

PORNOGRAPHY ADDICTION AND ITS PSYCHOSOCIAL IMPACTS IN ADOLESCENTS

Muhammad Nurfathirsyah, Bintang Arroyantri Prananjaya, Mariana

Correspondence: muh.nurfathirsyah@gmail.com

Faculty of Medicine, Sriwijaya University, Palembang, Indonesia

REVIEW

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ABSTRACT

Introduction: The research aimed to reveal the psychosocial impacts on adolescents who experienced pornography addiction.

Methods: A qualitative approach was used; participants were aged 14-25 years. The data was taken from PubMed, Google Scholar, and Portal Garuda. The result showed 7 of the 70 research articles that met the inclusion criteria.

Results: The psychosocial impact of addictive consumption of pornography was found in the form of depression, aggressiveness, and antagonistic communication, decreased empathetic tendencies, poor inhibitory control, lower working memory, and anxiety disorder.

Discuss: healthcare professional health promotion needs to be performed, and the most important is education about pornography usage and its negative impact on psychosocial health, especially in adolescents.

Conclusion: This study shows many negative impacts of pornography addiction from a social aspect, as well as from a neuromechanical aspect. In conclusion, pornography addiction has many negative impacts on psychosocial aspects, such as depression, aggressiveness and antagonistic communication, decreased empathetic tendencies, poor inhibitory control, lower working memory, and anxiety disorders. Pornography addiction, especially in adolescents, has direct and negative adverse effects.

Keywords: pornography, addiction, psychosocial, adolescent.

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INTRODUCTION

In the 21st century, the internet plays an important role in various sectors, including industry, the economy, education, and entertainment. According to World Bank data, the number of internet users is over 3.4 billion, with Asia having the most, at 2.5 billion.¹ Young people tend to use social media most frequently, ranging from age 16 to 24 years old.¹ This rapid advancement of internet usage has led to many research studies focused on internet addiction with pornographic content in adolescents.

Research on Internet addiction with pornographic content remains a debatable topic among scientists and health practitioners due to its existence because there is no specific diagnostic test. Addiction to internet pornography has not been included in the latest version of the International Classification of Diseases-11 (ICD-11). Despite a lack of reliable scientific evidence, assessing this order has been a vital task for health practitioners, especially psychiatrists. There has been evidence for a significant increase in pornography content consumption over the years. In 2019, the biggest source of data about

streaming platforms doesn't come from giant platforms like Netflix or Amazon Prime Video, but rather from porn sites.² According to Pornhub's latest statistics, there are over 100 million visits per day, and over 36 billion visits per year.³ Stanley Hall defined the age range of adolescence as beginning at 14 and ending at 24.⁴ Because adolescence is a time of reaching sexual maturity, interest in sexual topics and sexual issues is high, pornography has long been appealing to adolescents.⁴ Recent years, with the internet, pornographic material has suddenly become much easier to obtain. The relation between pornography and abusive exposure to adolescents and psychosocial changes has not been extensively studied previously. The present study aimed to examine and investigate the association between pornography addiction and psychosocial impacts in adolescents.

METHOD

Literature Search Strategy

The search for this review was conducted using the databases PubMed and Google Scholar. The search was conducted using

the Boolean operators (“AND” and “OR”) with the following keywords: “pornography addiction”, “psychosocial effect of pornography addiction”, and “pornography in adolescents”.

Eligibility Criteria

Free full-text articles about pornography addiction in the form of case reports, case-control studies, randomized controlled trials (RCTs), and cross-sectional studies published from 2019

to 2023 were included. The result showed 7 of the 70 research articles that met the inclusion criteria.

Data Extraction

Reviewers read the full articles independently, extracted the data, and then verified for completeness and accuracy.

RESULT

Table 1. Psychosocial Effects of Pornography Addiction in Adolescents.

Authors/Years/Places	Methods	Sample	Outcome
Elisabeth K. Andrie et al./2021/Europe	Cross-sectional studies	100 school classes (9 th and 10 th grade) in seven European countries: Greece, Spain, Poland, Germany, the Netherlands, Romania, and Iceland	Rule-breaking or highly delinquent youth and symptoms of borderline or clinical depression. Testosterone and androgen levels in adolescents who consume pornography could be correlated with aggressiveness and violent behavior
Chao Cheng-Min/2020/Taiwan	Cross-sectional studies	60 senior high schools in Taiwan, data collection 7,034 questionnaires returned	Cyberbullying among adolescent internet users. Potentially increasing abusive and antagonistic communication.
Wang and Dai/2020/China	Experimental	36 males with pornography addiction	The participant showed slower reaction times when answering a two-choice oddball paradigm (neutral and pornographic stimuli), and the participant experienced poorer inhibitory control when facing sexual stimuli.
Camilleri Christina et al/2020/United States	Cross-sectional studies	Franciscan University of Steubenville students who were aged over 18 (N:1031, 34% male and 66% female)	There is a significant correlation ($p < 0.05$) in males between online pornography consumption and depression and anxiety disorders.
Kadavala BN et al/2021/India	Cross-sectional studies	Undergraduate medical student in the seven medical colleges of Gujarat (N:1926)	There are several negative effects of pornography, such as emotional side effects, including nightmares, residual feelings of shame, guilt, and confusion, and depression.
Kor Ariel et al/2022/Budapest	Experimental	122 males, 69 with problematic pornography use	Group with problematic pornography use indicated that they had higher levels of oxytocin and arginine vasopressin, psychiatric symptoms, and pornography-related hypersexuality
Prawiroharjo, Pukovisa et al/2019	Experimental	30 adolescents aged 12 to 16 years old, 15 of addiction group and 15 of the non-addiction group	Lower Ray Auditory Verbal Learning Test in the pornography addiction group, which indicates there is decreased working memory and capability in adolescents with pornography addiction.

DISCUSS

Pornography addiction

The pathophysiology concept of pornography addiction is the same as substance addiction, which forms a circuit of impulsivity and compulsiveness with symptoms where the patient doesn't have or lacks inhibitory control.^{5,6} Impulsivity forms an inability to cope with action and compulsive initiative, as well as an inability to terminate ongoing actions. Habit is a type of compulsion and can be seen as a triggered response to mental and environmental stimuli that becomes a current desire.⁵ Habits can be seen from response (search pornography) to conditions that have been felt before as a

positive reinforcement, and loss of this condition, the patient becomes withdrawn or craving.^{6,7} The neuroanatomy of impulsivity and compulsion is shown in distinct neuronal loops, where the impulses project from the striatum ventral to the thalamus, then to the ventromedial prefrontal cortex (VPMC), and return to the striatum.^{5,6,7} Some research found that pornography addiction is represented by the same neurobiological findings as substance addiction, which refers to the same area of the brain that is responsible for addictive stimuli. It affects the mesolimbic dopamine pathway and projects into the nucleus accumbens (NAcc), also known as the reward center.⁶ The mesolimbic dopamine pathway connects from a collection of three integrated circuits to build the

“reward system,” which is the amygdala (positive and negative emotions and emotional memory), hippocampus, for processing and retrieving long-term memories, and the frontal cortex, which is responsible for coordinating and determining behavior.^{5,6}

Addiction can be described as a repeating cycle with these three stages, and each stage is particularly associated with the brain region described above. Binge or intoxication is the stage when an individual consumes an intoxicating substance (pornography content) and experiences pleasurable effects. Furthermore, the individual will experience withdrawal or negative effects when the individual experiences a negative emotional state in the absence of the substance. The last stages of addiction are the preoccupation or anticipation stages, in which the individual seeks the substance again after a period of abstinence.⁸

The prefrontal cortex is involved in addiction, where this brain area is responsible for the “stop and go” system. Research shows that when individuals seek the substance (pornography) activity in the go circuits of the prefrontal cortex, it increases dramatically, and it is triggered by incentive salience or environmental cues of pornography content. The nucleus accumbens releases glutamate, the brain's main excitatory neurotransmitter; this release creates a powerful urge to use the substance.^{9,10} Clinical implication of pornography addiction based on evidence is the sensitization of incentive salience of the mesolimbic dopamine system. According to that theory, pornography addiction is characterized by a hyper-reactive response to pornography cues, causing excessive cue-triggered consumption of pornography content.¹¹

As we know, the prefrontal cortex is the area that oversees regulating self-control. Recent studies show that pornography use, as a long-term substance addiction, has a slight volume loss in that particular area.¹² This effect on prefrontal cortex areas can be the underlying cause of some behavioral anomalies that are found in a person who is addicted to pornography content.^{12,13} In other studies, analyzing how the discriminative stimuli trigger the onset of porn consumption behavior. The stimuli are taken from social media that appear and are constantly exposed daily. The result shows that pornographic addiction is associated with more consumption and more activation using the fNIRS (functional near-infrared spectroscopy) technique on brain activity. This indicates the effect of pornography consumption on the brain.¹³

A person can be said to be experiencing addiction if met four of these seven criteria:⁷

1. Salience, pornography becomes the most important activity in someone's self and dominates their mind (preoccupation), feelings (cravings), and behavior (excessive use). Circumstances can be divided into cognitive interests (when a person often thinks about an activity) and behavioral interests (when someone ignores basic needs such as sleep, food, or hygiene to perform that activity).
2. Tolerance, the process by which a person begins to watch pornography and often gradually builds up the amount of time spent on the pornography.
3. Changes in mood, the subject's experiences are influenced by the activities carried out.
4. Relapse, a tendency to repeatedly return to patterns. Tendency to return to addictive behavior even after a relatively controlled period.

Withdrawal of unpleasant emotional and/or physical effects occurs when that pornography is suddenly reduced or stopped. Withdrawal consists mostly of moodiness and irritability, but may also include physiological symptoms, such as trembling.

Findings

Studies about pornography addiction and its psychosocial impact on adolescents from 2019 to 2022 are elaborated in this systematic review. All of the studies above show that there is a significant correlation between pornography addiction and psychosocial disturbance. The most common method used in these studies was a cross-sectional questionnaire-based survey. Most participants were university or school students. There are not specifically exclusion criteria in these studies. There is no specific clinical diagnosis that was made in these studies; therefore, these studies showed that the common reasons to watch pornography were seeking sexual pleasure and filling loneliness.

Elizabeth et al, in their studies, have found negative behavioral patterns in adolescents with pornography addiction.¹⁴ The studies addressed the behavioral problems, such as rule-breaking delinquent youth and the borderline of depression. Addiction to pornography content may trigger androgen and testosterone levels, which positively correlated with aggression in both sexual and behavioral. However, to clarify the causality of this relationship between pornography addiction and hormonal activities, well-designed studies are needed.

In other studies, Chao Cheng-Min et al examine the effects of problematic internet users on pornographic content and behaviors toward the internet.¹⁵ The findings of this study show a significant relationship between cyberbullying among adolescent internet users and internet pornography use. This study mentions that problematic internet usage, including pornography addiction, potentially increases abusive and antagonistic communication, especially when it takes place online.¹⁵ This implicates the previous study that says in pornography addiction, adolescents show negative behavioral changes in the form of aggressiveness.

In a recent work, Wang and Dai reviewed a comprehensive overview regarding the cognitive deficits underlying pornography addiction.¹⁶ Using a two-choice oddball paradigm including neutral and pornographic stimuli to evaluate inhibitory control, both in motor inhibitory control and subsequent motor execution, in adolescents with Pornography Problematic Usage (PPU). Participants with PPU showed slower reaction times when answering a two-choice oddball; this means that PPU adolescents experienced poorer inhibitory control when facing sexual stimuli. Inhibitory control plays a vital role in suppressing thoughts, actions, and emotions in response to the environment.¹⁶ Deficiency of inhibitory control is commonly observed in psychiatric disorders; these findings may be disrupted in craving situations experienced in addiction.

In substance, emotional changes and borderline depression state in pornography addiction, Christina et al reported symptoms of severe depression, anxiety, and stress increasing in university students who consume abusively pornographic content.¹⁷ The interrelationship between pornography use and negative mental health outcomes is predicted by the underlying neurobiological mechanisms present in addictive behaviors. Additionally, viewing pornography when feeling lonely, causing anxiety and depression, may be potentially mediated by self-disgust, related to viewing pornography as a negative

self-image. This condition of negative mental health symptoms, such as anxiety and stress, implies that pornography addiction is associated with dysregulated interoception in adolescents. The participants manage to withdraw in social situations, such as turning away from others and avoiding interaction. Finally, they tend to find it difficult to make friends, initiate communication, and get along with others in groups or organizations, as they prefer being alone.¹⁷ A cross-sectional study was carried out to assess problematic pornography consumption among undergraduate medical students. In this study, pornography consumption was measured with PPCS (Problematic Pornography Consumption Scale), which has six core items that assess addiction symptoms, including salience, mood modification, conflict, tolerance, relapse, and withdrawal. The study found 14.6% prevalence of PPCS among participants.¹⁸ The findings are consistent with previous studies, which implies that pornography use is similar to sex, causing persistent changes in synaptic plasticity and manifesting in the increased N-Methyl D-Aspartate alpha amino hydroxyl methyl isoxazolepropionic acid (NMDA-AMPA) in the brain system, affecting the motivational state of individuals.¹⁸ Although there are several emotional side effects, including nightmares, residual feelings of shame, guilt, and confusion, and depressive symptoms.

CONCLUSION

Pornography addiction has become a popular subject of study among intellectuals these days, especially focused on the negative effects of this addictive behavior. These studies have shown many negative impacts of pornography addiction from a social aspect, as well as from a neuromechanical aspect. In conclusion, pornography addiction has many negative impacts on psychosocial aspects, such as depression, aggressiveness and antagonistic communication, decreased empathetic tendencies, poor inhibitory control, lower working memory, and anxiety disorders. Pornography addiction, especially in adolescents, has direct and negative adverse effects.

In another study, Ariel Kor et al believed that addictive behavior, such as Pornography Problematic Use (PPU), psychosocial changes, are related to the neuroendocrine system.¹⁹ In this study, participants included 122 males, of whom 69 reported PPU. The findings are that baseline plasma Arginine Vasopressin (AVP) was elevated in men with PPU.¹⁹ The participants are given four videos of neutral and positive social stimuli, resulting in men with PPU showing a greater oxytocin increase. This result implies that there are two direct paths in PPU and its hormonal changes related to psychiatric symptoms, such as decreased empathic tendencies, aggressiveness, social tendencies, and stress.

Specific school-aged adolescent group studies by Prawiroharjo et al. have shown that in the pornography addiction group, there is a memory capability disruption and a diminishing.²⁰ As this study was using the Ray Auditory Verbal Learning Test (RAVLT) and the Ray-Osterrieth Complex Figure Test (ROCFT) to assess working memory, both in visual and verbal forms.²⁰ This study's outcome was similar to previous studies that found lower working memory in substance addiction, including pornography addiction. Pornography addiction, especially in adolescents, where it's become the most critical phase of brain development, might compensate for some brain impairment in the future.

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