REVIEW ARTICLE

Internet Era Jeopardize the "Mortals": Its Creators

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ABSTRACT

Background: In this technical era, undoubtedly the internet has brought the great revolution worldwide. Technology-mediated social networking sites (SNSs), Artificial Intelligence (AI), Smartphones, are all the predictors and mediators of the drastic increase of use of internet in all age groups of people and its use is now having tremendous impact from small children to adolescent, young people to older people also. But captivity of internet is prevalent these days, which leads to internet addiction. The main aim of the paper was to provide the possible mediators and predictors of internet addiction in all age groups, its prevalence, and the use of modern technology like Artificial Intelligence (AI) in the field of healthcare and also provide with the long-term solutions of internet addiction which works on the person level and not the disease level.

Methods: An extensive review of the literature was done on the use of internet, predictors of addiction of internet and its complementary treatment. The study done by different scientists on internet addiction, its psychological, social and physical impact on one's life were also studied and presented in tables and figures. The possible non-pharmacological treatment was also studied and discussed.

Result and Conclusion: Internet addiction is one of the growing challenges of health complications worldwide in all age groups of people. The possible long-term solution of IA is the psychological and complementary treatments along with the use of cosmic medicine, which has the ample opportunity of seeking betterment in people's life with healthy social and mental well being.

Keywords: Internet addiction, Social networking sites, Artificial intelligence, Meditation, Cognitive behavioural treatment, Cosmic medicine.

INTRODUCTION

Technological era or Technological slave ??

"The great myth of our time is that technology is communication"

The pivotal forum of discussion in sociology and philosophy is the impact on human beings due to the rapid progression of info-communicational technologies in society. The basic and main aim is the psychological consequences of the use of tech-

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nologies, prominent being the excessive use or abuse and its addiction.[1]In this era of advancement, each and everyone is under the technological captivity as its use is widely and commonly available which is hype up throughout our society. In the early 2000's it became more popular and personal as social networking sites (SNSs) were introduced and were embraced by the masses. The word "Technology" can be broken into two parts, where Techno means application, art or skill and Logy means science and learning. Thus the linguistic meaning of technology is the method or tool developed by the society to facilitate the solution of its practical problems and provides necessary needs for the community. A human being is a social animal thus their relationship dominance is crucial on the technology such as in SNSs. SNSs are the internet services that allow the user to make a public or semi-public or private profile where they can interact and share the media with the connection and view and share their list of connections, thus expanding the connections of users. Initially, SNSs created enthusiasm in a young generation only, later expanding its zest to all age groups, including children, adolescence, youth and old (above 60 years) in India. Consideration of, "being in social networking sites" as wastage, was long gone which was synergistically risen by the rise of the access of internet speeds and smartphones. SNSs was introduced and used as in the corporate sector for connecting with peers, customers, and clients but nowadays, it has branched itself including friends and family also. It represents the user profile information such as profile name, age, gender, education and directly link to other variety of SNSs with additional services. SNSs provide an interactive platform that enables its users to communicate and socialise with other members and share information and knowledge in various media. SNSs dominate all form of communication on the internet and affect social, emotional, cognitive development of youth, accounting for a large portion of their time. Consequently, it leads to risks, threats and crimes when used negatively in absolute terms in all walks of life. Technology addiction is considered as a kind of disorder or an impulse disorder where excessive use of technology and becoming dependant on it makes an individual technology slave. Psychosocial behaviour of an individual as the technology slave are the formation of personal beliefs, social isolation, reduction in the family ties between the family and society members, inactivity, lack of desire to work different activities, time wastage on unnecessary things, obesity, high rate of violence, especially in children because of watching violent programs, high crime rate because of spreading video clips presenting all kinds of these crimes and ways of committing them and the spread of lies and rumours causing distraction and loss of trust in such information.[2-7]As of April 2018, the total world population is 7.6 billion, in which the internet has 4.2 billion users, out of which 3.03 billion are active social media users. The average time daily spent on SNSs is 116 minutes a day.[8]To understand

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the increasing diversity of population in SNSs, one should understand the characteristics of the user in the current scenario. As recent statistics of 2014 show, that 65% of online adults in the 50–64 age group and 46% of online adults in the 65 years and older age group use SNSs.[9] As per the reports of Global Digital Reports-2018, in 2018, the statistics of mobile phone users was 5.135 billion, which is estimated to have an increase of 4% year-on-year.Countries that have the largest internet penetration with 74-94% internet users as compared to total population are the North, South and Western Europe and North America. Due to improved technology the social media usage is made easily accessible to more of the population in various countries, thus the largest social media usage countries are India, Ghana, Saudi Arabia and Indonesia.[10]

Table 1: Statistics of most used Social Networking Sites (SNSs) in India and worldwide as in 2017-2018[8,11-16]

S.No.	Social Networking Sites (SNSs)	Number of Users in India	Number of Users Worldwide
1	Facebook	219.94 million	2.072 billion
2	Youtube	245 million	1.5 billion
3	Instagram	67 million	800 million
4	LinkedIn	47 million	500 million
5	Twitter	7.83 million	330 million
6	WhatsApp	200 million	1.5 billion
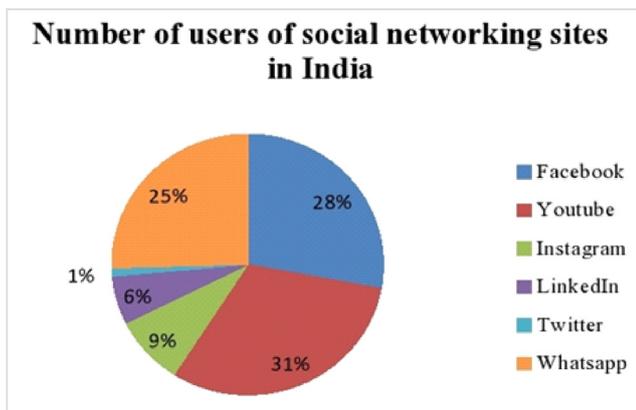
Figure 1: Statistics of Social Networking Sites (SNSs) in India

Internet Addiction (IA)

Technology gives rise to various terms associated with the different aspects of behavioural problems correlated with it. The problem includes a wide range of symptoms starting from harming others as the cyberbullying, cyberstalking to a socially unaccepted or dangerous use as talking on mobile phone while driving. Ultimately, this is directly or indirectly in relation to the rise of internet users leading to internet addiction. [1]

The term Internet Addiction (IA) disorder was first introduced in 1996 by Goldberg, who related it to the substance dependence. IA can be considered a serious social problem and the big business also. Despite the various advantages of the World Wide Web, misuse of the technology can be extremely dangerous and lead to IA which negatively affects an individual's health. IA can be defined as the maladaptive pattern of internet use which is time-consuming and leads to clinically significant impairment or distress. Generally, it can be

conceptualized as a behaviour control problem. The symptoms of IA include tolerance, withdrawal, lack of control, relapse, and large amounts of time spent online, negative consequences, and continuation of use, irrespective of problem awareness. IA generally consists of four elements namely, excessive use, withdrawal, tolerance and negative social repercussions. Excessive use is related to neglect of basic drives while using the computer, whereas withdrawal is associated with the feelings of anger, tension, frustration, depression when the internet is inaccessible. Tolerance refers to the need for more advanced software and better battery backup for long hour usage whereas negative social repercussions include negative feelings such as of depression and stress.[17-19]

A positive correlation can be seen between the emotional and behaviour problems and the severity of IA. These problems include increased social anxiety, increased irritability, increased hyperactivity, impulsiveness and aggression, increased interpersonal sensitivity, increased difficulties in making and maintaining friendships and decreased self-esteem. In addition, decreased organizational and strategizing ability and time management skills characterize the adolescents with IA.[20]

Frequently used inter-changeable terms on spending the excessive amount of time online are the Computer Addiction, Problematic Internet Use, Internet Addiction Disorder, Internet Dependence and Internet Addiction and they use the internet on the expense of other aspects in their lives. As per researches going on worldwide for the growing concern of IA phenomenon brought out some astounded stats like a survey conducted by marketing agency Digital Clarity, on 1,300 young adults, found that 16% of 18-25 years old young people revealed the symptoms of IA.[21] IA is not only about enticed of the internet but is a symptomatic expression of other psychological problems such as anger, low self-esteem, isolation and depression.[22]World Health Organisation (WHO) in June 2018 classified the gaming disorder as a mental health condition, thus establishing the concern for the technology-oriented era on people. Further, as per the news, a London Hospital is also preparing to launch the first ever internet addiction centre for young people and adults funded by NHS.[23]

Metacognitions and emotional distress in Problematic Internet Use

Problematic Internet Use (PIU) i.e. excessive use of the internet is characterized by excessive or poorly controlled behaviour regarding the use of computer and internet access that leads to distress. In recent years, it has been focussed that the potential transdiagnostic process of many forms of psychopathology is the emotional dysregulation. Emotional regulation is defined as the process that serves to intensify, dampen or maintain the behavioural, cognitive or physiological aspects of emotions depending on the goals of an individual. Subsequent research has supported the role of emotional dysregulation in a wide range of clinical disorders and PIU. Addictive behaviours concept emphasizes the role of metacognition in the genesis and perpetuation of emotional dysregulation. According to the metacognitive model, metacognitions refers to cognition applied to cognition and defined as any cognitive processes involved in the monitoring of thinking and are engaged in behaviours

aimed at reducing feelings of distress. It has been suggested that low levels of trait distress tolerance may potentially lead to adverse outcomes (e.g. substance abuse) as individuals attempt to use maladaptive behaviourstocope with a negative effect. PIU is associated withadverse outcomes but no study shed light on the underlying mechanism that leads to PIU. Thus, Akbari M conducted the study to examine which of metacognition and distress intolerance acts as an intermediary between emotional dysregulation and PIU. It was concluded in the study that the intolerance plays a full mediating role and metacognitions play a partialmediating role between emotional dysregulation and PIU.[24-26]

Smartphones and IA

Smartphones are the portable handheld size computers which represent the edge of the evolution of information technology.[27] As per the Newzoo's Global Market Report 2018, smartphone penetration in India is 28.5% which constitutes 386,934,000 smartphone users.[28] They have all the features of internet connections and telephone functions. Due to its excessive expansion and use, it has become the main tool for causing and enhancing IA in all ages.[29] Its use is based on web-based applications. There is a significant relationship between frequent use of smartphones and the internet, thus the subject of use of smartphones were examined with respect to internet use as well.[30] Thus there are several studies that examined the correlation between the use of Smartphones and IA. Recentresearches have shown positive correlation between IA and frequent use of smartphones, indicating thata higher frequency of Internet-based use of Smartphone apps, such as SNSs is the predictor of the existing addiction.[31-32]

Gaming disorders: Suicidal attempts

Unsettling air around the suicidal games is simmering due to various threatening actions of these games. Last year, media reported about the "suicidal game" that resulted in the loss of young people or children by suicide attempts by them. Basically, the game goes by several names but is commonly referred to as the "Blue Whale Game or Challenge", where people agree to follow instructions from the administrator over the course of 50 days, where the last task is to commit suicide as the 50th task. The general premise of the game includes the administrator giving assignments to that player, who is supposed to carry out, ranging from mundane tasks to self-harming behaviour. Moreover, the players are threatened with harm, if they refuse to follow the instructions. Additionally, they are encouraged to tag others and join the game. The player "wins" when they complete the final task of taking their lives on the 50th day. Russia, several European countries and in India too suicides and suicidal attempts among young people were reported associated with Blue Whale.[33]

"Momo Challenge" came in reports after a year, when the success of suicidal attempts by the children via Blue whale game was seen and created a threat among everyone. This new game also reportedly encouraged children to perform dangerous challenges. It is an alleged form of cyberbullying that spreads through social media and cell phone through Whatsapp and is first started in Mexico. The Buenos Aires Times reported the death of a 12-year-old girl in Argentina due to "Momo Challenge" where the challenge was given to her to communicate with the unknown number that evoked her to engage in a series of violent acts that ends with her ultimate suicidal attempt. In this game, all the violent acts are done to meet "Momo": which appears as a doll with wide mouth and large eyes to create the excitement among children. If the user is not ready to follow the instructions as directed then it threatens the user with violent images and the account is connected to various numbers from Japan, Columbia to Mexico.

The perpetrators of this game target people after monitoring the suicidal tendency of them on SNSs. Till now; there is no prevalence of "Momo Challenge" in India. As per cyber experts, the challenge is a hoax aimed at stealing personal data and extorting information. There is no confirmed news regarding the prevalence and suicidal attempts of this game in India but the threat is extensively spread all over the country.[34-38]

Threat of the recent time: Self Diagnosis

This era is technology-mediated and in this modern world, each and everyone has scarce time that encourages them to involve in internet captivity. This raises the opportunity of "google it" on behalf of a patient. They want their answer quick and reach their own conclusion by surfing on the internet and self-diagnosing their clinical situation. But this self-diagnosis can be very dangerous. For example, mood swings condition ought to be a bipolar disorder as per google by a user. However, mood swings can be a symptom of many other clinical scenarios like depression and personality disorder.[39] Information seeking ability of user through the internet is simpler, quicker and easier too thus they are getting more and more involved in it and obtain their diagnosis and themselves reach out with the conclusion online only. Patients are perceived as "challenging" who used the internet for self-diagnosis or self-treatment.Researchers are continuously coming across with the hype up a threat of self-diagnosis due to its expansion among people. One of the reports of Pew Research Centre of 2013 on Americans, on self-diagnosis concluded that 35% utilises online resources to determine their clinical conditions, out of which 46% undergone medical attention as per diagnosis reports online while 38% allowed the prior symptoms to run their course and not seek any medical attention. 72% of participants accepted they surf the internet for getting any medical information while 77% started their own diagnosis with various search engines like Yahoo, Google and Bing. Around 13% started with WebMD search.

Another survey conducted by Wolters Kluwer Health, in 2012 confirmed the widespread prevalence of self-diagnosis; data being 3 out of 10 patients used online information. The reason of using online self-diagnosis was determined by the survey where respondents gave varying reasons. Majority of the population 67% accepted that self-diagnosis makes them better informed prior to a doctor visit.[40] But the physician found it as negative only because patients then tend to ask such questions which have no relation to their condition and handling such patients are annoying and frustrating for them. Thus a relation of patient and physician is also altered. Dana Coriel, MD refers this phenomenon as "Google University". This phenomenon is flourished on SNSs such as Facebook. Further, he added that

"I've seen bad advice being given on innocent posts posing a question. I, see young moms posting questions about their children's ailments and getting completely wrong answers from random people".[41]

Prior to discussion of cons of self- diagnosis, the cause of this phenomenon need to be enlightened. And it is found to be that patients undergo this phenomenon of self-diagnosis just to educate themselves prior to doctor's visit and to assess what kind of care or which specialist they should concern about their medical condition. As per Warner, google searches and algorithm symptom checkers are pure solid science-based that omit the nuance and art of doctor assessing the patient which can result in misdiagnosis and adverse health outcomes.[40]For example, if one assumes to have depression by the symptoms without any consultation of physician and starts the treatment with the over-the-counter preparations, then it may miss a medical syndrome as some brain tumours also may present with changes in personality or psychosis or depression.[39-42]

Artificial Intelligence (AI)

In the past 20 years, the internet has emerged with new applications and features. This new phenomenon can be taken as the budding of the motor nervous system, the sensory nervous system and the visual nervous system respectively.[43]The universally accepted definition of AI is not available till now. One of the founders of modern computer science and AI was the British mathematician Alan Turing (1950) who has defined intelligent behaviour in a computer as the ability to achieve human-level performance in cognitive tasks, which later became popular as the 'Turing test'. Broadly, the term AI refers to the computing technologies that resemble the processes associated with human intelligence, like in reasoning, learning and adaption, sensory understanding and interaction. Thus we can define AI as the field of science and engineering concerned with the computational understanding of what is commonly called intelligent behaviour, and with the creation of artefacts that exhibit such behaviour. The term AI is not new but in recent years there had been rapid advancement in this field. There are many major technology companies that are investing in the development of AI for healthcare and research such as, Google, Microsoft, and IBM. The potential application of intelligent techniques in various fields of medicine has been explored since the mid of the last century. In the field of surgery, application of AI technology was first investigated by Gunn in 1976, when he explored the possibility of diagnosing acute abdominal pain with computer analysis. The problems faced by modern medicine are the challenges of acquiring, analysing and applying a large amount of knowledge necessary to solve complex clinical problems. AI is intended to help the clinicians in the diagnosis, making therapeutic decisions and predicting the outcome. They are designed to support healthcare workers in their everyday duties. The system includes

- ✓ **Artificial neural networks (ANNs):** They are computational analytical tools, inspired by the biological nervous system which consist of networks of highly interconnected computer processors called 'neurons' that are capable of performing parallel computations for data processing and knowledge representation. It is being used in clinical diagnosis, waveform analysis, image analysis in radiology and histopathology.

- ✓ **Fuzzy expert systems:** The fuzzy logic system is the science of reasoning, thinking and inference that recognises and uses the real world phenomenon and recognises that everything falls in between the varying shades of grey. Its application is used in the exploration of the diagnosis of acute leukaemia, and breast and pancreatic cancer.

- ✓ **Evolutionary computation:** This term imitates the mechanism of natural selection i.e. the survival of the fittest. They are applied to perform several tasks like diagnosis, prognosis, medical imaging and signal processing.

- ✓ **Hybrid intelligent systems:** Above mentioned technologies are combined together which can work in a complementary manner. Popular hybrid systems available are ANNs for designing fuzzy systems, fuzzy systems for designing ANNs .[44-45]

AI has entered a new era i.e. the era of Internet AI. Based on the mass "big data" of the internet and its information exchange with the real-world, have emerged since 2014, and since then new areas and records are continuously created.[43]

In recent times, there are efforts to research and develop Smart wearable systems (SWS). These systems are able to measure vital signs like the body temperature, heart rate, arterial blood pressure, respiration rate, electrocardiograms (ECGs), and electroencephalograms (EEGs). The measurements are forwarded via a wireless sensor network (WSN) either to a central connection node, such as a personal digital assistant (PDA) or directly to a medical centre. A physician can then manage the patient based on the transmitted data. SWS is used to monitor patients 24 h a day according to preventive medicine protocols. The monitoring system is connected to an assistance centre where the measured parameters are continuously or intermittently transmitted. Advances in the field of microelectromechanical systems (MEMS) have addressed a number of clinical indications, such as drug release and biosensors for point-of-care testing. Its usefulness lies in their ability to behave in a continuous or discrete fashion which may mimic the metastability of a living organ. There are various diseases that can be monitored via SWS are Cardiovascular diseases, Diabetes mellitus (DM), Renal diseases, Respiratory diseases, Cancer, Stress and various other.

DM is the disorder of glucose metabolism and the most challenging disease from the medical and economic perspective. The development of 'artificial pancreas' may be one of the solutions of better management of glucose level and infusion of insulin. Stress is a leading cause of illness and disease and is so pervasive that there is an inherent need to be able to supervise stress in real time over long periods. A real-time personal stress monitor would allow subject to keep a check on the stress levels and also provides the physicians to evaluate the stress levels between the visits.[46]

AI framework serves with the two potential purposes i.e. a simulation environment for various healthcare policies and the

basis of AI that can "think like a doctor". The framework is structured as a multi-agent system, which in future work has potential to account for the various conflicting and synergistic ns of various components in the healthcare system.[47]
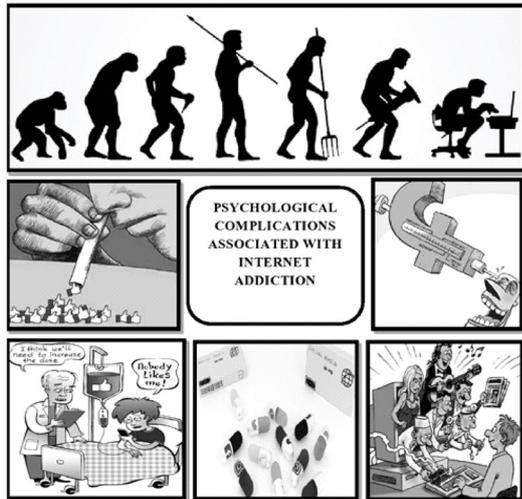

Figure 2: Psychological Complications associated with Internet Addiction (IA)
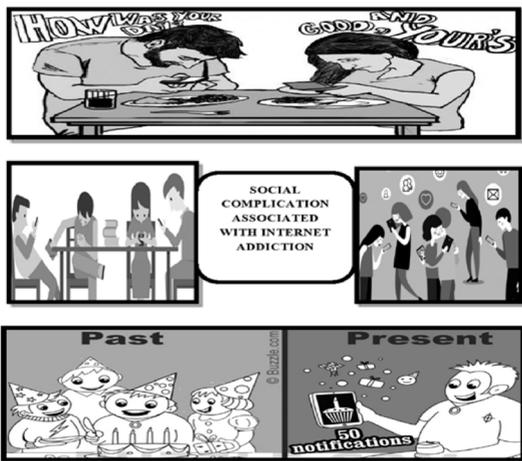

Figure 3: Social life complications associated with Internet Addiction (IA)
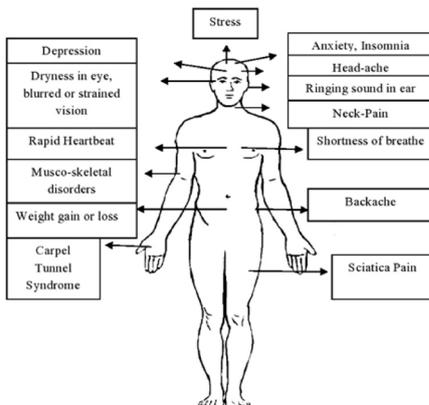

Figure 4: Physical complications associated with Internet Addiction (IA)

Reformation in age-distribution of users of social networking sites (SNSs)

As per the statistics worldwide, Facebook (fb) is the largest social network in the world. It was started as website limited only to Harvard students, but quickly expanded to other colleges, where till now, 1 out of every 7 people on earth is on fb. The World Wide Web has been transformed radically as the users are not only receivers of information, but also the creators of the content. Past years discussion issue was basically the addiction of television and with the advancement, problems are also advanced and internet addiction is the call of an hour discussion.[2]Slowly and steadily technology has robbed humans of their instinctive abilities and amputated them of their capacities.Today, many of us find ourselvesin poor health, depressed, isolated, alienated, alcoholics, drug addicts, overweight, stressed out,overworked, and exhausted which is the clear indication of the requirement of the deepest attention in order to find solutions for more wellness, and health for human beings everywhere, and also for the balance between our way of use and time of use of technology in conversation and social interaction with others. Machines and technology, along with the endless products of consumption, are useful to us, but we have become their slaves rather than their masters. It seems perfectly impossible for us to reverse this situation.[48]Youths are an important target group for health communication because they are susceptible to environmental influences and thus habits formed during this period persists into adulthood. There is a pivotal role of the social environment on the weight-related behaviours of youth recognised by academics and health practitioners.[49-51]
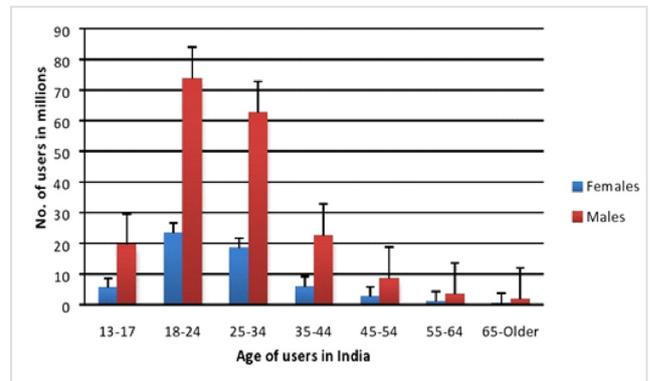

Figure 4: Age-wise distribution of users of Facebook in India as of January 2018

Although seniors have consistently lower rates of technology adoption than the general adolescent and young people, yet this group is more digitally active than ever before. Social media users have exploded in the past five years and continue to rise also. According to the report of Pew Research Centre in April 2012, it was found for the first time in America; more than half of older adults (65 years and more) were the internet users. In 2014, 59% of seniors reported that they go online which is estimated to be a six-percentage-point increase in a year. Additionally, 77% of older adults have cell phones, which are up from 69% in April 2012. In UK, there were only 45% of adults in 2011 that used SNSs, but now 63% use it and that too every day. Among them, 51% of adults aged 55-64 years regularly use SNSs and 23% of over 65 years use it, compared to only 15% in 2015. This is a crucial time to keep a check on its usage as per the statistics and reports available in recent years about the increasing demand of internet especially SNSs in all age groups.[52-53]

Table 2: Study of different scientists on the prevalence of Internet Addiction (IA)

No.	Name of Scientist	Objective of the study	Methodology	Conclusion of the study
1	Goel, D et al 2013[54]	To study the prevalence of IA and associated existing psychopathology in the adolescent age group in the Mumbai city	A crosssectional study sample comprising of 987 students, where 681 (68.9%) were female and 306 (31.1%) were males. The mean age of adolescents was 16.82 years. of various faculties across the city Of Mumbai was conducted who were assessed semistructured proforma and The Internet Addiction. Dukes Health Profile was used to study physical and psychosocial quality of life of students.	Of the total, about 74.5% were moderate (average) users. Using Young's Original criteria, 0.7% were found to be addicts. Those with excessive use internet had high scores on anxiety and depression.
2	Grover S et al 2010[55]	To study the pattern of Internet use across people of various professions (young) who have access to it.	104 respondents with the mean age of 27-49 years were assessed on a 31-items self-rated questionnaire covering all the ICD-10 criteria and Young's criteria for IA	The prevalence of IA was found to be 51.9% by ICD-10 criteria and 3.8% by Young's criteria.
3	Al-Hantoushi M 2014[56]	The study was done among secondary school students in Riyadh city for the prevalence of IA and its correlation to depression	A cross-sectional survey was conducted in randomly selected 770 secondary school students where 716 students answered the questionnaire via a self-administered questionnaire distributed among them.	It was concluded that the prevalence of IA was 5.16%. IA is a growing problem which has psychological, physical and social effects on adolescent's life which need to be checked upon. Internet addicts have reported having low school performance with more absence rate from school. They are at higher risk of poor sleep.
4	Anwar E, 2014[57]	The main aim of the study was to check IA among secondary school students in Lucknow and its relation with their academic achievement.	Stratified random sampling was designed to target the population and Young's Internet Addiction Test was applied in order to asses PIU. Academic achievement was assessed via self-completed questionnaire by the investigator.	It was concluded that male students had a higher rate of accessing the internet than the female students and the extreme users and non-users had a negative impact on their academic.
5	Ballarotto G et al, 2018[58]	The study aimed to investigate the differences in the use/abuse of the Internet, psychopathological risk, and adolescent's attachment on the basis of sex and age; and the influence of attachment to parents and peers on use/abuse of the Internet, considering the effect of adolescents' psychological profiles.	1105 adolescents (43.6% boys and 56.4% girls) from 12 to 20 years (average age = 15.55; SD = 1.68) were recruited for this study, through the collaboration of high schools of centre-south of Italy. The structured questionnaire was done to investigate the demographic profile and Hierarchical regression analyses were conducted to verify the influence of parental and peer attachment on Internet use/abuse,	It was concluded that girls have higher levels of internet use/abuse than the boys and suggest that unpleasant feeling of isolation, anger, or detachmenta experienced in attachment relationships with parents may predispose adolescents to cope with these emotions through an excessive use of the Internet, in order to avoid and/ or reduce the distress resulting from adverse attachment experiences.
6	Ben-Yehuda, L et al 2016[59]	The main aim of thestudy was to examine the relationship between the Smartphone and the Internet addiction and the level of users interest. Smartphone use in three different situations (boredom, passive activity and active activity) among male and female students.	40 university students consisting equal number of males and females were recruited and examined the variables of the study byInternet addiction, Visual Analog Scales (VAS) and Smartphone Addiction Scale (SAS) questionnaires.	Overall, the study concluded that the use of smartphones is directly and strongly associated with the IA and is not influenced by any interest or involvement in daily activities.

No.	Name of Scientist	Objective of the study	Methodology	Conclusion of the study
7	Bhatia M et al, 2016[60]	Assessment of the prevalence of internet overuse in school going students (Adolescent)	A cross-sectional survey was done in 3 private schools in the city of Gwalior, Madhya Pradesh (300 students). Questionnaire utilised was Young's twenty question internet addiction test questionnaire to measure IA.	It was concluded from the findings that higher number of students were under moderate IA than severe IA and thus parents and school need to have check and counsel students and teach them to maintain the time balance between the internet surfing, studies and outdoor physical activities.

Is there any solution to Internet Addiction?

In this growing era of technology, can there be any measures that could treat the IA with the overall growth and improvement of one's health?? The answer is "yes". The treatment includes the psychological and complementary treatment
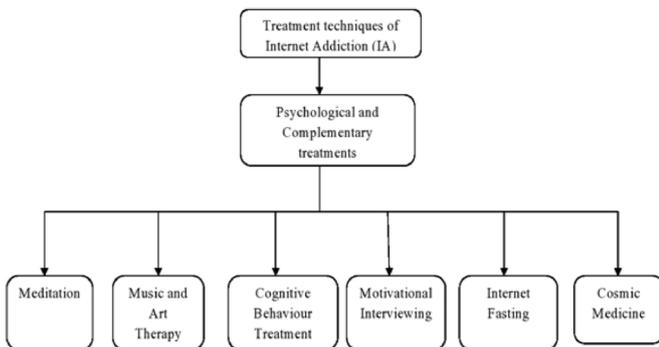
Psychological and Complementary Treatments of Internet Addiction: In the changing era, there are Verbal therapies are included in standard psychological treatments such as cognitive behaviour therapy, motivational interviewing, and relapse prevention. And also complementary and alternative medical therapies are utilized to allow for creative and expressive ways to address issues.[61]

Figure 6: Brief outline of Psychological and Complementary Treatment techniques

Meditation

Meditation is based on the international practices that ultimately lead to increased awareness, greater presence and a more integrated sense of oneself.[62] Previous studies have highlighted and shown that meditation may act as a useful adjunct in the treatment of mental health problems such as in mood and anxiety disorder.[63-65] As per the evidence based on previous studies, it has also been suggested that meditation is beneficial for the people suffering from hypertension,[66] insomnia,[67] irritable bowel syndrome[68] and in symptoms of epilepsy, premenstrual syndrome and menopause.[63] From the studies done by various scientists worldwide, it was found that internet addiction caused negative health impacts on adolescents, young and adults. Basically, they suffer from one or the other mental or psychological disorders which can be beneficially treated by meditation or we can say that the IA can be cured by the practice of meditation.

Among the biomarkers that are potentially affected by the meditation practice are telomeres, enzyme telomerase and the expression of telomere-related genes.

Telomeres are nucleoprotein complexes at the ends of eukaryotic chromosomes that protect DNA from instability and degradation. Telomere length (TL) is a valuable indicator of cellular ageing and physiological stress. Meditation practice promotes adaptive psychological functioning and improved telomere maintenance.[69] A study by Elder and colleagues[70] in 2014 reported that the meditation practice improves in measures of perceived stress, depression and burnout symptoms, thus proving that it is beneficial in a high stressed environment such as in workplace.

The beneficial use of the practice of meditation in IA is supported from the broad appeal of its use for its range of effects on physiology and mental function across groups, from those with depression and anxiety to those dealing with stress or chronic pain. The physiological benefits of meditation include lowering of blood pressure, decreasing cortisol levels, and improving active attention, emotion regulation in the cortex and affect the parasympathetic nervous system that induces relaxation leading to physiological and biochemical changes. Further, meditation increases cognitive function, decreases emotional reactivity, and enhances executive processes, which may help patients with depression and anxiety.[71-72] The evidence of these physiological changes comes from neuroimaging studies that have shown increases in network efficiency and connectivity of the anterior cingulate cortex of the brain responsible for self-regulation.[73-74] Meditation practices, in both clinical and nonclinical settings, show promise in reducing anxiety, depression, and symptoms associated with psychological distress.[75]

'Mindfulness meditation' is a type of meditation that helps people to be decentred from negative thoughts and associated sad moods. This practice is constituted in "Mindfulness behavioural cognitive treatment (MBCT) which has the ability to prevent relapse in patients with three or more episodes of depression. It is being considered that the addicted person acts 'mindlessly' with no or little awareness of the cues. Mindfulness-based relapse prevention (MBRP) is another name of MBCT in which educational intervention combines traditional cognitive-behavioural relapse prevention strategies with meditation and mindfulness meditation. This technique helps patients to tolerate uncomfortable states of difficult emotions and of craving.[76-77]

Since thousands of years, meditation has been the key component of eastern spiritual practices that have been recognised as a systematic practice resulting in measurable psycho-physiological effects on the body only during recent years. It is being practised to reduce stress and manage health. There are different meditation techniques that employ different procedures to achieve the desired state of mind. Heartfulness cleaning is an active process in which "willpower" is used.It is a unique heart-based system with key practices like cleaning and meditation aided by yogic transmission. Studies have demonstrated its beneficial effects on physical health, psychological health, emotional intelligence, sleep and even on telomere length. From the study of Arya NK[78] it was proved that heartfulness processes of cleaning and meditation had a positive effect on sympathovagal balance. Heart Rate (HR_{max}) was found to decrease significantly during cleaning and meditation whereas Blood Pressure (BP) decreased significantly during meditation, indicating overall positive effect of cleaning and meditation.[78-81]

Art and Music Therapy

It is so fascinating how the creativity of the art can provoke one's thought and used as such in medical science for the treatment. Art therapy uses expressive arts in a therapeutic environment with trained professionals. Its creativity is led by one's own visualisations. It utilises their ability and motivates them to portray specific images and symbols and also being playful at the same time. It can be considered as a self-discovery process or techniques. As in this process, communications skills are expanded so that one expresses or conveys the feelings in a much better way. This technique allows and motivates the person to explore more and comes to the understanding of one's own creation. The American Art Therapy Association explains it as a therapeutic approach that has the ability to enable the individual in building self-esteem, emotional regulation, and in reducing anxiety. It accomplishes in making a person full potential, emotionally, cognitively, and socially. The kind of art usually includes music, dancing, painting, sculpting, drawing, acting and poetry. Art therapy can be made applicable in many ways, some are as follows:

❖ **Gestalt Method: -** Patients are made to verbalise their thoughts and emotions with any piece of artwork, thus the process undergoes a deeper conversation between the patient and the therapist.

❖ **Active Imagination: -** As per the choice of a patient, they are encouraged to imagine and create the artwork upon it and the therapist observes what is being created and correlates it with the patient's mental well being.

❖ **Third Hand: -** With this method, the therapist assists with the creation of the art while the patient directs said creation.[82-84]

Music is a paramount measure in most of our lives such as they are nowadays, being used as the treatments for emotional issues such as depression and anxiety, compulsive behaviours and substance abuse.[85]Music therapy is one of the non-mainstream psychological therapies. According tothe American Music Therapy Association, the definition of music therapy is given as "clinical and evidence-baseduse of music interventions to accomplish individualized goals within a therapeuticrelationship by a credentialed professional who has completed an approved music therapyprogram".[61] Licensed therapists or professionals study the effects of music on the mind and body and also they develop the strategies to effectively utilise it for the accomplishment of individual's goal. This therapy gives clients an avenue of expression that can help them better communicate those things that trouble them and also promotemental calm, introspection and mental calm, thus complete mental well being. In rehab clinics, music is used in multiple ways at any given time.[85]Music includes drumming activities that play a very important role as complementary techniques addiction treatment. Prior work done in 1980 by Mendel says that drumming provides relaxation, induces shamanic experiences and enhances hypnotic susceptibility. Drumming and other rhythmic auditory stimulation impose a driving pattern on the brain, particularly in theta and alpha rages.[86]

Cognitive Behavioural Treatment (CBT)

CBT assist the individual with IA disorder that recognises the feelings which cause the person to inappropriate use the computer to meet personal needs. It is the treatment of choice for a broad spectrum of behavioural, emotional and psychiatric problems since the 1970s when it was used in scientific literature. Since then, its use has been tested for a variety of issues including addiction, anxiety disorders, depression, obsessive-compulsive disorders and eating disorders. Basic five steps are employed to change the behaviour over time. They are:

✓ **Pre-contemplation:**In the pre-contemplation stage, therapist or professionals focus to break the denial that a serious problem with a computer uses exists.

✓ **Contemplation:**In the contemplation stage, individual recognize the need for change, but the desire to change may not be substantial and feeling of being overwhelmed may exist.

✓ **Preparation:**In the preparation stage, the individual is ready to establish a plan to address the problem.

✓ **Maintenance:**The maintenance stage begins when the individual feels he or she has control over computer use and is putting less energy into the behavioural change.

✓ **Termination:**The final stage, termination has the goal to prevent relapse.

CBT is not only about making specific and identified changes to thoughts and behaviours but also making clients their own therapists which enable them to apply the learning general in their life.[86]

Motivational Interviewing (MI)

It is a brief, patient-centred, approach which is direct, that emphasized on personal choice and responsibility. They are basically for people who are not ready to change their behaviour on their own thus deny their problems and do not seek rehabilitation.[87] Many risk factors of IA relate to parents and the family environment. Family plays a crucial role in influencing

the socialisation of adolescents.[88] A prospective study was done by Chih-Hung Ko, in 2015 suggested that family play an influential predictive factor for IA among adolescents. It was explained that social control theory also claims that a tendency toward deviance manifests when the bond between an individual and society is weakened. Thus, family relationships play an extremely vital role in behavioural problems of adolescents.[89]

Internet fasting (IF)

In this technologically, advanced era, people are under the captivity of smartphones and are habitual of checking it per second whether in office for official work like for any information or e-mails or on SNSs. As more and more people are getting involved in the internet and are getting addicted, thus they have adopted the practice of "Internet fasting" by deliberately spending time offline. Internet fasting can be defined as the re-evaluation of one's lifestyle to learn appropriate ways to use the internet by maintaining the distance from the digital life. Tomohiko Yoneda, 41, who wrote Digital Detox, recommended the internet fasting phenomenon when he had observed it for a month and before that, he was hooked up in the internet for 12 hours per day. He realized that he was not able to read a book during his low health when he was on the bed as his ability to concentrate and of deep thinking had diminished. After making rules on his internet usage by imposing certain rules of time of checking e-mails or active in social media, he had more time for the real world, could concentrate more and had a general feeling of well-being. In Japan, there are medical and addiction centres that have involved the government plans on internet fasting. There are some companies too that has made the practice of internet fasting as the part of their curriculum like Ohyama Inc.[90]

Cosmic Medicine

With the ever-changing time, the era has introduced "Cosmic medicine". Dr Avadhoot Shivanand is the founder and leading practitioner of the science of cosmic healing and thus is the father of the cosmic medicine. He has introduced Shiv Yog, which works on the level of people whereas modern medicine works on the disease level.Now, if we study modern medicine, it does have some illnesses bracketed as incurable. As Shivanand Ji says, 'we must treat the person and not merely the disease which is just the superficial outcome of dissonance and turbulence in our cells. Like an ocean appears static from the outside. When we plunge in it, we realise the waves and strong currents which are actually in play.'

DNA isn't just a chemical photocopier. It can send out signals, which can turn chicks into ducks, revives dead seeds, caused to start re-growing organ teeth and allowed animals to survive a fatal dose of a poison which destroys the pancreas. Empirical medical science has come around to the notion that human health encompasses aspects above and beyond what can be routinely measured. This is partly because the field now has instruments for detecting what was previously out of reach. Neuroimaging is leading the way in this regard; increasingly sophisticated technologies for seeing the brain and its activity at the molecular level have revealed the physical connections between thoughts, feelings and the organism's health status. A prime example of this phenomenon is that painful emotions trigger the same parts of the brain as physical pain.

The biggest causative factor behind all prevalent illnesses is the calcification of Pineal Gland. It is ironic that all the lives we engross ourselves in mind-numbing - mindless eating, limitless TV viewing like a couch potato, endless smartphone gazing, and consumption of addictive substances and then we try to look for silence. First, we numb ourselves, and then we chase peace, calmness and tranquillity. First, we do everything to calcify and harden our Pineal Gland and then we run from pillar to post to decalcify it. That is what grants children a head start. They work on a decalcified Pineal Gland and reach great heights at a tender age.

Shivanand Ji gave an unexpected view to modern medicine and i.e. there are no incurable diseases only incurable thoughts, incurable people. He explained how Shiv Yog Healing is about activating the inner healing mechanisms so that the patient is receptive to medicines. So rather than being dependent on medicines, the patient only takes them as a minor support system to cure faster. This can happen only through Shiv Yog Healing when every day in every way you awaken, such medicines remain only a side help and in fact one fine day, medicines do not hold any value in your life.

"***Any addiction is like giving death sentence to the body***" When one comes back from consuming an addiction, it may be a cell phone, TV, junk food, liquor, one is not relaxed, is unconscious, unable to feel anything because the addiction is overridden, blocked one's sense of good judgement and self-decision making. Relaxation of the mind never happens through leisure activities as how they're sold us today. Meditation is peace and relaxation, self-healing is relaxation whereas digital overdose is mind-numbing, consuming tranquillizers and psychotropic substances are mind-numbing.[91]

DISCUSSION

Technology in our lives has increased the spectrum of behavioural addiction and today internet addiction is the most commonly found addiction as the addiction of drug. With the advancement in technology, the world is facing the challenge of dependency on technology. Despite heated debates on its addictive nature, the consensus is emerging regarding the existence of its problematic behaviour. There is currently a surge of interest in the possible mediators and predictors of IA along with its complementary treatment. The internet is not only been utilized for recreation but also for communication, education but also in health care sectors. There are numerous benefits of the internet, but it also brings various risks in every age group. To get over it, there is no specific or defined treatment that can be followed and would expect the cent per cent treatment. But there are a set of treatments that can be used in combination for the effective treatment.

Possible mediators and predictors that have the potential for the IA in all age groups of people are the duration and frequency of "being in social media", development of technology of smartphones, gaming disorders, artificial intelligence utilisation in internet of things in healthcare sectors, and self diagnosis-the major threat of the possible negative outcomes of internet in the current era.

The study demonstrated that there are various studies done by different scientists that provided the positive correlation between smartphone use and internet addiction. The smartphone is an accessible and convenient device for users to access various websites and thus provide maximal internet addiction. People are not only prone to visiting websites that can cause physical and psychological complications but also they tend to fall under the captivity of games that are the predictors of suicidal attempts among children and adolescents. In recent years, the captivity of games is the most common problem encountered by the parents of children and adolescent. Thus, there is a need to keep a regular check on the children on their surfing data, time and frequency.

Internet addiction not only leads to a specific disease but causes overall complications in one's life. Physical health, to mental and social life, is all complicated with the addiction. In the society of today, prevalence is at paramount among all age groups and is not only limited on children and adolescent. Not only school going children but young people in the workplace are also under negative outcome.

The phase of today is of such high pressure that in workplaces also many multinational companies (MNCs) have introduced meditation practice in their curriculum also. This will not only benefit a person but the overall environment of the workplace also.

CONCLUSION

Briefly, we can conclude that there are core areas of understanding the predictors of internet addiction and thus on their recognition possible complementary treatments can be done that have the long-term beneficial impact on complete well-being of an individual. These treatments must be encouraged as they have no side effects and have a profound impact on well being in this technological slave era.

Cosmic medicine utilisation is impactful on the person level and creates a renowned healthy environment. Thus these practices of meditation, cosmic medicine and internet fasting must be encouraged at all age groups of people and must be introduced as the part of their curriculum in schools and offices. Adults that are above 60 years are also nowadays fascinated with the internet and thus to maintain their healthy well being they should also take part in various complementary activities of utilising internet fasting, cosmic medicine and meditation.

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