

Internet Addiction in Young People

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Abstract

In our technology-savvy population, mental health professionals are seeing an increasing trend of excessive Internet use or Internet addiction. Researchers in China, Taiwan and Korea have done extensive research in the field of Internet addiction. Screening instruments are available to identify the presence of Internet addiction and its extent. Internet addiction is frequently associated with mental illnesses such as anxiety, depression, conduct disorder and attention deficit hyperactivity disorder (ADHD). Treatment modalities include individual and group therapies, cognitive behavioural therapy (CBT), family therapy and psychotropic medications. A significant proportion of Singapore adolescents engaging in excessive Internet use are also diagnosed to have concomitant Internet addiction. Despite the presence of a variety of treatment options, future research in this area is needed to address its growing trend and to minimise its negative psychological and social impact on the individuals and their families.

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Introduction

The Internet has in recent years become ubiquitous in the lives of young persons and children due to rapid information technology (IT) development, high speed wire connection, easy accessibility and increasing affordability. Its growth has also been fuelled by a huge customer demand created by social and print media, advertisements and peer influences. Singapore has been ranked as one of the top three Asian countries to have a high proportion of its population accessing and using the Internet.¹ In our technology-savvy population, mental health professionals are seeing an increasing trend of excessive Internet use or Internet addiction. Much is not known about its presentation or treatment options. This paper intends to summarise the phenomenology and pathogenesis of Internet addiction and its available treatment modalities.

Definition and Prevalence of Internet Addiction

According to Young,²⁻⁴ Internet addiction closely resembles an impulse control disorder. She described 8

common signs⁵ of Internet addiction which are based largely on the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) criteria for pathological gambling. The common features include preoccupation with the target activity, development of tolerance and withdrawal symptoms, compulsive need to engage in activity or a sense of loss of control, unsuccessful attempts to stop or cut down, and neglect of social, academic and occupational obligations with functional impairment. Based on these, she developed the Internet Addiction Test (IAT), which is the first validated instrument to assess Internet addiction. The psychometric properties of the IAT show that it is a reliable and valid measure of the degree and extent of Internet addiction, which can be used in both outpatient and inpatient settings.⁶

The prevalence of Internet addiction varies across countries: 2.4% of high school students⁷ and 19.8% of adolescents in Taiwan⁸ were found to be addicted to the Internet. In Korea, Ha et al⁹ reported in their study that

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14% of 455 children and 20% of 836 adolescents were screened positive for excessive Internet use, quite similar to the Singapore study in which Mythily et al¹⁰ reported that 17.1% of 2735 adolescents (mean age of 13.9 years) used more than 5 hours of Internet everyday. However, as the Singapore study only asked participants to self-report the number of hours they spent on the Internet rather than using any diagnostic tool, the results can only be interpreted as excessive Internet use instead of Internet addiction. In another local study on gaming addiction, 8.7% in 3034 children and adolescents were found to be addicted to online gaming.¹¹

Negative Effects of Internet Addiction

When Internet use becomes excessive and pathological, there could be ill-health effects on the adolescents such as impaired psychological well-being, less peer and family interaction, poor academic performance, and impediment to achievement of psychosocial developmental tasks.^{3,12} A study on the adversities of Internet overuse by the Korean National Youth Commission¹³ in school-going children indicated that as many as 27.6% children and 28.1% adolescents suffered deterioration in their grades. Up to 23.7% of them experienced disruptions in their lives, 10.6% experienced social isolation and as high as 13.4% of adolescents presented with school refusal. Violence at home occurred in 7.1% of the adolescents who overused the Internet. Typically affecting more boys than girls, sufferers tend to have behavioural problems such as hyperactivity, conduct disorder and worse overall psychosocial adjustments than their peers.¹⁴ Correlations between Internet use (including online gaming) and negative outcomes such as obesity, aggression and poor school outcomes have also been investigated.^{15,16}

Furthermore, excessive use of Internet can also impede one's physical health such as causing back pain, eye strain and carpal tunnel syndrome.³ Cardiopulmonary-related deaths were also reported in the most severe cases.¹³

Aetiology and Pathophysiology

Similar to many psychiatric illnesses, the interplay of neurobiological influences and psychosocial factors has been hypothesised as the main factor in producing addictive behaviour including Internet addiction.

In the past decade, there has been an increasing number of research studies that investigate Internet addiction using neuroscientific methods. Two most commonly utilised techniques are electroencephalogram (EEG) and functional magnetic resonance imaging (fMRI). Specifically, individuals with Internet addiction exhibit poorer executive control as illustrated by lower medial frontal negativity

(measured using EEG) during the incongruent Stroop test.¹⁷ Furthermore, altered neurophysiological condition^{18,19} as demonstrated by decreased absolute delta and beta powers, and increased gamma power at resting state could serve as potential neurobiological markers for Internet addiction due to the brainwaves' association with impaired inhibitory control and trait impulsivity.

On the other hand, using fMRI technique, Internet addiction was found to be associated with increased orbitofrontal cortex activation in money-gain trials during a card playing game and decreased anterior cingulate cortex activation in loss trials.²⁰ This implies that individuals with Internet addiction have enhanced reward sensitivity and decreased loss sensitivity than normal controls. A more recent fMRI study showed that individuals with Internet addiction necessitate greater cognitive efforts during decision-making tasks as illustrated by differential activation levels on certain brain regions involved in decision-making such as inferior frontal cortex, insula, posterior and anterior cingulate cortex.²¹ Lastly, brain activations similar to individuals with substance addiction were also observed in a study using cue-induced online gaming,²² thus suggesting common neurobiological pathways in both addictions.

Comparable with other addictions, the "addictive" components embedded within Internet use have a tendency to appeal to the users' brain reward system, which results in an increase in levels of the naturally-occurring neurotransmitter dopamine.²³ This modulates the brain's ability to perceive reward reinforcement and keeps the person coming back to re-experience these good feelings. After multiple reinforcements, the person might become "addicted" and requires higher level of stimulation to reach the same "good feeling".

Apart from the neurobiological factors, prior research have found that psychological factors such as attention deficit hyperactivity disorder (ADHD), autism, anxiety and depression,^{24,25} and social factors like poor family support and adult supervision, parental unemployment, poor interpersonal relationships, and social isolation²⁶⁻²⁸ are linked to Internet addiction.

One of the important psychosocial developments in adolescence is to strive for autonomy and independence.²⁹ By engaging in activities that otherwise would be prohibited by parents, adolescents could have a free rein online without being regulated by adults. Their search for self-identity, need to be close to and be a part of a peer group also render them vulnerable to peer influence and they tend to gravitate toward shared interests.³⁰ Certain personality and temperament profiles, such as a high degree of impulsivity, anger expression, novelty seeking and neuroticism, but with low agreeableness and self-esteem, could predispose adolescents and young adults to develop Internet addiction.³¹⁻³⁴ Harm avoidance, initially believed to be low for individuals with addictions,

was on the contrary found to be high in those suffering from Internet addiction.³² Choi et al theorised that anxiety could be the mediating factor in these individuals who used the Internet as a means of avoiding uncomfortable feelings such as stress, anxiety and loneliness. The interplay of mediating factors such as anxiety, depression and impulsivity in a specific motivation and personality construct (Behavioural Inhibition/Approach System, BIS/BAS) seems to also confer certain vulnerabilities to the development of Internet addiction.³⁵

Severe competition in school, stress from studies, parent-child problems and peer conflicts are all highly stressful situations which could generate negative emotions, such as low self-esteem, feelings of inferiority and repressed anger, in adolescents. Since the Internet provides a ready channel for individuals to gain social support and cultivate relationships which otherwise would be unavailable, the adolescents could redirect their energy and focus on the Internet, using cyberspace as an escape from unpleasant events or memories, or to manage negative emotions.²³ Cyberspace thus provides a temporary respite from their troubles and worries in the real world.

Management of Internet Addiction

Cognitive behavioural therapy (CBT), family therapy and psychoeducation are the mainstays of treatment for Internet addiction. Individual psychotherapy with CBT and group therapy with CBT in the clinical setting have shown good outcomes mainly with individuals with mild Internet addiction.^{36,37} For example, a randomised controlled study in adolescents aged 12 to 17 years with Internet addiction using either school-based CBT or no treatment,³⁸ reported an improvement for both groups, but the active treatment group improved more in terms of time management as well as reduction of emotional, cognitive and behavioural symptoms.

Family therapy, communication and parenting skills training are important adjunctive treatment modalities for Internet addiction.^{39,40} Besides educating the whole family on the disorder, emphasis should be made to reduce blame on the adolescents and to improve parenting and discipline skills. Assisting adolescents to find alternative hobbies and activities including family outings are relevant in order to distance them from the Internet and enhance parent-child relationships.

Though there have been no double-blind, placebo-controlled studies on the pharmacotherapy for Internet addiction, pharmacological management of Internet addiction predominantly targets the core mental health problems driving the behaviour. Comorbid ADHD, anxiety, depression or autism disorders should be treated. Stimulants and antidepressant medications are frequently used together

with behavioural modification or cognitive therapy.^{41,42}

In Singapore, treatment for Internet addiction is available at National Addictions Management Service (NAMS) sited in the Institute of Mental Health (IMH), and in the community. Some community and welfare agencies such as TOUCH Community Services conduct regular school workshops and cyber wellness enrichment programmes for families and adolescents suffering from Internet addiction or Internet-related problems. The enrichment programme focuses on promoting self-awareness through structured and adventure learning processes, and connecting the adolescents back to healthier Internet use habits. Counselling, mentoring and supervision, and behavioural modification methods to improve self-regulation in Internet use are also provided. School counsellors are equipped with counselling skills to help students overcome their Internet addiction. Should there be a mental health condition contributing to the development of the addiction, school counsellors could obtain professional assistance from the Response, Early Intervention and Assessment in Community Mental Health (REACH) programme. This programme, first developed under the National Mental Health Blueprint in 2007,⁴³ comprises 4 teams of multidisciplinary allied health staff who perform assessments, provide support and manage students in their own schools and when necessary, link the affected students to child psychiatric services, NAMS and other community cyber wellness resources.

Prevention in Internet Addiction

With most behavioural and addiction problems, prevention is key to reducing incidence and morbidity associated with them. Public awareness of Internet addiction, parent education on Internet use and advocacy for proper parental supervision of Internet use are pertinent factors in prevention efforts. Simple measures, such as implementing house rules on Internet usage at a young age, placing the computer in the common living area and making available alternative social activities, are some of the practical tips parents could start doing easily. Improved parent-child relationship and family functioning, effective communication and positive social support further lay the foundation for the family and the children to become resilient and competent in problem solving.

Conclusion

Internet addiction is a complex behavioural syndrome, resulting from multiple biological and psychosocial factors. It tends to be persistent and resistant to treatment with high relapse rates. While it has yet to be included in the DSM-V as a distinct diagnostic entity, Internet addiction has been perceived by many mental health professionals as a very real

psychosocial problem likened to that of substance misuse. Its true prevalence is difficult to establish due to different instruments used to define and measure the problem. Regardless of whether Internet addiction is considered a clinical disorder, we know that its severity is highly correlated with that of comorbid psychiatric disorders. A multidisciplinary team approach involving collaboration among education, social and mental health agencies are necessary to provide a holistic and comprehensive management of Internet addiction. Preventive measures remain critical in curbing Internet-related problems early and effectively.

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