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Original Article

The Risks Young People Face as Porn Consumers*

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Abstract

Adolescents are now significant users of internet pornography. Samples of voluntary consumption were identified from 14 countries. Considered collectively they demonstrate that boys are much more interested in viewing pornography than girls and that both genders watch more pornography as they get older. By age 18 most boys are consumers. From a risk management point of view, internet pornography has not been proven to be a safe product. It poses dangers similar to any activity that has a high potential for the development of problematic behaviors or addiction through sustained overconsumption. Until causality linking pornography consumption to harm is either disproven or demonstrated to be very low, there is a strong case for governments and policy makers to intervene in the unrestricted supply of internet pornography to all consumers, particularly adolescents. The precautionary principle should be invoked to minimize the likelihood that internet pornography consumption will become a global public health crisis. Prevention of harm is always preferable to treating it. Reducing risk from internet pornography by discouraging its consumption is relatively inexpensive and easy to do.

Keywords

Internet pornography • Adolescents • Risk management • Porn consumption • Precautionary principle

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There is a paucity of research for understanding the potential harm of internet pornography to children. In this context, children are considered young people under the age of 18 years. It is evident that more research is needed to demonstrate if causal relationships exist between consuming internet pornography and specific harms to children. With this in mind, the issue becomes how policy makers should proceed until the uncertainty is resolved.

What We Know about the Number of Children Using Internet Pornography

The market for legal pornography intended for consumption by adults continues to expand by at least 10% per annum. The world's largest corporate supplier is Pornhub Network with 100 million visits per day worldwide, or 87.8 billion video views a year (Pornhub, 2016). The second largest supplier, Xvideos, claims that it adds 10,000 new videos per day. Clearly, pornography is being consumed from the internet on a vast and unprecedented scale.

Commercial internet pornography suppliers do not publicly admit that consumers under the age of 18 use their content. For example, as suppliers of "adult entertainment" Pornhub only provides statistics for its consumers over the age of 18 (Pornhub, 2016) and never mentions younger consumers. A more accurate scale of use is suggested by research from the U.K.'s Department of Culture Media and Sport (2016), which found that 1.4 million unique visitors to adult sites in Britain were under the age of 18 during the month of May 2015.

A review of recent journal literature identified 38 datasets for adolescents' voluntary watching of internet pornography. Each data set is represented in the figures by the mean age of the viewing group. Figures 1 and 2 provide an international view of online pornography viewing for both adolescent boys and girls. Sources of the data are cited in Appendix 1 for both figures, along with information regarding the size of the samples and date of collection.

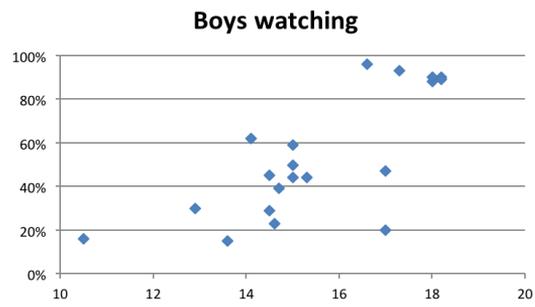


Figure 1. Adolescent boys voluntarily viewing internet pornography.

A long list of harms is currently under investigation, including social isolation, depression, lethargy, erectile dysfunction, and a declining interest in real partners. Early internet pornography use correlates with early sexual debut and a wide range of anti-social markers (Svedin, Åkerman, & Priebe, 2011).

In modeling sex, the activities depicted generally ignore health risks, displaying condom-free performances with multiple partners. The performers are often physically enhanced and they usually behave in an exaggerated way. There is evidence correlating the increased levels of hetero-anal sex in real-life with its very frequent depiction in popular pornography (Braun-Courville & Rojas, 2009; Mattebo et al., 2016; Rogala & Tydén, 2003; Tydén & Rogala, 2004). This view is also held by front-line sexual health professionals such as those at Edinburgh's Chalmers Sexual Health Centre (Hardman, S. 2016, personal communication, 16 June) and at the Gold Coast Centre Against Sexual Violence (Macleod, D. 2016, personal communication, 11 November).

Free access to internet pornography means that virgin consumers often view this material for years before they engage in partnered sex. For some, it can become a substitute for partnered sex. Through unconscious sexual conditioning, it can also encourage the development of tendencies for voyeurism and to escalation to different genres, potentially including illegal child sexual exploitation material (CSEM). Escalation may be driven in part by the need to feel sexually aroused when affected by pornography-induced erectile dysfunction (Wilson & Jack, 2014). This side-effect is a result of desensitization, a characteristic of addiction. Heavy consumption can also lead to confusion over sexual orientation, as bored users escalate to genres of pornography at odds with their natural orientation. For example, heterosexual individuals may begin to view homosexual pornography and vice versa to create sexual arousal (Downing et al., 2016).

The first-ever effort to produce a meta-analysis (an analysis of multiple studies to obtain a larger sample size) concerning the impact of pornography as a driver for sexual aggression appeared at the end of 2015. However, the analysis only explored the impact on the general population, and did not address children specifically. No equivalent research for those under 18 years has been published. Nevertheless, the meta-analysis detailed a number of interesting findings:

Consumption was associated with sexual aggression in the United States and internationally, among males and females, and in cross-sectional and longitudinal studies. Associations were stronger for verbal than physical sexual aggression, although both were significant. The general pattern of results suggested that violent content may be an exacerbating factor (Wright, Tokunaga, & Kraus, 2015).

The newest area of concern is the potential for internet pornography addiction to affect heavy users (Wilson & Jack, 2014). According to a 2015 review into internet addictions led by Love (Love, Laier, Brand, Hatch, & Hajela, 2015), compulsive use of internet pornography fits the definition of an addictive behavior established by the American Society of Addiction Medicine. Recent research from the University of Cambridge (Voon et al., 2014) indicates that compulsive use of internet pornography causes the same brain changes as those seen in cocaine addicts and alcoholics.

The default situation, which has evolved throughout most parts the world, is to accept unfiltered internet access, allowing everyone unlimited access to all pornography. The exception is illegal depictions of children in CSEM, which is banned through an international agreement underpinned by the United Nations Convention on the Rights of the Child (United Nations, 1989).

Internet Pornography and Risk Management

The cornerstone of risk management is the precautionary principle. Where there is an unproven risk, the activity must be assumed to be harmful until proven otherwise. Allowing adolescents to consume internet pornography falls into this category. Thus, precautions should be taken to avoid the possible risk until when, or if, internet pornography is proven either harmless or low-risk. According to the European Commission, “the precautionary principle may be invoked when a phenomenon, product or process may have a dangerous effect, identified by a scientific and objective evaluation, if this evaluation does not allow the risk to be determined with sufficient certainty.” (EUR-Lex, n.d.).

This paper will now explore the options available to governments if they choose to use the precautionary principle to minimize access for adolescents to internet pornography while the debate over harms is resolved or clarified.

Harm Minimization - Reducing Access to Legal Pornography

Making legal pornography illegal will not prevent consumption unless its supply can be efficiently blocked before it reaches consumers. At present, this is only feasible for countries investing heavily in internet censorship, such as Iran and China.

From a risk management point of view, internet pornography poses dangers similar to any activity that has a high potential for the development of problematic behaviors or addiction through sustained overconsumption. In fact, internet pornography has not been demonstrated to be a safe product, and therefore, it could be mandated under product liability law as a defective product when consumed in excess.

It is important to recognize the role of search engines in providing children with the ability to find pornography. Typing “porn” into Google generates 345,000,000 results

and “sex” returns 2,010,000,000 results. Nearly all results in the first few pages are for pornography sites. Any effort to reduce access will require technical collaboration with the search engine companies as well as the Internet Service Providers (ISPs).

Fewer young people are likely to be able to access internet pornography easily if the ISPs routinely block access to adult sites. Historically, this has already been enacted in the U.K. based on an automatic opt-out. When a person leases an internet connection, it comes unfiltered and there is an option for the consumer to have adult-content filtering turned on, blocking most common pornography sites. Uptake of these filters has been poor, meaning that most U.K. consumers have unfiltered access.

More recently in the U.K., several major ISPs have moved toward setting up new accounts with adult filters turned on by default. However, the bill-payer still has the option to opt-out. Over time, the market will move toward filtering as the default condition in the U.K. This sort of filtering is currently a blunt instrument, as it does not block non-commercial pornography sites or sexting and sometimes blocks legitimate content.

The majority of young people access pornography on mobile devices ([Pornhub, 2016](#)). Specifically, internet-enabled gaming machines continue to increase in popularity as sources of pornography. For pay-as-you-go mobile services, some providers have a default over-18 filtering, which can only be removed by registering a credit card. Once this is done, adult content is permanently enabled.

Although filtering has the ability to reduce overall consumption, it can be overcome by a range of easy hacks within the capacity of many teens. Moreover, if one family blocks pornography, a child can always watch it at their friends’ homes where it is not blocked. The protective benefits of filtering are likely to be greatest for younger children who have fewer options to circumvent blocking.

The review by the United Kingdom Government of the potential to institute an age verification system to minimize the access to internet pornography ended its public consultation phase on April 12, 2016 and is expected to result in the passage of the Digital Economy Bill ([Department of Culture Media and Sport, 2016](#)). This study is investigating options to both establish specific methods of acceptable age verification and to develop a range of control measures, which have the potential to encourage internet pornography suppliers to conform to U.K. law. However, it is recognized that no major pornography supplier is based in the U.K., and few are even within the European Union. In essence, the measures would encourage pornography suppliers to incorporate the age verification software for consumers with IP addresses in the U.K.

In the future, it is likely that Artificial Intelligence (AI) technologies will develop to the point where machines can identify pornography with a high degree of

reliability. Having recently visited labs where some of the world's leading computer scientists are building image identification algorithms, it is apparent that it will be at least several years before it will be possible to block pornography purely based on the content of images. AI filtering could be done at both the consumer and supplier levels, making it a powerful technology once it is perfected.

Harm Minimization - Reducing Demand for Legal Pornography

If adults have less desire to consume legal pornography, they are less likely to expose young people in their care to this material or to create opportunities where young people can gain access while the adults are not present. There is also a body of research indicating that pornography consumption by one adult in a relationship can significantly negatively affect the future of the relationship (Stewart & Szymanski, 2012; Szymanski, Feltman, & Dunn, 2015). Therefore, active education to highlight the harmful aspects of an overconsumption of internet pornography would be valuable among the adult population in any country. Excessive consumption of pornography is already a global public health issue (Dines, 2010, 2016).

The single factor that tends to motivate people to reduce or eliminate pornography consumption is the recent massive rise in erectile dysfunction, especially among younger men. Historically, levels of impotence among young men have been 2% to 5% (Park et al., 2016). A range of recent studies are finding that 27% to 33% of young men age 18–40 years are having erectile difficulties and low libido rates with a real partner (Bronner & Ben-Zion, 2014; Klucken, Wehrum-Osinsky, Schweckendiek, Kruse, & Stark, 2016; Kühn & Gallinat, 2014; Mialon, Berchtold, Michaud, Gmel, & Suris, 2012; Pizzol, Bertoldo, & Foresta, 2015; Sutton, Stratton, Pytyck, Kolla, & Cantor, 2015), though not with internet pornography (Landripet & Štulhofer, 2015). Essentially, they have conditioned their brains to respond to images on a screen and not to real partners. For most young men, this problem can be treated by discontinuing their use of pornography (Pacha, 2016; Park et al., 2016; Porto 2016).

A range of proven approaches to support people who wish to end their use of pornography are available on the internet. For example, the site www.yourbrainonporn.com provides many resources to explain internet pornography addiction. Online help is readily available from recovery websites, such as NoFap.com and Reboot Nation (www.rebootnation.org). Additionally, The Reward Foundation offers a three-step approach to quitting (www.rewardfoundation.org).

Harm Minimization - Reducing Demand for Illegal Pornography

Creating illegal pornography to supply the needs of adult users means children are being harmed through the production process. It is likely that reducing demand

for CSEM will reduce the number of children being harmed, either within the local community or elsewhere in the world.

If an individual becomes addicted to internet pornography, the need to progressively increase the impact provided by imagery is similar to that experienced by substance abusers. With substances, an addict needs more of the same, and with pornography, an addict needs different and new images to experience a high. Many internet pornography addicts achieve this by escalating to different genres of pornography. Over time, they may move from heterosexual hardcore pornography to viewing group sex, gay porn, transgender porn, or a multitude of sub-genres that do not match their original taste, and can lead to sexual conditioning and fetishes (Downing et al., 2016; Wéry & Billieux, 2016). Unfortunately, some addicts inevitably move to consuming CSEM.

Thus, the internet has generated a new type of child abuser. Internet pornography addicts can escalate to CSEM without themselves having any interest in committing contact offenses against children. The legal authorities in many countries treat those in possession of images of child abuse as much of a potential risk as contact offenders. For pornography addicts with no history of abuse, but who have escalated to possession of CSEM, quitting pornography use may be effective in itself to reduce the risk of further offending.

Separately, the work of Seigfried-Spellar and Rogers (2013) suggests that:

...child pornography users were more likely to consume both adult and animal pornography, rather than just solely consuming child pornography. Results suggested deviant pornography use followed a Guttman-like progression in that individuals with a younger “age of onset” for adult pornography use were more likely to engage in deviant pornography (bestiality or child) compared to those with a later “age of onset.”

Here the implication is that avoiding early pornography consumption could also help reduce demand for CSEM.

Harm Minimization - Reducing Access to Illegal Pornography

The supply of illegal pornography is very much like the supply of illegal recreational drugs. Draconian laws, banning substances, and very heavy investment in enforcement can greatly reduce the supply, driving demand underground. However, it can never be 100% effective and it generates serious unintended consequences. Organized crime tends to use a wide mix of simple and sophisticated techniques to get its pharmaceutical products to market. Illegal pornography is similar. It can be made by anyone with a smartphone, which is the majority of the population. It can be distributed by any communication channel. Moreover, pornography gains monetary or economic value as well as social status when it is banned or scarce. For example,

CSEM demands a high price because it is illegal. This economic value encourages organized crime to produce ever more CSEM, compromising the safety of children around the world, especially in poorer countries.

Recently, alarming growth is being reported in on-demand production of CSEM for individual live-streaming. Organized crime experts have located users who pay money to impoverished families in poor countries and force young children to perform live sex acts via webcam for the sexual gratification of clients abroad.

Technology providers, such as NetClean in Sweden, provide blocking, analytic, and forensic software for corporate networks to block child sexual abuse content. NetClean also supply software for ISPs to block this content. A related company, Griffeye, supplies technology that allows law enforcement agencies to gather intelligence and visual evidence from large data platforms handling images and video. These technologies rely on digital fingerprinting of known abuse images, which can then spot additional occurrences of the same material, allowing illegal images to be tracked as they are shared across child abuse networks. This technology is used by the Metropolitan Police in the U.K.

CSEM is generally found on the dark web. Much of this is shared using The Onion Ring (Tor) anonymity network. This provides privacy, though leaks from Edward Snowden show that in the United States, the National Security Agency has developed techniques to identify and infiltrate Tor networks, especially when they are being installed. One of the largest U.K. successes against child sex exploitation was courtesy of a hack by Anonymous who gave material to the police that enabled 700 CSEM consumers to be identified and charged.

Conclusion

In little more than a decade, internet pornography has moved from being a niche product to something consumed routinely by most adolescent boys in advanced economies. Fewer girls consume pornography, but they may be affected by the way it can change the behavior of boys.

From a risk management perspective, until causality linking pornography consumption to harm is either disproven or demonstrated to be very low, there is a strong case for governments and policy makers to intervene in the unrestricted supply of internet pornography to all consumers, particularly adolescents.

The precautionary principle should be invoked to minimize the likelihood that internet pornography consumption will become a global public health crisis. Prevention of harm is always preferable. Reducing the risk from internet pornography by discouraging its consumption is relatively inexpensive and easy to do. This requires

a comprehensive educational programme starting in primary school and going throughout secondary school. Teaching children about the brain's reward system and its vulnerability to addiction can help young people take more responsibility for their own actions. Teaching sexual education that emphasizes respect, consent and safe physical contact can replace, or at least, reduce the need for pornography as a sex manual. Classes on media literacy to deconstruct the pornification aspect of advertising and the emotionally arousing messages that are being used to facilitate the sale of merchandise can be useful in teaching young people critical thinking skills. All of this can support a focus on reducing adolescent's demand for pornography at a local level while governments aim at a national level to reduce supply.

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Appendix 1

Boys Voluntarily Watching Internet Pornography (Sorted by percentage watching)

| Country and year published | Year data collected | Sample size | Boys mean age | Boys watching |
|--|---------------------|-------------|---------------|---------------|
| Hong Kong 2012 (Shek & Cheung, 2013) | 2009–11 | 1,862 | 13.6 | 15% |
| Australia 2011 (Green, Brady, Olafsson, Hartley, & Lumby, 2011) | 2010–11 | 100 | 10.5 | 16% |
| Cambodia 2015 (Lopez, Mukaire, & Mataya, 2015) | 2009 | 136 | 17.0 | 20% |
| Hong Kong 2013 (Ma & Shek, 2013) | 2011–12 | 2,185 | 14.6 | 23% |
| Netherlands 2011 (Peter & Valkenburg, 2011) | 2008 | 1,803 | 14.5 | 29% |
| Sweden 2013 (Skakoon-Sparling, Cramer, & Shuper, 2016) | 2008? | 142 | 12.9 | 30% |
| England 2016 (Stanley et al., 2016) | 2015 | 172 | 14.7 | 39% |
| Bulgaria 2016 (Stanley et al., 2016) | 2015 | 207 | 15.0 | 44% |
| Italy 2016 (Stanley et al., 2016) | 2015 | 273 | 15.3 | 44% |
| Australia 2011 (Shek & Cheung, 2013) | 2010–11 | 100 | 14.5 | 45% |
| Morocco 2013 (Kadri, Benjelloun, Kendili, Khoubila, & Moussaoui, 2013) | 2010–11 | 200 | 17.0 | 47% |
| Norway 2016 (Stanley et al., 2016) | 2015 | 218 | 15.0 | 50% |
| Cyprus 2016 (Stanley et al., 2016) | 2015 | 168 | 15.0 | 59% |
| Czech Republic 2014 (Ševčíková & Daneback, 2014) | 2012 | 1,221 | 14.1 | 62% |
| Netherlands 2013 (Hald, Kuyper, Adam, & de Wit, 2013) | 2008–09 | 1,402 | 18.0 | 88% |
| Italy 2015 (Romito & Beltramini, 2015) | 2014? | 319 | 18.2 | 89% |
| Sweden 2015 (Kastbom, Sydsjö, Bladh, Priebe, & Svedin, 2015) | 2009 | 1,219 | 18.0 | 90% |
| Sweden 2011 (Svedin, Åkerman, & Priebe, 2011) | 2009 | 1,902 | 18.2 | 90% |
| Germany 2012 (Weber, Quiring, & Daschmann, 2012) | 2007–08 | 209 | 17.3 | 93% |
| Sweden 2014 (Mattebo, 2014) | 2011 | 477 | 16.6 | 96% |
| Total | | 14,315 | | |

Appendix 2

Girls Voluntarily Watching Internet Pornography (Sorted by percentage watching)

| Country and year published | Year data collected | Sample size | Girls mean age | Girls watching |
|----------------------------|---------------------|-------------|----------------|----------------|
| Cambodia 2015 | 2009 | 127 | 17.0 | 1.5% |
| England 2016 | 2015 | 500 | 14.7 | 3.0% |
| Cyprus 2016 | 2015 | 300 | 15.0 | 3.0% |
| Hong Kong 2013 | 2011–12 | 1,885 | 14.6 | 4.6% |
| Italy 2016 | 2015 | 340 | 15.3 | 5.0% |
| Hong Kong 2012 | 2009–11 | 1,716 | 13.6 | 6.0% |
| Norway 2016 | 2015 | 517 | 15.0 | 6.0% |
| Bulgaria 2016 | 2015 | 463 | 15.0 | 8.0% |
| Netherlands 2011 | 2011–12 | 1,885 | 14.5 | 10.0% |
| Australia 2011 | 2010–11 | 100 | 10.5 | 13.0% |
| Morocco 2013 | 2010–11 | 200 | 17.0 | 17.6% |
| Australia 2011 | 2010–11 | 100 | 14.5 | 39.0% |
| Italy 2015 | 2014? | 383 | 18.2 | 39.2% |
| Netherlands 2013 | 2008–09 | 3,198 | 17.0 | 44.8% |
| Czech Republic 2014 | 2012 | 1,410 | 14.1 | 52.6% |
| Sweden 2014 | 2011 | 400 | 16.6 | 54.0% |
| Germany 2012 | 2007–08 | 143 | 17.3 | 61.0% |
| Sweden 2015 | 2009 | 1,364 | 18.0 | 75.6% |
| Total | | 15,031 | | |

Note. The sources for the Girl's data are the same as for the matching Boy's set in Appendix 1.