

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

Ambica^{1*}

ABSTRACT

Background: Adult Smartphone addiction is a widespread issue that has the potential to be harmful to mental health. However, a lot of people are unaware that Smartphone addiction is a significant problem that can harm a person's thoughts, behavior, habits, feelings, and sense of wellbeing. **Objectives:** This paper will review the existing evidence on effect of Smartphone addiction on depression, anxiety, and stress. **Method:** The terms "Depression," "Anxiety," "Stress," and "Smartphone addiction" were entered into the Pub Med Central and Google Scholar search engines up until November 2022. **Result:** The association between Smartphone addiction and sleep of young adults found that Smartphone addiction was associated with poor sleep, independent of usage duration, suggesting that usage duration should not be used as a proxy for harmful use. The result of this review paper revealed that university students in Malaysia had a propensity for Smartphone addiction and were exposed to anxiety and depression. **Conclusion:** The use of Smartphone excessively is linked to cognitive-emotion control issues, impulsivity, and cognitive impairment, addiction to social media, shyness, and low self-esteem. Medical issues can include sleep issues, decreased physical activity, unhealthful eating patterns, pain and headaches, impaired cognitive function, and alterations in the grey matter volume of the brain. In summary, excessive Smartphone use is linked to psychiatric, cognitive, emotional, and neurological alterations that health and education experts should take into account. People with psychopathological symptoms of depression, anxiety, and stress are more prone to use Smartphone problematically, according to research on populations in Western and Eastern Asia.

Keywords: Smartphone Addiction, Depression, Anxiety, Stress, Adults

"More people have access to phones than running water, thus the Smartphone revolution is under-hyped. Since the planet's creation, we have never experienced anything like this". — Marc Andreessen, the man who started Netscape

"The world is changing more quickly than ever thanks to technology. The Smartphone is the current catalyst". - Larry Rosen, author of iDisorder

¹Research Scholar (G.D.Goenka University, Sohna, Gurugram, Haryana, India)

*Corresponding Author

Received: October 5, 2023; Revision Received: November 7, 2023; Accepted: November 10, 2023

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

The average Smartphone penetration rate in 47 nations was 44.6%, according to a recent market study, and this number is projected to rise quickly. Smartphones are now considered necessity in people's life rather than cutting-edge communication devices. For people who use Smartphone, their phone is the last thing they glance at before going to sleep and the first thing they look at in the morning (Oulasvirta et al., 2012) actually discovered that their subjects checked their phones 34 times each day—not necessarily out of a sense of necessity, but more out of habit. For Smartphone users, excessive usage and repetitive checking of missed calls or texts can lead to compulsive use of the device or even mobile phone addiction (Bianchi & Phillips, 2005; Oulasvirta et al., 2012; Takao et al., 2009).

Smartphones are used by people for amusement or stress relief. Such usage can produce instant gratification, but it can also result in persistent behavior and be accompanied by a decreased sense of volitional control (Thomé et al., 2011). Depression and sleep disturbance are two indications of compulsive use of substances (Thomé et al., 2011). Regular technology use is associated with increased psychological suffering (Couples & Study, 2005). According to medical literature, electromagnetic radiation from cell phones may have an impact on biological systems by altering the antioxidant defense mechanisms in human tissues, which can result in oxidative stress (Ozguner et al., 2005). Therefore, due to both psychological and biological factors, obsessive Smartphone use increases user stress. This study incorporates techno stress, which is defined as "a modern sickness of adaptation caused by an incapacity to cope with the latest computer technology in a healthy manner," to identify the stress associated with Smartphone use. End users who experience stress as a result of information and communication overload are said to be experiencing techno stress (Ragu-Nathan et al., 2008). The intensity of techno stress is made worse by the rapid development of networking and end-user computing technology. As a result, we anticipate that the Smartphone user would experience more techno stress and hence feel more stressed. (Charles et al., 2013) found that everyday stressor exposure had detrimental long-term consequences on consumers' mental health. Overdependence on cell phones may result in compulsive usage and increase user techno stress because they are a key information technology device and individuals feel the need to adapt to them in order to "keep up with the times."

Recent research revealed the significance of psychological and personality traits in compulsive technology consumption (Roberts & Pirog, 2013; Takao et al., 2009).

Previous studies have also discovered that some psychological characteristics may affect a person's capacity to handle stress or render them prone to it (Ebstrup et al., 2011). Additionally, psychological characteristics (Feingold, 1994), cell phone use (Leung & Wei, 2000), and obsessive behavior (O'Guinn & Faber, 1989) are all observed to differ by gender. Considering gender differences in the relationships between psychological traits and compulsive Smartphone usage, this article adds to these developing streams of research by examining whether and how psychological traits contribute to compulsive Smartphone use as well as whether this compulsive usage affects a user's techno stress level. Following a thorough analysis of pertinent research in the areas of psychology, psychiatry, sociology, consumer behavior, and mobile commerce, a number of ideas are put forth.

Addiction:

The term addiction is tough to outline, and therefore the conception of addiction has been mirrored as debatable; but, the foremost necessary definition of addiction is that dependence on a substance or activity.

Behavioral addiction versus substance addiction

There are two styles of addiction, one is dependence like alcohol; caffeine; cannabis; hallucinogens; inhalants; opioids; sedatives, hypnotics, and anxiolytics; stimulants; and tobacco and therefore the difference is action behaviors like games, internet, even Smartphone. Current criteria for designation area unit enclosed within the Diagnostic and applied mathematics Manual of Mental Disorders (DSM-V)

Problematic Smartphone use with different kinds of psychopathology. There are unit positive correlations between Smartphone use and stress (Elhai et al., 2017), correlation statistics between Smartphone use and anxiety (Elhai et al., 2017), and correlation statistics between Smartphone use and sleep quality. This relationship ought to be taken seriously since the newest knowledge from the globe Health Organization (WHO, 2017) show depression is the leading reason for incapacity and ill-health within the world poignant quite three hundred million folks globally, tending to become a serious contributor to wellness burden worldwide by 2030(Stanković et al., 2021).

The risk of anxiety and depression may be increased by excessive smartphone use combined with a negative outlook, sensation of anxiousness, and dependence on technology (Rosen et al., 2013; Thomée et al., 2011). (Gutiérrez et al., 2016) found that sleep deficit, depression, anxiety, and stress had all been correlated with problematic cell phone use. Nevertheless, it had been over that excessive Smartphone use had a negative psychological impact. Another empiric study reports that sleep quality might result in depression. Li et al. (2016) did a prospective cohort and projected that sleep quality and risk of depression square measure associate(Shoukat, 2019).

Lin et al., (2016) outlined an inventory of diagnostic criteria for Smartphone addiction that classified into three categories: Category (criteria A): consisted of the symptoms of Smartphone addiction including,

1. Persistent use of Smartphone with a scarcity of management.
2. Restlessness, nervousness, or irritability once an amount of withdrawal from use.
3. Mistreatment of the Smartphone for an amount longer than anticipated.
4. Desire and/or unsuccessful efforts to quit or cut back Smartphone use.
5. Lack of management and continuing mistreatment or quitting Smartphone use.
6. Persistent Smartphone uses while not attention to continual physical or psychological consequences.

The second class (criteria B) represented the purposeful impairment (two (or more) of the subsequent symptoms are present) that was secondary to Smartphone use, including,

1. Excessive use and later on persistent or continual physical or psychological issues.
2. Use of Smartphone in physically risky things (such as driving or crossing the street) or things that produce other negative influences on the way of life.
3. Use of Smartphone in an exceedingly method that harms social interactions or activity in school or work.
4. Use of Smartphone in an exceeding method while not attention to disbursal time which may be caused or causes suffering.

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

Users of Smartphone are drawn to them because they are accessible and informative. Previous studies revealed a connection between depression and excessive Smartphone use, including messaging, social networking, gaming, watching videos, emailing, and listening to music. These findings demonstrated a considerable rise in both users' stress levels and their excessive and obsessive use of Smartphone. Smartphone users' increased "techno stress" and compulsive use are positively connected with social anxiety, locus of control anxiety, materialism, and a need for touch and communication.(Y. K. Lee et al., 2014).

The final category (criterion C): Was the exclusion criteria to rule out manic episodes or by bipolar disorder and obsessive-compulsive disorder (OCD)(Lin et al., 2016).

Addiction of Smartphone

Smartphone addiction has become a growing concern due to the explosive growth in Smartphone use and the abundance of functions these devices offer(M. Kwon, Kim, et al., 2013). Internet addiction and Smartphone addiction share many similarities. However, there are certain distinctions as well, such as cell phones' portability, real-time Internet access, and simple and direct communication features(M. Kwon, Lee, et al., 2013).Behavior addictions, such as Smartphone addiction, are typically challenging to identify since they are influenced by social and psychological as well as physical elements(H. Lee et al., 2014).

There are no official diagnostic standards for Smartphone addiction. However, based on how Internet addiction is defined, Smartphone addiction is the excessive usage of cell phones to the point where it interferes with users' daily life.According to research by (Roberts et al., 2014), college students use their phones for about nine hours every day. According to the experts, as cell phone capabilities increases, it seems impossible to escape becoming addicted to this almost inevitable piece of technology.In a 2012 study carried out in South Korea, it was found that Smartphone addiction was more common (8.4%) than internet addiction (7.7%). The same survey found that Smartphone addiction affects 10.4% of those in their 20s and 10.4% of people in their 10s (South Korea National Information Society Agency, 2011)

Adults frequently have different schedules than teenagers, and they have the freedom to choose how they want to use electronic media without being constrained by their parents(Fossum et al., 2014). Young individuals, such as college students, may use Smartphone and other electronic media devices more frequently as a result of these circumstances.

Overusing Smartphone can result in physical health issues including blurry vision and pain in the neck or wrists(M. Kwon, Lee, et al., 2013).Additionally, excessive Smartphone use may result in some behavioral or mental health issues. It may result in unhelpful behavioral issues, disruptions at work or school, a decrease in social connection in real life, and interpersonal problems(Kuss & Griffiths, 2011)

Depression

It is referred to as major Effective disorder or emotional disturbance may be a common and high mood disorder. People who suffer from depression experience persistent feelings of disappointment and despair and lose interest in activities they once enjoyed. Aside from the emotional problems caused by depression, individuals can also gift with physical symptoms like chronic pain or process issues. To be diagnosed with depression, symptoms ought to be present for a minimum amount of your time. Symptoms of depression vary between males

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

and females. Depressed men show behaviors like irritability, restlessness, issue in concentrating, rather than the standard behaviors. Sleep disturbance could be a common symptom in depressed men. Men are less doubtless to travel to doctors and unconsciously show alternative behaviors like anger rather than disappointment. It appears that considering depression as “feminine” could be a nice injustice toward male patients whose sickness won't be diagnosed nor treated (Chowdhury & Chakraborty, 2017).

Symptoms of Depression

The individual should be experiencing 5 or additional symptoms throughout a constant 2-week amount and a minimum of one among the symptoms ought to be either (1) depressed mood or (2) loss of interest or pleasure.

1. Depressed mood all the time in a day.
2. Markedly diminished interest or pleasure altogether, or most, activities most of the day, nearly daily.
3. Vital weight loss once not fast or weight gain, or decrease or increase in craving nearly daily.
4. A fastness down of thought and a discount of physical movement (observable by others, not simply subjective feelings of restlessness or being slowed down).
5. Fatigue or loss of energy nearly daily.
6. Feelings of worthlessness or excessive or inappropriate guilt nearly daily.
7. Diminished ability to assume or concentrate, or indecisiveness, nearly daily.
8. Repeated thoughts of death, repeated self-destructive mutation while not a particular set up, or a suicide try or a particular set up for committing suicide.
9. The symptoms should additionally not be a result of abuse or another medical condition (DSM-5)

The ICD-10-based Definitions

Episodes of depression: The common symptoms of mild, moderate, or severe depression include a lowering in mood, a loss in energy, and a decrease in activities. Reduced capacity for enjoyment, interest, and focus, as well as frequent marked exhaustion after even light work. Normal side effects include decreased appetite and disrupted sleep. Self-confidence and self-esteem are nearly always lower, and even in the mildest cases, there may be some remorse or worthlessness-related thoughts. It is possible that the depressed mood will be accompanied by so-called "somatic" symptoms like loss of interest and pleasurable feelings, waking up earlier than usual in the morning, depression that is worse in the morning, marked psychomotor retardation, agitation, loss of appetite, weight loss, and loss of libido. A depressive episode can be classified as mild, moderate, or severe depending on the quantity and intensity of the symptoms.

Recurrent depressive disorder: A condition having a history of recurrent depressive episodes, as indicated for depressive episodes (see above), but no separate episodes of mood elevation and enhanced energy (mania). However, there may occur brief episodes of moderate activity and mood elevation (hypomania) right after a depressive episode, which is occasionally brought on by antidepressant therapy. Earlier ideas including manic-depressive depression, melancholia, vital depression, and endogenous depression share many similarities with the more severe forms of recurrent depressive illness. The initial episode can start at any age, from childhood to old age, and can last anywhere from a few weeks and many months. It can also start suddenly or creep up on you. However many depressive episodes a patient with recurrent depressive illness has suffered, the likelihood that they will

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

encounter a mania episode never totally goes away. The diagnosis should be updated to bipolar affective disorder if such an episode does occur.

In its Global Burden of Disease 2010 study, a unique classification scheme was employed (Murray et al., 2012). In this study, dysthymia and major depressive disorders (MDD) are grouped under the umbrella term "unipolar depressive disorders." Therefore, the classification used in the Global Burden of Disease 2010 study is more comparable to the DSM-IV than the ICD-10.

Depression comes in a variety of forms. Depressed mood, a loss of interest and enjoyment, and increased weariness are all signs of a depressive episode. A depressive episode can be classified as mild, moderate or severe based on the volume and intensity of symptoms. A person experiencing a mild depressive episode may find it challenging to continue with normal job and social activities, but not to the point where it significantly interferes with everyday activities. On the other hand, it is quite improbable that someone experiencing a major depressive episode will be able to continue with social, professional, or home activities, save to a very restricted amount (Yasamy, 2017).

There are connections between physical health and depression. For instance, depression can result from cardiovascular disease, and vice versa. When combined with other chronic illnesses, outcomes are typically worse and health care costs are significantly higher than anticipated (www.who.int/about/licensing/copyright_form/en/index.html). Because of these facts, it is even more crucial to reduce the disease burden caused by depression.

A different classification based on clusters with major co morbidities, shared neurophysiopathology, and clinical similarities may be necessary, according to some data. Bipolar depression, fast mood cycling, dysphoric mania, cyclothymia, and other bipolar conditions fall under this category. Obsessive-compulsive disorder, obsessive personality, and other neurological diseases involving obsessive movement, such as Tourette syndrome, would all fall under the category of the obsessive cluster (Akiskal et al., 2000). The most useful grouping would be stress-related mental disorders, which would include evasion-prone personalities, major depression, dysthymia, generalized anxiety, panic attacks, post-traumatic stress, and dysthymia.

Overview

An estimated 3.8% of the world's population suffers from depression, including 5.0% of adults and 5.7% of persons over the age of 60. Around 280 million individuals worldwide suffer from depression. Depression is distinct from common mood swings and fleeting emotional reactions to problems in daily life. Depression may develop into a significant medical illness, especially if it is recurrent and of moderate to severe degree. The affected person may experience severe suffering and perform poorly at job, in school, and in the family. Suicide can result from depression at its worst. Every year, around 700,000 people die by suicide. For people aged 15 to 29, suicide is the fourth most common cause of death.

More than 75% of people in low- and middle-income nations do not obtain treatment for mental problems despite the fact that there are established, efficient therapies for them (Evans-Lacko et al., 2018). Lack of finances, a shortage of qualified healthcare professionals, and the social stigma attached to mental illnesses are all obstacles to providing effective care. People who experience depression are frequently not properly diagnosed in nations of all income levels, while others who do not have the disease are frequently

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

misdiagnosed and given antidepressants (<https://www.who.int/news-room/fact-sheets/detail/depression>).

Anxiety

The Latin term "anxiety," which means "to choke, throttle, trouble, or upset," is the source of the word. It refers to behavioral, affective, and cognitive reactions to the impression of risk. A typical human feeling is anxiety. An anticipatory and adaptive reaction to difficult or stressful events is stimulated when anxiety is present, but only in moderation. When anxiety is excessive, it destabilizes the person, which leads to a dysfunctional state. When anxiety develops in the absence of a challenge or stressful situation, when it lasts longer than expected or is more severe than expected, when it causes great distress, and when it impairs one's ability to function in social, occupational, biological, or other ways, it is deemed excessive or pathological.

Classification of Anxiety Disorder

The following primary categories of anxiety disorders are included in the DSM-IV (American Psychiatric Association)(Baron, 1996). Acute stress disorder, posttraumatic stress disorder, obsessive-compulsive disorder, generalized anxiety disorder (GAD), agoraphobia without panic, social phobia (social anxiety disorder), specific phobia, generalized anxiety disorder (GAD), and anxiety disorder not otherwise described. The DSM-IV also covers anxiety that develops as a result of adjustment disorders, substance addiction, or general physical conditions. Finally, anxiety that does not merit a psychiatric diagnosis may be situational in people who are otherwise healthy or an indication of another mental illness.

Generalized Anxiety Disorder

A. Excessive anxiety and worry (apprehensive expectation), occurring additional days than not for a minimum of half dozen months, a few ranges of events or activities (such as work or college performance).

B. The individual finds it troublesome to regulate the concern.

C. The anxiety and worry area unit related to 3 (or additional) of the subsequent six symptoms (with a minimum of some symptoms having been a gift for more days than not for the past half dozen months):

Note: just one item needed in kids.

1. Restlessness, feeling keyed up or edgy.
2. Being simply worn out.
3. Problem concentrating or mind going blank.
4. Irritability.
5. Muscle tension.
6. Sleep disturbance (difficulty falling or staying asleep, or restless, unsatisfactory sleep).

D. The anxiety, worry, or physical symptoms cause clinically vital distress or impairment in social, activity, or alternative vital areas of functioning.

E. The disturbance isn't a result of the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism).

F. The disturbance isn't higher explained by another medical disorder (e.g., anxiety or worry regarding having panic attacks in anxiety disorder, negative analysis in social psychological disorder [social phobia], contamination or alternative obsessions in neurotic disorder, separation from attachment figures in separation psychological disorder, reminders of traumatic events in posttraumatic stress disorder, gaining weight in anorexia, physical complaints in corporal symptom disorder, perceived look flaws in body dysmorphic

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

disorder, having a significant health problem in health problem psychological disorder, or the content of psychoneurotic beliefs in dementia praecox or psychoneurotic disorder) (DSM-5™ Diagnostic Criteria F41.1)

Stress

The DSM-5 describes acute stress disorder because of the development of specific worry behaviors that last from three days to one month once a traumatic event. These symptoms forever occur once the patient has intimate with or witnessed death or threat of death, serious injury, or sex crime. Samples of traumatic events from the DSM-5 embrace physical attack, physical abuse, mugging, active combat, sexual violence, natural disaster, and high accidents. Acute stress disorder can even result from hearing concerning the violent or accidental trauma of a lover, or continual exposure to traumatic events (American Psychiatric Association, 2013). Outcomes of acute stress disorder area unit best once the victim has access to immediate crisis management medical care. Once psychotherapy is untouchable, acceptance and commitment medical care is an efficient therapeutic intervention.

Symptoms of Acute Stress Disorder

Individuals with acute stress disorder expertise intrusive thoughts or recollections of the traumatic event. Distressing dreams concerning the trauma and general sleep disturbances are common. The patient may expertise flashbacks or distress once exposed to triggers of the traumatic event. Conversely, the patient might “block out” or be unable to recollect elements or the complete traumatic event. Several patients avoid external reminders, like places or folks associated with the traumatic event. Additionally to those intrusive symptoms, patients expertise a negative mood. They will feel depressed, anxious, angry, or guilty and unable to feel happy. To boot, the patient might have impossible feelings or beliefs concerning the event. For instance, basic cognitive process that a plane crash might be prevented had the patient done one thing otherwise. Hyper vigilance, issues with concentration and exaggerated startle are common. To boot, the DSM-5 explains that physical symptoms, like headaches, dizziness, and sensitivity to lightweight or sound might occur, even while not injury (American medical specialty Association, 2013).

Post Traumatic Stress Disorder

PTSD is a significant global issue, and its effects in nations that have long histories of natural disasters and societal turmoil may pose serious public health issues. Despite having a significant global impact, the prevalence of primarily industrialized societies, particularly the USA, has been best examined (Crocq & Crocq, 2000). The applicability of US data to other industrialized nations is debatable (Breslau et al., 1991). In underdeveloped nations, when a sizable segment of the populace has been exposed to terror attacks, torture, sexual assault, and forced displacement, the picture is probably certainly very different (Husain et al., 1998). There aren't many estimates of how common PTSD is among the general population of nations other than America (Kessler, 2000).

REVIEW OF LITERATURE

Since long ago, communication has had a significant impact on our civilization. Over time, its tools and apparatus have been developed, enabling us to communicate with people more quickly and easily. A Smartphone has recently taken the top spot among communication devices in people's daily lives (Suparp 2006). Since the introduction of the first mobile phone in 1983, the Smartphone has evolved. Digital technology was integrated with Smartphone technology between 1993 and 2003, resulting in a variety of functionalities. (Palachairomsil2011) The Smartphone might offer a variety of capabilities like a camera,

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

games, and a multitude of applications when it could connect to the internet. Most critically, Smartphone are becoming much more affordable. These contributed to the recent rise in popularity of Smartphone.(Boonuyang et al. 2015)People can use Smartphone to connect with pals online so they can control and lead more convenient lifestyles, including for business and personal amusement in addition to communication (Wacks & Weinstein, 2021).

By employing the terms "Smartphone addiction & Disorders," (Sinsomsack & Kulachai, 2018) performed a study to examine Smartphone addiction among high school students and its impact. 341 high school students from Thailand's Eastern province made up the study's sample, which was selected using stratified random selection. The data was gathered via the questionnaire. After that, correlation statistics were used to assess the data. The findings suggested that Smartphone addiction was beneficial for mood disorders. Additionally, it had a detrimental effect on the academic performance, family relationships, social relationships, and health of high school kids.(Y. S. Kwon & Paek, 2016) The National Information Society Agency (NISA) developed an instrument for the study the Influence of Smartphone addiction on depression and communication competence among college students to evaluate Smartphone addiction. The study's goal was to investigate the relationships between depression, communication competence, and level of Smartphone addiction as well as to identify factors related to Smartphone addiction of college students. The association between Smartphone addiction and social-environmental and psychological aspects is only partially explored in this study, and more research is needed. According to a large UK cross-sectional observational study, the association between Smartphone addiction and sleep of young adults(Sohn et al., 2021) examined the relationship between Smartphone addiction and sleep quality in a young adult population and found that Smartphone addiction was associated with poor sleep, independent of usage duration, suggesting that usage duration should not be used as a proxy for harmful use.

(Sangam et al., 2015) researchers looked into the relationship between Smartphone addiction, anxiety and depression among undergraduate students in Malaysia to determine the connection between Smartphone addiction and anxiety and depression among Malaysian undergraduate students. Data were gathered using the Beck Anxiety Inventory (BAI-M), Beck Depression Inventory (BDI-M), and Smartphone Addiction Scale (SAS-M). IBM SPSS software version 21.0 was used to analyze the data. The results of this study revealed that university students in Malaysia had a propensity for Smartphone addiction and were exposed to anxiety and sadness.(Pandemic & Limone, 2021) studied the psychological and emotional effects of digital technology on children with the goal of examining the impact of digital technology on kids during a pandemic, as well as the psychological and emotional effects of "COVID" and "Neurological Effects of Lockdown." They discovered that increased technological use during the pandemic has both positive and negative effects, depending on usage. As much as Smartphone can help people who are lonely or in a locked room, they are also to blame for major mental diseases like sadness, anxiety, irritation during sleep, and cognitive decline. It is advised that parents integrate educational and imaginative games into their homes and should inspire their kids.

(Li et al., 2021) researchers looked into the relationship between loneliness and problematic mobile phone use while taking the effects of escape motivation and self-control into account. By using cluster sampling and distributing a number of self-reported questionnaires, they discovered that loneliness was positively correlated with both problematic mobile phone use and escape motivation.(Elhai et al., 2020) investigated the relationships between depression

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

and anxiety as well as the intensity of problematic Smartphone use (PSU). Through a web-based survey that examined Smartphone use frequency, PSU, depression, anxiety, and FOMO, they recruited 1034 Chinese undergraduate students in order to analyze the fear of missing out (FOMO) as a potential mediator in these interactions. They discovered According to structural equation modeling, the frequency of Smartphone use and the severity of PSU were both substantially correlated with FOMO. Significantly mediating the relationships between anxiety, Smartphone use frequency, and PSU intensity is FOMO. The correlations between depression and Smartphone use/PSU were not taken into account by FOMO.

(Alhassan et al., 2018) investigated adults all around the world struggle with Smartphone addiction, which has the potential to be harmful to their welfare. This study looked into the incidence of the risk factors for depression and Smartphone addiction in a Middle Eastern population. A web-based questionnaire that was disseminated via social media was used to conduct this cross-sectional study in 2017. The percentage means score (PMS) of the responses to the Smartphone Addiction Scale - Short version's (10-items) questions was computed using a 6-point Likert scale. Responses to the 20 items of the Beck Depression Inventory were summed (interval 0–60); their mean score (MS) was computed and classified. Higher scores showed higher degrees of despair and addiction. Descriptive and regression analysis were used to find the factors that were related to these results. The cutoff for statistical significance was $P < 0.05$. According to the findings, there is a highly significant positive linear link between Smartphone addiction and depression ($y = 39.2 + 0.8x$; $P < 0.001$). Younger Smartphone users had significantly higher scores for Smartphone addiction ($\beta = 0.203$, adj. $P = 0.004$). Users who had less formal education than the university-educated group ($\beta = 2.034$, adj. $P = 0.010$) and those who scored higher on Smartphone addiction ($\beta = 0.194$, adj. $P < 0.001$) were factors linked to higher depression ratings. It is concerning that a researcher discovered a link between sadness and Smartphone addiction. Smartphone use should be moderate, especially among younger folks and less educated users who may be more susceptible to depression.

According to a study by Yehuda Wacks and Aviv M. Weinstein published in 2021, excessive Smartphone use is linked to health issues in adolescents and young adults. Reviewing the research that has been done on the negative effects of excessive Smartphone use on both physical and mental health. Up until February 2021, searches on Pub Med Central and Web of Science produced 84 English-language research studies using the terms "excessive Smartphone use" and "Smartphone addiction." Their research reveals co morbidity with alcohol use disorder, OCD, ADHD, OCD, and depression. The use of Smartphone excessively is linked to cognitive-emotion control issues, impulsivity, and cognitive impairment, addiction to social media, shyness, and low self-esteem. Medical issues can include sleep issues, decreased physical activity, unhealthful eating patterns, pain and headaches, impaired cognitive function, and alterations in the grey matter volume of the brain. In summary, excessive Smartphone use is linked to psychiatric, cognitive, emotional, and neurological alterations that health and education experts should take into account(Wacks & Weinstein, 2021).

The role of depression, anxiety, and stress in problematic Smartphone use among a large sample of the Iranian population was examined by (Pourafshari et al., 2022). Today's human existence has been substantially improved by Smartphone. However, excessive Smartphone use (PSU) may have a deleterious effect on mental well-being. People with psychopathological symptoms of depression, anxiety, and stress are more prone to use

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

Smartphone problematically, according to research on populations in Western and Eastern Asia. This study looked into whether PSU among Iranians was related to stress, anxiety, or depression. In 2020, a web-based survey that was advertised on social media was used for this cross-sectional investigation. The Depression, Anxiety, and Stress Scale-21 Items and the Smartphone Addiction Scale (SAS) were completed by all participants ($n = 2569$). (DASS-21). To further understand how depression, anxiety, and stress-related psychopathological disorders affect PSU, a linear multivariate regression model was developed. They discovered that the SAS scores rose by $1 = 0.24$ (95%CI: [0.18, 0.29]), $2 = 0.13$ (95%CI: [0.09, 0.18]), and $3 = 0.14$ (95%CI: [0.09, 0.18]) correspondingly for every one-unit increase in the subscales of stress, depression, and anxiety. Additionally, there were significant connections between the stress, anxiety, and depression subscales of the DASS-21 and PSU ($r = 0.42$, $p 0.01$), as well as depression ($r = 0.38$, $p 0.01$). Their findings imply that general signs of sadness, anxiety, and stress may contribute to problematic Smartphone use among Iranians (Pourafshari et al., 2022).

Gender differences in the relationship between psychological traits and compulsive usage of Smartphone

Technology is viewed differently by different genders. While women utilize a people-oriented approach to satisfy their social needs, men are stereotypically assumed to be task-oriented users who incorporate technological competence and know-how, talents, and hobbies (Claisse & Rowe, 1993). Males use telephones less frequently than ladies do, and what they do on the phone is frequently referred to as "gossip" (Claisse & Rowe, 1993). It has also been discovered that females have a deeper attachment to their mobile phones and that they retain tight personal interactions even with people who live far away. These gender distinctions are also seen in the world of cell phones.

Males are more likely to use their Smartphone for agentic purposes than females are who typically use them for social purposes. The following develops evidence to suggest that gender distinctions will attenuate the links between psychological characteristics and compulsive Smartphone usage. Males are more likely than females to use technology in harmful ways, despite the fact that they welcome it and have more optimistic attitudes (Rotsztein, 2003; Takao et al., 2009). According to research by (Rotsztein, 2003), women are more likely than men to identify their problematic Internet use and make an effort to reduce or stop it. The findings suggest that males have less self-control with such technologies than females do. In the case of Smartphone, it is expected that men are more prone than women to be obsessive users, particularly when the men have an external locus of control.

Physical and Mental Health Issues of Smartphone

The use of Smartphone negatively impacts both mental and physical health (Abo-Jedi, 2008). In that people with depression or anxiety use Smartphone as a coping mechanism to deal with depressive and negative emotions; this might lead to technological addiction (Kim et al., 2015). Smartphone abusers often check their devices and respond to their notifications. That is a feature of anxiety and sadness as well (Cougles et al., 2012; Evraire and Dozois, 2011). Long-term stress, depression, and sleep difficulties were found to be more common in heavy computer, social media, and mobile phone users (Thomé et al., 2011). Excessive Smartphone use at night could keep a person up until late, affecting stress and depression as well as sleep quality (Lemola et al., 2015). Screen time and Internet use have been shown to have an impact on sleep (Brunborg et al., 2011; Vollmer et al., 2012),

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

and SNS users have been found to have lower sleep quality than non-users of the service (Wolniczak et al., 2013).

Overuse of Smartphone can have harmful impacts on physical health, including cancer, brain tumors, nervous system abnormalities, immune system deterioration, eardrum issues, wrist, neck, and joint discomfort, weariness, and sleep disorders (Alasdair and Philips, 2017; Richard, 2001). As was already said, using a Smartphone excessively might have negative health effects, but not having access to one can equally have negative health effects. For instance, it has been seen that Smartphone addicts experience distress when their devices are taken away for a while, and that teens who experience problems with anxiety, melancholy, aggression, and sleep when their Smartphone are turned off (Assabawy, 2006; Torrecillas, 2007).

Studies Based on Treatment and Management of Anxiety Disorders

Since 1959, research on treating anxiety disorders or states has been published in the Indian Journal of Psychiatry. The first few studies that were published looked at the effects of carbon dioxide (Jetley, 1958) on anxiety states, Guaiacol glycerol ether (Mehta et al., 1960), haloperidol (Jayaram & Ram, 1971), trioxazine (Mcdowall et al., 1972), double blind placebo-controlled trial of pimozid (Ramachandran, 1977), and prochlorperazine (Study of Prochlorpera (Nigam et al., 1985)

Master and Kajaria carried out the first research on benzodiazepines and anxiety disorders in India (Master et al., 1974). This 60 outpatient double-blind trial compared the effectiveness of lorazepam and diazepam in treating anxiety neurosis. Both lorazepam and diazepam are effective anxiolytics, the study found, but lorazepam produces a clinically adequate response more quickly. (Singh et al., 1984) conducted research on the effects of clobazam, a non benzodiazepine anxiolytic, and afterwards compared it to diazepam (Channabasavanna & Pinto Pereira, 1986).

In a cross-over double-blind trial using Clomipramine and Nortriptyline, 12 participants with a diagnosis of OCD who had not responded to amitriptyline, imipramine, or behavior therapy were examined by (Khanna et al., 1988). Clomipramine had no effect on subjects who had previously failed to respond to the other medications. In all cases with OCD, an adequate trial of imipramine and amitriptyline should be administered, and if participants do not respond to these two medications, it is doubtful that they will respond to clomipramine, according to the study's preliminary findings.

Buspirone and Diazepam were tested in a controlled, double-blind experiment for generalized anxiety disorder by (Shah et al., 1990). The Hamilton Anxiety Scale improved in both groups of patients. The cardiovascular, somatic autonomic, anxious, and mood symptoms did, however, improve in the Buspirone group, but the anxious mood, tension, sleeplessness, cognitive symptoms, and somatic and cardiovascular symptoms improved in the diazepam group. The average daily dosage needed by the patients in the buspirone group was 36.56 mg, which was more than what had previously been reported.

Social Anxiety Disorder

Adolescence is the usual time for the development of social anxiety disorder (SAD), which is a chronic, incapacitating, and curable condition. To determine the prevalence, demographic and phenomenological traits of SAD, family-related risk factors, academic impairment, and co morbidity of depression among teenagers, (Mehtalia & Vankar, 2004) conducted the sole

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

study. In one high school, a total of 421 teenagers underwent screening for SAD, depression, and variables linked to academic impairment. 54 people, or 12.8%, had SAD. The most typical SAD symptom was aversion to public speaking. SAD was equally prevalent in both sexes and was linked to issues such as trouble managing studies, weight concerns, having fewer friends, a lack of connection with parents, and being treated differently from siblings.

This study came to the conclusion that SAD is a prevalent adolescent disease that is co-morbid with significant depression and linked to impairment in academic functioning. All teenagers should be assessed for SAD and given treatment, especially those who seek medical advice for depression. This study's conclusions are based solely on the first step of screening. For more reliable results, the data must be verified in a second, two-stage study that uses organized clinical interviews. Although the most prevalent co-morbidity, major depression, has been examined in this study, other anxiety disorders and their connections to avoidant personality disorder have not. Future research on this topic is also required.

METHODOLOGY

The terms "Depression," "Anxiety," "Stress," and "Smartphone addiction" were entered into the Pub Med Central and Google Scholar search engines up until November 2022, yielding 56 English-language research studies. Finally, the review is not systematic and has eliminated papers written in other languages.

RESULT

The association between Smartphone addiction and sleep of young adults found that Smartphone addiction was associated with poor sleep, independent of usage duration, suggesting that usage duration should not be used as a proxy for harmful use. The results of this study revealed that university students in Malaysia had a propensity for Smartphone addiction and were exposed to anxiety and sadness. According to the findings, there is a highly significant positive linear link between Smartphone addiction and depression ($y = 39.2 + 0.8x$; $P = 0.001$). Younger Smartphone users had significantly higher scores for Smartphone addiction ($\beta = 0.2034$, adj. $P = 0.004$). Users who had less formal education than the university-educated group ($\beta = 2.034$, adj. $P = 0.010$) and those who scored higher on Smartphone addiction ($\beta = 0.194$, adj. $P = 0.001$) were factors linked to higher depression ratings. It is concerning that a researcher (Alhassan et al., 2018) discovered a link between sadness and Smartphone addiction. Smartphone use should be moderate, especially among younger folks and less educated users who may be more susceptible to depression.

CONCLUSION

The use of Smartphone excessively is linked to cognitive-emotion control issues, impulsivity, and cognitive impairment, addiction to social media, shyness, and low self-esteem. Medical issues can include sleep issues, decreased physical activity, unhealthful eating patterns, pain and headaches, impaired cognitive function, and alterations in the grey matter volume of the brain. In summary, excessive Smartphone use is linked to psychiatric, cognitive, emotional, and neurological alterations that health and education experts should take into account. People with psychopathological symptoms of depression, anxiety, and stress are more prone to use Smartphone problematically, according to research on populations in Western and Eastern Asia.

REFERENCES

Akiskal, H. S., Bourgeois, M. L., Angst, J., & Post, R. (2000). *Re-evaluating the prevalence of and diagnostic composition within the broad clinical spectrum... - Abstract - UK*

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

- PubMed Central*. 59. <http://ukpmc.ac.uk/abstract/MED/11121824/reload=0;jsessionid=tmriRkjAILNjtDhdn3Qr.2>
- Alhassan, A. A., Alqadhib, E. M., Taha, N. W., Alahmari, R. A., Salam, M., & Almutairi, A. F. (2018). *The relationship between addiction to smartphone usage and depression among adults : a cross sectional study*. 4–11.
- Baron, D. A. (1996). The American Psychiatric Press Textbook of Psychopharmacology. *Psychiatric Services*, 47(2), 203-a-204. <https://doi.org/10.1176/ps.47.2.203-a>
- Bianchi, A., & Phillips, J. G. (2005). Psychological predictors of problem mobile phone use. *Cyberpsychology and Behavior*, 8(1), 39–51. <https://doi.org/10.1089/cpb.2005.8.39>
- Breslau, N., Davis, G. C., Andreski, P., & Peterson, E. (1991). Traumatic Events and Posttraumatic Stress Disorder in an Urban Population of Young Adults. *Archives of General Psychiatry*, 48(3), 216–222. <https://doi.org/10.1001/archpsyc.1991.01810270028003>
- Channabasavanna, S. M., & Pinto Pereira, L. M. (1986). Clobazam Single O R Divided D O S E Against. *Health (San Francisco)*, 28(January), 51–54.
- Charles, S. T., Piazza, J. R., Mogle, J., Sliwinski, M. J., & Almeida, D. M. (2013). The Wear and Tear of Daily Stressors on Mental Health. *Psychological Science*, 24(5), 733–741. <https://doi.org/10.1177/0956797612462222>
- Chowdhury, S., & Chakraborty, P. pratim. (2017). Universal health coverage - There is more to it than meets the eye. *Journal of Family Medicine and Primary Care*, 6(2), 169–170. <https://doi.org/10.4103/jfmpe.jfmpe>
- Claisse, G., & Rowe, F. (1993). Domestic telephone habits and daily mobility. *Transportation Research Part A*, 27(4), 277–290. [https://doi.org/10.1016/0965-8564\(93\)90001-2](https://doi.org/10.1016/0965-8564(93)90001-2)
- Couples, C., & Study, C. (2005). *Chesley-2005-Journal_of_Marriage_and_Family*. 67(December), 1237–1248.
- Crocq, M.-A., & Crocq, L. (2000). From shell shock and war neurosis to posttraumatic stress disorder: a history of psychotraumatology. *Dialogues in Clinical Neuroscience*, 2(1), 47–55. <https://doi.org/10.31887/dcns.2000.2.1/macrocq>
- Ebstrup, J. F., Eplöv, L. F., Pisinger, C., & Jørgensen, T. (2011). Association between the five factor personality traits and perceived stress: Is the effect mediated by general self-efficacy? *Anxiety, Stress and Coping*, 24(4), 407–419. <https://doi.org/10.1080/10615806.2010.540012>
- Elhai, J. D., Dvorak, R. D., Levine, J. C., & Hall, B. J. (2017). Problematic smartphone use: A conceptual overview and systematic review of relations with anxiety and depression psychopathology. *Journal of Affective Disorders*, 207, 251–259. <https://doi.org/10.1016/j.jad.2016.08.030>
- Elhai, J. D., Yang, H., Fang, J., Bai, X., & Hall, B. J. (2020). Depression and anxiety symptoms are related to problematic smartphone use severity in Chinese young adults: Fear of missing out as a mediator. *Addictive Behaviors*, 101(57), 105962. <https://doi.org/10.1016/j.addbeh.2019.04.020>
- Feingold, A. (1994). Gender Differences in Personality: A Meta-Analysis. *Psychological Bulletin*, 116(3), 429–456. <https://doi.org/10.1037//0033-2909.116.3.429>
- Fossum, I. N., Nordnes, L. T., Storemark, S. S., Bjorvatn, B., & Pallesen, S. (2014). The Association Between Use of Electronic Media in Bed Before Going to Sleep and Insomnia Symptoms, Daytime Sleepiness, Morningness, and Chronotype. *Behavioral Sleep Medicine*, 12(5), 343–357. <https://doi.org/10.1080/15402002.2013.819468>
- Gutiérrez, J. D. S., de Fonseca, F. R., & Rubio, G. (2016). Cell-phone addiction: A review. *Frontiers in Psychiatry*, 7(OCT). <https://doi.org/10.3389/fpsy.2016.00175>
- Husain, S. A., Nair, J., Holcomb, W., Reid, J. C., Vargas, V., & Nair, S. S. (1998). Stress

- reactions of children and adolescents in war and siege conditions. *American Journal of Psychiatry*, 155(12), 1718–1719. <https://doi.org/10.1176/ajp.155.12.1718>
- Jayaram, S. S., & Ram, P. K. (1971). Methods of Assessment in a Trial of Haloperidol in Anxiety Neurosis 1. *Practitioner*, 1, 131–135.
- Jetley, S. K. (1958). Carbon dioxide therapy in nervous disorders. *Indian Journal of Psychiatry*, 90(1), 7–12.
- Kessler, R. C. (2000). Posttraumatic stress disorder: The burden to the individual and to society. *Journal of Clinical Psychiatry*, 61(SUPPL. 5).
- Khanna, S., Rajendra, P. N., & Channabasavanna, S. M. (1988). No Title. *Ворона. Птицы*, 1(2), 12–17.
- Kuss, D. J., & Griffiths, M. D. (2011). Online social networking and addiction-A review of the psychological literature. *International Journal of Environmental Research and Public Health*, 8(9), 3528–3552. <https://doi.org/10.3390/ijerph8093528>
- Kwon, M., Kim, D. J., Cho, H., & Yang, S. (2013). The smartphone addiction scale: Development and validation of a short version for adolescents. *PLoS ONE*, 8(12), 1–7. <https://doi.org/10.1371/journal.pone.0083558>
- Kwon, M., Lee, J. Y., Won, W. Y., Park, J. W., Min, J. A., Hahn, C., Gu, X., Choi, J. H., & Kim, D. J. (2013). Development and Validation of a Smartphone Addiction Scale (SAS). *PLoS ONE*, 8(2). <https://doi.org/10.1371/journal.pone.0056936>
- Kwon, Y. S., & Paek, K. S. (2016). The influence of smartphone addiction on depression and communication competence among college students. *Indian Journal of Science and Technology*, 9(41). <https://doi.org/10.17485/ijst/2016/v9i41/103844>
- Lee, H., Ahn, H., Choi, S., & Choi, W. (2014). The SAMS: Smartphone addiction management system and verification. *Journal of Medical Systems*, 38(1). <https://doi.org/10.1007/s10916-013-0001-1>
- Lee, Y. K., Chang, C. T., Lin, Y., & Cheng, Z. H. (2014). The dark side of smartphone usage: Psychological traits, compulsive behavior and technostress. *Computers in Human Behavior*, 31(1), 373–383. <https://doi.org/10.1016/j.chb.2013.10.047>
- Leung, L., & Wei, R. (2000). More Than Just Talk on The Move. *Journalism and Mass Communication Quarterly*, 77(2), 308–320.
- Li, J., Zhan, D., Zhou, Y., & Gao, X. (2021). Addictive Behaviors Loneliness and problematic mobile phone use among adolescents during the COVID-19 pandemic : The roles of escape motivation and self-control. *Addictive Behaviors*, 118(2), 106857. <https://doi.org/10.1016/j.addbeh.2021.106857>
- Lin, Y. H., Chiang, C. L., Lin, P. H., Chang, L. R., Ko, C. H., Lee, Y. H., & Lin, S. H. (2016). Proposed diagnostic criteria for Smartphone addiction. *PLoS ONE*, 11(11), 1–11. <https://doi.org/10.1371/journal.pone.0163010>
- Master, R. S., Kajaria, S. M., & Raheja, S. (1974). A controlled evaluation of “Lorazepam” and diazepam in anxiety neurosis. *Indian Journal of Psychiatry*, 16(1), 42–47.
- Mcdowall, A., Tilak, L., & General, M. (1972). a Double Blind Trial Df Trioxazine With Placebo in Anxiety States. *Psychiatry: Interpersonal and Biological Processes*, 287–288.
- Mehta, C. H., Yahia, N. S., Bagadia, V. N., & Desai, A. (1960). Guaiacol Glycerol Ether (GGE) In Anxiety States. *Indian Journal of Psychiatry*, 1.
- Mehtalia, K., & Vankar, G. K. (2004). Social anxiety in adolescents. *Indian Journal of Psychiatry*, 46(3), 221–227. <http://www.ncbi.nlm.nih.gov/pubmed/21224903>
<http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC2951647>
- Murray, C. J. L., Ezzati, M., Flaxman, A. D., Lim, S., Lozano, R., Michaud, C., Naghavi, M., Salomon, J. A., Shibuya, K., Vos, T., Wikler, D., & Lopez, A. D. (2012). GBD 2010: Design, definitions, and metrics. *The Lancet*, 380(9859), 2063–2066. <https://doi.org/>

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

10.1016/S0140-6736(12)61899-6

- Nigam, P., Rastogi, C. K., Kapoor, K. K., & Gupta, A. K. (1985). Prochlorperazine in anxiety. *Indian Journal of Psychiatry*, 27(3), 227–232.
- O’Guinn, T. C., & Faber, R. J. (1989). Compulsive Buying: A Phenomenological Exploration. *Journal of Consumer Research*, 16(2), 147. <https://doi.org/10.1086/209204>
- Oulasvirta, A., Rattenbury, T., Ma, L., & Raita, E. (2012). Habits make smartphone use more pervasive. *Personal and Ubiquitous Computing*, 16(1), 105–114. <https://doi.org/10.1007/s00779-011-0412-2>
- Ozguner, F., Altinbas, A., Ozaydin, M., Dogan, A., Vural, H., Kisioglu, A. N., Cesur, G., & Yildirim, N. G. (2005). Mobile phone-induced myocardial oxidative stress: Protection by a novel antioxidant agent caffeic acid phenethyl ester. *Toxicology and Industrial Health*, 21(8), 223–230. <https://doi.org/10.1191/0748233705th228oa>
- Pandemic, C. C.-, & Limone, P. (2021). *brain sciences Psychological and Emotional Effects of Digital Technology on*.
- Pourafshari, R., Rezapour, T., Rafei, P., & Hatami, J. (2022). Journal of Affective Disorders Reports The Role of Depression , Anxiety , and Stress in Problematic Smartphone Use among a Large Sample of Iranian Population. *Journal of Affective Disorders Reports*, 10(February), 100436. <https://doi.org/10.1016/j.jadr.2022.100436>
- Ragu-Nathan, T. S., Tarafdar, M., Ragu-Nathan, B. S., & Tu, Q. (2008). The consequences of technostress for end users in organizations: Conceptual development and validation. *Information Systems Research*, 19(4), 417–433. <https://doi.org/10.1287/isre.1070.0165>
- Ramachandran, V. (1977). *A Clinical Trial of Pimozide (R6238) In Anxiety State Pimozide (R6238) is a new neuroleptic . It is said to have a specific anti-psychotic effect and a long duration of action . (Janseen and Allewijn , 1968) Brugmans (1968) in a double blind contr. 19, 79–82.*
- Roberts, J. A., & Pirog, S. F. (2013). A preliminary investigation of materialism and impulsiveness as predictors of technological addictions among young adults. *Journal of Behavioral Addictions*, 2(1), 56–62. <https://doi.org/10.1556/JBA.1.2012.011>
- Roberts, J. A., Yaya, L. H. P., & Manolis, C. (2014). The invisible addiction: Cell-phone activities and addiction among male and female college students. *Journal of Behavioral Addictions*, 3(4), 254–265. <https://doi.org/10.1556/JBA.3.2014.015>
- Rosen, L. D., Whaling, K., Carrier, L. M., Cheever, N. A., & Rökkum, J. (2013). The Media and Technology Usage and Attitudes Scale: An empirical investigation. *Computers in Human Behavior*, 29(6), 2501–2511. <https://doi.org/10.1016/j.chb.2013.06.006>
- Rotsztein, B. (2003). *Problem Internet use and locus of control among college students : Boston College Poster presented at The 35 Annual Conference of the New England Educational Research Organization.* 1–13.
- Sangam, S., Naveed, A., Athar, M., Prathyusha, P., Moulika, S., & Lakshmi, S. (2015). *International Journal of Health Sciences and Research.* 5(1), 156–164.
- Shah, L. P., Mazumdar, K., Parkar, S. R., Ghodke, P. R., Shah, A. N., Psychologists, C., & Hospital, K. E. M. (1990). *ACONTROLLEDDOUBLE BLIND CLINICAL TRIAL OF BUSPIRONE.* 32, 166–169.
- Shoukat, S. (2019). Letter to the editor : Cell Phone Addiction And Psychological and. *Excli*, 47–50.
- Singh, G., Kumar, V., & Kapur, R. (1984). GURMEET SINGH/M.B.B.S., M.R.C. Psych., D. P. M . (Lond.), Dip. Psych. (McGill), Dip. Am. Board of Psych, and Neurology, VIJAY KUMAR, 2 M.B.B.S., M.D. (Psych.), P.CM. S. RUPINDER KAPUR/ M.B.B.S.,M.D. (Psych.),P. *Indian Journal of Psychiatry*, 26(2), 141–146.

Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults

- Sinsomsack, N., & Kulachai, W. (2018). *A study on the impacts of Smartphone addiction. March*. <https://doi.org/10.2991/insyma-18.2018.61>
- Sohn, S. Y., Krasnoff, L., Rees, P., Kalk, N. J., & Carter, B. (2021). The Association Between Smartphone Addiction and Sleep: A UK Cross-Sectional Study of Young Adults. *Frontiers in Psychiatry, 12*(March), 1–10. <https://doi.org/10.3389/fpsy.2021.629407>
- Stanković, M., Nešić, M., Čičević, S., & Shi, Z. (2021). Association of smartphone use with depression, anxiety, stress, sleep quality, and internet addiction. Empirical evidence from a smartphone application. *Personality and Individual Differences, 168*(June 2020), 110342. <https://doi.org/10.1016/j.paid.2020.110342>
- Takao, M., Takahashi, S., & Kitamura, M. (2009). Addictive personality and problematic mobile phone use. *Cyberpsychology and Behavior, 12*(5), 501–507. <https://doi.org/10.1089/cpb.2009.0022>
- Thomé, S., Härenstam, A., & Hagberg, M. (2011). Mobile phone use and stress, sleep disturbances, and symptoms of depression among young adults - A prospective cohort study. *BMC Public Health, 11*. <https://doi.org/10.1186/1471-2458-11-66>
- Wacks, Y., & Weinstein, A. M. (2021). Excessive Smartphone Use Is Associated With Health Problems in Adolescents and Young Adults. *Frontiers in Psychiatry, 12* (February), 1–7. <https://doi.org/10.3389/fpsy.2021.669042>
- Yasamy, M. T. (2017). *DEPRESSION. January 2012*.

Acknowledgment

The author(s) appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Ambica (2023). Effect of Smartphone Addiction on Depression, Anxiety, and Stress of Adults. *International Journal of Indian Psychology, 11*(4), 1185-1201. DIP:18.01.106.20231104, DOI:10.25215/1104.106