The In your home set of articles article is separated into 9 sections, each of which can be individually downloaded. It is a 'work in progress' incorporating new information whenever time permits.

Section 4

Internet addiction (IA)

1. Introduction; powerfrequency (ELF) EMFs; radiofrequency (RF) EMFs; measuring EMFs; the importance of timing
2. Appliances A-C; air conditioners, amateur (Ham) radio transmitters, amplifiers, electric guitars and keyboards, aquarium, baby monitors, bath hoists, battery operated equipment, battery re-charging mats, beds, blood glucose monitors, bottle warmer, bra, burglar alarm, camcorder, carbon monoxide detectors, CD player, central heating, motor-controlled chairs, clock radio, clothes dryer, coffee grinder, coffee maker
3. Computers; monitors (Visual Display Units or VDUs), wired and optical mice, health effects, parental guidelines, laptop computers, wireless enabled laptop, PDA (Personal digital assistant), computer wireless LAN (local area network), Schools' reactions, parents, cognitive effects, sleep effects, broadband, computer games consoles, tablets, computers and Electrical Hypersensitivity (EHS), protection devices against EMFs from computers
4. Internet addiction; behaviour changes; cognitive changes; disruption of circadian clock; eating disorders; EEG; gambling; headache and migraine; life satisfaction; limiting use; links to depression and suicide; parental effects; purpose in life
5. Cooking; electric ovens and hobs, microwave cooking, barbecues, deep fat fryers
6. Appliances D-H; dehumidifier, dishwasher, doorbell, electric (el) blankets, el can opener, el clock, el drill, el guitar, el kettle, el knife, el lawn mowers, el shavers, el shower, el toothbrush, el vehicles, electricity meter, exercise machine, extractor fan, fan, fax machines, fire alarm, fitness devices, floor polisher, food processor, foot spa, foot & hand warmer, fridge, fridge/freezer, hair curlers/tongs, hair dryers, headphones, hearing aids
7. Appliances H-S; heart pacemakers, heaters, central heating boilers, heating pads, hi-fi, etc., hostess trolleys, immersion heater, iron, Jacuzzi, musical keyboard, lift, loudspeaker, magnetic field therapy mats, meters, mixer & blender, music centre, nightlights, pagers, PDAs, pencil sharpeners, personal alarms, personal radios, pet fences, photocopiers, plasma balls, power tools, printers, projectors, radar, radios, radio transmitters, sandwich maker, sauna, scanner, security systems
8. Appliances S-Z; sewing machines, smoke detector, sockets, solar panel water heating, solar photovoltaic panels, soldering irons, spinners, stairlift, static electricity, sun beds, sun lamp, tea maker, telephone, television, TV and radio transmitters, TENS unit, toaster, toys, transformers, trouser press, tumble drier, typewriters, vacuum cleaners, vagina speakers, washing machines,

washer/dryer, waste disposal unit, water filters, water heater, water softener, water supply, wheelchairs, wristwatches

9. Grounding & 172 references

In a review by Bilgrami (2017) 94 articles published since 2006 were on the most popular new age technologies among adolescents: the internet, television, cell phones, and video games. The current body of research highlights several health risks related to these technologies. Nearly all have the potential for addiction, which can result in other symptoms and impair one's daily life. Excessive use can affect several components of health -- such as quality of sleep, body composition, and mental well-being, and certain practices (viewing pornography, sexting) can lead to risky sexual behaviours.

Factors associated with Internet addiction (IA)

Psychiatric disorders often coexist with IA, one definition of which is 'an inability to control one's use of the Internet which leads to negative consequences in daily life'. There is growing evidence that genetic, personality and individual differences in automatic and controlled aspects of self-regulation may promote the development of IA. (Spada 2014).

The Internet is increasingly influential in the lives of adolescents. Although there are many positives, there are also risks related to excessive use and addiction. It is important to recognize clinical signs and symptoms of Internet addiction (compulsive use, withdrawal, tolerance, and adverse consequences), treat comorbid conditions (other substance use disorders, attention deficit hyperactivity disorder, anxiety, depression, and hostility), and initiate psychosocial interventions (Jorgensen 2016).

A study by Das (2017) showed that age was found to be negatively correlated with addiction to mobile, internet, video game, and pornography among those seeking treatment for psychological problems in a mental health setting. It was suggested that they should be motivated to develop the healthy use of technology.

Online activities, depression, and substance use were important predictors of youth initiation and of the persistence of Internet addiction (FC Chang 2014).

In a study by Piguet (2015), she reports that what is known about problematic Internet use is that:-
1) it has been found to be predominant among males
2) specific online activities have been identified as being addictive for young men and women differently and
3) it is known to impact in several ways the general health and daily functioning of teenagers.

She adds that what is new is that:-
1) a sizeable percentage of female adolescents are problematic Internet users.
2) tobacco use, poor well-being, as well as compact devices to access the Internet are positively related to problematic Internet use.
3) in addition to their special interest in online social and communicational activities, female problematic Internet users also reported more online gambling.

In a study by Lam (2009) the majority of respondents were classified as normal users of the Internet, with 10.2% moderately and 0.6% severely addicted to the Internet, similar to that found in Chinese adolescents (Wu 2016). There was a 50% increased odds for males to be addicted to the

Internet when compared to females. Other potential risk factors included drinking behaviour, family dissatisfaction and, especially, experience of recent stressful events. Stress-related variables were associated with Internet addiction among adolescents as they are also related to other addictions. W Li (2014) highlighted the following: internet addiction is endemic among Chinese youth and increasingly prevalent; families of youth with internet addiction experience significant dysfunction; youth with internet addiction evidence significant psychosocial impairments. Internet addiction was negatively correlated with social support and positively associated with depression. The results of a study by Yan (2014) indicated that compared with non-addicted subjects, subjects with severe IA (9.98%) had lower family functioning, lower extraversion, higher neuroticism and psychoticism, and more stressful life events, and subjects with mild IA (11.21%) had higher neuroticism and more health and adaptation problems. In 2013, López-Fernández estimated the number of Spanish adolescents with problem internet use was about 5%.

A study by Bener & Bhugra (2013) of Qatari adolescents added to the growing body of evidence linking problematic Internet use with negative lifestyle and depressive risk factors, among vulnerable adolescents and young adults. They concluded that problematic Internet use is becoming a significant public health issue that requires urgent attention.

Tang's study (2014) reported a high prevalence of internet addiction among Chinese adolescent internet users and they highlight the importance of stressors from interpersonal problem and school related problem as a risk factor for IA which mainly mediated through negative coping style.

In Hong Kong 25.3% of adolescent secondary students exhibited IA, particularly those from divorced families, low-income families, families in which family conflict existed, and severely dysfunctional families. Interestingly, adolescents with restricted Internet use were almost 1.9 times more likely to have IA than those whose use was not restricted (Wu 2016).

In India the prevalence of IA was 8.7%. Male gender, owning a personal device, hours of internet use/day and the use of smartphones was linked to IA (Prabhakaran 2016). Internet use for online friendships was found to be a significant predictor of IA. Use of internet for chatting, making online friends, shopping, watching movies, online gaming, searching information online and instant messaging were found to be associated significantly with IA. In Hong Kong adolescents the risk for gaming addiction was significantly higher among boys, those with poor academic performance, and those who preferred multiplayer online games (C Wang 2014).

Social self-efficacy and family and emotional stresses were positively predictive of smartphone addiction (Chiu 2014). Sex, grade of high school, academic accomplishment, student`s satisfaction with school life, monthly allowance, the level of parental respect and having an opposite sex friend were related to smartphone addiction and impulsiveness. Students having a smartphone addiction had worse mental health and impulsiveness, and showed higher levels of mental health in 9 subareas - anxiety, depression, phobic anxiety, somatization, obsessive compulsive behaviour, interpersonal sensitivity, hostility, paranoid ideation and psychosis as their smartphone use increased (M-O Yu 2014).

Chiu reported (2013) in a study of Taiwanese college students that mobile phone addiction and Internet addiction are positively related and that female college students score higher than male ones in the aspect of mobile addiction.

Cheng & Li (2014), in a study of 31 nations across 7 world regions, reported a global prevalence estimate of IA of 6.0%, with moderate heterogeneity. The highest prevalence was in the Middle East with 10.9% and the lowest was in Northern and Western Europe with 2.6%. Moreover, IA prevalence was higher for nations with greater traffic time consumption, pollution, and

dissatisfaction with life in general. IA prevalence is inversely associated with the quality of life, as reflected by both subjective (life satisfaction) and objective (quality of environmental conditions) indicators.

The findings by Stavropoulos (2017) demonstrated that: (a) higher levels of anxiety were significantly associated with higher IA behaviours, (b) the strength of this association did not vary over time (between 16 and 18 years old), and (c) however, it tended to weaken within classrooms higher in extraversion. The study indicated that the contribution of individual IA risk factors might differently unfold within different contexts.

In a study by Yoo (2014) the prevalence rates of potential internet addiction and internet addiction were 14.8% and 3%, respectively. The odds ratios for potential internet addiction were higher in both boys and girls who reported suicidal ideation, depressive mood, moderate or higher subjective stress, moderate or more happiness, or ever having engaged in problematic substance use. Adolescents at high risk for internet addiction had poor mental health outcomes. The findings indicate the need for measures to prevent and manage internet addiction in adolescents that consider the severity of factors related to internet addiction.

Internet addiction has been widely researched among adolescents, but they are not the only ones for whom this is a problem. Adults were more likely to report at-risk/problematic engagement in video-game playing and gambling in a study by Yau (2013). Compared to the problematic group, the at risk group reported poorer self-control and higher levels of impulsivity and depression.

McNicol & Thorsteinsson (2017) made a study of internet users aged 16-71. They found that 24.4% were problematic users, and 6.7% as addictive Internet users. High use of discussion forums, high rumination levels, and low levels of self-care were the main contributing factors to IA among adolescents. For adults IA was mainly predicted through engagement in online video gaming and sexual activity, low email use, as well as high anxiety and high avoidant coping. Problematic Internet users scored higher on emotion and avoidance coping responses in adults and higher on rumination and lower on self-care in adolescents. Avoidance coping responses mediated the relationship between psychological distress and IA.

Behaviour changes

Rikkers (2016) found links between problem behaviours associated with Internet use and electronic gaming, and mental disorders and risk-taking behaviour in young people.

In a study of secondary school students (Gür 2015) found significant differences between the students' Internet addiction scores and the presence of physical behaviour problems (going to bed late, skipping meals, eating meals in front of the computer) and psychosocial behaviour problems (suffering from conditions such as restlessness, anger, heart palpitations, or tremors when they could not connect to the Internet, decreased relationships with family and friends, feelings of anger, arguing with parents, and finding life boring and empty without an Internet connection).

Lim (2015) suggested that adolescents with Internet addiction disorder (IAD) seem to have more aggressive dispositions than do normal adolescents. If more aggressive individuals are clinically prone to Internet addiction, early psychiatric intervention may contribute to the prevention of IAD. K Kim (2013) found that Internet overuse is strongly associated with aggression in adolescents of both sexes.

Eveningness and Internet addiction are major concerns in adolescence and young adulthood. Lin and Gau's findings (2013) were that associated variables for increased compulsive Internet use

were the tendency of eveningness, male gender, more anxiety symptoms, less maternal affection/care, and a lower level of perceived family support.

Cognitive changes

In an overview by Mills (2014), she concluded that there is particular concern about how Internet use is affecting the brains of adolescents. Whilst accepting that acquiring the skills to use this resource may change brain neurology, she felt that we have not the tools to decide whether the changes may be a problem. Romer (2013) had believed that heavy use of the Internet and video gaming may be more a symptom of mental health problems than a cause. Moderate use of the Internet, especially for acquiring information, is supportive of healthy development.

Scores on internet addiction test (IAT) were negatively associated with sublimation and positively associated with projection, denial, autistic fantasy, passive aggression and displacement. There was a high prevalence of problematic use of internet among medical and dental students. It had significant associations with several defence mechanisms (Waqas 2016).

Dong (2014) showed that people with IA Disorder show impaired cognitive flexibilities.

Disruption of circadian clock

A large number of adolescents move to evening chronotype and experience a misalignment between biological and social rhythms which, added to sleep loss, results in e.g. fatigue, daytime sleepiness, behavioural problems and poor academic achievement. The permanent social jet lag resulting in clock misalignment experienced by a number of adolescents should be considered as a matter of public health (Touitou 2016).

Eating disorders

It was found that 15.2% of Turkish high school students have disordered eating attitudes (DEAs), and Internet addiction (IA) was detected in 10.1%. The presence of DEAs, male gender, and high body mass index were found to be the strongest predictor variables of IA (Alpaslan 2015).

EEG

J Lee (2014) found that there were differential resting-state EEG patterns between both groups of participants (those with or without depression) with Internet addiction and healthy controls and suggested that decreased absolute delta and beta powers are neurobiological markers of Internet addiction.

Gambling

Among free-to-play gamers the prevalence of Internet gaming disorder (IGD) amounted to 5.2%. Subjects classified with IGD displayed higher psycho-social symptoms than non-problematic users, reported higher degrees of perceived stress, and applied dysfunctional coping strategies more frequently (Dreier 2017).

Headache and migraine

Results from a study by Cerutti (2016) highlighted the potential impact of excessive internet and mobile use, which ranges from different types of headache to other somatic symptoms.

Life satisfaction

Highly significant associations were observed between problematic Internet use (PIU) and the facets of life satisfaction, health and leisure, with considerable differences between males and females, which the authors suggested should be taken into account in studies (Lachmann 2016).

In a study by Boniel-Nissim (2015) more hours per day spent on the computer were associated with lower life satisfaction (LS); more electronic media (EM) communication with friends with higher LS. This relationship became negative if EM use reached and exceeded a certain threshold. Supportive communication with parents (SCP) moderated the effect of EM communication with friends, but not computer use. SCP seems to be more important than computer use or EM communication with friends for LS and it seems to buffer negative effects of EM use.

Limiting use

Ko (2015) found that, among other factors, inadequate regulation of unessential Internet use predicted risk of Internet addiction, particularly among adolescent girls. Internet regulation was necessary to prevent Internet addiction. Among adolescents with Internet addiction, it is also necessary to pay attention to deterioration of family function, particularly among girls.

Links to anxiety/depression and suicide, loneliness, self-esteem

In a study by Fu (2010) the prevalence rate for having five or more symptoms of IA was estimated to be 6.7%. Its symptoms seem to co-occur with individuals' suicidal ideation and depressive symptoms.

There were significant correlations between IA and depression, anxiety, attention disorder and hyperactivity symptoms in adolescents in India (Yadav 2013), Greece (Andreou & Svoli 2013), Korea (Cho 2013) and Turkey (Bozkurt 2013, Orsal 2013, Seyrek 2017), particularly among males. Smoking was also related to IA. Another Turkish study (Alpaslan 2016) showed that problematic Internet use (PIU) was higher in adolescents with major depressive disorder (MDD) and hopelessness was more prevalent among MDD patients with PIU, but no links with potential suicide were found. Depression and symptoms of ADHD appeared to have the most significant and consistent correlation with PIU (Carli 2013). Associations were reported to be higher among males in all age groups.

Dissatisfaction with physical appearance seems to have a significant role in individuals' immersing themselves in internet use (Koronczai 2013).

Parental effects

Lam & Wong (2015b) found that there was a significant parent and adolescent problematic Internet use relationship; however, this relationship is differentially affected by the stress status of the adolescent. The direct implication of the results is that parental Internet use should also be assessed and included as part of the treatment regime for adolescents. In an Iranian study (Ahmadi & Saghafi 2013) 21.1% of the students were in some way victims of IA, among whom 1.1% had significant problematic symptoms. Familial relationships was the most important factor related to IA; religious beliefs, moreover, was the second most important factor. The father's level of education was more important than that of the mother's by nearly twice as much.

Chang's study (2015) found that Internet addiction by adolescents was associated with cyberbullying, substance use and depression, while parental restrictive mediation was associated with reductions in adolescent Internet addiction and cyberbullying.

The results of a study by Lam (2015a) suggested that there was a significant relationship between parental mental health, particularly depression, and the IA status of their children. These results have direct implications on the treatment and prevention of Internet Addiction among young people.

Purpose in Life

Male gender, perceived relatedness, and purpose in life emerged as the three most salient predictors of problem game playing among Chinese young adults (AM Wu 2013). Psychological needs and purpose in life influenced their vulnerability to problem game playing directly or indirectly. Intervention programs that encourage social involvement and voluntary work, as well as counselling that helps clients to search for life purpose, are suggested for intervening in problem game playing.