Problematic Internet Use in Adolescents:
An Overview for Primary Care Providers

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Introduction

Technology use is playing an increasingly important role in the daily lives of adolescents. As many adolescents readily incorporate the internet into their lives, it is important to be aware of the negative consequences that can stem from problematic internet use.

Problematic internet use is characterized by an excessive preoccupation with internet use and a difficulty controlling urges and behaviors related to the internet.[1] This preoccupation with or use of the internet causes significant distress or impairment in social, occupational, or other important areas of functioning.[2] Though there is no listing of problematic internet use in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR),[3] many articles have proposed ways to identify when internet use has become a problem.

Problematic internet use in adolescents can manifest in different behaviors, including online gambling, internet-enabled sexual behavior, excessive online gaming, and excessive online socialization (i.e., emailing, messaging, social network site usage).[4,5] Heavy internet use has been correlated with poor academic performance, depression, social phobia, and attention-deficit/hyperactivity disorder.[6,7] Primary care providers are often the first to intervene when problems arise with adolescents, and awareness of problematic internet use is more important than ever.

Effects of Problematic Internet Use

Problematic internet use can impact the health of adolescents negatively. Problematic internet use in adolescents is assoc-iated with psychosomatic symptoms such as lack of physical energy, weakened immunity, and lower life satisfaction.[8] Excessive internet usage can be defined as greater than or equal to 35 hours per week.[4] High levels of electronic media use by adolescents, including internet overuse, is related to poor sleep patterns and increased daytime sleepiness, decreased level of functioning during the day, and fatigue.[9-11]

Excessive time spent on the internet increases the opportunity to be victimized through unwanted sexual solicitation, exposure to pornography, and cyberbullying. One study[12] showed that 9% of youth reported unwanted sexual solicitation, 11% of youth reported an online harassment experience (cyberbullying), and 23% of youth reported unwanted exposure to pornography. Unwanted exposure to pornography can occur inadvertently while using a search engine, opening an email, or surfing the web. Experiences with unwanted sexual solicitation include unwelcome sexual comments, requests for offline contact (e.g., telephone, in-person meeting, etc.), or other unwanted sexual experiences. Of note, solicitation may occur from other minors. Although the rate of unwanted online sexual solicitation is decreasing, online harassment, or cyberbullying, is increasing.[12]

Cyberbullying includes online threats or abusive, dishonest, and offensive material posted where the victim or others can see.[13] Given the anonymous nature and lack of face-to-face contact in online communi-cation, online bullies may become more brazen in their bullying attempts. In

traditional forms of bullying, victims can go home and escape the threats. However, with cyberbullying, the victim may receive threatening electronic communication wherever he or she is. In addition, cyberbullying does not require the aggressor to be large in physical stature or popular in social status.

Cyberbullying can reach a much larger audience than traditional bullying,[14] can result in significant distress to victims, and should be taken seriously.[15] One study[16] of adolescents found that that 42.5% of the victims of cyberbullying felt frustrated, almost 40% felt angry, and 27% felt sad. In this study, 31.9% of respondents said cyberbullying affected them at school, while 26.5% said cyberbullying affected them at home.

Youth who experienced traditional or cyber forms of bullying, as either a bully or a victim, were more likely to attempt suicide than those who had not experienced such forms of peer aggression.[17] The perpetrators of cyberbullying also are at risk for psychological, behavioral, and social problems, such as poor emotional bonds with their caregivers, substance use, delinquent behaviors, and themselves being subject to peer victimization on and offline.[18]

The effects of problematic internet use may extend to the central nervous system. One study[19] compared adolescents who spent around 10 hours per day on the internet with controls who spent less than two hours per day on the internet. Results showed that long-term problematic internet use resulted in structural alterations in the brain in adolescents with excessive internet use. Such changes included reduced gray matter volume in regions such as the right dorsolateral prefrontal cortex, right supplementary motor areas, and left rostral anterior cingulate cortex. Impairment in these regions results in decreased cognitive control. Abnormalities were consistent with previous substance abuse studies, suggesting similar mechanisms in problematic internet use and substance use.[19]

Evaluation

Diagnostic criteria for problematic internet use do not appear in the DSM-IV-TR.[3] Various instruments have adapted DSM-IV-TR criteria for substance abuse or dependence or DSM-IV-TR criteria for pathological gambling.[20] There are at least 13 instruments designed to diagnose problematic internet use,[20] such as such as the Internet Addiction Disorder Diagnostic Criteria,[21] Young's Internet Addiction Test,[22] and the Chen Internet Addiction Scale.[23]

In general, internet use is considered problematic when it begins to interfere with daily responsibilities, grades, relationships, mood, and physical health. The primary care physician may find it useful to screen routinely for problematic internet use and may ask the following questions, as adapted from those proposed by Shaw et al.[1]:

- Do you feel overly preoccupied with accessing the internet?
- Do you feel that your internet use is excessive, inappropriate, or poorly controlled?
- Has your usage of the internet ever been overly time consuming, caused you to feel upset or guilty, or led to serious problems in your life (e.g., financial or legal problems, academic problems, or relationship loss)?

Problematic internet use may be interrelated with existing comorbidities; therefore, it is difficult to determine whether this can be classified as a separate disorder.[5] Nevertheless, recognition of the manifestations of problematic internet use remains important.

Prevention and Treatment

There are no widely-accepted evidence-based treatments for problematic internet use. As mentioned, problematic internet use

may coincide with already-present psychiatric comorbidities. In fact, problematic internet use may be predicted by the presence of depression, attention-deficit/hyperactivity disorder, social phobia, and hostility.[6] One of the various screening tools for problematic internet use is warranted when such symptoms are present.

Social anxiety may predict problematic internet use, as socially anxious people may feel that online communication is safe and poses less risk for negative evaluation.[24] One study[25] suggested that aggression, low self-control, and narcissistic personality traits may predispose individuals to become addicted to online games. Overall, the early recognition and treatment of psychiatric symptoms, according to established treatment guidelines, is crucial in mitigating future problematic internet use.[6,26]

There is no Food and Drug Administration approved medication indicated for the treatment of problematic internet use in adolescents. Hadley et al.[27] tested escitalopram in adult patients with problematic internet use. Patients showed a significant improvement of symptoms during the 10-week, open-label escitalopram phase. After this phase, subjects were blinded and randomized to either continue on escitalopram or receive placebo. Both groups showed improvement. However, no significant difference in improvement was found between the escitalopram and placebo groups. This result suggested that the placebo effect might have played a role in improvement.

In a study of 57 males ages 13-57, bupropion SR was shown to be effective in improving problematic online game play in patients with major depressive disorder.[28] Another study of 62 children with attention-deficit hyperactivity disorder and internet game addiction showed that treatment with methylphenidate significantly reduced time spent on internet.[29]

Cognitive behavioral therapy is effective in managing problematic internet use. Young et al.[30] investigated 114 adults with problematic internet use who were treated with cognitive behavioral therapy (CBT). This study showed that most clients managed their presenting symptoms by the eighth CBT session and during the six-month follow-up had sustained these results. Young[31] suggested the following strategies to achieve recovery from problematic internet use:

- Practicing the opposite: identifying the patient's pattern of internet use and doing neutral activities during that time.
- Setting external limits: use of external prompts such as an alarm clock to prompt client to log off.
- Setting time limits and making pre-set schedules for future use.
- Making reminder cards: negative consequence of internet use are written down on a reminder card and carried at all times.
- Set task priorities: prior to using internet, the client should write down priorities of the internet session to maintain a time-limit and avoid unplanned internet surfing.

Family involvement is equally important to achieve recovery from problematic internet use and the education of guardians along with adolescents is crucial. A family-focused approach is especially relevant to the adolescent population, as their health and well-being is dependent on family circumstances and dynamics.[32] Families can monitor internet use and assist in techniques employed to reduce problematic internet use. Numerous resources are available online for use by practitioners and families. One helpful website, www.netaddiction.org, provides information about problematic internet use, self-assessment tools, and resources for professionals and families.

In cases of cyberbullying and online sexual solicitation, adolescents should be advised to avoid responding to online harassment and to block communication from the perpetrator.[33] In addition to informing parents of online harassment, adolescents should be encouraged to contact school officials if cyberbullying takes place on campus and law enforcement officials if threats have been made. The perpetrators of cyberbullying or unwanted sexual solicitation should be reported to the website moderator. Facebook and Twitter, for example, allow inappropriate content to be flagged for review by administrators.[34,35]

Parents should be advised to maintain access to their children's online accounts and to keep computers in common areas of the house. Parents can install software on computers that blocks certain types of websites, videos, and music while reporting inappropriate online communication or access. The FBI has a printable Parent's Guide to Internet Safety that outlines risky online behaviors and ways that parents can prevent danger and intervene.[36]

Conclusion

Overall, advances in technology will continue to impact the world of adolescents. It is important to evaluate the mental, emotional, and physical impact of technology regularly. Adolescents are vulnerable to new and unique issues related to the expansion of the internet. Recognizing those at risk for problematic internet use and screening regularly is essential in adolescent healthcare. It is also important to recognize and treat co-morbid disorders that may be related to the problematic internet use. Such co-morbid disorders include, but are not limited to, depression, bipolar disorder, personality disorders, and attention-deficit hyperactivity disorder. Timely recognition of problematic internet use and appropriate intervention when the presence of problematic internet use is established can enhance the mental and physical health of adolescents in this ever-evolving world.

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