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Abstract

Purpose: According to "Global Statshot Report" indicating 4.65 billion Social Media (SM) consumers in Oct 2021, its numbers present almost 57.6 percent of the world population. SM scrolling, video calling texting, browsing on Google, and other internet surfing are causing numerous health issues like headache, earache, neck pain, tinnitus, painful fingers, fatigue, eye symptoms, morning temporary state, restlessness, and sleep disturbances developed in users. With this concept, this study aims to find out the association of SM effects on student's physical health and cognitive skills. Excessive use of SM causes negative effects on both cognitive skills and physical health.

Methodology: This analytical cross-sectional study has been conducted at Indus University of Health and Science, Korangi Crossing, Karachi over 01-year timeline (Feb 2021 to Jan 2022). The sample size of 167-170 was targeted on both male and female age group (16 to 35) who were active user of social media and electronic gadgets Any discipline (nursing, allied health, biosciences, medical technology, etc.) enrolled in this study. Any person with a mental and physical disorder or under psychological therapy was excluded beforehand.

Findings: Excessive use of SM affects cognitive skills, Forgetfulness, Distractibility and False Triggering mean score was high in the second group of high users. Statistical associations were found between Forgetfulness and Distractibility in both groups.

Recommendations: This study will provide awareness to students and society regarding the negative effects of SM on health.

Keywords: _Social Media, Physical Impairment, Cognitive Impairment_

1.0 INTRODUCTION

According to "Global Statshot Report" indicating 4.65 billion social media consumers in Oct 2021, its numbers present almost 57.6 percent of the world population. As per social networking sites streaming ratio, almost 4.48 billion of the world population is active users according to the digital world report. One of the most famous websites in Social Media (SM) is Facebook, 79 % of users aged between 18 to 29. Kemp S generated a web report on global digital data in which he portrays the figures of SM users globally and estimated the average time spend per day on SM is of 2 Hrs 29 Min. [Figure 01] [1]. Pakistan Telecommunication Authority's (PTA) official web page has given the figure of 124 million 3G/4G Subscribers and 193 million Broadband Subscribers as well as a number of rapidly increasing day by day. Statistical analysis shows 46.00 million of social site consumers are present in Pakistan at start of 2021. The number of SM consumers in Pakistan increased by 9.0 million between 2020 to 2021. The recent PTA stats reveals the highest percentage of SM used in Pakistan are Facebook, WhatsApp, and Instagram. In Pakistan, there are 39 million SM users and this ratio is exceeding day by day [Figure 02][2].

SM scrolling, video calling texting, browsing on Google, and other internet surfing are causing numerous health issues like headache, earache, neck pain, tinnitus, painful fingers, fatigue, eye symptoms, morning temporary state, restlessness, and sleep disturbances developed in users. SM entirety of the nation has gained huge exposure and because of it significant social factors such as social interaction, love affection, and discussion are slowly and steadily being wiped off from our environment. However, the impact of SM on education is becoming an essential and compelling factor. The world has become a global village and technology use has made it a smaller world through SM and how it is changing instruction. It is noticeable that social networking sites and their applications present enormous benefits but also have risks for university students. Nevertheless, research studies found an association between the usage of social networking and mental well-being or mental health. Anxiety, depression, stress, fatigue, loneliness, decline in cognitive abilities, emotional imbalance, and lack of concentration during study and work are the major impact of SM among youths and adults. Youth suffers negative emotionless, feelingless, and numb while using SM which affects their mental health [3].

A research study conducted in 2016 showed excessive usage of social media sites has negative impacts on students' habits and academic performance. A large number of students spend more time on social networking eventually leading negative effect on student's psychology, causing destruction and decreasing focus on this study [4]. Later it is also reported that SM provoked aggression through violent content accessibility, as well as this violent content negatively affect the mind of youth and make them more violent eventually, that leads them to violence in the real world [5]. Another aspect of SM was shared by Rani PU et al about the young generation addiction to social media as they are engaging in posting videos and images, and chatting unnecessarily therefore lacking critical thinking skills among youth [6] Role of cyber wellness and the duration of networking association with cyber aggression among students was highlighted by Mardiantoa FH et al [7]. Moreover, an association of factors among SM users are present such as online harassment, social life, family and friend relationships, cognitive development, and sleep routine disturbance. Because of it online harassment and threats were mirrored in the offline world as well, and their interactions with mobile technologies were adopted by the brain and body [8]. Excessive

use of SM daily reduces student self-learning skills and causes stress. SM excessive use affect sleep pattern and cause attention deficit among students [9].

In 2019, Abbas J et al, capture the role of the learning behavior of university students to achieve supportable education. Study findings revealed usage of SM in Pakistan has a negative impact on a student's behavior as compared to positive aspects [10]. Moreover, SM also spreading wrong information related to sensitive issues like health, and people sharing health information without confirmation from medical professionals and Physicians [11]. Nowadays (google doctor) the trend is increasing day by day in our society, one of relevant example was the pandemic covid-19; in starting of the pandemic people shared false news on social media regarding covid-19 i.e. posts regarding covid-19 vaccination side effects. With this concept, this study aims to find out the association of SM effects on student's physical health and cognitive skills. Excessive use of SM causes negative effects on both cognitive skills and physical health.

2.0 METHODOLOGY

This analytical cross-sectional study has been conducted at Indus University of Health and Science, Korangi Crossing, Karachi over 01-year timeline (Feb 2021 to Jan 2022). The study was priorly approved by the Head of the following academic departments i.e., Indus College of Allied Health Sciences, Indus College of Physical Therapy, and Indus College of Nursing. The sample size of 167-170 was estimated using the frequency of headaches associated with excessive social media use as 10.2%, the margin of error as 4.6%, and 95% confidence level. Both male and female age group (16 to 35) active user of social media and electronic gadgets was enrolled in this study from any discipline (nursing, allied health, biosciences, medical technology, etc.).

Any person with a mental and physical disorder or under psychological therapy was excluded beforehand. A purposive sampling method was followed to collect data from 170 students of allied health students from different academic departments of the university randomly. For data sample collection investigator physically visited multiple times with Covid-19 SOP, after the introduction to participants, the investigator explained the purpose of the study and took a written consent form with the signature of the participant. Two questionnaires had distributed; the first part of the questionnaire contained the bio-data profile of the respondent of this study. The second part of the questionnaire was related to SM usage duration, purpose, average time spent, physical health issues participant self-perception, a second questionnaire was related to cognitive assessment.

A cognitive assessment scale was used for the study, this scale consisted of 25 questions and three sections. For cognitive assessment, subscales for Forgetfulness, Distractibility, and False Triggering questions sum and were created in two groups for average use of SM social. For the Physical Health assessment, a questionnaire was related to SM usage duration, purpose, average time spent, and physical health issue participant self-perception has been taken. We created two groups for the average use of SM for association determination statistically. For physical health; participant reception and feeling regarding symptoms of cervical pain, fatigue, shortness of breath, sleep issues, back pain, headache, stress, numbness in fingers, and nomophobia were recorded through the Likert scale. The average time spent per day on electronic gadgets like smartphones, tablets, laptops, etc. was taken as an independent factor. For cognitive assessment, participant reception and feeling regarding their cognitive functions thought processes like the ability to recall, analyses, respond, use information, analyze the situation, creativity and new idea thinking abilities or mental functioning, such as memorizing and remembering, and focusing attention were

recorded. Cognitive assessment dependent variables are divided into three categories. Forgetfulness represents the ability of recalls a thing participant's ability. Distractibility is a condition in which a person is unable to pay attention or stay on task. Lastly, False Triggering is the Interrupted processing of sequences of cognitive and motor actions. However, the Average time spent per day on social media like YouTube, etc.

The personal information and data of participants were confidential, participants had a right to know about the details of this study and the reason for data collection, we had maintained confidentiality, and only the relevant person handled data, before and after data entry in SPSS, we Kept all data in the lock, we had not to use the name of a person, instead of name we used ID number only. The study protocol has been approved by IRB, Reference number IERB (8)/SZABIST KHI (LIFE)/19104154/210058.The data had analyzed on SPSS, and all collected data had been entered into SPSS software with an ID number. Means, and frequencies of participants were analyzed. An inferential statistical independent t-test has been applied for association determination of the hypothesis of the study. Two questionnaires have been used for cognitive assessment, a cognitive assessment scale and a second scale for physical health self-made questionnaire after validity testing through a pilot study.

3.0 FINDINGS

Overall 170 Medical and Allied Health students participated in this study among which 79 males and 91 females voluntarily participated. Most participants in this study had ages between 19 years to 24 years. In our study, 23 students had an affiliation with Doctor of Physical Therapy, and 29 students had an affiliation with medical technology, 69 students had an affiliation with BS Nursing, 23 students had an affiliation with Nursing Assistant course, 26 students had an affiliation with Allied Health technician course. Most participants of this study had more than one electronic gadget, like a smartphone, laptop, or computer. All participants were active users of social networking. 25 participants (14.6%) Had 1 to 4 Hours of Users, and 145 (85 %) had more than 4 hours' users of social networking [Table 01]. On the basis of time spent, the cognitive effect of SM is divided into Group A and Group B to find out the absolute measure of the disease [Table 2]. Excessive use of SM affects cognitive skills, Forgetfulness, Distractibility and False Triggering mean score was high in the second group of high users. Statistical associations were found between Forgetfulness and Distractibility in both groups.

Smartphones were the main source of using SM in our study population. Out of 107, 35 participants (20.5 %) average time spent on smartphones is 1 to 4 hours, and 135 participants (79%) average time spent on smartphones is more than 4 hours. We divided two groups according to use or time spent on smartphones. Group A and Group B. Group A categorized on the basis of usage from 1 to 4 hours while Group B is on the usage of more than 4 hours or above. The mean score of symptoms among both groups on completion was calculated by applying an independent t-test for association significance with a smartphone [Table 03 and 04]. Assessment of SM revealed Physical health issues and symptoms such as cervical pain, fatigue, shortness of breath, backache, sleep issues, headache, and stress, numbness in fingers & eye pain, and nomophobia increase with more time spent on electronic gadgets. Statistical significance was found for cervical pain & fatigue with more time spent on smartphones.

4.0 DISCUSSION

All participants are active users of electronic gadgets and social networking. Most students of the study said they use SM for socialization, entertainment, communication, online gaming, and Study purpose. The majority of participants spend average time more than 4 hours on social networking sites such as YouTube, WhatsApp, Twitter. The dependency of participants on SM is high. Due to more time spend on social network causing negative effect on cognitive skills and causing stress and depression the findings of our study supported by Orsal et al [12]. Our study finding show significance association between cognitive skills decline with SM, we found more time spend causing negative effect on cognition activity the finding of our study also supported by research conducted in 2019 survey method used for data collection of study total 150 people participated in study, Chi square and regression tools used to analyze data [6]. This study found association between networking and lack of critical thinking skills. The participant spends more time on electronic gadgets such as smartphone, laptop or computer and headphone having several health issues like, Cervical pain, headache, eye pain, shortness of breathing, numbness in fingers and nomophobia and sleep issues etc. but mean score of these issues is low in group those spend less time on electronic gadgets [13-15]. The present agree with study over use and dependency on smartphone causing negative effect on cognitive skills and reduces available cognitive capacity study conducted on students gets peer pressure and spend long time on SM for entertainment [16].

Associations between digital reliance and cognition have not gotten the same attention as emotions and consequences, and Executive Functioning (EF) is an important topic in this regard. A trio of investigations looked at the links between social media addiction (SMA) and daily memory (Experiment 1), EF tasks using neutral stimuli before and after social media exposure (Experiments 1 and 2), and impulse control impairments using social media-related and neutral signals (Experiment 3). These findings are appealing since there is limited proof linking EF functioning to social media reliance, and they reveal a relationship between SMA and decreased impulse control when exposed to social media-related signals [17]. Phubbing (paying attention to the smartphone while interacting with another person, resulting in an inability to pay attention to interpersonal contact) has been linked to a decline in social skills and communication issues. Two Turkish state colleges were utilized to examine social media use in terms of virtual tolerance and communication. There was a strong negative association between social media addiction and cognitive flexibility (r =.37, p.01), a high degree of positive correlation between social media addiction and phubbing (r =.79, p 01), and a moderate negative correlation between cognitive flexibility and phubbing (r =.51, p 01) [18]. Another aspect of cognitive impairment i.e. the effect of SM interruptions and task cognitive levels on mental workload (MWL) and physiological indicators. Chiossi F et al study results demonstrated that SM interruptions had a substantial influence on heart rate, the low-frequency/high-frequency (LF/HF) ratio, and skin conductance [19].

Recent research under the heading of the dark side of social media (DoSM) defined the Situation-Organism-Behavior-Consequence (S-O-B-C) framework to explain pathways through which situational triggers such as loneliness and self-presentation lead to students experiencing cognitive overload, addiction (SMA), and, as a result, reduced academic performance (RAP). The findings show that loneliness and students' self-presentation have a considerable impact on overload and SMA, which in turn have a large effect on RAP [20]. Another research is being conducted to

determine the influence of social media distraction on the link between student engagement and student evaluations of teachers (SET) in management education, which is a STEM field. According to the findings of 47 student participants, social media distraction moderates the link between students' cognitive involvement and their rating of teaching faculty [21]. Mousa S designed the experimental investigations that attempt to determine the association between two independent variables: cognitive-behavioral treatment and the dependence of university-age students on social media. The study's findings, however, do not indicate any statistically significant differences in the mean ranks of the participants in the control and experimental groups in the initial assessment of the degree of social media addiction (0.05) [22].

5.0 CONCLUSION

This study is highlighting one of the emerging major health issues among students (the young generation) students are too much dependent on electronic gadgets and social networking. Excessive use of SM is causing negative effects on their physical health and thinking abilities or cognitive skills. This study will provide awareness to students and society regarding the negative effects of SM on health. This study can be helpful for planning and strategies developing in curriculum designing for courageous students in self-learning activities, physical exercise, and improving concentration as well as enhancing the thinking skills of students. Secondly, this study will be useful for cyber networking regulatory bodies to control SM content because most of the time bogus and unethical content miss guide students. In our study, we found more time spent on SM does affect physical health and cognitive skills. However, a statistically significant effect was found in Forgetfulness, and Distractibility. If the study is repeated with a larger and more representative sample (which was not possible due to the COVID Pandemic) significant influence or otherwise, of time spent on electronic gadgets on physical health could also be detected. The only limitation we faced is that due to covid-19 pandemic, lockdown, and safety measures, only a limited number of participants were present at the institute that's why we did not include a large number of participants in this study. The sample size of the study was small and such type of study should be conducted in a cohort with a large sample size.

Disclosure

The author reports no conflicts of interest in this work.

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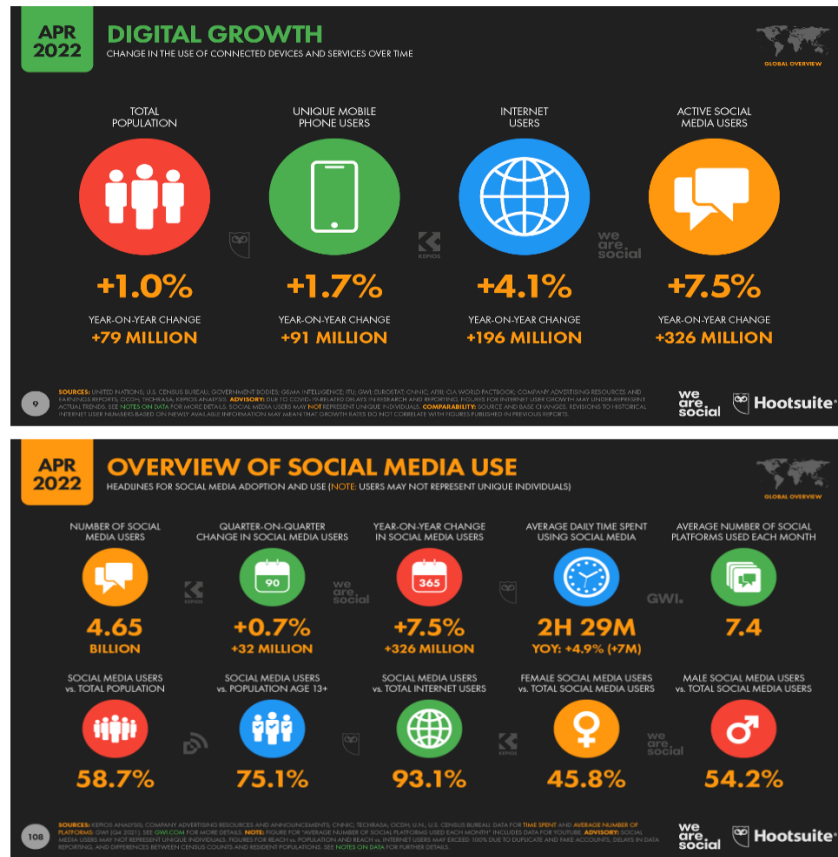
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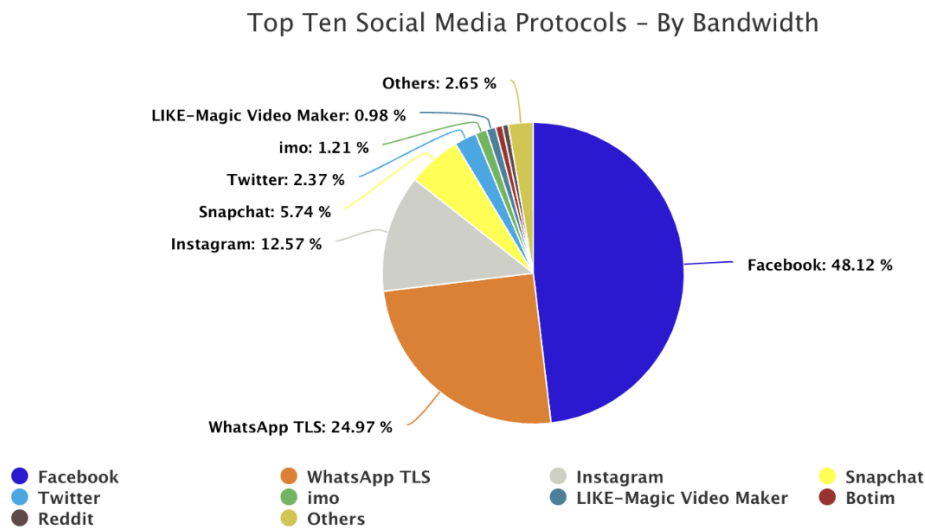

Figure 1: Global Shot Report of 2023 Reported by Kemp S

Figure 2: PTA Top Ten Social Media Protocol Data as Per "By Bandwidth" From the Year 2023

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TABLES

Table 1: Effect of SM on Cognitive Skills among the 107 Study Participants

COGNITIVE SKILLS	MEAN ± S.D	CI AT 95%	P-VALUE
Group A: Up to 04 Hours (n=104)			
Forgetfulness	16.6 ± 4.51	(-4.42) - (-1.67)	<0.005*
Distractibility	14.3 ± 4.23	(-3.74) - (-1.11)	<0.005*
False Triggering	18.3 ± 3.73	(-2.46) - (-0.35)	0.09
Group B: More than 04 Hours (n=66)			
Forgetfulness	19.6 ± 4.28	(-4.408) - (-1.68)	<0.005*
Distractibility	16.75 ± 4.19	(-3.74) - (-1.12)	<0.005*
False Triggering	19.8 ± 2.78	(-2.39) - (-0.41)	0.06
Statistical significance: P value <0.05			

Table 2: Impact of SM on Cognitive Skills among Study Participants Using Absolute Mean Difference

COGNITIVE SKILLS	MEAN SCORE		DIFFERENCE IN MEAN SCORE	P-VALUE
	Group A: Up to 4 hours	Group B: More than 4 hours		
Forgetfulness	16.6	19.6	3.0	<0.01***
Distractibility	14.3	16.3	2.0	<0.01***
False triggering	18.3	19.8	1.5	0.06
*Statistical significance: ***= P value is <0.01, and ** =P-value is <0.05.* *The higher mean score shows a decrease in cognitive skills*				

Table 3: Effect of SM on Physical Impairment among the 107 Study Participants

SMARTPHONES USERS	Mean ± S.D	CI at 95%	p-Value
Group A: Up to 04 Hours (n=130)			
Cervical pain and fatigue	2.25 ± 0.499	(-531) - (-127)	<0.05*
Shortness of breathing and back ache	2.29 ± 0.616	(-379) - (-0.647)	0.162
Sleep issues	2.84 ± 0.581	(-385) - (-0.62)	0.155
Headache and stress	2.70 ± 0.743	(-321) - (0.221)	0.716
Feel numbness in fingers and eye pain	2.61 ± 0.84	(-361) - (0.226)	0.652
Nomophobia	2.65 ± 0.71	(-407) - (-115)	0.271
Group B: More than 04 Hours (n=40)			
Cervical pain and fatigue	2.58 ± 0.747	(-582) - (-076)	<0.05*
Shortness of breathing and backache	2.45 ± 0.639	(-386) - (-071)	0.173
Sleep issues	3.00 ± 0.751	(-421) - (-098)	0.217
Headache and stress	2.75 ± 0.809	(-337) - (0.237)	0.729
Feel numbness in fingers and eye pain	2.68 ± 0.764	(-350) - (0.251)	0.067
Nomophobia	2.80 ± 0.823	(-434) - (0.141)	0.314
Statistical significance: P value <0.05			

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Table 4: Impact of SM on Physical Impairment among Study Participants Using Absolute Mean Difference

SMARTPHONES USER	MEAN SCORE		DIFFERENCE IN MEAN SCORE	P-VALUE
	Group A: Up to 4 hours	Group B: More than 4 hours		
Cervical pain and fatigue	2.25	2.58	0.33	**<0.05*****
Shortness of breathing and back ache	2.29	2.45	0.16	0.162
Sleep issues	2.84	3.00	0.16	0.155
Headache and stress	2.70	2.75	0.05	0.716
Feel numbness & eye pain	2.61	2.68	0.07	0.652
Nomophobia	2.65	2.80	0.15	0.271
Statistical significance: ***= P value is <0.01, and ** =P-value is <0.05. The higher mean score shows a decrease in cognitive skills				