

## **CYBER-PSYCHIATRY: “DAYS OF THE FUTURE PAST”**

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## **SUMMARY OF THE CHAPTER**

The impact of cyberspace in civilization can be criticized and debated endlessly, but not neglected. The abstract continuum of cyberspace and its intersection with mental health, have been discoursed throughout the book. The rapid advent of technology and internet has promised new dimensions of interventions and access in mental healthcare, but at the same time fraught with the ‘digitalization’ of thinking, pathological dependence on technology and unhealthy use of cyberspace. The ongoing Coronavirus disease 2019 (COVID-19) pandemic has provided an unprecedented impetus to tele-psychiatry which looks up to a new ‘digital normal’. Furthermore, accessibility, affordability, feasibility and socio-cultural adaptability in diverse settings are other vital concerns. Technology does not necessarily discriminate between the “good and evil” and hence brings in its own demons of “unhealthy use, technology addiction and digital enslavement of normalcy”, which are concepts that have been discussed at multiple areas throughout the book. Summarizing the past pages, this chapter attempts to take a bird’s eye view of cyberpsychiatry: its promise, scope and future in the coming days. The “boon versus bane” debate is eternal, however how cyberspace is utilized and implemented in the coming days, supplemented by research, innovations and legislations will help pave the pathways for its ‘future’ in mental health.

## **CYBERSPACE AND PSYCHIATRY: OUR UNDERSTANDING SO FAR**

*“The internet is becoming the town square for the global village of tomorrow”*

(Bill Gates, 2012)

These words of the billionaire co-founder of Microsoft resonate with the future of cyberspace, a promising tool in medicine with its inherent caveats. ‘Cyberspace’ made its first appearance in fiction through the works of William Gibson, and in the next few years got gradually identified by internet and online computer networks. Even though originally defined as a “widespread, interconnected digital technology”, the present-day cyberspace is an abstract continuum generating virtual interactive experience in any field irrespective of geographical boundaries. Medicine has been increasingly using cyberspace. Tele-psychiatry is the application of telemedicine in the field of mental health. As we attempt to glance at the future of cyber-psychiatry, there is no one answer that fits its scope, challenges or promise in the days to come.

The relevance of cyberspace in psychiatry forms a new beginning towards a novel and promising future. The ease of access and pragmatic advantages can form a pathway of high utility. In this book we have discussed the various aspects of cyberspace - its birth, advances in the medical field specifically in psychiatry, various challenges that could be anticipated, and the “not so good” situations due to its unrestricted and unsupervised use. The concept of ‘cyberspace’ is a double-edged sword. Technology on one hand enabled distance communication, connected loved ones, families and friends and on the other triggered opportunities for cyberwars between people, communities and countries. The comfort and advantages of cyberspace when overused or misused could be disastrous for one’s physical and mental health. The human mind with its creative, intellectual and comfort seeking outlook has seen evolving advantages with the internet.

It is not a complete substitute. However, digitalization as of today, is yet to replicate the exact nature of human interaction – a touch, a hug, or a pat, the basic essence of “human touch”. This innate nature of the civilization to socially reciprocate and connect has been enhanced by cyberspace yet, forms one of its greatest limitations as well. A prime objective of being a mental health professional i.e. providing empathy and a detailed mental status evaluation, both of which might be compromised through telepsychiatry/cyber-psychiatry alone. However, in times of dire need, the ‘right to health’ should be given priority just as a common saying goes, “*Something is better than nothing*”. The advantages of reaching out to those with limited healthcare access due to their location, resources, and natural disasters forms the essential tenet of the future promise of cyberspace(Math et al., 2020; Sciences, 2020). In this era of human-rights and social-justice based approach, cyberspace thus forms a “dual-edged tool” for prospective utilization in order to deliver adequate mental healthcare and augment the existing treatment strategies in mental health. It has the advantages of reaching out to people, ease communication between professionals, value for time and reduced travel burden (Math et al., 2020). At the same time, many developing countries including India, is yet far from achieving the required amount of technology dissemination and network facilities in order to comprehensively use cyberspace in many geographical areas. Furthermore, technology does not necessarily discriminate between the “good and evil” and hence brings in its own demons of “unhealthy use, technology addiction and digital enslavement of normalcy”, which are concepts that have been discussed at multiple areas throughout the book. This final chapter thus takes a bird’s eye view at cyber-psychiatry as a whole and glances at its future through the lens of the discourse in the pages so far.

## **POTENTIAL MENTAL HEALTH ISSUES RELATED TO THE OVERUSE OF CYBERSPACE**

Let us glance at the challenges first. As motivation, need to learn and ease of work governs the use of cyberspace, mental wellbeing is one of the first things affected by its unrestricted use.

With the continuous development of new technologies, the internet users can communicate anywhere in the world, shop online, use it as an educational tool, work remotely and carry out financial transactions with various services offered by banks. Business across the world is rapidly enabling consumers to make the best use of digital services, but in the process constantly entangle masses in the never-ending web of technology. This infinite uses and benefits also come with its own harm and abuse potential. Below we revisit various mental health issues related to overuse and enhanced access of cyberspace.

### **Cyberbullying**

Cyberbullying is a virtual offence with real mental health consequences(Rao, Bansal, & Chandran, 2018). Bullying in traditional terms is usually seen in children and adolescents but can be prevalent in all age groups. Bullying is defined as aggressive (physical or psychological) behavior, which is deliberate, unprovoked and repeated with an attempt to hurt the victim. This is almost always caused by a sense of power imbalance between the perpetrator and victim. This traditional form of bullying has been witnessed in all types of hierarchical levels and requires the perpetrator to be within a physical boundary of the victim. The beginning of a new era of digital technology, has also opened windows for various forms of online behavioral problems. One such problem is cyber bullying. This has currently been an important global issue as there is no physical boundary for the use of cyberspace. Cyber bullying is defined as repeated, offensive and

humiliating interactional patterns where internet is the medium of communication, i.e. through cell phones, mail, calls, video calls social media, etc. by one or more individuals towards another individual or group, (Slonje and Smith, 2008) which can be enacted in overt or covert ways (Grigg, 2010). It has been linked to decreased self-esteem, traumatic stress and increased risk of suicide, just like other forms of bullying (Hinduja and Patchin, 2010). Though all negative interactions are not bullying and some could be accidental, the crux of understanding cyberbullying would be a repeated behaviors (insults, death or rape threats, trolls etc.), or also a single event which has very high psychological impact on the victim (like posting sexual content of the victim on social media or internet sources without consent with intention of insult or revenge.) (Rao et al., 2018).

Cyberbullying has significant mental health implications – both on the victim and the perpetrator. Both of whom could be of any age group, but predominantly adolescents and young adults.

### Effect of cyberbullying on the victim

“I am at home, I am safe” is hereby no longer a statement a victim can tell himself/herself as cyberbullying has not left any boundary for separation. The lifestyle is such that one moves, sits, eats and sleeps with cyberspace. As mentioned in the beginning unlike a physical area, cyberspace is an abstract construct that can be all-pervading in human lives with its constant use. The most recent example is that of the ongoing COVID-19 pandemic, where both information and misinformation have percolated through our daily lives, structures and conversations. The digitalization of the ‘viral discourse’ has in fact invaded and impacted human lives much more than the virus itself. The cyberspace while gives opportunities to reach for help easily, its

encroachment also paves ways to social troubles and vulnerabilities for turning into ‘soft targets’. A cyberbully victim usually is temperamentally slow to warm up, internalizing, and defenseless. They often fail to find a safe space in the virtual world. Being a victim puts them at a higher risk for depression, anxiety, PTSD and suicide. The anonymity of the bully also makes them feel helpless and more victimized than traditional bully victims(Campbell et al., 2012).

### Cyberbullying – perpetrators perspective

Cyberbully is one who patronizes another person over the internet/digital space. The bully may use anonymity to their strength as they may be known or unknown people. They however tend to get more fearless in their actions as the possibility of any ramifications are low. A cyberbully is seen to have high rates of childhood Attention Deficit Hyperkinetic Disorder (ADHD), conduct disorder, mood disorders and other externalizing personality traits or difficult temperament which predispose them to become ‘bullies’. Cyberbullies are also seen to have high impulsivity, low frustration tolerance and tendencies for aggression. They have lower empathy and prosocial behavior towards victims when compared to traditional bullies (Campbell et al., 2013). A developmental understanding also conceptualizes them to have low ‘moral quotient’ and high sociopathic tendencies. Cyberbullies as compared to traditional bullies, tend to feel that their behaviors are not hurtful which can further perpetuate their actions in the cyberspace. It could be possible that the inability to see the victims suffering also increases their threshold for negative behaviors. But, in the course of ability to maintain anonymity, create multiple profiles, and enable larger access area-virtually, the issue of cyberbullying is a mental health pandemic which needs to be identified and addressed in the future of digitalization.

## **Unhealthy use of internet and addiction**

The cycle of addiction as evidenced, is a bio-psycho-social model. Here, apart from the genetic vulnerability, access to the item of overuse or addiction is an absolute necessity. A person with no access to money cannot become a gambler/shopaholic. The use of mobile phones and e-commerce have increased drastically in the last two decades. In the given era, everything is virtually a “click away”! The ability to access things of their interest has led to unlimited consumerism – shopping, social media, pornography, gaming etc. The access and ability to protect anonymity plays a huge role in grabbing attention of those with problematic use of the internet. The immediate gratification of desires with minimal effort also reinforces these behaviors. The whole world is now dependent on internet for various aspects of living namely communication, entertainment, e-commerce, education, training and even employment. However, the difference between use and ‘over-use’ or problematic use of internet is seen to have a similar neurobiological basis as other substance use disorders. The symptoms are characterized by craving, tolerance, withdrawal, poor academic or work and loss of control (Cash et al., 2012), which can be as well applied to technology addiction. The internet addiction is almost always a behavior secondary to underlying primary psychiatric problems – anxiety disorder, alexithymia, negative affective states, personality disorders and others. Internet addiction can also be a coping mechanism or avoidance to a pre-existing anxiety disorder. Family members and close contacts need to be aware of these symptoms and should take help at the earliest to minimize the potentially significant mental health effects. The anonymity, easy access to social media and internet youngsters face more problems predominantly in the psychological domain. The inherent curious nature, impulsivity, need for

immediate gratification and poor self-control makes them easy victims. A detailed description has already been provided in the earlier chapters and hence will not be repeated here. The pathological use of technology leads onto online grooming, Phishing, cyber racism, electronic gambling and need for 'digital gratification'(Diomidous et al., 2016). Apart from pathological behaviors, certain developmental tendencies get amplified in the use of internet. These are body image disturbances, peer comparison, poor identity formation and reduced self-esteem, which in turn impact confidence, educational attainment, affective states, coping and have long term effects on to their quality of life, development and personality development.

### **Psychiatric disorders and use of cyberspace**

The addiction to internet can affect people of any age group but is mostly prevalent in adolescents and young adults. The psychological issues associated with problematic cell phone usage are sleep disturbances, preoccupation with social media feeds, depression, anxiety, suicidality, substance use, and a higher propensity for addiction(Gutiérrez et al., 2016). The use of the internet and gadgets also inversely associated with physical activity (Aljomaa et al., 2016). The increased use of digital gadgets also tend to impact the physical health, mainly the ophthalmic, neurologic and gastro-intestinal systems. Excessive stress, continuous use of 'digital screen', reduced sleep and the snowballed consequences on health can all lead to increase in chronic non-communicable diseases namely diabetes, hypertension, obesity, depression, anxiety, insomnia, chronic trauma. There also have been proposed relationship between perceived degree of life-satisfaction and happiness with the degree and frequency of 'digital time'. After all, we can all imagine the 'distress' that might ensue in today's world, we are deprived of our smart

phones or internet even for a day. The constant need to ‘stay in touch’ or ‘virtual connectivity’ through mails/social media impacts the attention span, concentration as well as work efficiency.

## **FAMILY/SOCIAL RELATIONS AND INTERNET USE**

There cannot be a direct link for a positive or negative relationship for internet use and family relations. This can be a causal or consequential effect (Banerjee & Rao, 2020), which can be understood on reading further. There is a tendency for children and adolescents coming from broken families, families with high stress levels, inconsistent parenting and with high loneliness (social segregation) to have increased use of internet. Similarly, increased internet use might also result in repeated physical and verbal abuse from parents to reduce engagement on gadgets leading to high stress levels. The use of internet and gadgets can be a learnt behavior from elders, who tend to use it as a sole item of entertainment. The engrossment in internet and social media, creates a virtual network reducing the need for actual social interactions. This can be detrimental and impair social skill development. The ability to make friends, engage in romantic relationships, demonstrate personal intimacy have also shifted a towards digital modes. Sending various emojis, friend requests, liking and sharing on Facebook and other social media platforms are gradually replacing personal touch and social interactions. While this does help in enhanced social connectedness beyond the boundaries of travel, it opens the pandora’s box of a world of virtual relationships which can be shallow, superficial and dangerous at the same time. The ability to block people, unfriend them and ignore their messages make the digital relationships short-lasting but increase the risk of cyber-bullying, online extortion and online stalking. The inability to understand one’s personal nature and motives through cyberspace can affect the trust and boundaries of human interactions. Socialization might get too dependent on ‘technology use’

and may compromise in-person/ quality family time that has been traditionally necessary as an important measure of coping and psychological resilience.

## **CYBERSPACE AND IDENTITY FORMATION**

The term 'identity formation', was initially described by Erik Erikson in 1978. The psycho-social development was theorized as going through 8 stages, till the end of life. The identity formation especially in adolescence is considered as a very important stage. However, in the digital world, one should question – *“Is the identity formed from within or without? What am I? Do I have a single personality or am I an amalgamation of multiple personalities? Am I one or fragmented?”*

Through digital modality, it is not surprising that one can always present themselves how they would want or imagine to! The social identity thus tends to get re-shaped and re-visited through the digital lens often colluding with the “expected versus real self”. It is easy to modify pictures to make it look more appealing, write ‘self-descriptions’ to make someone believe you match them, have multiple online profiles with different identities, put up unauthentic information, snowball misinformation about one’s abilities, and so on. Here a person creates for themselves and the world a different identity, that might lead on to higher expectations, need for expectance, and identity diffusion in a person. This multifaceted identity formation hence might become fragmented which can be a potential psychosocial problem especially for the younger age groups. With digitalization of identity and self-image, the reality-expectation can often get blurred leading to frustration, depression, addictive behaviours, decreased self-esteem and reduced work efficiency(Roesler, 2008). Table 1 gives the potential problems of cyberspace with age-based categorization.

Table 1: Potential problems associated with cyberspace

Age group	Potential Problems
Toddlers to adolescence	<p>Access to explicit content – pornography</p> <p>Premature access to social media</p> <p>Worsen certain symptoms of Attention Deficit Hyperkinetic Disorder (ADHD), Conduct Disorder and Autism Spectrum Disorders (ASD)</p>
Adolescence	<p>Pornography</p> <p>Gaming addiction</p> <p>Social media addiction</p> <p>Body image disturbances</p> <p>Social comparison</p> <p>Poor physical activity</p> <p>Poor identity formation</p>
Young adults	<p>Pornography</p> <p>Gaming addiction</p> <p>Social media addiction</p> <p>Body image disturbances</p> <p>Identity diffusion</p> <p>Misinformation</p>
Older Adults	<p>Confusion</p> <p>Misinformation / Disinformation</p> <p>“Information pollution”</p>

	Misinterpretation of facts Lack of acceptability & feasibility
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## **ENSLAVEMENT BY TECHNOLOGY**

Human civilization is known for its evolution, intelligence and progress in fields of science and technology. With the advent of civilization, technology has paved the way for progress, globalization and economy. We have tried all we can through scientific achievements to make our lives easy and comfortable. Evidenced right from the stone age while discovering fire, then wheels and through years of evolution exploring cyberspace in the digital era. The initial promise of this world started with the basic feature of e-mails to connect people, use of word and excel to organize e-documents. The progress since then has been drastically increasing which along with the ease also creates significant emotional dependence on technology. No minute passes in life without being surrounded by internet – communication, commuting, commodities and the nuances of our daily life. Let us remember for a minute, how we make the common daily decisions:

- *What is the review of the restaurant on google?*
- *I can't find my way, please send me your location!*
- *I can see on my map; I will take 25 minutes to reach.*
- *Oh! 1000 followers on Instagram- must be a significant person*
- *I urgently need to know about this illness, please search it on WebMD*
- *Travel plans: let us book the package online to save costs!*
- *Daily headlines and relevant updates*

And so, mostly all our real-life transactions fall in the cyberspace. We judge, accept and know based on social media! Human race is progressing in technology at a rate where cyber-science helps in developing robots that are used in various tasks, including medical interventions, surgical procedures and even artificial intelligence-based psychotherapies. Akin to our unlimited reliance on our domestic help, we might soon get accustomed to our ‘technical’ help as well when independent decision-making might be difficult without the use of technology. In that sense, is hard to tell if we are masters of the digital world or slaves to it. Now, we are moving towards changing the very meaning of man and his existence through a movement of “transhumanism”. The probable utopian future as portrayed in various fiction movies and novels are that humans will be replaced by trans-humans, post-humans, cyborgs, etc. In the eventuality human ‘life’ in its literal sense like many other beings can become extinct. “The humans will turn into cyborgs or will be irrelevant” (Flores, 2018). Even though, this is more of a logical speculation at present, with increasing ‘digitalization’ of our thinking each day, it is hard as mental health professionals, not to be concerned about the long-term symbiosis of human minds and technology.

Apart from questioning our own existence, we also need to look at how digitalization is affecting us. We can replace craftsmanship with programming, this reduces the cost for the producer – one machine can replace “n” number of human hours, this increases problems of unemployment and poverty. All governments are struggling to strike a balance between technology and employment already. If the internet and computers start replacing humans, the ones at the first disadvantage are those less educated and from low socio-economic backgrounds. This will further increase the social gap, making the rich richer and poor poorer. This might raise ethical and moral concerns in the future in every socio-economic sphere.

## **A PERSPECTIVE ON THE POST-PANDEMIC DIGITALIZATION**

It is a social injustice not to mention about the ongoing pandemic and its long-term impact on the cyberspace. Already, eight months into COVID-19, the social distancing, lockdown and widespread travel restriction have made cyberspace the greatest 'Hero' of the time. Technology has assisted education, economy, employment, dissemination of knowledge and social connection. The norms of 'work from home', virtual concerts, online classes, webinars and other digital propaganda are expected to long outlast the outbreak itself. In the uncertain times of COVID 19, the drastic measures taken by governments of enforcing social distancing, closure of public spaces, restricting movement has made life difficult and created a mass panis(NV, Banerjee, & Tss, 2020). This has affected people of all age groups in different ways. The fear of contracting and spreading the virus has made e-commerce the most comfortable source for daily needs. The schools, colleges and workspaces have moved from real to virtual spaces. The joys of festivals and marriages, sharing grief and taking part in death rituals have all moved into cyberspace. Even entertainment and pursuing hobbies, like music and concerts, painting, dance and others have moved to a virtual platform. This with the comfort of reducing exposure, fear related to COVID and no travel makes it easier for one to participate and reduces expenditure. This also comes with its disadvantage of reduced socialization and involvement. This currently gaining concepts of work from home and digital learning are encouraging users to utilize it. This is a huge change for the entire human race. Does digitalization help? The answer is Yes! Does digitalizing our life entirely help? One cannot know. But one can predict that this will make us increasingly dependent on digital media to interact with people, the value of non-verbal gestures, behaviors and reinforcements could all be dulled off. We also know that, when using e-commerce is a blessing, it has so much of options and offers, one might get lost searching for

what they would want. The desire to find something better, cheaper would be of more importance, than the time spent on it. If one takes 30 minutes to shop for a biscuit packet online or taking it traditional way that would take 15 minutes, enable you to go out, probably a short walk, interact with the shopkeeper, find acquaintances and smile at them, which would be more rewarding? We should keep a tab on our ability to get addicted to easier ways and hooked onto digital world. In short, the pandemic might lead to the rippling effects of cyberspace on human life for years to come as technology will gain a significant impetus in all areas. The biopsychosocial model of health will thus be entangled with cyberspace as will be learning, sharing and technology. This critical balance between 'need to know' and 'information pollution' might set the norm for a new 'digital normal', which stands the test of time. Online classes, examinations and increased 'digital screen usage' have already led to stress, fatigue, unhealthy use of technology, misinformation and sleep disturbances as per the emergent research. Exploring the influence of the overwhelming impact of technology on civilization might pave the interventions and challenges for the times to come. Nevertheless, in spite of all the 'silver linings', man, as a social being runs the risk of losing meaning, transiting from social to 'pseudo-social' in the virtual space.

### **THE FUTURE OF ONLINE THERAPIES**

The advancement of cyberspace for mental health interventions has created a need and potential for using digital health services. The pandemic has provided an impetus to the same. This has shown great promise in the field of psychiatry, psychology and psychiatric social work as well. The use of telephonic consultations, awareness programs over radio and television have been very popular from early days. The advent of internet has now taken a higher priority due to its ability to attract a larger number, low costs, colorful and attractive memes, memos and

newsletters. Gradually apart from information, awareness and communication (IEC) activities, teleconsultations too have gained a lot of attention. The one-of-its-kind ‘Telepsychiatry guidelines’ were released as a combined effort of the National Institute of Mental Health and Neurosciences (NIMHANS) and the Indian Psychiatric Society (IPS) for the Indian practitioners earlier this year(Math et al., 2020). These regulations which have been discussed in detail in the previous chapters, outlines ethical, legal, practical and user-friendly principles to enable practitioners to provide adequate mental healthcare utilizing the cyberspace. The guidelines for first consultation, reviews and emergency services are also clearly delineated. NIMHANS has also released the psychotherapy and case management guidelines from the Dept of Clinical Psychology (CP) and Psychiatric Social Work (PSW) respectively(Sciences, 2020b, 2020a). Research has already established the advantages of teletherapy and its effectiveness as compared to face to face therapy sessions. In the practice of medicine, videoconferencing has gained the widest popularity in psychiatry due to the nature of the stream and evaluation itself however requires enhanced infrastructure and support. The primary-tertiary connection model has been proposed in telepsychiatry with liaison for assessment, diagnosis and management in rural areas that lack adequate qualified mental health manpower (Malhotra, Chakrabarti, & Shah, 2013). The advantages of lesser travel, cost effectiveness, reduced waiting time, and high cost-benefit ratio are seen to provide optimum care and digital interface to be promising. The challenges in developing countries including logistics, resources, network bandwidth, technological feasibility and appropriate legislations are the current concerns.

## **ARTIFICIAL INTELLIGENCE IN PSYCHIATRY: A NOVEL ARM**

Artificial Intelligence (AI) was initially designed by Alan Turing, during the World War II. AI is an algorithm-based machine learning process, which enables the system to understand, think and analyze like humans. The superiority of AI depends on how equivalent or better it is to human thinking. AI is the trending feature in medicine currently, and psychiatry is pacing up with it.

The use of AI in social media to detect conversational patterns and deduce behavior is one of them. AI has also been used to design online questionnaires to help screening, symptom analysis, diagnosis, evaluating mental state and risk of suicide. Some of the commonly used mental health applications and programs. AI being a very objective measure of symptoms, would reduce inter-clinician reliability and bias in diagnosis. It can be a potential mode of data acquisition, storage and research. The unique feature of AI is the ability of the digitalized system to learn new things and add it on in subsequent analysis which has already been used to simulate brain neurocircuitry and cognitive simulation. The diagnosis of psychiatric disorders has been tried using the speed of typing, types of messages sent, places visited and other variables available on the smart phone. It very reliably also monitors basic variables, assesses sleep quality, levels of physical activities, mood diaries and behavioral logs. It is an efficient way to have subjective user information in integration with data available on the AI through smart devices to be able to complete evaluation through physiological, motor, social and environmental information. In NIMHANS “PUSH D” and “Wellness Check” are web-based preventive and promotive mental health applications. It helps in screening and suggesting the need for potential interventions.

The digitalization has not only helped in evaluation and assessments but have aided interventions as well. Web-based face to face therapies on Skype, WhatsApp, Google meet and others have already gained popularity. Furthermore, online chat boxes like “Chatbots” with the AI are also in

use. “Woebot” is a special chatbot designed in Stanford for cognitive behavioral therapy and has been used for people with depression (Kalanderian & Nasrallah, 2019). The offline therapy and help seeking in the form of e-mails/texts is also gaining importance. There are debates on how clients can reveal confidential information offline easily than in online or face to face settings. There are also online self-help websites and Apps available. Online therapist guided sessions where the person works with periodic review of the mental health professional has been customized using tailored AI approach. With the risks of data theft, data protection, anonymity and confidentiality, the use of AI holds a potential promise for the future for cyber-psychiatry. Virtual Reality (VR) has been employed in mental health quite often. VR utilizes a stereoscopic headset to place people in simulated and controlled environments for both interventions and research (“AI-Therapy Computers and Therapy,” n.d.). Here the system designer has control over what a person experiences through the visual and auditory senses. It also almost simulates the natural environment in 3-dimensional modality and is as close to real experiences. They have been used in exposure therapy for Obsessive Compulsive disorder, specific phobias and anxiety disorders like Post traumatic stress disorder (PTSD). An interesting area is the use of VR and serious gaming in cognitive rehabilitation for dementia and cognitive training for healthy aging. In the absence of adequate neuropsychologists, VR forms a potential promise for home based and graded cognitive stimulation for the elderly. VR in association with biofeedback has also been used for sleep disorders and pain management, though research is still emerging in this field.

‘Therapeutic robots’ (“AI-Therapy Computers and Therapy,” n.d.), a new experimental interventional modality, is upcoming in the branch of psychiatry. Here the need for socialization in human beings is utilized to reduce loneliness and isolation. This is of importance in geriatric

population with dementia, where an animal shaped robot (AI) accompanies and assists them. Though criticized for the lack of individualized emotional support, the cognitive requirements can be pre-programmed, and the utility is promised as high. The therapeutic robot can respond to sound, touch, show emotions, develops sleeping patterns and learns things from its environment like name of the care giver and their requirements. Similar therapeutic robots with algorithms and AI are also employed to train social skills in people with autism and learning disorders. It has been used in psychoeducational and rehabilitative measures. The caveats however are the socio-cultural adaptability, feasibility and the costs involved. The technological sophistication makes its reach and effectiveness limited to certain sectors of the population.

Gamification and gaming interventions are gaining a lot of importance in the current era. The easy access and comfort of using it at any time serves as a major advantage. The various games like exergames, CBT-based gamification, CBT-based serious games, cognitive enhancement games, redirection of entertainment based games and biofeedback-based gaming have been used to improve depression, attention and concentration, minimal cognitive impairment (MCI), promote healthy aging, exposure response prevention and relaxation(Fleming et al., 2017). Research has shown their efficacy and promise for the psychiatric future. Table 2 summarizes the various modalities of AI use and utility.

Table 2: Use & utility of Artificial Intelligence in mental health

Modality of AI	Subtypes	Utility
Web based interventions	Skype	IEC activities
	Instant messaging	Psychoherapy
	Whatsapp	Screening
	Chatbots	Evaluation

	Woebots Email	
Online self-guided therapy		Psychotherapy Biofeedback
Therapist assisted therapy		Psychotherapy
Therapeutic robots		Companionship Social skill training Easy learning
Games	Exergames CBT based gamification, CBT based serious games, cognitive enhancement games, redirection of entertainment- based games biofeedback based game	Depression, Attention and concentration Minor cognitive impairment Promote healthy aging Exposure response prevention Relaxation games
Virtual reality		Attention enhancement (ADHD) OCD Specific phobias

		Cognitive stimulation for healthy aging Cognitive rehabilitation for dementia, schizophrenia
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IEC: Information Education Communication; CBT: Cognitive Behaviour Therapy; OCD:

Obsessive Compulsive Disorder

## CONCLUSION

To return to the creator of the word ‘cyberspace’ in fiction, Gibson,

*“Cyberspace is a consensual hallucination experienced daily by billions of legitimate operators, in every nation”* (Gibson, 1984)

Whether the creation of technology surpasses the creator, is an eternal debate to answer.

However, the rapid advancement of digitalization has strengthened the intersections between mental health and cyberspace, so much so that it cannot be neglected, irrespective of the constant criticism. How a tool suits the need depends on its context and utilization, rather than the characteristics of the tool itself. The path of cyberpsychiatry might be fraught with challenges but the journey depends on how the road is traversed with time!

The ability of man to produce a machine as intelligent or more intelligent than him is a huge achievement for the civilization. Just like man himself can be good or evil, the machines created by him and simulating him can trace the same path as well. There is a gradual shift and leaning towards the utility of digital services more than traditional services in psychiatry, which has gained more popularity during the uncertain and difficult times of the ongoing COVID-19 pandemic. The maintenance of health records, availing investigations for the user, peer-

communication and research are added advantages of cyberpsychiatry. The application of digital services and AI in psychiatry holds promise too. The ability to evaluate, monitor and intervene at ease especially in a country like India with high mental Health gap is beneficial both for the client and service providers. With time and digitalization, the country is also adapting its ways for the 'new normal'. Cyberpsychiatry thus carries the promise to deal with the age-old problems of limited manpower, mental healthcare access, undertreatment of psychiatric disorders and lack of service utilization due to prevalent stigma. As India looks up to globalization and technology, the future of cyberpsychiatry lies in well-planned research related to its effectiveness, adequate legislations for its implementation and monitoring for the security, feasibility, affordability and confidentiality of the services. Innovative models incorporating tele-mental health need to be designed and studied for the socio-cultural and diverse suitability of the country. Only then can cyberspace be tailored to answer the numerous questions posed throughout the pages of this book.

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