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SMART PHONE ADDICTION AND ITS EFFECT: SYSTEMATIC REVIEW

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ABSTRACT

Smartphones play very important role in day today activities However, the growing popularity of smartphone use has led to smartphone overuse and addiction. This review aims to systematically investigate the smartphone addiction and its ill effect on health. Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were used to carry out the systematic review. MeSH terms was used while searching data base. Eligible studies were screened against inclusion criteria and data was extracted. Results: A total of 23 of 1550 studies met the inclusion criteria. All of the studies were cross-sectional and focused on physical, mental, and neurological health outcomes. Anxiety and depression were commonly found to mediate mental health problems. A wide range of physical health was also associated with smartphone addiction. Conclusions: Findings suggest that there are associations between smartphone addiction and physical and mental health, especially mental health. Social awareness campaigns about smartphone addiction and its ill effects are needed.

KEYWORDS

Smart Phone Addiction, Overuse, Ill Effects

1. INTRODUCTION

Smartphones are technological device that have a great impact on people's daily lives changing their habits and behavior. The overuse of smartphone has emerged as a significant social issue with growing popularity of smart phone.

Over the past decades, smart phone ownership and use have been exponentially increased globally. For example, there were almost 2.2 billion smart phone owners or users in 2018 and the number has exceed 2.9 billion 2021 worldwide.[1]

Excessive use of smart phone was first recognized as health issue in United States in the mid 1990's. The majority of the internet smart phone uses found to be adolescents and young adults. Compulsive and heavy internet use of smart phones has been associated with potential detrimental side effects such as depression, suicide ideation, loneliness, interpersonal problems, poor school performance and personal relationships, time management issues, sleeplessness, unhealthy lifestyles and poor dietary behavior.[2]

Smart phone addiction is conceptualized as behavioral addiction including mood intolerance, withdrawal and conflicts. Reviews states that there are association between smart phone addiction and mental health, physical health and neurological problems. Still there is an argument in the literature about positive or negative relationship between the amount of screen time or smart phone use and health outcome.

Though existing evidences have provided useful data, however it is difficult to draw conclusions without a systematic review. This systematic review is an attempt to collate evidences about the health impacts of smart phone addiction among human beings. This study aims to provide evidences to inform policy or recommendations to control and prevent smart phone addiction.

2. METHODS

The systematic review was carried out according to the PRISMA (Preferred reporting items for systematic reviews and metanalysis). All studies including controlled trials, case control, cross sectional and cohort studies were included.

The eligibility criteria included studies which explored smart phone users focusing people aged over 18 years. Articles included were only published in English language only. A search strategy based on the MeSH headings included smart phone, behavior, addiction, overuse, problematic use, excessive use and adults. The searches were carried out from January 2011 to January 2021.

Studies were assessed for methodological quality using a modified New Castle – Ottawa Scale separately for each study design, where each study was assessed and deemed by giving a rating of either 'good', 'fair', or 'poor'.

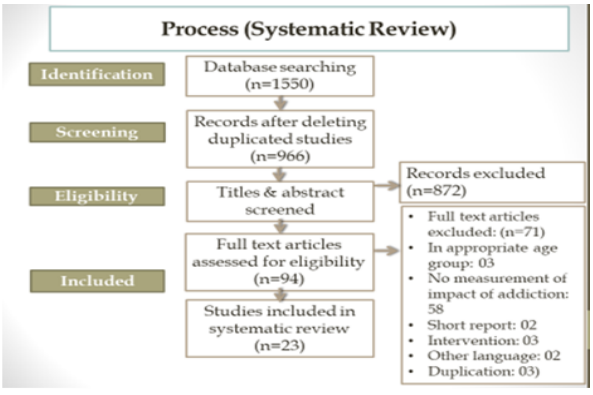

Fig 1: Process of Systematic Review

3. RESULT

A total of 1550 potential studies were identified. The full test articles assessed for eligibility were 94. The studies included in systematic review were 23. The sample size ranged from 30 to 4302 adults. Five studies were conducted in South Korea, 3 in Saudi Arabia, 3 in China, 3 in Turkey,1 in India, Taiwan, Switzerland, USA, Italy and Thailand and 3 were international studies. Smart phone addiction was measured in the study sample using different scales, however the smart phone addiction scale, short version (SAS- SV) was most common measure. Among the selected studies, ten studies were considered to be good, 12 studies were considered fair and the remaining one was considered poor.

3.1 Sociodemographic characteristics associated with smart phone addiction.

Across 14 studies age was correlated with smart phone addiction and 18 o 21 years old were the most frequent sufferers of smart phone addiction. Females were reported as more prone for smart phone addiction by 13 studies (1,2,3,4,5,7,9,11,12,13,14,15,16).however 4 studies (6,8,10,21)reported the opposite. Smart phone in males was correlated with use of media, apps, and games, while in females it was correlated with communication and social networking apps. Smart phone addiction was also positively associated with monthly cost of living, family income and higher economic status.(22,23)

3.2 Mental health

Mental health was associated with smart phone addiction in fourteen studies. (1,2,3,4,5,7,9,11,12,13,14,15,16,17) Depression and anxiety were the most commonly observed. One study found that the group who were classified as smart phone addiction had an increased risk of depression (relative risk 1.337;$P<0.001$) and anxiety (relative risk 1.402; $P<0.001$)

a) Stress

Five studies investigated perceived stress across 3618 participants, four studies found a significant association between smart phone addiction and perceived stress.

b) Psychological factors associated with smart phone addiction

A range of different personality and emotional factors were investigated in relation to smart phone addiction somewhat paradoxically , traits associated with greater risk taking (such as low self-control, impulsivity emotional instability and openness) and traits associated with avoidance of risk taking (such as perfectionism and conscientiousness) were more common among problematic smart phone users. An insecure attachment style, loneliness and low self-esteem were all associated with smart phone addiction.

3.3 Physical health

a) Musculoskeletal problems

Four studies (19, 20, 21, 22) depicted the effects of smart phone addiction on musculoskeletal system. Two studies reported cervical problems, one study nerve thickness (11,21). One study compared cervical spine repositioning errors in different start phone addiction groups and revealed that there were significant differences between non addicted, moderately addicted and severely addicted groups; the severely addicted groups showed the largest changes in posture, the cervical repositioning errors of flexion (3.2+/- 0.8), extension (4.9+/- 1.1), right lateral flexion (3.9+/- 1.0) and left lateral flexion (4.1+/- 0.7). Another study conducted among medical students revealed that excess smart phone use can cause nerve injury and smart phone addiction was linked to higher signs of inflammation in the musculoskeletal structure of hand joints.

b) Sleep and lifestyle issues

A study conducted by Fahad et.al among 2367 university students reported 43% of the sample had decreased their sleeping hours due to smart phone addiction and 30 % of the samples had an unhealthy lifestyle including weight gain, reduction in exercises and consumption of more fast foods when diagnosed with smart phone addiction. Another study conducted among migraine. Samples reported that smart phone addiction can increase headache duration and decreased sleep quality.

c) Accidents and injury:

Hye- Jin Kim et al (2017) revealed that smart phone addiction is associated with different types of accidents and injury. Falls, bumps, collision, traffic accidents, burns and electric shocks are noted throughout the data.

d)Neurological problems

Two studies reported the neurological effect of smart phone addiction. One study found alteration in white matter integrity and another study reported smaller grey matter volume in the right lateral orbitofrontal cortex.

3.4 Educational attainment:

Six studies explored smart phone addiction and educational attainment, four studies reported a significant association between smart phone addiction and poor educational attainment.

DISCUSSION

Findings suggest that medical and emotional issues are significantly linked with smart phone addiction. One survey found that 46% smart phone owners believed they could live without their phones.

It is evident that musculoskeletal pain and sleep disturbances are the two most common physical problems related to smart phone addiction. Fingers, cervical, back, shoulder, neck issues all most commonly linked to excessive smartphone usage. Text neck syndrome is commonly seen.

This review indicates that smartphone addiction shares similar features with substance abuse. However smart phone has become a part of daily life, facilitating work, education or entertainment. Therefore it is important not only utilize the advantages of smart phone but also to reduce the negative consequences.

The findings from this review suggest that health care provider and policymakers should recognize the problem and take necessary action in raising community awareness about smart phone addiction and its physical and mental impacts.

Primary prevention of smart phone addiction is difficult since smart phone use is now a societal norm; however awareness of the risks of smart phone addiction amongst students, parents, teacher's health care providers caused help limit exposure.

Finally further exploration of the relationship between smart phone addiction and diagnosed mental health indicators is urgently needed to clarify the magnitude of any casual contribution of smart phone addiction to growing burden of mental health conditions amongst smart phone users.

CONCLUSION:

This review indicates that approximately 1 in 4 adults are demonstrating problematic smart phone use, a pattern of behavior that mirrors that of a behavioral addiction. A consistent relationship has been demonstrated between smartphone addiction and delirious mental health symptoms including depression, anxiety, high levels of perceived stress and poor sleep. Younger populations are more vulnerable.

Further work is needed to develop assessment tools for diagnosis of smart phone addiction and prevent possible long term widespread harmful impact on future generation's mental health and wellbeing.

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