

Cybersex addiction: an overview of the development and treatment of a newly emerging disorder

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pISSN: 0853-1773 • eISSN: 2252-8083
<https://doi.org/10.13181/mji.rev.203464>
Med J Indones. 2020;29:233–41

Received: January 08, 2019

Accepted: April 08, 2020

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ABSTRACT

Cybersex addiction is a non-substance related addiction that involves online sexual activity on the internet. Nowadays, various kinds of things related to sex or pornography are easily accessible through internet media. In Indonesia, sexuality is usually assumed taboo but most young people have been exposed to pornography. It can lead to an addiction with many negative effects on users, such as relationships, money, and psychiatric problems like major depression and anxiety disorders. A few instruments may be used to detect cybersex behavior. This review was aimed to provide a comprehensive discussion about cybersex addiction in Indonesian society and the importance of its screening for this condition to enable its early detection and subsequent management.

KEYWORDS addictive behavior, internet, pornography, sexual online

Religion has a major role in Indonesian society and daily life. Sexuality is usually considered as conservative and is assumed monogamous and heterosexual; typically, people have sex after marriage in this country. The practice of cohabitation and premarital sexual activities are not permitted by the government or society. Therefore, Indonesian culture is similar to Eastern culture in the understanding of sexuality.¹

Cybersex activity refers to all internet usage activities that include sexual content for recreation, entertainment, exploration, education, trade, and seeking sexual or romantic partners. Internet sex addiction, also known as cybersex addiction, is defined as sexual activity on the internet or online that causes addiction, has a negative impact, and includes physical, mental, social, or financial problems. Addiction to cybersex consists of addictions to various activities

such as reading erotic stories, viewing, downloading or exchanging pornography online, online communication activities themed sexual fantasies, masturbating while doing online activities that stimulate lust, seeking sexual partners, performing online searches on various information about sexual matters, and other online sexual activities.^{2,3}

Changes in globalization, modernization, and socioeconomics had substantial effects, especially on the youth in Indonesia. These changes provided greater freedom, autonomy, liberal expression, and access to the internet, including pornographic or internet sexual behavior. In 2008, an anti-pornography law was passed that prohibited Indonesia to produce, make, copy, distribute, broadcast, import, export, offer, trade, lease, provide, show, utilize, own, or save pornography and has imprisonment as a consequence

of the violation. Despite this law, the use of the internet for pornography is still problematic and worrisome.⁴ Most junior high school students had been exposed to pornography, and men tended to be more exposed to it.^{1,4} Nowadays, the Indonesian government uses a restriction program for pornographic content on the internet, but some ways can be used to bypass that restriction program, such as the use of a virtual private network (VPN).⁵ In the survey by Global Web Index in 2017, Indonesia had the highest usage of VPNs.⁶

A study about cybersex addiction has not been established in the Diagnostic and Statistical Manual of Mental Disorders 5. Until now, the two behavior-related addictions that have been included were gambling and internet gaming disorder. Studies about cybersex addiction as a newly emerging disease are still developing, and the number of people with this behavioral addiction is increasing. Therefore, screening needs to be done to find patients at risk of cybersex addiction so that intervention can be done as early as possible to reduce the impact of this addiction. This review was aimed to provide an overview of cybersex addiction in Indonesian society and the importance of its screening to help early detection and management of this condition so that it can raise awareness about cybersex addiction, which considered taboo.

Epidemiology

A survey of internet usage among students in New England showed an average of 15.59 hours per week in 2007.⁵ Along with it, they often use the internet for sexual purposes. Meanwhile, Indonesian people use the internet for an average of 8 hours and 36 min per day in 2019.⁷ Döring et al⁸ conducted a study in four countries, e.g., Sweden, Canada, Germany, and the United States, and found that 76.5% of subjects used the internet for sexual activity.⁸ Data from the survey on internet users in Germany reported that men use the internet for sexual matters four times more often (21.5%) compared with women (4.7%). Men under 34 years old are the highest percentage in using the internet for sexual matters.⁹

Today, Indonesia is a profitable and promising market for the development of the internet and mobile technology. The Ministry of Communication and Information of the Republic of Indonesia published a report showing that Indonesia is the sixth-largest internet user of the internet – reaching 83.7

million people in 2014.¹⁰ Data about pornography is the most data on the internet compared with other content, such as ethnicity, religion, race, inter-group relations, fraud or illegal trade, drugs, gambling, and radicalism. From January to October 2017, the amount of pornographic content is fluctuating every month, but mostly higher than other categories. There are 775,332 data related to pornographic content up to October 2017.¹¹

Hening did a study on Indonesian and German students and found that Indonesian students were more capable of accepting and being open to the phenomena related to online sexual activity than German citizens were. This is contrary to the presumption of norms and Eastern values.¹² This may be because Indonesians are more daring to talk about sexual matters online rather than talking in the real world. Sexual content does not seem to be something taboo when discussed online rather than being discussed in the real world because it is anonymous.¹³ The convenience of people to access sexual content online has a hidden problem and is almost undetectable because it is not immediately visible.

Risk factor

Many things contribute to the overuse of the internet, such as gender, alcoholic drinkers, family dissatisfaction, or stressful life experiences. Men have a higher likelihood of internet addiction than women.¹⁴ Internet addiction is one manifestation of behavior due to experiences that trigger pressure in a person. The internet provides an opportunity for someone to divert their attention from the stresses experienced so that the internet becomes a coping mechanism to overcome the condition of the person.¹⁵

Another factor that influences the possibility of internet addiction is poor communication between parents and their children. Difficulties experienced by adolescents, such as depression or being away from parents, increase the likelihood of finding an online relationship that makes children feel comfortable.¹⁶ Lack of parental supervision is one risk factor for adolescents accessing sexual content on the internet. According to the research,¹⁶ supervision carried out by fathers is usually worse than supervision carried out by mothers. However, too many regulations or restrictions on internet use will make teenagers tend to access the internet from outside the home without parental supervision.¹⁶ Rules at home that prohibit

teens from accessing pornographic content at all are associated with a three-fold increase in the possibility of the teenager trying to find sexual content online.¹⁴ Parents should facilitate open communication about the use of the internet, together with their children, and make regulations regarding restrictions on behavior on the use of the internet.¹⁶

Humans always face various kinds of problems throughout their lives. People with emotional or interpersonal problems, such as low self-esteem, loneliness, exhaustion, or withdrawal, can choose to stay away from the social world and use the internet to feel better. People with sexual addiction who try to recover from their condition might use the internet as a channel for their condition.¹⁵ Individuals with secret sexual fantasies that cannot be conveyed into the real world may find the content on the internet that is unlimited and growing. This problem can be dealt with well but sometimes be faced poorly and can create a variety of emotions. Emotions when people are in a state of mental stress, such as depression, loneliness, anxiety, or fatigue, can result in the use of the internet to channel their unpleasant emotion.¹³ People with online sexual addiction feel different emotions when they are active online and while offline. When offline, they feel frustrated, worried, angry, anxious, or depressed. Whereas when they are online, they feel more excited, attractive and more desirable by others on the internet, so that they feel happier. This emotion reinforces the increases of online sexual behaviour.¹⁷

Easier access to find the pornographic content online also has been associated with cybersex addiction. Moving images increase the arousal of the brain in a significant way. Greater complexity in the films is known to impact posterior, cortical sites in the brain.¹⁸ The predictors of cybersex addiction are hypothesized including the sexual arousal while consuming internet pornography, the psychological symptoms, the number of online sex application used, and the time spent on internet sex sites.¹⁹

The mechanism for cybersex addiction

Two neurotransmitters that take place in the addiction process are serotonin and dopamine. Serotonin is involved with inhibition of behavior, while dopamine, involved with learning, motivation, and the salience of stimuli, including rewards, may contribute to the symptoms of addiction.²⁰ All

drug abuse associated with addiction affects the dopamine pathway in the mesolimbic pathway, which originates from the ventral tegmental area and projects into the nucleus accumbens (NAcc).^{21,22} A brain imaging study also showed that patients with both substance and behavioral disorders demonstrated the same involvement of dopaminergic and mesolimbic pathways from the ventral tegmental area to the NAcc.²³ The NAcc is the pleasure center in humans, so it is associated with pleasure, learning, seeking pleasure, and impulsivity. The mesolimbic dopaminergic pathway is connected with three areas forming a collection of integrated pathways called reward systems: the amygdala (regulating positive and negative emotions and memory), the hippocampus (regulating long-term memory), and the frontal cortex (regulating coordination and determining behavior). Areas in the prefrontal cortex, namely the dorsolateral prefrontal cortex, play a role in executive and cognitive functions, and the ventromedial prefrontal cortex area plays a role in inhibition and emotional response. So when this circuit is altered, it will lead to addiction disorders.^{20,21} Changes in the dopaminergic pathways have been suggested as the cause of seeking reward symptoms in behavioral addiction that will trigger the release of dopamine to produce pleasure. Another pathway that leads to addiction is the serotonin pathway. In this pathway, a low level of 5-hydroxyindoleacetic acid, a metabolite of 5-HT, is correlated with a high level of impulsivity and sensation-seeking behavior that can be found in behavioral disorders.

Behavioral addictions, such as gambling, overeating, watching television, and internet addiction, including cybersex, are similar to substance addiction. Markers of behavior addiction are the emergence of psychopathologies, such as depression, dependencies or symptoms of withdrawal, and problems in social life.²⁴ Behavioral addictions indirectly affect the brain's neurotransmitter system, especially the dopamine system, and function as a reinforcement comparable to pharmacological substances that directly affect this system. The reward system modulates pleasure, reward, memory, attention, and motivation.²¹

Psychopathological development of cybersex addiction

Cybersex addiction symptoms usually include loss of control of oneself to perform a cybersex activity.²⁵

At the beginning of the addiction phase, users will feel pleasure while performing internet activities related to the discovery phase. The internet offers users an infinite selection and opportunity to explore new sexual behaviors related to the experimental phase. This leads to continuous engagement in online sexual activities despite negative consequences.¹⁷ In the escalation phase, internet addicts get bored with the same fantasy routines and look for a new, bigger, or more dangerous challenge. This desire causes the preoccupation of cybersex addiction that leads to constant remembrance of these activities that will cause impairment in their daily life and feeling as if they need more. Online sexual behavior is growing, and the user enters the compulsive phase. In the last phase, namely the phase of helplessness, addicts feel hopeless and cannot be helped. This will then evolve into the feeling of withdrawal and relapse may also occur.^{17,25}

Impact of cybersex addiction

The impact of cybersex addiction can be related to social-interpersonal, psychological, and criminal consequences. Cybersex addiction can also develop to other risky behaviour. Therefore, knowing the impact of cybersex addiction and early detection of these impact will help individual manage their behaviour (Table 1).

- **Social-interpersonal impact**

The impact of one's involvement in cybersex at the social level is a deterioration in relationships and sexual dissatisfaction, which comes from the contact with other people. Research shows that the influence on the social relationship of the cybersex addicts is the leading cause of divorce and separation from spouses.²⁶

The impact of cybersex affects not only the individuals involved in it but also their partners and children. Children and families involved in this activity are affected socially and psychologically. According to a survey conducted in women and men aged 24–

57 years who have experienced the consequences of their partner's involvement in the use of cybersex, concluded that cybersex addiction is a factor that influenced separation and divorce. As many as 22.3% of subjects decided to divorce and some seriously considered leaving their partners because they felt hurt, betrayed, rejected, abandoned, felt crushed, isolated, embarrassed, jealous, angry, and lost their confidence in their partners knowing that their partners carried out cybersex activities.^{26,27}

Sixty-eight percent of subjects also complained about the loss or diminished interest in sexual relations in cybersex addicts or their partners.²⁷ Couples compared themselves to men or women on the internet and felt powerless to compete with them. Couples feel that online relationships are just as painful as their feelings when compared with relationships in the real world.

Children in the family can be exposed to pornographic content. Conflict with parents can arise as children get lack of attention from parents. Children or adolescents who use internet pornography excessively can be traumatized, abusive and causes addiction. The use of pornography on the internet and its relationship to sex can harm sexual and social development.²⁸ This can manifest in relationships in the future because the person has desires that may not be in accordance with reality.

Someone with cybersex addiction might lose friends and family who dislike the habit. This makes the person lose the support of the family or the people closest to them.²⁶ When a person cannot control himself in using the internet for sexual activity, he/she can lose self-confidence, which causes various other social problems. This condition can cause a depression and other conditions that arise due to an alienation from other people. The changes in offline social interactions to online also change the social health of users.

- **Psychological impact**

Squirrel²⁹ researched 1,325 people of the United States and Australia, who spent 12 hours a week related to online sexual activity. The study showed that 27% of subjects experienced severe depression, 30% experienced high anxiety, and 35% felt depressed with their activities. The more often a person spent time on online sexual activity, the worse of the level of depression and anxiety.²⁹ The condition of severe

Table 1. Summary of the impact of cybersex addiction

Aspects	Impact
Social interpersonal	Deterioration in relationships, sexual dissatisfaction, divorce, separation
Psychological	Anxiety, low self-esteem, depression
Criminal consequences	Aggressive behavior risk, criminal activity

mental disorders can lead will be to a condition that causes suffering in daily life that it might also leads to suicide.

Boies et al³⁰ surveyed students in 2004 and found that students who did not use the internet for sexual content had higher social and environmental support than students who used the internet to satisfy their sexual needs. Some studies concluded that exposure to erotic content could influence the formation of a person's behavior, one of which can reduce one's interest in their partner, and increase the desire to have a relationship without commitment.

- **Criminal consequences**

A person with a cybersex addiction can spend a large sum of money and make someone lose his or her job because of sexual preoccupation mediated by the internet. Guilt, low self-confidence, and criminal activity related to sexual content make it difficult for individuals to get along in their social environment. Cybersex can increase the risk of sexual addiction and provide an easy medium to express pre-existing sexual addiction. Chronic exposure to online sexual content can increase the risk of sexual addiction in people who already have risk factors, such as attachment disorders, history of substance abuse, and impulse control disorders.³¹ Men who have aggressive sexual behavior risk increasing their an aggressiveness four times as much when continuously watching online pornography.¹⁴

Diagnosis

Cybersex addiction is a matter of debate. Dhuffar and Griffiths³² define cybersex addiction as a maladaptive pattern of sexual behavior, which causes significant clinical damage or pressure similar to other types of online addiction. Other criteria include tolerance (requires an increase in the number or intensity of sexual behavior), withdrawal, loss of control, regulation of moods with online sexual activity, and continuous use despite the negative effects.⁹ From a psychopathological perspective, it is important to understand the basis of addiction to cyber sexual internet or any internet that can be diagnosed.

Young³³ divides internet addiction into five categories, namely cybersexual addiction, cyber-relationship addiction, net compulsions, information overload, and computer addiction. Cybersex addiction refers to excessive internet use for cybersex and cyberporn. Cyber-relationship addiction refers to

excessive involvement with online relationships. Net compulsions refer to compulsive behavior, including transactions on online exchanges, online gambling, and online shopping. Information overload refers to an excessive use to search for information online. Computer addiction refers to excessive time spent online and offline using a computer.³

Until now, there are no definite diagnostic criteria in the international manual diagnostic guidelines either in the Diagnostic and Statistical Manual of Mental Disorders 5 or in the World Health Organization's International Classification of Diseases 10. Thus, a behavioral addiction diagnosis was developed in 1990 by Goodman and Griffiths. In 1996, it was widely used for cases of addiction, such as overeating, compulsive television use, and internet addiction.²⁴ Signs and symptoms that can arise in people with possible addiction to cybersex, including repeated use of the internet to access sexual-themed sites and anxiety when unable to go online, and use the money for online sexual activities.³⁴ These individuals feel the need to reduce or stop the online sexual activity, continue to use online activities despite knowing the adverse effects caused, binge, spend much time exploring the internet related to sexual activity online, and have feelings of guilt and shame for online activities. Moreover, they can be defensive when other people say that they spend too much time on the internet. Their online sexual behavior affects work, school, family, hobbies, or daily life. They have a preoccupation with the thought of returning online or thinking about online sexual behavior.

Screening

Some screening tools in the form of questionnaires were developed for screening cybersex addiction as there are still no established diagnostic criteria. These screening tools (Table 2) will help professionals to assess and detect cybersex addiction problems early.

- **The internet sex screening test (ISST)**

The ISST was developed by Dr. David Delmonico for screening people with online sexual behavior problems. The ISST is one of the best instruments to evaluate online sexual behavior by assessing pornography on the internet and other things that accompany it.³⁵ High total scores indicate a high risk of internet sexual addiction. The internal consistency of the overall ISST

among the current research sample was high and ranged from $\alpha = 0.51-0.78$ for each subscale. The ISST's total assessment divides subjects into three categories: low risk (grades 1 to 8), at risk (grades 9 to 18), and high risk (values >19), which are calculated from items number 1 to 25. Items number 26 to 34, do not have a cut-off value, but the high value of the first 25 items paired with the high value of items 26–34 shows a higher risk for sexual behavior on the internet.³⁶

- **Cyber-pornography use inventory (CPUI)**

The CPUI design was based on the principle that addictive behavior is characterized by an inability to stop the behavior, significant negative effects as a result of the behavior, and a generalized obsession with the behavior.³⁷ Most items are a scale with a choice of "strongly agree" to "strongly disagree" as many as seven. Another choice of item is "never" to "always" as many as five. Some of the items in the CPUI were taken from the ISST, and all of these were made specifically for online pornography, except in the ISST online sexual behavior-social subscale. The CPUI is specifically designed to target areas related to internet pornography, while the ISST itself aims to assess sexual

compulsion in general and cybersex addiction. Table 2 shows that the CPUI consists of five scales with an overall reliability coefficient of 0.84.³⁶

- **Sexual addiction screening test-revised (SAST-R)**

The SAST-R derived from the Sexual Addiction Screening Test with additional items about internet sexual addiction to detect potential cases of sexual addiction.³⁸ The results are affected by sex, sexual orientation, and setting. Reliability for the Core scale and SAST-R Internet are 0.86 and 0.79, respectively.³⁶

Management

The life of modern society that easily accesses the internet makes the management of cybersex addiction more difficult. It is not easy to become abstinent with an online sexual activity if an individual's work or daily activities require a computer or internet.¹⁷

- **Psychotherapy**

The most widely used therapy for cybersex addiction is cognitive behavioral therapy (CBT).³² CBT can be applied in various forms, such as individual CBT, online CBT, and CBT in a group. Twohig and Crosby³⁹

Table 2. Screening tools for cybersex problems

Inventory	Item analyzed
The internet sex screening test (ISST) (34 items)	<ul style="list-style-type: none"> • Cybersex (25 items) <ol style="list-style-type: none"> 1. Online sexual compulsivity 2. Online sexual behavior – social 3. Online sexual behavior – isolated 4. Online sexual spending 5. Online sexual behavior 6. Non-home computer use for online sexual behavior 7. Accessing illegal sexual material • Sexual addiction screening test (SAST) (9 items)
Cyber-pornography use inventory (CPUI) (31 items)	<ol style="list-style-type: none"> 1. Compulsivity 2. Social 3. Isolated 4. Efforts 5. Guilt
Sexual addiction screening test-revised (SAST-R) (45 items)	<ul style="list-style-type: none"> • Core item scale (20 items) • Sexual addiction (mostly included in core item scale) <ol style="list-style-type: none"> 1. Preoccupation (4 items) 2. Loss of control (4 items) 3. Relationship disturbance (4 items which included 1 item from internet-related sexual activity subscale) 4. Affective disturbance (5 items) • Subscales about internet-related sexual activity (6 items) • Subscales about specific behaviors towards heterosexual and homosexual in men and women (3 subscales with total of 18 items) • Associated factors, not a subscale (5 items)

conducted the first randomized control trial study that examined acceptance and commitment therapy twice a week for 12 weeks in patients with cybersex addiction. The results of this study indicate that there are significant decline in the time taken to view pornography online before and after therapy. As many as 93% of patients showed a reduction in symptoms. In a systematic review journal about the use of drugs as well as non-pharmacotherapy management for cases of cybersex addiction, the use of CBT proved to be more beneficial in reducing symptoms, and reducing the negative consequences of cybersex addiction.³²

Psychotherapy should be able to manage symptoms using immediate intervention and long-term management to reduce online sexual activity.¹⁷ Patients should understand their thoughts and feelings associated with sexuality and try to identify those aspects to treat the problem with insight that leads to new behaviors. Concrete steps should also be considered, such as moving the computer to a more open room, installing software to monitor internet activity, limiting time online every day, and telling one person who could be trusted about the problem. Long-term management requires self-reflection and increases awareness of the person's underlying problems that access the internet, such as depression, anxiety, other addictions, or obsessive-compulsive disorder. Patients should identify what causes their problematic pornographic use and try to reform their maladaptive cognitions that relate to their problematic use of cybersex.^{17,40} Schneider and Weiss⁴¹ suggested making a plan consisting of three things in the management of maladaptive cognitions and behavior. First, patients can make a list of behaviors that are problematic, embarrassing, and painful for themselves or others. Next, patients can explore events or thoughts that caused him or her to be involved in situations related to cybersex. Third, patients can give themselves positive rewards for maintaining abstinence and holding himself or herself back from problematic activities.

The goals of psychotherapy should include changes in patient behaviors, such as regulating their emotions, cognitions, or situational factors that trigger addictive behavior and overcome the underlying problem more adaptively. They need to assess how often and how far the use of cybersex is carried out and identify high-risk situations, feelings, or events that can trigger the behavior. Psychotherapy

should also involve the patient's support system and try to strengthen support from others. People with cybersex addiction are likely left by their closest people who are the source of mental support. By improving relationships, mental support can be achieved so that it can improve treatment outcome.^{40,42}

- **Pharmacotherapy**

There is still no established guideline in treating cybersex addiction. Some case reports include the use of pharmacotherapy to help patients manage their addiction. Bhatia et al⁴³ showed that psychotropic drugs reduced the severity, intensity, and frequency of addiction. The study used serotonin selective reuptake inhibitors, such as 20 mg of fluoxetine daily with counseling. The patient showed progress after six weeks, and the medication gradually tapered off after five months. After six months' follow-up, the symptoms did not appear, but the study did not state about how many counseling sessions per week were done. The result showed that patients had no symptoms of compulsion and relapse from cybersex addiction after six months of follow-up. In a case study by Elmore,⁴⁴ a combination of drugs, such as venlafaxine 150 mg and sodium valproate 500 mg twice a day with risperidone 0.5 mg+paroxetine 20 mg, were given to the patient to improve the capacity of their sexual relations and there was a significant decrease in online sexual activity in men, even though behavioral uses of cybersex was still occurred. The stimulation was not as high as before the patient gets treatment.

In addition to the use of these drugs, other drugs used by Raymond and Grant⁴⁵ are naltrexone in 19 patients at 25–50 mg in one day. Seventeen of the 19 patients who participated in the study managed to reduce their sex compulsion. The use of pharmacotherapy in the form of the morphine receptor antagonist, naltrexone, can inhibit uncontrolled dopamine and unbalanced inhibition functions. Naltrexone can block morphine receptors, thereby facilitating increased gamma-aminobutyric acid and reducing dopamine through direct and indirect mechanisms. This can lead to gradual desensitization and reduced addictive behavior.^{22,32}

A systematic review done by Dhuffar and Griffiths³² concluded that there is a lack of similarity in how the treatment is applied in all the studies. Therefore, it is difficult to show any superiority among the treatment methods. All the included studies show

significant improvement of psychological function and behavioral outcome through psychotherapy and pharmacotherapy.

This reviews summarize the important of addressing addiction especially cybersex addiction as a new emerging disease. Addiction is currently divided into substance addiction and behavior. Cybersex addiction is one type of behavioral addiction that needs immediate detection. Early detection of people at risk of cybersex addiction is necessary to prevent or reduce the negative impacts by using various screening tools. This should be applied to young adult with emotional problems, daily stress, poor parenting, interpersonal problems, and/or sexual addiction.

In a married couple, cybersex addiction may lead to divorce or difficulties in social relations. Other possible impacts are depression and anxiety disorders. Some treatments for this addiction maybe offered, such as CBT or specific psychotherapy and pharmacotherapy. The treatment selection requires adjustment to each unique condition of individual patient.

Conflict of Interest

The authors affirm no conflict of interest in this study.

Acknowledgment

None.

Funding Sources

The research was supported by grant from Universitas Indonesia, named *Hibah Publikasi Terindeks Internasional untuk Tugas Akhir Mahasiswa UI* 2018.

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