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Contraceptive Sex-Acceptability: A Commentary, Synopsis, and an Agenda for Future Research

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Introduction

In 2005, Severy and Newcomer argued that sexuality is a “critical issue” in contraceptive and STI prevention acceptability research [1]. Yet, few studies explore current methods’ direct effects, if any, on women's libido, enjoyment, arousal, lubrication, or orgasm, let alone how such effects shape contraceptive uptake, continuation, and adherence. Furthermore, researchers have thoroughly investigated contraceptive side effects such as weight gain and vaginal bleeding, but rarely are such changes explored as possible sexual detractors—despite their influence on women's bodies, desires, and sexual selves. The overwhelming majority of sexual activity occurs during times when women wish to avoid pregnancy; contraception is expressly designed for non-procreative sexual activity. Investigating both negative and positive aspects of contraceptive practices represents a vital and understudied area for the contraceptive field [2].

The family planning field's inattention to women's sexuality, formerly termed "the pleasure deficit" [3, 4], becomes more pronounced when compared to research on male-based pregnancy and STI prevention methods. Research marked by concern for men’s pleasure, libido, and orgasm recognizes that methods that compromise men's sexual wellbeing will limit acceptability [5-8]. For example, researchers attempt to improve condom design by developing more pleasurable latex and non-latex varieties [2]. A study of hormonal-based contraception for men that ignored effects on erectile functioning or orgasm would be regarded as incomplete, even invalid. Contraceptive methods developed for women rarely receive similar sexual consideration, nor do reviews of methods typically highlight their effects on women’s sexuality [9].

Ways in which Contraception Can Affect Sexual Functioning and Experience

Sexuality encompasses a wide range of experience, from more immediate physiological functioning and sensation to broader satisfaction with one’s sexual self and life [10]. More
immediate aspects of sexual functioning include a woman’s wantedness or desire for sexual activity, her ability to begin and sustain arousal, experience sufficient lubrication, experience orgasm, enjoy the actual sensation of sexual activity, and minimize sexual pain and discomfort.

Contraception may affect any of these sexual functions. Condoms and other barrier methods have direct effects on sensation and lubrication, whereas hormonal contraception could directly affect factors such as libido and orgasm as well. In a 2013 study comparing approximately 500 women using hormonal methods to a similarly-sized group using non-hormonal methods of contraception exclusively, researchers found that women using hormonal methods experienced lower levels of arousal, decreased sexual pleasure, fewer orgasms and more difficulties with vaginal lubrication, even when controlling for sociodemographic characteristics such as age, relationship status, sexual exclusivity status and children in the home [11]. Any method which inhibits ovulation and the mid-cycle increase in cervical fluid might impact some sexual experiences in as yet unknown ways [12]. Progestin methods that strongly suppress ovarian function and reduce endogenous estradiol could impact sexual functioning by contributing to vaginal dryness, especially in peri-menopausal women. Some recent contraceptive research benefits from use of the validated Female Sexual Functioning Index (FSFI) [13], which contains domains on desire, arousal, lubrication, orgasm, pain, and other sexual functions [14-17].

Contraception could also affect the sexual experience indirectly. For example, feeling more protected against pregnancy could contribute to less sexual inhibition, and/or feeling sure that exogenous hormones will lower one’s sex drive could diminish libido [18]. Seemingly non-sexual effects such as changes in bleeding patterns, mood [19, 20], weight, or breast size or tenderness could impact women’s sexual functioning in specific ways. As Davis and Castaño point out [21], hormonal methods that inhibit ovulation can improve both painful gynecologic conditions (e.g.,
endometriosis, dysmenorrhea, and ovarian cysts) and acne. Decreased pain and improved
dophysical appearance could certainly improve sexual functioning, although positive effects remain
unstudied. Some research also finds that hormonal contraceptive methods are associated with
increased experiences of vulvar pain in some women [22].

Changes in bleeding patterns due to contraception can also affect women’s sexual
eexpression, either positively (i.e., with a decrease in bleeding) or negatively (with an increase in
bleeding or change to more unpredictable bleeding). For both personal and cultural reasons (e.g.,
religious proscriptions), some women avoid vaginal intercourse and to a lesser extent other
genital contact when they are bleeding or spotting [23]. Such changes may reduce interest in sex
and contribute to method discontinuation. On the other hand, some women may also appreciate
the opportunity to refrain from partnered sexual activity at regular intervals.

Many women lose their arousal when the risk of pregnancy is present [24], especially when
partners are not equally committed to pregnancy prevention [25]—although many men are also
turned off by pregnancy risk [24]. The strong protection offered by highly effective methods may
very well lead to improvements in sexual confidence and dis-inhibition (see sterilization section),
though empirical data on this issue are lacking.

Weight changes should also be considered for sexual implications. Women are more likely
to attribute weight gain to their contraceptive method than lifestyle factors [26], and some
methods such as DMPA [27] and implants [28] have been associated with weight gain in some
studies. Women who feel less comfortable in their bodies due to such weight gain can experience
detractions in their ability to feel desirable and/or enjoy sex [29]. Moreover, how a woman feels
about her weight, versus the amount of weight itself, tends to be more salient in terms of sexuality.
Satisfaction with one’s body is more strongly associated with sexuality-related outcomes than
actual body size [30, 31]. Of course, clinicians concerned about the sexual aspects of contraception should focus on promotion of healthy body image with women in their care.

Contraception is designed for sexual activity within the context of a couple, and the male partner’s sexual experience may also impact method acceptability. For example, some women dispense with male condoms in order to enhance their partner’s pleasure, and thus their own [10]. Moreover, in order to protect partners’ sexual egos, some women may encourage the initiation of vaginal intercourse without a condom, only to apply one once an erection is maintained. In a randomized comparison study between ring and patch users [32], ring users were significantly more likely than patch users to say that their partner was bothered by the product during intercourse (p<.001), even though the majority of both users said that this occurrence “never” or “rarely” happened. Partner status and relationship satisfaction can also be significantly correlated with women’s reports of their sexual functioning and/or satisfaction [16].

Finally, we wish to include that users of hormonal methods in particular may be more likely to attribute any negative sexual changes to their contraceptive method rather than to their relationships, life stressors, health, or other external factors. These negative (mis)attributions will nonetheless influence acceptability and use patterns. Without further study, we have no way of knowing how the various possible influences on sexual functioning may interact or overlap.

**Method-Specific Considerations**

**Male Condoms**

Population-level research indicates that at least one in four acts of sexual intercourse in the U.S. involve the use of male condoms [33]. A significant body of empirical literature, mainly from the HIV/AIDS and STI fields, documents that many men do not like using male condoms because they curtail sexual sensation [34-38], interrupt the sexual heat of the moment [39], make erections
harder to maintain, or undermine other aspects of sexual functioning and enjoyment [39-42]. The Gates Foundation recently released a call for proposals regarding the development of more pleasurable and appealing male condoms [43]. The call for proposal stated, “The primary drawback from the male perspective is that condoms decrease pleasure as compared to no condom, creating a trade-off that many men find unacceptable.”

Growing research demonstrates that the ways male condoms feel sexually matter to women, too [44]. Some women dislike like the ways condoms diminish sensation [45], exacerbate vaginal dryness [29], or interrupt the sexual moment [45]. Research from both the United Kingdom [46] and the United States [47] demonstrated that women were less likely to use condoms when they experienced reductions in sexual pleasure and functioning compared to women with more positive condom experiences. Notably, women’s attitudes on whether condoms affect their arousal may be even more influential on use patterns than men’s attitudes. In one cross-sectional survey of 5,600 adults in the US and Canada, women who reported that condoms diminished arousal were more likely than men to have had unprotected sex in the last twelve months [24].

**Oral Contraceptives**

Oral contraceptives (OCs) entered the cultural marketplace 50 years ago and are hailed as a key factor in facilitating the US sexual revolution [48]. Studies have explored if, and how, OCs affect sexual desire, enjoyment and functioning, and many of these studies have been reviewed elsewhere [12, 18, 21, 22, 49, 50]. Unfortunately, the sexual impact of OCs remains poorly understood. Study methodology and quality varies widely and possible pathways of action are controversial. Further, the majority of studies on pill use and sexuality have been cross-sectional...
in nature (for example, see [51, 52]), an inherent limitation if one wants to understand the causal effects of the pill and changes in sexual functioning and enjoyment over time.

Most research on OCs and sexuality examines libido [17, 21, 50]. Oral contraceptives with estrogen reduce total and free testosterone, and decreased androgens are cited as a plausible biological mechanism for reduced libido in OC users [53]. A role for androgens is also suggested by studies showing transdermal androgens in various doses have improved sexual desire, arousal, orgasm, and other sexuality effects in women presenting with libido and arousal problems [54]. Researchers have explored the supplemental use of dehydroepiandrosterone (DHEA) to ameliorate the decline of adrenal and ovarian androgens during COC use [55, 56]. However, the role of androgens themselves in women’s sexuality remains unclear. Results from androgen replacement studies should be interpreted in the context of known poor correlations of serum androgens and measures of women’s sexual function [12, 57-60].

Both 2004 and 2012 reviews assessed studies of OCs and libido and found reports of both increased and decreased libido with pill use [21, 22]. Both reviews also noted the lack of high quality studies of this topic. A few randomized, placebo-controlled studies examined libido in OC users, but few meet current standards for high-quality reporting of randomized clinical trials (CONSORT guidelines [61]), and results of these studies are mixed. A well-conducted trial demonstrated a decrease in libido in COC users compared to placebo in a sample of women in Scotland (higher baseline libido), but not in a sample of women in the Philippines (lower baseline libido) [62]. Another prospective study followed new OC users for one year (n=100) [63]. Among those 47% who discontinued OCs over the course of the study, decreased sexual thoughts and decreased psychosexual arousability were the strongest predictors of discontinuation. This study, like many other published observational studies, could not establish if OCs definitively caused the
lower libido; yet it does highlight the importance of lowered libido to this sample of women and
its effect on discontinuation.

Overall, while OC use does appear to be associated with diminished sexual desire in some
women, it appears as if women experience positive effects, negative effects, as well as no effect on
libido during OC use. Additional well-designed studies are needed to establish the independent,
causal effects of OCs themselves. A significant body of research suggests that women’s sexual
desire is impacted by many factors, including being desired [64]. Basson has suggested that
women’s sexual response is more cyclical than linear in nature, in which desire may responsively
follow arousal rather than spontaneously preceding arousal [65]. The independent effects related
to OCs should be weighed in the context of women’s relationships, health, pregnancy plans, and
comparison to other methods. Strong effects related to other factors may overwhelm changes
related to OC use.

**Other Hormonal Methods**

In comparison to OCs, comparatively few studies describe how rings, patches, injectables,
and implants affect women’s sexual functioning. A 2013 Cochrane review of the patch and ring
[66] only identified two published studies with mixed results that referred to any aspect of sexual
functioning [67, 68]; one found improvements in sexual functioning among ring users [67] while
the other found increased reports of vaginal dryness and loss of desire [68]. Potential mechanisms
for OC-mediated sexual effects (i.e., physiological and psychological) are likely similar for other
hormonal methods that combine estrogen and progestin. One study of new ring and patch users
(all recent COC users) compared women’s Female Sexual Functioning Index (FSFI) scores at
baseline and at three months [16]. Overall FSFI scores declined more in the ring group than the
patch group; however, not only were declines small (less than 1 point on a 36 point scale), but they did not deter women’s greater satisfaction overall with the ring compared to the patch.

The ring is unique as the only hormonal vaginal contraceptive. Data from clinical trials show most couples find it comfortable during sexual activity; for those who find it uncomfortable, the ring can be removed and replaced a few hours later without risking pregnancy. Women may hesitate to place a vaginal ring due to concerns about correct placement or discomfort; however, even women who do not use tampons or masturbate find the ring comfortable once placed [69]. Severy and Spieler suggest that contact between the penis, the ring, and the vagina or cervix may serve as a sexual stimulus to some couples [2].

One particular note should be made about sexual functioning and depot medroxyprogesterone acetate (DMPA), or Depo. DMPA has been used in recent decades as “therapeutic sex drive reduction” to suppress sex drive in male sex offenders [70]. The treatment dose for sex offenders is considerably larger than standard contraceptive formulations (300-400 mg every 10 days versus 150 mg every 12 weeks) [70]; effects on sexual suppression in women are unknown. One study of DMPA users found evidence of decreased libido in approximately 1 in 4 users (23%) returning for their second shot after 3 months [71]. In contrast, a study of Chinese women found that injectables were not significantly related to sexual functioning or overall quality of life [72].

**Intrauterine Contraception**

The high efficacy of intrauterine contraception (IUC) is also likely to influence sexual enjoyment, but few studies document this or other sexual changes with IUC. Indeed, we wonder if strong user satisfaction with this method [73-75] is influenced at least in part by its facilitation of enjoyable sex, but few studies ask specifically about sexual satisfaction with this method when...
assessing acceptability. Two studies reported sexual functioning improvements in women using this method [76, 77], while other investigations have found no sexual changes, positive or negative, with IUC use [44, 72, 78, 79].

As with any contraceptive method, IUC’s non-contraceptive effects should be explored for possible sexual consequences. Women who experience reductions in bleeding may sustain enhanced sexual functioning as a result and many women report a substantial reduction in menstrual bleeding as a major benefit of using the levonorgestrel IUD [80]. In turn, women who experience increased bleeding or cramping or unscheduled bleeding while using IUC may experience diminished interest in sex or may experience more discomfort when engaging in sexual activity.

**Sterilization**

Female and male sterilization account for a large share of the US and global method mix. The bulk of studies on the sexual acceptability of vasectomy were conducted several decades ago, with most studies showing high sexual satisfaction among both sterilized men and their partners [81, 82], but with others raising questions about the possible adverse sexual [83] and psychological [84] effects on men. A 2010 population-based study in Australia (N=3,390) found that sexual problems were equally common in vasectomized and non-vasectomized men [85].

A large, prospective US study examined women’s sexual experience after female sterilization. Results showed >80% of the 4,576 women participants reported no consistent change in either sexual interest or pleasure after interval tubal sterilization [86]. Among those respondents who *did* report consistent change, positive changes were 10-15 times as common as negative changes in sexual interest or pleasure. A 2010 nationally representative study of tubal ligation among a smaller cohort of Australian women (N=447) found a similar relationship, and
also highlighted a number of possible sexual benefits to sterilization, perhaps due to the study's wider measurement of sexual effects [87]. Sterilized women were significantly more likely to experience extremely high levels of sexual satisfaction, relationship satisfaction, and sexual pleasure—perhaps due in part to diminished concern about unintended pregnancy. These two studies should be reassuring for clinicians, women and their partners.

Conclusions and Implications

This commentary underscores the need for high-quality research on the sexual effects and related acceptability of contraceptive methods, with equal concern for women's and men's sexual functioning [6]. Reason for optimism exists: a growing body of recent research considers sexual aspects of various contraceptive methods for women. It would be unwise to base understandings of the sexual side effects of contraception any one of the above studies alone, given differences and limitations in study design, study population, and method composition or mechanism [18, 21]. One consistent finding of variability does emerge—women clearly vary in their sexual responses during contraceptive use, and we understand little about the reasons for this variability.

Though such variability may be daunting for researchers, we nonetheless argue that contraceptive studies should systematically collect data on sexuality and sexual functioning. The above-mentioned Female Sexual Functioning Index, or FSFI, could be helpful in capturing domains relating to arousal, lubrication, orgasm, satisfaction, relationship closeness, and pain [13].

Another possible measure is the Sexual Functioning Questionnaire (SFQ), which was designed to assess changes in sexual function after a medical treatment or condition [88], and thus may be well suited to assess effects of a contraceptive “treatment.” Several SFQ items gather more

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1The “satisfaction” domain of the FSFI measures overall satisfaction with the sexual relationship, not satisfaction of the sexual experiences occurring in the past four weeks as the other domains measure. Thus, this particular part of the index might not be suitable for measures of contraception.
subjective data on how the respondent thinks the method may have affected her sexual
functioning (for example, “what impact has your [contraceptive method] had on your sex life?”).

Even if a contraceptive method isn’t “truly” or solely responsible for sexual detractions,
respondents’ feelings about such detractions will shape use patterns and thus must be better
understood. Along these lines, researchers should recognize that women may be more likely to
attribute negative sexual changes to their contraceptive method rather than their relationships,
mood, health, life stressors, or other external factors. These negative (mis)attributions, whether
causal or not, will nonetheless influence acceptability and use patterns. At the very least, studies of
methods’ potential effects on sexuality should control for relationship duration, age, mental health
factors and associated pharmaceuticals in use, and other known correlates of sexual satisfaction.

We also encourage an approach that taps into the sexual-improvement potential in
contraceptive counseling, programming, and marketing [3, 89-91]. What if clinicians and
contraceptive marketers were to tout the potential sexual benefits of methods? Existing
contraceptive advertisements portray women as empowered medical consumers but not as sexual
agents. Ads promote convenience, efficacy, and non-contraceptive benefits (e.g., menstrual timing
and regulation, acne improvement), but not their potential catalysis of pleasurable, worry-free sex.

It strikes us as odd that our culture uses sexual and erotic images to sell many consumer goods—
but not to sell contraception, which is designed expressly for sexual activity.

Along these lines, sexual and reproductive health clients could be well served by
investigations of the feasibility and benefits of eroticizing of contraceptives. This trend can be seen
globally in pleasure-centered sexual health promotion efforts, including the eroticization of safer-
sex campaigns [91, 92] (see also thepleasureproject.org). The contraceptive field should follow
suit.
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