

# Virtually addicted:

why general practice must now confront screen dependency

Discretionary screen time (ST) is now the main waking activity of children: a lifestyle factor as relevant to health as nutrition and physical activity. High ST is increasingly considered an independent risk factor, often exhibiting a dose-response relationship with cardiometabolic disease, unfavourable child development outcomes, and adult morbidity and mortality, ultimately placing greater pressure on primary care services.<sup>1</sup> The US Department of Health has issued 'recommended limits for screen time' as one of its national 'health improvement priorities' and a key 'disease prevention objective'.<sup>2</sup> Public Health England recently reported their concern over:

*'Increased screen time ... evidence suggests a "dose-response" relationship, where each additional hour of viewing increases the likelihood of experiencing socio-emotional problems.'*<sup>3</sup>

As concern grows over the amount of ST, the term 'addiction' is increasingly used by physicians to describe the rising number of children engaging in a variety of screen activities in a dependent, problematic manner. The diagnostic vernacular is still evolving: internet addiction disorder (IAD), at-risk/problematic internet use (ARPIU), pathological video game use, video game addiction, pathological technology use, online game addiction, and more. Although the current medical focus is on 'video gaming', other forms of screen use, from excessive messaging and social networking to 'porn addiction', can also become highly problematic. While there is a lack of consensus as to whether such screen use constitutes a formal psychiatric disorder, the NHS doesn't consider it a passing phase, stating 'as computer use has increased, so too has computer addiction'.<sup>4</sup>

Involving primary care in this emerging problem should not be construed as medicalising a popular pastime, the thin end of the wedge leading GPs to meddle in patient lifestyles. ST is a health issue and the GP's surgery is the entrance hall through which patients seek authoritative guidance, referral, and where education can take place. Raising parental awareness of both excessive ST and problematic, dependent screen use is vital. As the guardians of family health, GPs' views on child health hold currency. Unfortunately, families are courted and bedazzled, child

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development research is funded, and governments are lobbied by a well-heeled, highly influential technology industry. It is, therefore, incumbent on GPs to confront the iridescent elephant(s) in the room.

Irrespective of the formal status of screen 'addictions', those in primary care must step back and simply consider the extent to which excessive, seemingly dependent, non-work-related ST affects the health and wellbeing of patients, and ST's impact on functioning including work, study, relationships and finances. In this rapidly developing field, a better understanding of the subject will enable physicians to make clinical and policy decisions.

### EPIDEMIOLOGY AND COMORBIDITY

Prevalence rates vary (2–20%) according to the screen activity, diagnostic tool used, and age of subjects. For example, a longitudinal study in *Pediatrics* of a large sample of 8–14-year-olds concluded that:

*'... between 7.6% and 9.9% of our sample would be classified as pathological gamers at any point in time.'*<sup>5</sup>

Non-pathologically, a study of British students' personal internet use reported that:

*'... over 50% of the sample produced scores on the IAT [Internet Addiction Test] that could be considered to represent some degree of problematic behaviour.'*<sup>6</sup>

There is significant comorbidity between, for example, pathological internet use and depression or attention deficit hyperactivity disorder (ADHD) symptoms. Patients presenting with dependent screen use as a primary problem should be screened for associated comorbidities. However, while one may assume that 'addictive' ST is a reflection of a pre-existing psychological condition, recent research suggests the

relationship may be bidirectional:

*'Pathological gaming seems not to be simply secondary to other disorders but to predict poorer functioning longitudinally ... Youths who became pathological gamers ended up with increased levels of depression, anxiety, and social phobia.'*<sup>5</sup>

### NEUROLOGICAL CONCERNS

A new generation of studies is finding associations between IAD/gaming addiction and abnormal neural tissue and neural function. Although these neurological characteristics may be a precondition rather than a consequence of addiction, child health policy must adhere to the principle of precaution. Until the matter is resolved we should heed the concerns of some of the researchers as a prudent approach to protecting child wellbeing.

Differences have been found between frequent and moderate video game players in the size of reward-related brain regions implicated in cocaine, metamphetamine, and alcohol addiction, suggesting possible 'adaptive neuroplasticity in frequent adolescent video game players'.<sup>7</sup>

Other studies report 'abnormal white matter integrity in adolescents with IAD' in a wide variety of 'major white matter pathways ... throughout the brain'. The authors speculate that 'heavy internet overuse, similar to substance abuse, may damage white matter microstructure'. Interestingly, these are some of the same brain areas found to exhibit abnormal white-matter integrity in substance addictions.<sup>8</sup> Adolescents with 'online game addiction' are found to exhibit 'microstructure abnormalities of gray and white matter'.

There also appear to be differences in brain function. For example, among 'online game addicts' researchers successfully induced increased activity in 'crave-related brain areas' merely by showing them pictures from a game.

'Decreased functional brain connectivity', described as 'widespread and significant', is reported as more prevalent in adolescents 'with internet addiction'. On tests of impulse control, such adolescents 'fail to recruit the frontal-basal ganglia pathway believed to inhibit unwanted actions'.<sup>9</sup> Brain activity during gaming suggests increased sensitivity to rewards and insensitivity to loss in IAD.

Dopamine, implicated in reward processing and addiction, is released during gaming. Yet reduced numbers of dopamine receptors and transporters have been found in the brains of 'internet addicts', leading some researchers to speculate that this may reflect 'neuropathologic damage to the dopaminergic neural system caused by IAD'.<sup>10</sup>

The addictive potential of a substance or activity is influenced by the speed with which it promotes dopamine release, and the intensity and reliability of that release. Many video games are designed to offer an extremely effective 'reward schedule'.

### PATIENT RISK FACTORS

Children are more susceptible to developing a long-term problematic dependency on technology. The age of initiation and level of exposure to, for example, gaming may increase this risk, which may start much earlier than assumed. Kirzinger *et al* reported 'a substantial portion' of individual differences 'in media habits can be attributed to genes'.<sup>11</sup> Prenatal exposure to higher levels of androgens is associated with later 'problematic video gaming behavior', 'video game addiction', and alcohol dependency.<sup>12</sup> Parental role modelling is another important factor: parents who consume high ST have children who are many times more likely to consume high ST. There has been a dramatic rise in the number and range of screen devices to which children have access and a commensurate rise in ST. Coupled to this is a marked drop in the age at which high consumption occurs, making problematic screen use a growing problem.

### PRIMARY CARE INTERVENTIONS

GPs must work with what is possible at the moment, using their clinical judgement to focus on the patient's ability to function, without being preoccupied with formal diagnostic categories. It may be most practical to consider the issue of dependency as a continuum. Although there is a lack of consensus over diagnostic criteria, there is one frame of reference at the more pronounced end of this problem. The American Psychiatric Association DSM-5 has proposed a provisional diagnostic criteria set for Internet Gaming Disorder (mild,

moderate, and severe) based on how much time is spent playing the games, and how much they compromise a person's overall functioning. Five of the following criteria must be met within 1 year: preoccupation, withdrawal symptoms, increasing tolerance, failure to reduce or stop, loss of outside interests, continuation despite negative consequences, lying about extent of use, use to escape adverse moods, or individual has put at risk or lost relationships/life opportunities because of gaming. GPs may consider these points when presented with other forms of problematic screen use.

Greater liaison is now required between primary care, counselling, psychotherapy, and addiction specialists, especially those involved in related 'behavioural addictions' such as 'gambling addiction'. Given the scale of the problem and the fact that it affects children, pilot schemes within enhanced GP services involving screening, brief intervention, and onward referral where indicated, should be considered. Currently, there is one specialist NHS pilot programme, the Centre for Compulsive and Addictive Behaviours, treating 'compulsive internet use' and 'gaming addiction'. GPs can refer patients to non-statutory bodies such as On-Line Gamers Anonymous and YoungMinds.

However, for now, it is prevention that should be the focus of intervention.

Family physicians in the US are encouraged to take a 'media history' from patients and discuss connections between a child's health and behaviour and screen use. They can also provide anticipatory guidance to families about media in the home, including limiting media use: raising the age and reducing the degree of exposure, and discouraging screens in children's bedrooms.

There is good evidence that children's ST can be reduced through parental measures, and with recent evidence of the significant effects of 'maternal media monitoring', mothers must now be encouraged to 'nag'.<sup>13</sup>

Interventions targeting families could also take the form of formal statements by the Royal College of General Practitioners on problematic screen use and an information leaflet/poster on the subject. This would help to create a cultural shift and a reference point for healthy behaviour. However, while GPs can raise parental awareness, ultimately parents must stop being their child's enabler and start to parent authoritatively. In the face of a screen-consumed generation they must learn to say 'no' with conviction.

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