with different scenarios as participants indicated their willingness to use a birth control pill (Gomez-Torres et al., 2022). Approximately fifty percent of the men in the study would use a contraceptive pill regardless of the circumstances (Gomez-Torres et al., 2022). Those who felt otherwise believed that their usage of a pill would depend on the side effects (10%), the efficacy (6%), a combination of the side effects and efficacy (12%), and the context and side effects (12%) (Gomez-Torres et al., 2022). Men want to share the burden of reproductive health and take control their reproductive health.

Another study explored the female viewpoint on male contraception. Four different family planning clinics- in Shanghai, Edinburgh, Hong Kong, and Cape Town- recruited women ages sixteen to 50 years of different ethnic groups (Glasier et al., 2000). When asked whether male contraceptives would allow for more gender equality in sharing the responsibility of contraception, over eighty-four percent of women in each center agreed (Glasier et al., 2000). Only two percent of the women in the entire study felt they could not trust their partner to use a hormonal contraceptive (Glasier et al., 2000).

Gender inequality in the contraceptive industry is incredibly obvious. However, this is not due to the lack of demand. As opinions toward contraception has changed significantly from the early 1900s to the modern day, it is important that the availability of products advances to match the demand. Many studies have detailed the demand for sharing reproductive responsibility, and following the overturning of Roe v. Wade, the demand has only increased. As the unethical basis for the first female hormonal pill was uncovered, the studies exploring potential male contraceptives extinguished due to the fear of safety and efficacy.

Currently, there are a few hormonals and nonhormonal contraceptives currently being researched. Contraline is a company based in Charlottesville, Virginia that produces ADAM™, a hydrogel that is injected into the vas deferens that occludes the flow of sperm (*Contraline,* n.d.). Contraline has advanced to the clinical trial phase of research and has the potential to reach the market in the next decade. Nestorone, NEST™, is another method of male contraception currently in development (Anawalt et al., 2019). It is a hormonal method that uses the hormone nestorone in conjunction with testosterone to achieve a state of azoospermia.

The current intent of many of the companies currently researching and developing male contraceptive options revolves around narrowing the gender gap in reproductive responsibility. As the political climate has led to the increase in the demand for male birth control, the researchers are working to figure out a method. Both the regulations and social opinions on contraceptives are vastly different than they were in the 1950s. The search is much more virtuous. From ensuring safety during use and after to efficacy, companies are striving to maintain ethical procedures in the development of contraception.

## Conclusion

The social well-being of women is directly impacted by gender inequality in the field of reproductive health. Female contraceptive methods have dominated the market, which has led to little progress in the development of male contraceptive options. This forces women to shoulder the burden of reproductive health and employs a cultural norm that women are responsible for the conception inhibition and reproduction. Over forty-three percent of individuals who use contraceptives are on long-acting methods, and ninety-eight percent of this demographic are women (United Nations, 2019).

As contraceptive research grew dramatically in the mid-1900s, there have been a dramatic increase in the number of methods available to women, however male contraceptive options have been limited to sterilization and the condom since the late 1800s. This could be attributed to the monthly cycle women follow, as the female body naturally releases progesterone to restrict ovulation, therefore creating a fairly straightforward means of targeting contraception. Males, however, are on a daily cycle as spermatogenesis is constantly occurring, tampering with hormonal levels has had some severe physiological impacts. As reproductive rights are being restricted in the United States, the desire for more options has grown immensely. Therefore, many companies are currently searching and developing potential methods of hormonal and nonhormonal male contraceptives.

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