Pornography: the psychological and neurological effects of a $97 billion industry

Review article
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Abstract

Aims: This review aims to summarise the research exploring the health effects of internet pornography on its users. It focuses on pornography’s addictive potential, impact on sexual behaviours and mental health.

Methods: The relevant literature concerning the health effects of internet pornography was reviewed. Resources were sourced from databases such as PubMed and JSTOR.

Results: This review finds significant evidence for the addictive potential of pornography, validating the consideration of pornography addiction as a clinical diagnosis. Pornography may also cultivate misogynistic beliefs, affect the sexual functioning of its users and have some role in promoting sexually aggressive behaviours. Poor mental health and pornography appear to have a bi-directional association.

Conclusions: The potential health effects of pornography are extensive and well-established. Given the ubiquitous nature of this media, there may be significant clinical implications for these findings.

Background

The proliferation of the Internet has fostered a wild-fire growth of the pornography industry. [1] Pornography is more accessible and widely disseminated than ever before, accounting for a quarter of all internet searches and 1.5% of all websites.[2] However, this growth doesn’t come without concern. The cultivation of sexual abuse, misogyny and poor mental health are among some of the startling accusations made against this industry. [1,3,4] Given that 84% of Australian males and 23% of females aged 16–25 years use this media daily or weekly,[5] if these accusations hold water, they may have significant and widespread impacts. The following review aims to summarise the research on the health effects of pornography on its users.

Compulsive pornography use and addiction

There is considerable debate as to whether pornography has addictive potential and if it does, whether it is comparable to those of other addiction disorders (e.g. alcoholism, compulsive gambling). [6] These well-established addiction disorders are characterised by several common thought and behavioural patterns. These include but are not limited to: (a) perceived lack of control over the substance/object of abuse; (b) adverse consequences from its use (e.g. relationship, social, work or school problems); (c) an inability to stop its use despite these negative consequences; and (d) preoccupation with the substance/object of abuse.[7]

These symptoms are being increasingly reported in patients who complain of pornography overuse. [6] Pornography addiction is not at present a formally-recognised clinical disorder in the DSM-V or ICD-10, however, the prevalence of these findings has led to the widespread use of Compulsive Pornography Use as a working clinical diagnosis. Many of the studies mentioned in this paper have recruited patients suspected to have this disorder. There is no consensus on the definition of this disorder, but as with other addictions, the aforementioned thought patterns are characteristic.[7] The prevailing argument contesting the recognition of Compulsive Pornography Use as a clinical disorder is the thought that these symptoms reflect a high sex drive in certain populations and are not suggestive of a pathological addiction.[8]
The cultivation of sexual abuse, misogyny and poor mental health are among some of the startling accusations made against this industry.[1,3,4] Given that 84% of Australian males and 23% of females ages 16-25 use this media daily or weekly,[5] if these accusations hold water, they may have significant and widespread impacts.

Due to this debate, researchers have attempted to draw direct comparisons between those with suspected Compulsive Pornography Use and those with addiction to substances where the disorder is better defined and established (e.g. alcohol). One of the hallmarks of a substance use disorder is an increased desire for a substance without proportional pleasure from its use.[6] On fMRI neuroimaging this can be visualised as decreased striatal responsiveness to dopamine as the brain becomes tolerant to its effects.[9] Very similar findings have been found in patients with suspected pornography addiction. Their desire for this media far exceeds the pleasurable effects it has on them[10] and fMRI changes resemble those in patients with other substance use disorders.[11] Studies have found reduced grey matter volume in the right caudate and dampened putamen activation in those who compulsively use pornography.[12] These patients are also likely to have escalating levels of pornography usage, which supports the theory that a tolerance to pornography can develop.[13]

A predominant counter to these findings is that reduced striatal volume is a precondition for, not a result of increased pornography use.[12] This model argues that people with naturally lowered striatal volume require additional stimuli for dopaminergic responses. They are therefore more likely to consume large amounts of pornography. With this model, those with decreased striatal volume should be able to achieve the full pleasurable effects of pornography, even if more of it is needed.[12] However, there does not seem to be this expected positive dose-effect relationship between pornography use and pleasure.

[10] Additionally, laboratory fMRI studies have shown that repeated viewing of sexual images can cause a down-regulation of the brain's reward pathways.[14] This suggests pornography can play an active role in down-regulating the striatum. The dose-response relationship of this finding is yet to be established, and it remains unclear whether these findings are exclusive to high-volume users or those with other risk factors for addiction.

**Gender roles and sexual behaviour**

Another charge made against pornography is its potential to promote misogynistic attitudes and behaviours, particularly in males. In a review of 135 studies on the topic, it was found that sexualised media, of which pornography was included, was directly associated with "sexist beliefs ... and greater tolerance of sexual violence toward women" in males. [15] This media may play a role in cultivating views that support female objectification, patriarchal ideologies and permissiveness towards female harassment. [1] This association is greatest when pornography is accessed during early adolescence (12-14 years). [16] Longitudinal research in this area is lacking, therefore these findings may simply suggest that people with these views consume greater amounts of pornography as it reaffirms their beliefs. Additionally, if pornography is to have a role in promoting sexist attitudes, the extent to which these opinions go on to influence interactions with others is unclear and difficult to determine.

The research attempting to establish the impact of pornography on sexual encounters is highly conflicted. A prevalent thought is that the violence depicted in its material desensitises viewers to sexual assault, increasing their propensity to commit sexual crimes. [17] This view is supported by findings that porn can increase acceptance of rape and sexual assault in males.[3,18] This influence on sexual violence seems to be greatest and perhaps limited to males with other risk factors for sexually aggressive behaviour. [1] These include: a history of family violence, a cultural upbringing promoting male dominance and toughness, attitudes accepting of violence and impersonal views of sex.[19] Pornography use in these high-risk individuals has been associated with an increased prevalence of forced vaginal, oral and digital penetration, sexually aggressive remarks and sex with animals.[1] This research challenges the argument of a cathartic role for pornography – that its usage can reduce the prevalence of sexual crimes committed in males as these sexual impulses are somewhat acted upon through pornography usage. The active role of pornography usage in promoting sexual assault is well-established in people with other risk factors for sexual assault, however, the causal link between pornography and sexual assault in most users is less strongly established and highly debated.[20] Therefore, pornography may play a role in fostering and validating attitudes that predispose some men to rape women, however, it may have little to no impact in males with no other risk factors for sexually aggressive behaviour.[1] There are many
barriers to research into this question, not least the underreporting of sexual assault and the ubiquitous nature of this media.

While pornography may have a limited role in promoting sexually aggressive behaviour in most men, lowered libido and erectile dysfunction are widespread in pornography users.[21] In a study of adolescent males, 16% of those who consumed pornography more than once weekly reported low sexual desire, compared to 0% of those who did not.[22] Other sexual performance problems associated with pornography use include difficulty orgasming, decreased enjoyment of sexual intimacy, less sexual and relationship satisfaction and a preference for pornography over a sexual partner. [23] Erectile dysfunction is also strongly associated with pornography use and when present, often occurs during intimate sexual relationships, but not to sexually explicit material.[10] Males who use pornography to stimulate sexual desire likely partially account for these findings. However, cessation of pornography use has on numerous accounts been recorded as an effective treatment for patients with sexual dysfunction, suggesting it does also play a causal role in this condition.[24,25]

One longitudinal study has also found that pornography usage has a statistically significant role in predicting poor marital quality. Pornography usage was found not only to be a product of marital dissatisfaction, but a causal factor for such dissatisfaction. This media was the second greatest predictor of poor marital quality in the study, following only marital quality at the commencement of the study. These effects increase with frequency of pornography use and seemed to only apply to husbands who use pornography and not to wives. [26]

Mental health

With our society's increasing interest in mental health, pornography's impact in this area is being heavily researched. Pornography usage is strongly associated with mental health disorders, loneliness, poor self-esteem and reduced quality of life.[5,27,28,29] An Australian study of 914 adolescents found that those who reported mental health problems in the last 6 months were 52% more likely to watch pornography at least once weekly than those who did not.[5] Masturbation to internet pornography has also been strongly associated with dissatisfaction in offline life and feelings of poor social support.[29] Pornography may play a causal role in this relationship, but equally, it may be a means by which adolescents aim to aid feelings of loneliness. Exploring the causal nature of this relationship, a study published earlier this year found that intentional exposure to pornography in adolescence was a predictive factor for depression and low self-esteem in later life.[30] On the other hand, a longitudinal study has also found that low self-esteem and depressive feelings in adolescent males are predictive of compulsive pornography use.[31] The extent to which poor mental health and pornography encourage each other is unclear. The increasing ubiquity of this media makes controlled longitudinal trials in this field difficult to conduct. Additional research exploring the therapeutic benefits of pornography cessation in patients with mental health disorders would be of great clinical benefit.

Conclusion

While much of the research exploring the health impacts of pornography is still inconclusive, there is still substantial and warranted concern surrounding this media. This field would greatly benefit from additional longitudinal studies which further clarify the causal role of pornography in promoting the health issues addressed above. The prolific use of this media does serve as a barrier to controlled studies in this field, but also stresses the need for further research, given the extensive clinical implications such findings may have. Additionally, this industry has transformed substantially this century with the proliferation of the internet, and the full impacts of this may yet be apparent.

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