



Pornography and Sexual Dysfunction: Is There Any Relationship?

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Abstract

Purpose Consensus about whether pornography use affects sexual functioning during partnered sex is lacking. In this review, we explain and define the variables under consideration (pornography use and sexual functioning), briefly elaborate the controversy, and conduct a literature search extending from 2015 to the present using diverse and all-inclusive keywords related to pornography use, problematic pornography use (PPU), and sexual functioning in men and women.

Recent Findings Twenty-eight studies directly related to the issue were identified, and another 23 studies were used as supporting material (e.g., defining or assessing variables and identifying predictors of PPU). Results were organized into two major sections, beginning with a delineation of methodological issues related to studies on the topic and followed by summaries of studies first on women and men drawn from community samples, and then on women and men drawn from samples defined by excessive, problematic, compulsive, or addictive use of pornography. In general—and consistent with prior reviews on the topic—women were more likely to show positive associations between pornography use and sexual functioning whereas men showed mixed results. Specifically, the analysis demonstrated the diversity of outcomes of pornography use, including how they currently play out differently for women and men and for problematic and non-problematic users, with this latter group—particularly when male—more likely to show mild to moderate negative associations with sexual functioning.

Summary Claims of a strong relationship between pornography use and sexual dysfunction are generally unfounded, both by the findings of studies and/or by misinterpretations of them. As part of our “**Discussion**”, we identify the ongoing methodological challenges in this field, unpack the meaning of PPU and how its component constructs might affect sexual functioning, and suggest a path forward that makes better and more systematic use of covariates/constructs related to both PPU components and sexual functioning.

Keywords Pornography use · Problematic pornography use · Pornography addiction · Sexual functioning · Men · Women · Erectile response · Orgasmic difficulty · Arousal difficulty · Delayed ejaculation

Introduction: Defining the Issue

Pornography may impart a number of negative social effects; for example, it may objectify partners, damage intimacy, lead to unrealistic expectations regarding physical sexual attributes and behavioral responses, promote denigrating or sexist attitudes, result in sex trafficking, be an affront to some people’s morality, induce shame and guilt, or increase the risk of sexual offending. However, it may also impart positive effects such as improved dyadic communication, increased sexual

experimentation, and enhanced sexual satisfaction, particularly when used by couples [1]. For this article, the topic is limited to whether pornography use has effects—either positive or negative—on sexual response during partnered sex, with sexual response defined as either “functional or dysfunctional,” that is, whether the individual is able to perform satisfactorily during sex with their partner (functional) or experiences difficult or impaired performance with the partner (dysfunctional). Other aspects of partnered sexual response including pleasure, intimacy, and sexual satisfaction—that is, aspects that may enhance or detract from the partnered sexual experience without specific reference to level of functionality—are beyond the scope of this review. Furthermore, sexual satisfaction has already been addressed and summarized in a number of papers, recently, for example, in a major review by Hoaglund and Grubbs [2••].

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Understanding the Study Variables: Sexual Response/Dysfunction and Pornography Use

Sexual Response/Dysfunction and Its Assessment

“Sexual dysfunction” is a generic term that includes a variety of specific problems encountered by men and women within the context of partnered sex. Sexologists typically identify three phases or components of sexual response [3–5], including (1) attraction, libido or sexual interest, all psychological constructs intended to explain the likelihood or strength of a sexual interaction with a partner; (2) sexual arousal, a cerebral/mental state induced through various modes of sensory stimulation (or internally-generated fantasy) that leads to specific genital (penile erection and vaginal lubrication) responses, larger bodily changes via autonomic activation, and psychosexual arousal, all in preparation for sexual response; and (3) orgasm, the subjective (sensory-mediated) experience of the smooth and striate muscle contractions in the pelvic/genital region [6, 7].

These phases are interdependent and contiguous (if not continuous) with one another. However, each phase is supported via different yet complementary physiological and psychological systems. Furthermore, the specific elements of these phases—and their relationships to one another—may be manifested differently for women and men [8–13], given underlying differences in sexual physiology and psychology. Problems—or dysfunctions—can occur independently within one or more of these phases and while both men’s and women’s sexual problems may share some similar etiologies and risk factors, the prevalence and understanding of those factors are sometimes better delineated in one sex than the other [11, 13]. For the purposes of this review, emphasis is on dysfunctions related to the excitation phases of sexual response, namely, physiological (erection in the man and vaginal lubrication in the woman) and psychosexual arousal and orgasmic response.

A number of standardized instruments are available for assessing sexual problems in men and women, for example, the IIEF [14] for male erectile functioning and related dysfunction constructs and the FSFI for female sexual dysfunction [15]. Other excitation problems surrounding sexual performance, such as low sexual desire in women and delayed/inhibited ejaculation in men, have been studied extensively, with a number of constructs/items recommended for use in their assessment [16, 17]. Unfortunately, many studies relating pornography use to sexual functioning report only global scores and do not include various subscale scores that provide greater specification of the sexual problem.

Pornography Use and Its Assessment

Early studies sometimes used a simple yes/no dichotomy to assess pornography use, but in today’s milieu where

pornography is available throughout the world—even in countries where it is prohibited and thus presumably less available—pornography use has become fairly widespread [18–20]. Thus, with most men and women now having had experience with pornography, recent studies have taken a more sophisticated approach to assessing pornography, using measures related to frequency of current use, frequency of use during adolescence, duration of use, purpose of use, age of onset of use, and so on. Perhaps less common are attempts to identify the effects of specific content—such information is available, for example, in databases such as those maintained by Pornhub—on the assumption that content that strays further into deviant territory may impart more negative effects on partnered sexual response than more conventional content. Such content analyses would, of course, require evidence-supported criteria for operationalizing “deviant” content, a challenging task given wide cultural differences in what is considered acceptable. However, the assumption is sometimes made that increasingly frequent pornography use requires increasingly unusual sexual portrayals in order to prevent habituation and maintain arousal levels; in this regard, measures of frequency of pornography use might also serve as a partial proxy for deviant content.

A number of studies have focused on men and women who tend to be extreme users of pornography, who experience such negative effects from its use that they deem themselves “problematic pornography users (PPU)” [21], or who fall into categories such as compulsive users or even “porn addicts.” Although the percentage of users who comprise these groups is not clear, studies having sample sizes greater than 1000 have reported rates ranging from about 2 to 8% [22••]. PPU correlates with the “frequency of pornography use (FPU),” but the two are distinctively different constructs. It is entirely possible, for example, to have a very high FPU but very low PPU, or vice versa.

A number of scales have been developed to assess problematic pornography use. Table 1 lists common instruments that have been used in recent years, provides a brief description of each, and notes sample studies where they have been used [23–33]. Given the variety of instruments, psychometric characteristics, specific applications, and researcher preferences vary substantially among measures. A more comprehensive analysis and discussion of PPU-type assessment instruments are provided by Alarcon et al. [22••] and Chen and Jiang [26].

The Controversy

The existing controversy regarding the relationship between pornography use and sexual functioning during partnered sex may be summarized by the following two statements:

1. A number of research papers have suggested that the use of pornography during masturbation may interfere

Table 1 Assessment of problematic pornography use and pornography addiction

Instrument	Description	Used in study
Brief Pornography Screening (BPS)	A 5-item assessment used to detect problematic pornography use	[23]
Youth Pornography Addiction Screening Tool (YPAST)	A 25-item scale measuring 3 components: lack of control over pornographic behavior, regret after pornography use, and pornography for sexual arousal	[24]
Pornography Addiction Screening Tool (PAST)	A 25-item assessment focusing on assessment of a range of pornography use	[25]
Problematic Pornography Consumption Scale (PPCS)	A 12-item self-reporting scale assessing four dimensions of IPU	[26]
Cyber Pornography Addiction Test (CYPAT)	A brief screening measure used to assess addiction to cyber pornography	[27]
Online Pornography Test (OPT)	A 12-item test to determine if a person has an issue with the use, abuse or addiction to online pornography	[28]
The Pornography Craving Questionnaire (PCQ)	A 12-item scale assessing the craving to use pornography	[29]
Internet Sex-screening test (ISST)	A 25-item test assessing 5 dimensions (online sexual compulsivity, online sexual behavior-social, online sexual behavior-isolated, online sexual spending, and interest in online sexual behavior)	[30]
Problematic Pornography Use Scale (PPUS)	A 12-item test measuring 4 domains (distress and functional problems, excessive use, control difficulties, and use for escape/avoidance of negative emotions)	[31]
Short Internet Addiction Test adapted to online sexual activities (s-IAT-sex)	A 12-item questionnaire measuring two dimensions of on-line PPU	[32]
Cyber-Pornography Use Inventory (CPUI-9)	A 41-item instrument used to assess internet pornography usage as it relates to behavioral patterns of addiction	[33]

with sexual response during partnered sex. These studies have argued that the fantasy, images, and supernormal stimuli/arousal potential associated with pornography use during masturbation do not transfer well to partnered sex. These studies have also led to various recommendations, for example, (1) that abstinence from, or at least diminished frequency of, masturbation and concomitant use of pornography can lead to improved sexual performance and more satisfying sex with the partner [34, 35], and/or (2) that general practitioners and specialists consider querying men seeking help for sexual problems about their pornography use [36]. Indeed, several reports/headlines have sounded an alarm that pornography use—particularly by youth—may explain the rise in erectile problems over the past several decades.

- Other studies have reported that pornography use (either solo or with the partner) generally has no negative effect on partnered sex and/or may even enhance the partnered sex experience. These studies suggest, for example, that (1) for the majority of users, pornography use not only has minimal or no negative effects but that its educational and arousal effects may enhance partnered sexual experiences [37] or, alternatively, (2) solo and partnered sex may be sufficiently compartmentalized such that the stimuli of each are experienced somewhat independently of the other [38•].

Goals of This Paper

In this paper, we lay out four goals, to

- Identify and review methodological issues that affect confidence in the extant literature;
- Briefly summarize recent review papers on the topic and their major takeaways;
- Encapsulate and update the literature, examining the issue in two groups: the general population and specific subpopulations of problematic pornography users;
- Provide an evaluation and discussion of the state of research on this topic.

Methodology

To address the goals above, the literature search conducted for this narrative review relied on three major databases, PUBMED, which includes MEDLINE and other relevant databases, and APA PSYCHINFO/PSYCHARTICLES. We also conducted Google searches and drew from existing papers and their bibliographies that were part of our personal databases/libraries.

Keywords for the organizing variable, pornography use, included PORNOGRAPHY, PORNOGRAPHY USE, SEXUALLY EXPLICIT MATERIALS, CYBERSEX,

EROTICA, PROBLEMATIC PORNOGRAPHY USE, PPU, PORN/PORNOGRAPHY ADDICTION, and COMPULSIVE PORNOGRAPHY USE.

Keywords for the outcome variables (sexual dysfunction) included SEXUAL DYSFUNCTION, SEXUAL PROBLEMS, SEXUAL DIFFICULTIES, ERECTILE DYSFUNCTION, DELAYED EJACULATION/INHIBITED EJACULATION; ORGASMIC DIFFICULTY; LOW SEXUAL INTEREST, DESIRE DISORDER, LOW SEXUAL DESIRE, AROUSAL DISORDER, and EJACULATORY DISORDERS.

Limiters included MEN, WOMEN, ENGLISH, and PUBLICATION DATES JAN 1, 2016 TO CURRENT NOVEMBER 2023. However, given that reviews of topics relevant to pornography use and sexual functioning/dysfunction have appeared as recently as 2019 and 2021, our emphasis was on the discussion of papers published around or since those reviews, from 2019 and beyond.

Results

Methodological Issues

One concern regarding the research that has been carried out thus far on this topic pertains to the use of methodologies that lead to vague and sometimes juxtaposing conclusions. Although not an exhaustive list of issues, problems with a number of existing studies often include one or more of the following methodological shortcomings.

- **Sampling:** The relationship between pornography use and sexual function has sometimes been investigated in clinical or patient samples, or other specialized samples. Such samples are typically biased, as they focus on individuals who are seeking help for an existing health-related problem—specifically, these individuals may already have a sexual dysfunction and/or be in poorer general health than the population at large. Beyond this, sample sizes need to be sufficiently large to ensure well-powered studies both to accommodate multivariate analyses and to enable confidence in studies that report a lack of associations/effects.
- **Defining/operationalizing variables:** For the outcome variable (sexual function/dysfunction), standardized assessment instruments have not always been used, even when available; or cut-off scores for dichotomized outcomes (function vs dysfunction) have neither been reported nor justified; or clear justification for, and psychometrics of, an operationalizing procedure (when standardized assessments have not been used) have not been included. For non-standardized predictor and correlated variables,

internal and test–retest reliability statistics are seldom reported—often, best psychometric practices are not followed.

- **Over-reliance on bivariate relationships:** Simple bivariate associations provide little insight into the overall issue and, more importantly, may lead to erroneous conclusions, particularly given that confounding variables may better explain an outcome than pornography use. Even for studies taking a multivariate approach, the included covariates may not represent those most critical to the issue. Some studies have also failed to report effect sizes, making them uninterpretable.
- **Use of cross-sectional methodologies:** Although not a problem in and of itself, this becomes an issue when a study infers a directional effect, for example, pornography use → sexual problem (e.g., ED) and does not seriously consider equally plausible bidirectional or opposite direction effects: for example, individuals suffering from a sexual problem sometimes turn to masturbation and concomitant pornography use for sexual pleasure when partnered sex is difficult or not readily available.

In light of the above issues, interpretation of associations between pornography use and sexual functioning merits both qualification and a humility that recognizes the inadequacies of various research designs along with the plausibility of alternative or opposing interpretations. In some instances, studies on this topic suffer from overreach—perhaps because the media is more likely to attend to sensational findings than to well-researched though more muted conclusions based on actual effect sizes. To this point, we refer the reader to Sidebar 1, which provides a real-world example of the distorted conclusions that may come about from naïve media reporting.

Findings From Major Reviews Since 2016

In this section, we briefly highlight four reviews (since 2016) on the topic of pornography use and sexual dysfunction. In their comprehensive review, Dwulit and Rzymiski [39] concluded that “a causal link between porn use and ED has yet to be demonstrated...” The review arrived at similar conclusions for other sexual dysfunctions, identifying the many methodological limitations that prevented causal interpretations. In a systematic review of 44 articles, Hoaglund and Grubbs [2••] offered a qualified interpretation, indicating that pornography use has shown both positive and negative associations with sexual functioning; they further identified problematic pornography use (PPU) as a consistent predictor of lower sexual functioning. In men with sexual dysfunctions, a review dealing with the use of sex aids identified pornography use as among the more common, convenient, and effective approaches used

by men [40]. An older review puts forth the conclusion that increased availability of and accessibility to pornography may account for sexual difficulties in many younger men whose origin for the difficulty is non-organic and likely not “performance-anxiety based” [34].

Several relevant takeaways can be garnered from the above reviews: (1) limiting methodological designs have diminished confidence in reported relationships between pornography use and sexual functioning; (2) the relationship between pornography use and sexual functioning likely differs depending on the sample characteristics, for example, whether a community sample, a clinical/patient sample, or a sample of individuals indicating extreme or problematic pornography use; and (3) specific personality or experiential characteristics may render some individuals more vulnerable to the effects of pornography than others.

Review and Update of Research Studies

The Roadmap

Relationships between the study variables are substantially different between men and women. For this reason, we review each sex separately, presenting a reiteration of studies prior to 2019/2020 (approximately 2016–2019) as well as coverage of studies from 2019/2020 to the present, thus providing updates to the last major published reviews in 2019 and 2021 [2••, 39]. We also review the studies separately for the two sample categories: broad community-based sample, and samples tapping special populations such as problematic pornography users, porn “addicts,” and individuals showing compulsive use.

Studies Based on Community Samples

Women

Women masturbate less frequently than men, use pornography less frequently than men, and represent a lower percentage of PPU [18]. Not surprisingly, negative effects of pornography use on women’s sexual response are generally less concerning than for men.

We reviewed 11 studies on community samples that included women and in which—for the most part—sexual dysfunction was assessed using either a standardized assessment instrument or multiple items drawn from such instruments. Studies published between 2016 and 2020 (and reported in other reviews) tended to indicate no or slightly positive associations between pornography use and sexual functioning. For example, Berger et al. [41] reported no relationship between pornography use and sexual functioning in women patients at a urology clinic

on a military base—58% of whom indicated a sexual problem. Vaillancourt-Morel et al. [42] concluded that women’s use of pornography likely improved their functioning during partnered sexual activity, with similar conclusions reached by two additional studies on sexual well-being and sexual arousal during partnered sex [43, 44]. For all three studies showing improved functioning, effect sizes—as indicated by beta coefficients or eta-squared values—were in the low/weak range. In some instances, studies categorized women into specific subtypes—some showing better sexual functioning and others showing slightly lower sexual functioning. For most such classifications, however, compared with men (in mixed sex studies), the preponderance of women fell into subgroups that were more likely to benefit from pornography use than to suffer from it. For example, frequent pornography users—whether men or women—showed better sexual functioning than problematic pornography users [45•], although effect sizes were small. Not surprisingly, the great majority of women were frequent pornography users, in contrast with men who showed a higher prevalence of problematic pornography use. Along similar lines, when recreational users of pornography were distinguished from distressed and/or compulsive users in either dyadic or solo use, recreational users of pornography showed more positive associations with sexual functioning—again, not surprisingly, women (compared with men) were more heavily represented in the recreational and dyadic pornography use categories [42]. Two other studies—though less clear about specific associations regarding women’s use of pornography—suggested that pornography use either had no negative effect on sexual functioning (e.g., arousal) or was more likely to impart slight beneficial effects than negative effects [46, 47]. Again, effect sizes were very small. Notably and not surprising, use of pornography in a partnered context was consistently associated with the most positive sexual functioning outcomes (e.g., [43]).

Four, more recent, studies on community samples have been published since 2020. First, a large national probability survey from Sweden [48] found that most women (83%) reported that pornography use did not impact their sex life, 15% of women reported a positive impact, and only 4% reported a negative impact. Further analysis relating the frequency of pornography use to items regarding sexual performance pressure, sexual arousal difficulty, and orgasmic difficulty was also carried out: only the item related to performance pressure showed significance—with no relationship with arousal or orgasmic difficulty. Second, in a study using over 600 Austrian medical students, Komlenac and Hochleitner [49] reported that frequent pornography use among women was associated with better sexual functioning, albeit only weakly. And third, Sommet and Berent [50] also reported that in women, the greater frequency

of pornography use, the higher the sexual functioning. In addition, women who reported increasing pornography use successively over three years also showed higher sexual functioning compared with those showing no or decreasing use of pornography. Effects sizes—as noted by the beta coefficients—were, again, small. In contrast with the general patterns of no or slightly positive effects above, Wright et al. [51] reported an association between pornography use and orgasmic difficulty in women; however, the effect was indirect, mediated through sexual insecurity, quite small, and did not use a multivariate or standardized assessment of the sexual problem.

Evaluation and Comment on Women’s Community Sample Studies

The above body of literature on community samples of women shows an overall consistency, namely, that pornography use among women typically demonstrated no association with sexual functioning, or a weak positive association. Furthermore, most studies demonstrated various strengths, including large and diverse samples, for example, ranging from 217 couples to over 10,000 participants and using recruitment procedures that minimized a high degree of homogeneity in participants (e.g., using only university students). In addition, all but two assessed sexual functioning using standardized or multivariate instruments; the two that used [46, 51] single-item analysis of “sexual arousal difficulty” or “orgasm difficulty” were deficient, but other strengths of these studies partly compensated, for example, robust sample sizes, classification into specific relationship types, or testing of mediating covariates. Finally, effect sizes were discernible for all studies—thus despite differences in sample sizes and typically highly significant probabilities, effect sizes could be compared across studies.

On the other hand, shortcomings were also notable. First, although sexual functioning differences were detectable, the placement of sexual functioning within the larger context of “functional vs. dysfunctional” categorizations was generally not clear—were some respondents dysfunctional? Did pornography use mean that these women were less dysfunctional or simply more functional (e.g., more easily aroused even though they were not dysfunctional)? Second, determination of cause-effect was not possible, yet studies seldom attempted to interpret reverse associations, for example, were women with better sexual functioning perhaps more open to the use of pornography? Although one study used longitudinal analysis [50], because a true experimental design was not used, confidence in cause-effect directionality was still limited. Finally, few studies incorporated covariates specifically related to sexual functioning in women, such as relationship quality, medical conditions, menopausal status, level of sexual

interest/desire, or even frequency of masturbation. And most studies did not specify which component of sexual response improved—for example, sexual interest/desire? Psychosexual arousal? Vaginal lubrication? Orgasmic capacity? Obviously, issues still remain to be addressed.

Men

In contrast with research on women, studies examining the relationship between pornography use and sexual functioning in community samples of men show substantial variation in results. In some instances, slight beneficial associations have been found; just as frequently either no or slight-to-moderate negative associations have been reported.

We reviewed 13 studies on community samples that included men and in which sexual dysfunction was assessed using a standardized assessment instrument, questions/items drawn from such instruments, or other multivariate measures. Studies published between 2016 and 2020 (and reported in other reviews) tended to show mixed results. For example, Landripet and Stulhofer [52]—in two separate studies having over 1000 participants each—reported no negative association between frequency of pornography use and sexual functioning in a sample that included multinational subgroups, and only weak and inconsistent results in a Croatian sample, an association which later disappeared when the study was repeated on a second Croatian sample. A similar lack of association was also noted in a much smaller study on couples by Vaillancourt-Morel et al. [53], although a related variable—increased partner sexual distress—showed some relationship with pornography use. Two other well-conducted studies [45•, 54] concluded that frequency of pornography use had no association with impaired sexual functioning using either cross-sectional or longitudinal methodology. Both studies placed qualifiers on their overall conclusions, as both identified a PPU group that showed mild/moderate negative associations with sexual functioning (see later section on the topic).

In contrast, two studies have suggested that pornography use by men may be associated with improved sexual functioning, with erectile function or sexual arousal scores increasing [42, 46] although, as with women, effect sizes were small. For example, Vaillancourt-Morel et al. [42] reported that recreational use of pornography was associated with lower sexual dysfunction, and Barrada et al. [46] reported a significant but weak positive association between pornography use and sexual functioning. However, both studies also identified typically small subgroups likely to suffer ill effects on sexual functioning from pornography use. Vaillancourt-Morel et al. [42] differentiated between recreational/curiosity vs. compulsive users, the former group showing higher sexual functioning but the latter group showing lower sexual functioning. Barrada et al. [46] identified

a group having a more compulsive orientation toward pornography use who showed negative (though weak) associations with sexual functioning. As with women, men who used pornography with their partner tended to show the most positive associations with sexual functioning [43].

Six, more recent, studies have taken up the issue of pornography use on sexual functioning since 2020, and, to a large extent, the overall landscape has changed little. Four concluded that pornography use was associated with either no or only slightly lower sexual functioning. One study reported a moderate negative association between these variables, and one concluded only an indirect effect mediated through sexual insecurity. Regarding those showing no association, in a large national probability study in Sweden, the vast majority of male participants (72%) reported no perceived effects of pornography use on their sex life; 23% reported positive effects, and only 5% reported negative effects [48]. Furthermore, for the small minority reporting negative effects, erection problems were associated with frequency of use only at higher levels, and no direction of effect could be ascertained. In a second study of over 600 medical students in Austria, frequent pornography consumption was associated with greater sexual flexibility but neither positive nor negative associations with sexual functioning [49]. Two other studies provided comprehensive and detailed analyses of the relationship between frequency of pornography use and delayed/inhibited ejaculation and, separately, erectile dysfunction [28, 55]. These studies controlled for covariates known to affect sexual functioning such as sexual desire and anxiety/depression. For delayed/inhibited ejaculation, masturbation frequency was very weakly associated negative sexual functioning, and using stepwise discriminant analysis, frequency of pornography use added less than 1% of explained variance to the understanding of ejaculation difficulty. In contrast, other factors related to delayed ejaculation—the importance of sex, anxiety/ depression, erectile functioning, medical issues, and relationship satisfaction—all showed relatively strong associations with ejaculation difficulty. In a parallel analysis on erectile functioning, using the same strategy of statistically controlling covariates relevant to sexual functioning, no associations were found between pornography use and erectile response. For these studies, the absence of an effect occurred consistently across various subsets of men, for example, men 30 years or under, men with comorbid sexual dysfunctions, and men with lifelong vs. acquired problems.

In contrast to the above four studies that showed no meaningful associations between pornography use and sexual functioning, one study [50] reported a moderate negative association, and another [51] reported an indirect association with orgasmic difficulty mediated through sexual insecurity. The effect was fairly weak, and orgasmic difficulty was assessed with only a single item.

Evaluation and Comment on Men's Community Sample Studies

As with women, the above body of literature on samples of men shows substantial consistency, with most studies demonstrating either no association or a weak negative association with sexual functioning. Only one study reported a moderate negative association with sexual functioning. In general, these studies had robust sample sizes, and all but two were recruited from diverse populations (the two exceptions used medical students or military personnel visiting a urology clinic). In addition, in all studies but one [51], sexual functioning was assessed using standardized or multivariate instruments. Effect sizes were included and therefore could be compared across all studies.

On the other hand, shortcomings were once again apparent, often identical to those seen in studies on women. For example, although sexual functioning differences related to pornography use were sometimes detectable, the placement of sexual functioning within the larger context of “functional vs. dysfunctional” categorizations was usually not clear. Due to the use of cross-sectional designs, the direction of cause-effect for most studies was not discernible. Two studies using longitudinal analysis [50, 54] yielded disparate results, with one reporting no association between pornography use and sexual functioning and the other finding a negative association. Only two studies used covariates specifically related to sexual functioning in men [28, 55], and only three studies [28, 51, 55] actually specified which components of sexual responding were (or were not) affected.

Studies Based on Special Populations of Pornography Users (PPUs, Compulsive Users, etc.)

The findings from the community studies reported above focused primarily on the relationship between frequency of pornography use (FPU) and sexual dysfunction. However, within a number of those studies, various sub-analyses suggested that particular subgroups or characteristics (e.g., compulsive pornography use) were associated with greater vulnerability to negative effects on sexual functioning. In the next section, we turn to a discussion of studies assessing sexual functioning in special populations of self-identified problematic and/or compulsive users of pornography.

Women

Few studies have examined PPU or compulsive use and sexual dysfunction in women. We identified four studies related to the topic up through 2021 (reviewed also in Hoagland and Grubbs [2••]), but only one study since then. Most studies

have shown no clear association with sexual functioning; one has shown a weak positive association and one a weak negative association. Bothe et al. [45•], for example, contrasted frequent pornography users (FPU) with problematic pornography users (PPU) in over 4000 women, finding a weak/moderate positive association between FPU and sexual functioning but a moderate negative association between PPU and sexual functioning, that is, women problematic users were at moderate risk for sexual problems during partnered sex.

Four other studies focused on compulsive pornography use, pornography obsession, or social media addiction, a construct presumably similar or related to (though not identical with) PPU. Barrada et al. [46] studied a cross-section of over 110 college students in Spain, specifying three types of pornography usage: compulsive, isolated, and social. Interestingly, those identified as compulsive users exhibited a number of sex-related differences, such as higher sexual dissatisfaction and higher sexual preoccupation with sex, but they did not show any differences from other groups with respect to sexual functioning. Unfortunately, however, their analysis did not examine patterns for men and women separately, so interpretation of these effects remains obscure. A second study by Vaillancourt-Morel et al. [42] investigated a subgroup of participants having a compulsive user profile (compared to recreational and distressed non-compulsive user profiles). The compulsive user profile—about 12% of the sample—was characterized by high scores on compulsivity to pornography, intense efforts to access pornography, and moderate emotional distress. While compulsive profile users reported higher distress related to pornography use and higher sexual compulsivity, they actually showed slightly better sexual functioning than the other two groups, although no effect size was provided. As with Barrada et al.'s study [46], however, this study—unfortunately—did not examine the relationship between compulsive use of pornography and sexual functioning separately for men and women. More specific to women, Berger et al. [41] also reported no association between craving or obsessive passion for pornography use and sexual functioning in women, despite a high level of sexual dysfunction (52%) reported in this relatively small sample of 44. And a fourth study—only tangentially related to compulsive or problematic use of pornography—reported that while social media addiction in women resulted in lower sexual functioning scores, pornography use was positively associated with sexual functioning, but again no effect size was presented [56].

Evaluation and Comment on Women Problematic Pornography Users

In summary, these five studies suggest no clear relationship between PPU or compulsive use and sexual functioning in

women. The most parsimonious interpretation is that of no association or only a very weak association. Studies benefited methodologically from their large sample sizes (all over 100 participants except one study), from their use of standardized assessment scales for sexual functioning, and from analytic strategies that were generally quite sophisticated, for example: Bothe et al. [45•] used multi-group structural equation modeling; Vaillancourt-Morel et al. [42] employed cluster analysis; Barrada et al. [46] used a series of analytical procedures from factor analysis to hierarchical regression.

On the downside, only three of the five studies included effect sizes. Even more disappointing, two studies did not differentiate effects by sex, so conclusions specific to women were not possible. The use of covariates to determine influencers of the relationship between PPU/compulsivity and sexual functioning was sporadic across studies, although given the various methodological issues, this may be a moot point. Given the paucity of research and lack of differentiation between men and women participants, no clear conclusion regarding an association between PPU/compulsive use and sexual functioning can be drawn with any confidence.

Men

In addition to three studies reported above that included both men and women, six additional studies on PPU/compulsive use and sexual functioning in men were located. For these 9 studies, outcomes were mixed, with some investigations finding negative associations between these two variables, and others reporting none. A variety of covariates were also included in these studies.

Six studies on men reported negative associations between PPU and sexual functioning. Bóthe et al. [45•] reported moderate negative associations between PPU and sexual functioning compared with non-PPU men who showed small positive associations. Three other quantitative studies have reported mild negative associations between PPU and sexual functioning. For example, Wery and Billeux [57] studied PPU in over 400 men in Belgium, reporting a moderate association with higher sexual desire but lower erectile functioning in such men compared with non-problematic users. They further reported that use of pornography for mood regulation was moderately-to-strongly associated with problematic use. Whelan and Brown [58] showed a weak association regarding self-perceived internet pornography addiction and lower sexual functioning in 942 men, and Jacobs et al. [26] reported that, in a group of 3400+ men between the ages of 18 and 35, higher problematic pornography use was associated with mild to moderate erectile problems, although the effect size was small.

Two qualitative studies suggested an association between problematic pornography use and erectile problems. Blinka et al. [59] identified individuals who sought treatment for

PPU, tracking their developmental processes and cataloging various negative outcomes, among them sexual functioning. However, no systematic or standardized assessment of sexual functioning was included, so neither the pervasiveness nor size of the relationship could be assessed. A second qualitative study [25] explored the relationship between PPU and sexual functioning through a combination of topical life history method and personal online diaries in 11 men experiencing severe erectile problems and who attributed their problem to pornography use. Through retrospective description of their escalating pornography use along with implementation of changes in their pornography viewing habits, some participants experienced benefits in their sexual functioning, leading the authors to argue for a cause-effect relationship between compulsive pornography use and impaired sexual functioning. The in-depth analysis and intervention were strong points, while the use of a highly select clinical population, the lack of exploration of other potential risk factors for impaired sexual response, and the lack of a formal assessment of sexual functioning placed restraints on the study's conclusions.

Not all studies of men with problematic or compulsive pornography report negative associations with sexual functioning. Berger et al. [41], for example, reported no association between craving for or obsessive passion for pornography use and sexual functioning scores in men, but the authors note that men who preferred masturbation with pornography to partnered sex had a significantly increased risk of sexual dysfunction. However, the numbers for this particular comparison were very small, and no effect sizes were included. Two studies reported under the “**Women**” section that included men but did not examine them separately reported no negative associations. Specifically, Barrada et al. [46] concluded that men who identified as compulsive users exhibited a number of sex-related differences, such as higher sexual dissatisfaction and higher sexual preoccupation with sex, but they did not show any differences from other groups with respect to sexual functioning. And Vaillancourt-Morel et al. [42] investigated a subgroup of participants having a compulsive user profile (compared to recreational and distressed non-compulsive user profiles) and reported that while compulsive profile users reported higher distress related to pornography use and higher sexual compulsivity, they actually showed slightly better sexual functioning than the other two groups, although no effect size was provided.

Evaluation and Comment on Men Problematic Pornography Users

The majority of studies relating PPU to sexual functioning in men demonstrated weak-to-moderate negative associations with sexual functioning. Several studies reported no

associations, but two of these did not parse effects by sex of the respondent. Quantitative studies have typically used multivariate or standardized assessment scales for sexual dysfunction, and most report effect sizes that suggested that even in extreme users of pornography, negative associations with sexual functioning were fairly modest. Not surprisingly, select clinical samples were more likely to result in strong cause-effect interpretations, but with very small samples, reliance on self-diagnosis, lack of effect sizes, and absence of investigation into other risk factors for sexual problems, such studies would benefit from greater attention to issues surrounding dysfunctional sexual responding. As an illustration, one recent study has argued that erectile concerns in such groups as those reported in the above studies are better predicted by anxiety than by pornography viewing habits, casting doubt on a foolproof interpretation of causality [60•].

Discussion

From this summary of the literature, several conclusions can be drawn: (1) for the vast majority of consumers of pornography, there are no or only very mild negative associations with sexual functioning; (2) some women show mild positive associations with pornography use; (3) men—when they do show effects—are more likely than women to show negative associations with sexual functioning; and (4) for both sexes, the sexual functioning of a relatively small percentage (perhaps 2–8%) of self-identified problematic or compulsive pornography users may be affected by pornography use.

Similar conclusions had been reached in reviews completed in 2019 and 2021 [2••, 39], with more recent studies conducted since 2020 generally affirming these patterns, that is, no new and significant revelations have since emerged. In essence, and contrary to various hyped media reports, we have yet to see evidence of anything more than a weak relationship—whether positive or negative—between pornography use and sexual functioning in the general population, and we have yet to see persuasive evidence of a cause-effect relationship between these two variables in the general population, and we have yet to understand why a relatively small subset of the population may be particularly vulnerable to developing a pattern of pornography use—typically defined as problematic or compulsive—that is associated with small to moderate decrements in sexual function during partnered sex.

Methodological Issues Revisited

As mentioned in the “**Results**” section, various methodological issues have limited the confidence regarding conclusions drawn by studies relating pornography use to sexual functioning. On the positive side, studies carried out over the

past 5–8 years have, for the most part, shown a fairly high degree of methodological and statistical rigor. They have generally relied on sizable samples, avoided using patient or clinical samples, applied standardized assessments of sexual dysfunction, and used a multivariate research and statistical model to understanding relationships, including structural equation modeling and path analysis [49, 54], multiple linear regression analysis, discriminant analysis [28, 55], and cluster analysis [42].

Yet methodological issues remain. Statistically, some studies have not reported effect sizes, an index that is far more interpretable than significance levels and that enables comparisons across studies [61]. From a conceptual standpoint, we note four additional concerns. First, studies that report variation in sexual functioning often do not specify whether these differences actually “reclassify” men (or women) into (or out of) a dysfunctional classification, or simply represent differences in one direction or another on a particular sexual functioning scale. Two studies that assessed actual dysfunctional reclassification of men based on pornography use showed no—or almost no—effect within community samples [38, 55]. Furthermore, few studies have examined whether the severity of the dysfunction was related to the level of pornography use—two that did [38, 55] found no relationship between these variables.

Second, even though most of the studies reviewed used a multivariate approach that included covariates, most often these covariates were demographic-, pornography use-, situational-, or personality/temperament-related. Few studies included covariates (other than masturbation frequency) known for their relationship to sexual functioning/dysfunctional, for example, sexual interest/importance, relationship satisfaction, medical issues, anxiety/depression, sexual self-confidence, sexual partner availability/access, and sexual comorbidities. And few incorporated covariates likely associated with the frequency or problematic pornography use (e.g., low tolerance for anxiety and misuse/dependency on substances). Control of such covariates is critical to specifying which of a set of correlated variables are most likely uniquely associated with changes in sexual functioning as a result of pornography use.

Third, most studies seemed unaware of the intricate and complex physiological and psychological nature of sexual response and dysfunction. For example, studies seldom bothered to specify the component (or components) of sexual response associated with pornography use (e.g., most standardized sexual assessment instruments include subscales related to various dysfunctions). Furthermore, little attention has been paid to issues surrounding a “paper” vs. actual clinical diagnosis (e.g., most standardized instruments serve as screening tools rather than comprehensive diagnostic tools), to the varying etiologies of the dysfunctions (e.g., lifelong vs. acquired;

pathophysiological vs. psychological/relational), to sexual comorbidities (e.g., ED may occur by itself, in conjunction with premature ejaculation, delayed ejaculation, or genital pain, with various comorbidities having very different effects on sexual arousal potential), or to the myriad of relationship/partner variables that affect sexual responding. Indeed, given the relatively weak associations between pornography use and sexual functions—even in PPU individuals—we wonder whether control of such variables might eliminate effects altogether. We express further concern regarding a (lack of) depth of sexological knowledge apparent in a number of studies on the topic.

Fourth, the thorniest issue surrounding the topic of pornography use and sexual function is cause-effect directionality. True experimental analysis (i.e., more than merely longitudinal analysis) presents a near insurmountable challenge for this type of research, yet the alternative cross-sectional methodology that dominates the literature is ill-suited for interpreting cause-effect directionality. Most studies have implicitly assumed that pornography use affects sexual functioning, rather than vice versa, perhaps noting the interpretation conundrum in a sentence or two in the “Limitations” section of the article. Nevertheless, there is substantial evidence that such directional interpretations may not be all-inclusive—at least a portion of men and women with sexual performance problems and/or relationship issues turn to masturbation (supplemented with pornography use) as a source of alternative pleasure and satisfaction [62, 63]. In fact, two recent studies in men support this alternative interpretation. One study assessing men’s reasons for engaging in masturbation (and concomitant pornography use) identified problems with satisfaction/performance during partnered sex and problems with the relationship (including lack of partner access/availability) among the top reasons [64]. And, in a second study assessing men’s self-reported reasons for having difficulty reaching orgasm, under 4% attributed their problem to the use of pornography [62].¹ Together, these findings—although one is based on self-perceptions—question the cause-effect directionality (pornography → impaired sexual functioning) typically assumed in studies on this topic. Even when a longitudinal component has been incorporated into studies (e.g., [50, 54]), the direction of causality remains largely hypothetical, as reverse directional effects may also be plausible.

Mediating/Moderating Covariates and Correlates Between Pornography Use and Sexual Functioning

As noted in the “Results” section, men and women who are identified as problematic pornography users, compulsive users,

¹ This percentage falls within the typical percentages of PPU individuals reported within samples [22].

Table 2 Examples of correlates and mediating/moderating variables relevant to the relationship between pornography use and sexual functioning outcome

Variable	Type of variable	Reference
Sexual flexibility (women only)	Mediating/moderating	[49]
Masturbation frequency	Covariate	[38•, 55, 73, 74]
Importance of/desire for sex	Covariate	[38•, 55, 57]
Self-competence	Covariate	[50]
Motivation: emotional avoidance vs. curiosity	Organizing variable	[43]
Motivation: recreational vs. compulsive	Organizing variable	[42, 53]
Situational: isolated vs. social vs. compulsive	Organizing variable	[46]
Sexual insecurity	Mediating/moderating	[51]
Relationship parameters/assumptions/pressures	Organizing variable	[47, 51]
Moral incongruence	Mediating/moderating	[2••, 75]
Age of first exposure	Covariate/mediating	[34, 35, 59]
Dyadic use/communication	Covariate	[57]
Anxiety or depression	Covariate	[38•, 44, 55]
Other addictions	Covariate	[56]
Tolerance and escalation	Covariate/mediating	[72]

or pornography “addicts” typically form subgroups at greater risk for impairment of sexual functioning during partnered sex.² However, as with any compulsion, addiction, or excessive craving, PPU represents a dysfunctional state that likely impacts multiple domains of functioning, including retreat from social interactions; problems with family, friends, and co-workers; diminished performance in work, school, or home; and greater risk taking—that is, sexual functioning is likely only a small piece of a much larger picture [35, 59]. Furthermore, while categorization into problematic or compulsive user groups helps define a subset of vulnerable individuals, such classifications are merely descriptive—they do not explain the “why” and “how” behind this vulnerability. Studies reviewed herein have attempted to identify such explanatory covariates, including several that act as mediating or moderating factors. Ince et al. [72], for example, suggest high tolerance and psychological distress (as per substance addiction models); Wright et al. [51] and Komlenac and Hochleitner [49] suggest roles for sexual insecurity and sexual flexibility; and others suggest the relevance of possible motivational [43], relationship [47, 66••, 25], and sexual dysfunction correlates [38•, 55].

Table 2 catalogs a sampling of explanatory factors derived from the research literature reviewed in this article. A brief glance at them reveals no unifying or overarching dispositional or situational characteristics that might help explain variability in the relationships between pornography use and sexual functioning, for example, those related to male vs. female differences, problematic vs. non-problematic users,

and clinical vs. non-clinical samples. In fact, to date, there has not even been convergence on which correlates (or categories of correlates) should be included in studies on this topic.

We thus iterate four (somewhat interrelated) conceptual challenges for future research. The first is to identify any underlying constructs that might help unify the growing list of “explanatory” covariates in Table 2 [2••, 34, 35, 38•, 42–44, 46, 47, 49–51, 55–57, 72–75]. A second is to determine whether some of the predictors of PPU might also serve as direct predictors of partnered sexual functioning and/or its intermediary correlate, namely, masturbation frequency [62, 64, 73, 74]. For example, according to several models [21, 76, 77••], PPU vulnerability is predicted by predisposing variables such as developmental experiences/processes and disposition/temperaments (e.g., anxiety, depression, and low self-esteem). Not surprisingly, these same variables can also directly predict problems with sexual functioning during partnered sex [78, 79]. Thus, PPU may stand as a “non-informative” proxy between individual PPU predisposing predictors and sexual impairment.

A third challenge is to parse PPU—a composite variable—into its component parts, allowing them to serve as independent predictors of sexual functioning. Models of PPU (in specific) and addiction (in general) identify loss of/impaired control (an element related to functional/dysfunctional coping), cognitive preoccupation and distraction, compulsivity, high motivation/craving, and operants related to reward systems (pleasure; need for anxiety/mood regulation) as relevant to addictive and compulsive states [76, 77••, 80]. Understanding how each PPU component is related to sexual functioning may not only reveal the more relevant and powerful predictors of impaired sexual functioning but may also help explain differences between men and women, PPU and FPU, and so on. Furthermore, such an approach could offer a more targeted

² Given the current lack of consensus surrounding the possible addictive nature of pornography use, we invite the reader to peruse Sidebar 2, in which we provide a brief sketch of the issue [65–71].

strategy toward remediation than those offered by masturbation and/or pornography abstinence.

A fourth challenge is that of separating general “addictive” or “problematic” elements of behavior from elements specific to a “pornography” addiction. That is, all addictions share common elements, but the target behaviors of these addictions vary considerably. We thus pose the question, how much of presumed problem of sexual impairment stems from common (and dysfunctional) elements of addiction, and how much stems from the specific addiction to “pornography content” (as opposed to gaming, the Internet, social media, etc.).

Indeed, the potential synergies among the interrelated factors noted above may reveal deeper understanding of PPU-sexual dysfunction, for example, high motivation for sex coupled with low self-confidence/esteem is a recipe for both PPU and (independently) sexual dysfunction.

Putative Domains/Constructs Related to Problematic Pornography Use: A Path Forward

In this final section, we propose a number of theoretically relevant (though as yet untested) domains that might be considered for developing a more comprehensive model for understanding of the relationship between pornography use and sexual function. These domains are ones that serve as predictors (predisposing) and components of PPU/addiction or have been identified as relevant “bridge” variables between pornography use and sexual functioning.

- **Motivation-reward systems:** Studies have identified not only various reason/goals in using pornography but also level of sexual desire/drive/craving as relevant factors for both pornography use and sexual functioning [7, 21, 77••]. Various reinforcers (pleasure, anxiety reduction, etc.) result in strongly entrenched habitual behaviors
- **Developmental-experiential:** Individuals exposed to pornography or other sexual experiences (e.g., sexual abuse) at early ages when inhibitory brain/social functioning is not fully developed or before sexual maturation are at risk for both PPU and sexual problems [35, 59]
- **Relational:** General relationship satisfaction and intimacy are important to sexual functioning (e.g., “secret” pornography use may engender trust issues) but also impact (and are impacted by) pornography use and masturbation frequency [2••, 38•]. Limited/absent relationship experience and/or a strong autoerotic orientation characterize both PPU and partnered sexual problems
- **Coping strategies:** Either functional or dysfunctional, these strategies are important to managing feelings and dealing with situations in ways that may increase the likelihood of PPU. Cognitive strategies related to pre-occupation, attention, and inhibitory control are likely relevant [76, 77••]

- **Disposition/temperament:** Traits and dispositions such as anxiety (trait or situational), feelings of moral incongruence, sexual self-efficacy, openness, self-esteem, and flexibility correlate with both pornography use and sexual functioning [75, 78].
- **Contextual influences:** Each individual’s beliefs about and experience of pornography are significantly shaped by factors such as family of origin values, peer influences, community norms, societal statutes, and national policies [81]

Although neither exhaustive nor highly refined, the above list might represent candidates worthy of more systematic exploration with respect to the development of problematic pornography use and its negative effects, not only on sexual functioning but also on other possible outcomes such as relationship satisfaction and sexual well-being. A research agenda that attempts to address some of the above challenges could also yield richer/deeper insight into the “how” and “why” some individuals seem particularly vulnerable to problematic pornography use and may be instrumental in furthering conceptual development within this field.

Summary and Conclusions

In this review, we have demonstrated that claims of a strong relationship between FPU and/or PPU are unfounded both by the findings of studies and/or by misinterpretations of them. Our synthesis further shows the diversity of outcomes of pornography use, including how they currently play out differently for women and men and for problematic and non-problematic users. As we have stated in previous papers [55], we do not doubt that a relatively small percentage of men—perhaps younger, sexually inexperienced, and/or residing in sexually restrictive environments—might (even in the absence of pornography use) struggle with sexual performance during partnered sex, and this situation may be exacerbated by excessive or problematic pornography use. However, community samples do not support the notion that pornography use is widely associated with impaired sexual functioning during partnered sex.

We hope a proximal outcome of this review is the advancement of research in this field, achieved via two pathways. First is the inclusion of covariates directly associated with PPU and also with the particular sexual dysfunctions being assessed. It is our premise that these covariates may be accounting for much of any observed correlation between pornography use and the development of problematic outcomes. Second is the development of more intricate and detailed models that supplant concepts such as PPU and compulsive use with their component pieces, enabling retention or discarding of common and/or specific elements of PPU/addiction.

Finally, as scholars in this field consider more distal outcomes, we note that while pornography has been a part of human culture for thousands of years, the development of technology has had a profound impact on the nature, amount, and availability of cybersexual activity, from viewing pornographic material to online sexual activities, both in-person and with robotic partners. We challenge thought leaders in this field to envision the future of human sexuality in an environment where such (once unimaginable) disruptive interfaces are likely to affect the nature and definition of sexuality to future generations.

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Author Contribution DLR conceptualized, researched, and wrote approximately 70% of the manuscript and did the final editing and merging of text. SEC conceptualized, researched, and wrote approximately 30% of the manuscript and reviewed the final version.

Data Availability No datasets were generated or analysed during the current study.

Declarations

Competing Interests The authors declare no competing interests.

Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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