

Use of Internet and Electronic Screen Products among Children and Adolescents

Key Facts

- ※ There is a substantial increase in usage of Internet and electronic screen products (including computers, smartphones, tablet personal computers, video games, e-books and television, with or without Internet connection) among children and adolescents in Hong Kong. They are starting to use these products at a much younger age.
- ※ Excessive and inappropriate use of Internet and electronic screen products can negatively affect many aspects of children's physical health and psychosocial development.

Recommendations on Healthier and Safer Use of Internet and Electronic Screen Products

- ※ For Parents and Teachers: Principles of **SAFE ACTS**
 - * Show children the right attitude
 - * Aware of the benefits and risks
 - * Facilitate a balanced life
 - * Empower children to face challenges
 - * Agree with children on the rules of use
 - * Communicate openly
 - * Trust and respect children
 - * Seek help when needed
- ※ For Children and Adolescents: Principles of **DARES**
 - * Develop a balanced life
 - * Aware of the benefits and risks
 - * Respect and trust parents and teachers
 - * Effectively communicate with parents and teachers
 - * Seek help when needed
- ※ **Ten Health Tips**
 - * Be physically active, go outdoors
 - * Engage in interactive activities in real life
 - * Limit screen time and choose screen activities wisely
 - * Blink, break and rest
 - * Adopt proper setting
 - * Protect hearing, prevent accident and pay attention to hygiene
 - * Ensure adequate sleep time and appropriate environment
 - * Be aware of cyber-safety
 - * Behave oneself when using Internet and social networking sites
 - * Restrict access to inappropriate content

Use of Internet and Electronic Screen Products among Children and Adolescents

Children and adolescents spend more time with Internet and electronic screen products (including computers, smartphones, tablet personal computers (PC), video games, e-books and television, with or without Internet connection) for education, recreation

and socialization than ever before. As in any other areas of life, however, excessive or improper use of these products may expose them to different health risks.

Magnitude and Pattern of Use

Similar to many developed countries, there is a substantial increase in Internet and electronic screen products usage among children and adolescents in Hong Kong. More importantly, they are starting to use these products at a much younger age. Between 2000 and 2013, the proportion of children aged 10-14 who had used Internet services during the 12 months before enumeration increased from 43.1% to 93.8%. For adolescents and young adults aged 15-24, the corresponding proportion increased from 64.5% to 98.2% over the same period.^{1,2}

In 2013/14, the Department of Health (DH) conducted a customer survey on the use of Internet and electronic screen products among preschool children, primary and secondary school students. Results revealed that the median age of starting to use electronic screen products among preschool children was 8 months old and television (78.4%) was the most popular electronic screen product used with an average daily viewing time of 44.2 minutes (Table 1).³

Table 1: Usage pattern of electronic screen products among preschool children

Type of electronic screen products	Prevalence of use (%)	Median age of starting (months)	Average daily viewing time (minutes)
Television	78.4	8	44.2
DVD	44.4	10	38.8
Tablet PC	38.4	16	31.6
Computer (including desktop and laptop computers)	33.6	24	31.8

Source: Department of Health, 2013/14.

Among primary and secondary school students, 80.5%, 72.2%, 40.0%, 37.3% and 7.4% possessed smartphones, desktop computers, tablet PCs, laptop computers and electronic books respectively. Besides, 3.3% of primary school students reported

that they on average spent more than 3 hours a day on electronic screen products, while close to one-quarter (23.1%) of secondary school students reported so (Table 2).³

Table 2: Average amount of time spent on electronic screen products among primary and secondary school students

Average amount of time a day	Primary school students (%)	Secondary school students (%)
Less than 1 hour	70.9	35.4
1 to 3 hours	22.6	40.4
More than 3 hours	3.3	23.1
Not available	3.2	1.1

Source: Department of Health, 2013/14.

Potential Health Effects and Risks

While the use of Internet and electronic screen products can enhance knowledge, creativity and connectedness with others, studies have implicated that excessive and inappropriate use of these products can negatively affect many aspects of children and adolescents' health and development (Box 1). For example, studies of over 10 000 schoolchildren aged 10-12 in Iceland observed the more the use of electronic screen, the more the somatic symptoms (such as dizziness, tremors, headaches or stomach aches) as well as psycho-

logical distress symptoms (such as feeling blue, sad, lonely or hopeless). Schoolchildren who reported 4 or more hours per day of screen-based activities showed greater risks of multiple somatic symptoms and negative emotions.^{4, 5} Apart from health concerns, issues that merit awareness also include cyber safety (i.e. safe and responsible use of information and communication technology), loss of privacy, and risk of encountering computer related crimes (such as website defacement, Internet fraud and online theft).

Box 1: Health effects or risks associated with excessive or inappropriate use of Internet and electronic screen products

Decreased physical fitness and obesity – Screen time displaces physical activity and is an identified risk factor of suboptimal physical fitness and childhood obesity. According to a systematic review of prospective studies, there was moderate evidence for a longitudinal inverse relationship between screen time and aerobic fitness during childhood.⁶ Children logging more than 2 hours of screen time per day were twice as likely to be overweight or obese as children watching one hour or less per day.^{7, 8} A study in Switzerland also observed that the more the time children (grades 1 to 3) spent on playing electronic games and television viewing, the greater the risk of obesity.⁹

Musculoskeletal problem – Children and adolescents often neglect proper posture and movement when using Internet and electronic screen products. Compared with adolescents using computer less than 3.6 hours per week, adolescents using computer 14 hours or more per week were about 3-4 times as likely to have moderate or severe computer-associated musculoskeletal pain in different parts of the body (including neck-shoulder, low back, hands, and fingers or wrists).¹⁰ A local study in 2013 also found that 27.6% of school children aged 10-15 reported these musculoskeletal symptoms in relation to the use of electronic devices.¹¹

Vision problem – Prolonged viewing of the computer screen or other electronic screen products can lead to eye discomfort, dry eyes, headaches, blurred or double vision, and other symptoms of eyestrain. Compared with adolescents using computer less than 3.6 hours per week, adolescents using computer 14 hours or more per week were 3.3 and 3.4 times as likely to have moderate/severe computer-associated eye pain and headache respectively.¹⁰

Hearing impairment – Nearly all electronic screen products and smartphones have built-in personal music players. Repeated or regular exposure to high sound levels can damage the hair cells in the ear, leading to tinnitus, temporary or even permanent hearing loss (deafness). Studies showed that frequent use of personal music player could have a deleterious effect on hearing threshold in adolescents and tinnitus was more frequent in those who regularly listen to personal music players.^{12,13}

Infection – Smartphones and other mobile electronic screen products with touch screen functions are potential reservoirs of pathogens. A study sampled mobile phones from volunteers in the community and found that 91.7% of them showed bacterial contaminations.¹⁴ Another study sampled mobile phones from college students found that 65% of them were contaminated with more than 3 types of bacteria.¹⁵

Box 1: Health effects or risks associated with excessive or inappropriate use of Internet and electronic screen products (continued)

Injury and accident – Use of mobile phones while walking on roads can distract children and adolescents, which can compromise their safety. A study using virtual environment examined the effect of cell phone distraction on road crossing behaviours among children aged 10-11 years and showed that children were more likely to behave in a riskier manner (such as paid less attention to traffic; left less safe time between their cross and the next arriving vehicle; and waited longer before beginning to cross the road) when they were distracted by a cell phone conversation than when not talking on the cell phone.¹⁶

Sleep deprivation – Children and adolescents need to sleep longer and deeper for optimal health and development. Excessive time spent on Internet and electronic screen products can significantly disrupt their sleep-wake schedule, impacting on both quantity and quality of sleep. Among school-aged children, studies consistently found an association between screen time with delayed bedtime as well as shorter total sleep time.^{17, 18}

Addiction – There is evidence that Internet addiction has a negative effect on academics, family relations, physical and mental health, and finance.¹⁹ A local study reported that 22.5% of secondary school students (with mean age about 15 years) met the criterion of Internet addiction.²⁰ In South Korea, 11.4% of the youth population were addicted to smartphone, with top 2.2% facing difficulty living out of their everyday lives due to their addiction.²¹

Aggressive behaviour – There is evidence that violent imagery in television, film, video, and computer games has short-term effects on subsequent thoughts and aggressive behaviour in younger children.²²

Cyber-bullying – Both bullies and victims often report higher levels of psychosocial problems, including lower levels of self-esteem, depression, and even suicidal thoughts.^{23, 24} Depending on the age group and how cyber-bullying is defined, prevalence estimates of youth who experienced cyber-bullying varied from 10% to 40%.²³ In Hong Kong, a survey in 2010 reported that 22% of Secondary 1 to Secondary 4 and Secondary 6 school students had bullied others online while 30% had been victims of cyber bullying in the year before enumeration.²⁵

Online sexual risky behaviour – Children and adolescents can encounter pornographic materials (intentionally or unintentionally), sexual solicitation and harassment online. The 2010 Youth Internet Safety Survey in the United States showed that 9% and 23% of youth Internet users aged 10-17 reported sexual solicitation and exposure to unwanted pornography online respectively.²⁶ Another study of high school students in Los Angeles found that students with cell phone Internet access were more likely to report being solicited online for sex and having sex with an Internet-met partner.²⁷ In Hong Kong, a survey of Secondary 2 students found that 24.4% of boys and 12.3% of girls consumed pornographic materials (including stories, pictures or videos) via Internet in the year before enumeration.²⁸

Learning and cognitive development – Use of Internet and electronic screen products may have other adverse effects on health and development, especially for children under two and for children using these products without proper guidance or supervision. Studies found that children who started watching television at less than 12 months of age and watched television more than 2 hours a day were about 6 times as likely to have language delays as children without such exposure.²⁹

Healthier and Safer Use of Internet and Electronic Screen Products

Given the enormous influence that Internet and electronic screen products on lives of children and adolescents, there is a need to optimise the role of Internet and electronic screen products in our society, taking the advantage of their positive attributes while minimising the negative impact on children and adolescents. In 2013, the DH convened the Advisory Group on Health Effects of Use of Internet and Electronic Screen Products (Advisory Group) to deliberate and make recommendations on the use of Internet and electronic screen products. A series of recommendations were made for parents and teachers, as well as children and adolescents.³⁰

Specifically, the Advisory Group recommended parents and teachers to adopt the general principles of **SAFE ACTS**, i.e.

- ✓ Show children and adolescents the right attitude and be role models.
- ✓ Aware of the basic functions, benefits and risks of the technology, websites and games that children and adolescents are visiting and playing, and consequences of engaging in social networks.
- ✓ Facilitate children and adolescents to have a balanced and healthy life.
- ✓ Empower children and adolescents to face challenges.
- ✓ Agree with children and adolescents on the rules in using Internet.
- ✓ Communicate with children and adolescents openly with caring and non-judgmental manner.
- ✓ Trust and respect children and adolescents with proper guidance and open communication.
- ✓ Seek help from experts and professionals when needed.

For children and adolescents, the Advisory Group recommended the general principles of **DARES**, i.e.

- ✓ Develop a balanced life, with a variety of interests and hobbies.
- ✓ Aware of the benefits and potential risks of the technology.
- ✓ Respect and trust the guidance and efforts of parents and teachers in assisting them in the safe and healthy use of the Internet and electronic screen products.
- ✓ Effectively communicate with parents and teachers about their views, feelings, joys and concerns about using the Internet and electronic screen products.
- ✓ Seek advice or help when encounter unpleasant materials online or come across problems, such as being cyber-bullied.

The Advisory Group also recommended a set of 10 health tips as follows:

- ✓ **Be physically active, go outdoors.** Pre-school children should accumulate at least 3 hours physical activities daily. School children should accumulate at least 60 minutes of moderate-to vigorous-intensity physical activity daily.
- ✓ **Engage in interactive activities in real life,** like family or other group activities.
- ✓ **Limit screen time and choose screen activities wisely.** Pre-school children under 2 years old should avoid screen time as far as possible. Children aged 2-6 years should limit screen time to no more than 2 hours a day with parental or teachers' supervision, if electronic screen products have to be used. Students aged 6-12 years should limit recreational screen time to no more than 2 hours a day, whereas those aged 12-18 years should avoid prolonged screen time.

- ✓ **Blink, break and rest.** After every 20-30 minutes of screen use, rest eyes by taking a break for 20-30 seconds. Change position, blink eyes, do muscle relaxation exercise.
- ✓ **Adopt proper setting.** Adjust brightness, font size and workstation. Keep reading distance no less than 50 cm for computers, 40 cm for tablet personal computers, and 30 cm for smartphones.
- ✓ **Protect hearing, prevent accident and pay attention to hygiene.** Observe 60-60 rule to protect hearing, i.e. listen at no more than 60% of the mobile product's maximum volume for less than cumulative 60 minutes a day. Avoid using mobile products while doing other tasks requiring attention. Clean the surface of the screen regularly and avoid sharing electronic screens products with others.
- ✓ **Ensure adequate sleep time and appropriate environment.** Turn off the computer and keep other electronic screen products out of reach during sleep.
- ✓ **Be aware of cyber-safety.** Protect privacy, do not meet online 'friend' and do not respond to inappropriate messages.
- ✓ **Behave oneself when using Internet and social networking sites.** Be respectful and polite online. Do not bully, harass or flame others, and do not spread rumours.
- ✓ **Restrict access to inappropriate content.** Parents should actively involve in children's Internet use, choose age-appropriate video games for them and monitor their use.

There are four sets of recommendations for parents, teachers, primary school students and secondary school students in the format of frequently asked questions to address various common day to day scenarios through applying the general principles and health tips. To access the recommendations or the e-Report of the Advisory Group on Health Effects of use of Internet and Electronic Screen Products, please visit the website of Student Health Service at https://www.studenthealth.gov.hk/english/internet/health_effects.html.

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Safer Internet Day 2015 : Let's create a better internet together



Safer Internet Day is an annual campaign aiming to promote safer and more responsible use of online technology and mobile phones, especially among children and young people across the world. Each year on the Safer Internet Day hundreds of events are organised to raise the awareness of online safety issues across the globe.

In Hong Kong, WebOrganic is the secretariat of the Safer Internet Day. WebOrganic is a social enterprise implementing the Internet Learning Support Programme sponsored by the Government and carrying out education programmes to promote safe and healthy use of the Internet for learning.



The 12th Safer Internet Day will be held on Tuesday 10 February 2015, with the strapline of "Let's create a better internet together". Children and young people, parents and teachers, health care professionals and social workers, industry and politicians, we all have a role to play. To know more about Safer Internet Day 2015 activities and WebOrganic, please visit: <http://www.sid.hk> and <http://www.weborganic.hk>.

Non-Communicable Diseases (NCD) WATCH is dedicated to promote public's awareness of and disseminate health information about non-communicable diseases and related issues, and the importance of their prevention and control. It is also an indication of our commitments in responsive risk communication and to address the growing non-communicable disease threats to the health of our community. The Editorial Board welcomes your views and comments. Please send all comments and/or questions to so_dp3@dh.gov.hk.

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