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The impact of internet-enabled phones on physical activity among students of tertiary institutions

ABSTRACT

BACKGROUND AND AIMS

Smart phones usage is rapidly progressing day by day in young adults' lives who have become habituated and less indulged in physical activities. Thus, this study is aimed to measure the impact of internet-enabled smart phones on physical activity of students.

METHODOLOGY

An online cross-sectional survey was conducted among students aged 18-30 years studying in tertiary institutions. Internet-Connectedness Index and International Physical Activity Questionnaire-Short Form were formulated in the Google Docs and distributed to participants via email or social media applications.

RESULTS

A total number of 252 students participated in study revealed that majority of users have own computer for prolonged time with broadband and 3G internet. Only (4.4%) participants have performed vigorous and (5.6%) moderate activities 7 days a week. Whereas (27.8%) participants spent their time sitting at desk, visiting friends, reading, sitting or lying down to watch TV for <2 hours (27.8%), <4 hours (21.8%) while >8 hours (23%) respectively. This showed that with the increased use of internet, young adults performed low physical activity.

CONCLUSION

It was concluded that majority of young adults have used internet for prolonged time on computer/laptop/cell phones whereas limited participants reported to have regular physical activity however, no significant association was found between the impacts of internet-connectedness with physical activity.

KEYWORDS

Internet, Information Technology, Physical Activity, Activities of Daily Living, Mobile Phones, Young Adults.

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INTRODUCTION

The 20th century may be recalled for its exponential development of information and innovation as modernization is associated with data, although there is a growing opinion that people's capacity to handle data and think critically leads them to their future victory regarding any particular program[1-2]. This revolution is brought about by the innovation, known as information technology that is considered to interconnect through machinery as compared to reading, writing, and communication in comparison to past decades[3-4]. Internet is a series of connections around the globe; millions of computers are linked together at the same time[5]. There is billions of information to share around worldwide that is shared with just one click[4-5]. In addition to it, the development of internet technology has increased day by day due to modernized and refined enhancement leads to having not only a good impact on users but also harm users, specifically students[6]. The students tend to become more and more habituated and less supportive in educational activities even in physical actions[7]. Besides, the improvement in web innovation is progressing day by day, that is modernized and refined effect on clients but moreover have an impact that's not great for clients, particularly among understudies, they become increasingly habituated and less supporting in instructive exercises indeed in physical activities[8]. The timely utilization of the internet in areas such as online education, gatherings, and counseling, etc. can offer assistance to advance self-adequacy, mental strengthening, deep-rooted learning, as well as restoration[9]. Web or internet is characterized to connect all existing computer organizations within the world constitutes of an intranet, wide-region or personal area arranges, etc[10]. Besides, all computer-associated-gadgets that include smartphone, tablet, switches/routers or any other interfacing gadgets into a single connect via computer systems[10]. The time went through utilizing email and surfing online has expanded significantly in recent decades. However, the different sorts of web utilization have been associated with positive and negative impacts such that the like shopping, playing diversions, doing inquiry about or conclude[11].

Internet is one of the predominant variables which influence scholastic execution and social life[12]. In the recent era, the progressively far-reaching utilization of the web is occurring in numerous nations even though people tend to perform exceptionally profitable[13]. However, compulsive web utilization can be a bad influence on life, work, and family[12-13]. Similarly, on the off chance that a child feels more comfortable online than with companions within the genuine world. Otherwise, an individual cannot abstain from playing recreations online or open the smart phone, thus it is conceivable that children have already done using the web much[12-13]. Despite, the suitable utilization of the web in zones such as online forum, news, directing etc. can offer assistance to advance self-adequacy, lifelong learning and restoration[14].

A survey conducted in 2016 explored the internet-connectedness among young adults found that the internet was one major using resource. Moreover, upon investigation web utilization for social media was found to be 68.33% who used continuously, 41.67% regularly, 17% for online games, and 41.67% habitually utilize the web for online diversions. Surprisingly, 51.67% continuously utilize the web to observe YouTube[15]. Consecutively, children's use of gadgets such as smartphones, the tablet has grown substantially within the past decade. However, concerns existed for intemperate utilization and the impact on children's well-being amid childhood and puberty. Several studies ponder distinguished conclusions on portable device use and after wellbeing concerns in children that may lead to musculoskeletal outcomes and migraine[16]. Thus, number of studies is required to be conducted to determine the usage of varying gadgets and its impact on physical, mental and social well-being of the youth. With the advancements in technology, the cell phone is one of the foremost rapidly growing within the world[17]. Despite, today's use of a mobile phone can be compared with a computer as the modern mobile phone has all the facilities that a computer had, moreover mobile phone usage

is taking a replacement to a computer due to its small size, lightweight, and can operate with minimum power[18]. However, the disadvantages of using mobile phones may lead to addiction-like behavior, unhealthy lifestyle, poor sleeping habits, headache, and less physical movements that may lead to psychological problems that are mostly among teenagers. However, with all of the above circumstances, the misuse of the internet cannot be neglected[19]. With the advent of time, humans have foremost expanded, advanced, and imaginative due to implied communication, which is made conceivable due to more complex neurophysiological mechanisms[20]. Among all, children are the quickest developing populace with frequently centered on web i.e.11% of 3–4-year-olds are as of now web clients[21]. In recent a long time, the expanded notoriety of cell phones has pulled into consideration as teenagers say phones make their lives more secure and more helpful. However, they too cite modern tensions connected to cell phone utilization[22]. In particular, higher smartphone utilization among college students is still understudied[23] as self-reported indications such as migraine, headache, troubles in concentration, memory changes, sleep disturbances. The utilization of innovation is a worldwide basic because of its commitments to human life and has improved the financial relations all around the world. Remote correspondence has arisen as one of the quickest diffusing media on earth, fuelling a developing a versatile youth culture. Subsequently, expanded fame of cell and mobile phones in late years has drawn in research consideration. Mobile phones are viewed as a blended gift. Teenagers say telephones make their lives more secure and more advantageous. However, they likewise refer to new pressures associated with wireless elated to long time presentation per day[24]. As PDAs have gotten more accessible, they are progressively possessed and utilized by teenagers. Further, as handsets become more stacked with capacities going from video recording and sharing, to music playing and web access, youngsters and youthful grown-ups have a consistently expanding collection of utilization. Surely, we are moving into a period when cell phones are not only for talking what's more, messaging, however can likewise get to the web and all it has to bring to the table[25]. On the other hand, physical health of youth may considered to be predominantly affected therefore further trials should be conducted in this regard to evaluate the internet-connectedness impact on youth. Thus, this study is aimed to measure the impact of internet-enabled smart phones on physical activity level of students.

METHODOLOGY

A cross-sectional survey was conducted at public and private tertiary institutions of Karachi, Pakistan from August to October 2020. Non-probability convenience sampling approach was used to recruit participants for an online survey on the basis of following inclusion criteria:

Inclusion Criteria

Young male and female students aged 18 to 30 years, currently studying in tertiary institutions for >1 year having access to internet-enabled smart phones.

Exclusion Criteria

Students who refused to participate or filled incomplete questionnaire.

Sample Size

n=252

Data Collection Tools

ICI: Internet-Connectedness Index was used to assess the usage of internet on technology-enabled smart phones on dimensions of history, context, scope, intensity and centrality on the scale of Yes/No, Agree/Disagree options.

SF-IPAQ

International Physical Activity Questionnaire-Short Form is a self-administered questionnaire consisted of 7-tems to estimate the intensity of physical activity on total METs-min/week and time spent sitting.

Data Collection Procedure

Online questionnaire was designed on Google Docs distributed through e-mail and several social media groups (Facebook, WhatsApp, Instagram and Twitter). All participants were also provided with informed consent to have clear understanding about the study. Subsequent to the consent, participants were asked to fill both the questionnaires to evaluate their usage of internet and level of physical activity. Afterwards, the responses were recorded and analyzed.

Data Analysis Strategy

Data was analyzed on IBM Statistics Software version 20. The demographic features and responses of participants were represented through frequency, mean and standard deviation. Chi-square Test of Association was used to determine the impact of internet-enabled phones on physical activity of students.

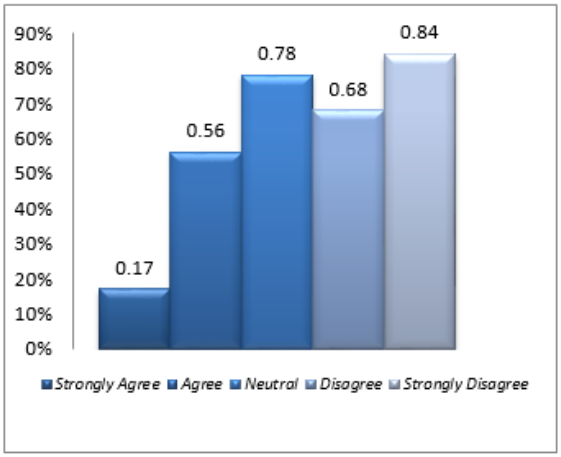

Figure-1 shows responses of participants of how internet has helped them in achieving life goals

Ethical Considerations

Informed voluntary consent was taken online from all the participants while their information was kept anonymous under principal investigator's supervision.

RESULTS

A total number of 252 students participated in the study comprised of 48 (19.1%) males and 203 females (80.9%) with mean age of 23.4±4.1 from which highest number of responses attained from age range of 18-22 years (53.4%). On ICI, it was showed that majority of users 72 (28.6%) have own computer for 7 years or more followed by 3 to 6 years (25.4%) with (81%) have broadband access to internet and (70.2%) has 3G access, although (65.1%) haven't accessed the internet at organization, public library or cyber café for their personal use in last three months. Moreover, (31%) participants were agreed that internet helped them to stay on top events or groups, expressing themselves, accomplishing business or financial work tasks and making new friends as illustrated in Figure-1.

Majority of participants 140 (55.6%) reported that they would extremely miss the use of computer and internet if they found it unavailable. Furthermore, only (6.3%) reported of very positive and somewhat positive (21.8%) response on the effect of internet-connectedness on their lives. Also, majority of students have reported to use chat rooms, Facebook, movies, online games, shopping, and web surf besides e-mail as depicted in Figure-2.

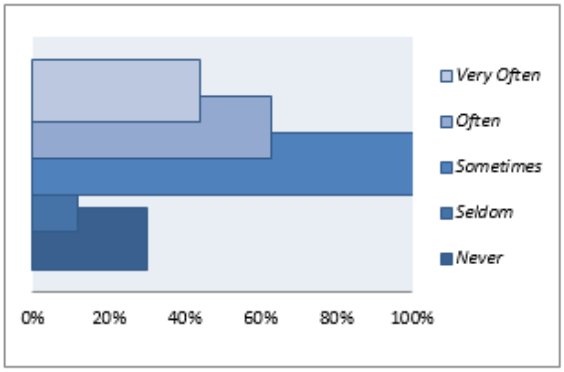

Figure-2 shows responses of participants on using social media applications and websites

On IPAQ-SF, it was reported that only 11 (4.4%) participants have performed vigorous physical activities 7 days a week for <30 minutes (23%), <1 hour (21.8%), <10 minutes (17.5%) wile (26.2%) with no activity. In moderate physical activities like carrying light loads, bicycling at a regular pace, or table tennis only 14 (5.6%) participants have performed moderate activities 7 days a week for <30 minutes (29.4%), <10 minutes (22.2%), <1 hour (13.5%) while (22.6%) with no activity.
Furthermore, 75 (29.8%) participants walked for at least 10 minutes a time including at work and home, traveling from place to place or done slowly for exercise or recreational activities for <30 minutes (26.6%) and >1 hour (22.2%) respectively. Whereas 70 (27.8%) participants spent their time sitting at desk, visiting friends, reading, sitting or lying down to watch TV for <2 hours (27.8%), <4 hours (21.8%) while >8 hours (23%) respectively. However, the impact was analyzed using Chi-square Test of Association revealed no significant association between the prolonged use of internet and different physical activities level as depicted in Table-1.

Internet-Connectedness Duration	*Vigorous PA*	*Moderate PA*	*Walking*	*Sitting*
Pearson Chi-Square	7.92	7.62	4.40	5.15
Likelihood Ratio	10.46	9.03	5.37	5.79
**p>0.05*				

DISCUSSION

The findings of this current study revealed that majority of users have own computer for prolonged time with broadband and 3G access. Moreover, majority of participants reported that they would extremely miss the use of computer and internet if they found it unavailable. Furthermore, only (4.4%) participants have performed vigorous, (5.6%) moderate activities 7 days a week. Whereas (27.8%) participants spent their time sitting at desk, visiting friends, reading, sitting or lying down to watch TV for <2 hours (27.8%), <4 hours (21.8%) while >8 hours (23%) respectively. This showed that with the increased use of internet, young adults performed low physical activity. However, its impact is still unclear as no significant association was determined.

A study conducted by Shek et al[27] on high school students of Hong Kong declared that internet-connectedness behavior was found to be consistently higher in males in comparison to females. Another study conducted by Chiu et al[28] who determined the internet addiction through smart phones among college students concluded that female students were found to be more addicted. On the other hand, our study didn't evaluate the gender-wise addiction behavior. Similarly, Malik et al[29] conducted a study to evaluate the addiction of Facebook but found no gender predominance. Furthermore, Kuss and Lopez-Fernandez[30] demonstrated that majority of students spent more time surfing the internet however found no difference in gender and declared the internet usage as problematic. However, Alavi et al[31] showed that males are at three time of greater risk to develop internet addiction then females attributed to factors like cultural values, access to internet or may be personal habits.

It has been evident that the health problems of the human are constantly growing due to the development of associated technology. A number of researchers have suggested that most of the problems could have been avoided or mitigated, however different lifestyles, habits, and behaviour of people from a young age in relation to physical activity is required[32]. Students who perform any kind of physical activity tend to stay away from gadgets that involve the internet. As the students are inclined towards health-related activities instead of surfing the internet therefore they tend to sleep early due to physical fatigue thereby use the internet less. On the other hand, students who lack physical activities seemed lazy and to remain stuck with gadgetries. For that reason, Warbrick, Wilson and Boulton[33] found technology as a major reason for distraction among youth as due to this revolution the indoor activities have been replaced. Furthermore, Spengler et al[34] conducted a study on media usage and physical activity found that two-thirds of young adults predominantly used media.

Consecutively, cardiovascular diseases are the leading cause of death that is increasing significantly around the globe with the predominant risk factors. In particular, obesity is a well-known risk factor that has increased dramatically in young adults in the last decade. Therefore most of the studies have emphasized the importance of incorporating physical activity thereby decreasing sedentary lifestyle that may include preoccupation with video games, computer, the internet, or watching TV. So, regular physical activity has importance for the prevention of obesity and other risk factors.

Strength

To the best of author's knowledge, this study is first to be conducted in Pakistan to determine the impact of internet-connectedness on physical activity in young adults. Furthermore, study was conducted on considerable sample size in recent pandemic on today's society, internet and mobile phones highlighting the issues of youth that needs to be addressed further. Thus, the excessive usage of internet, in adolescents particularly may leads to adverse outcomes.

Limitations

There are number of limitations in our study including the small sample size that is not substantial to generalize the results. Moreover, the data was self-reported by the participants that is subject to various biases and hasn't been verified independently. In addition, our study was limited to only a finite age group, with no discrimination analysis was run to evaluate multiple factors.

Future Directions

A number of multidisciplinary studies should be conducted further with larger sample size and diverse age groups for more definite results. Moreover, more definite internet-connectedness scales shall be used to comprehend association between the variables.

CONCLUSION

It was concluded that majority of young adults have used internet for prolonged time on computer/laptop/cell phones. Whereas limited reported to have regular physical activity while most of them spent their time sitting at desk, reading or lying down to watch TV. However, no significant association was found between the impacts of internet-connectedness with physical activity. Therefore, multicenter researches with larger sample size are required to be conducted to further evaluate the factors associated with addictive internet behavior and its related consequence so that the findings can be extrapolated to the general population with a reasonable confidence level.

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