

Impact of Technology and Online Learning on Physical Health of Students

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Abstract

Health of every individual is of great concern during this period of Covid-19 pandemic as it has changed the society in almost every aspect of life from education to entertainment. Traditional learning is being replaced by online learning, but there are also risks of using technology and online learning when it comes to our children's health. Technology if used excessively can negatively affect the overall health. The objectives of the study are as follows: To find out the impact of technology and online learning on the physical health of higher secondary students. To compare the impact of technology and online learning on the physical health of higher secondary students of girls and boys studying under different streams. The study is descriptive in nature. Population for this study was the higher secondary (Intermediate) students of Hyderabad. Purposive sampling technique is used to select the sample for this research. The sample for this research is 180 higher secondary students of Hyderabad of India, studying under different colleges of Board of Intermediate. The sample is selected from both Boys and Girls belonging to different subjects like MPC (Mathematics, Physics, and Chemistry), BPC (Biology, Physics, Chemistry) and CEC (Civics, Economics, Commerce) of Telangana State. A closed ended questionnaire consisting of 12 items based on different dimensions was prepared as a tool for this study. The boys and girls had shown a common problem with regard to the dreamy/ Sleepless nights as a major problem and lowest as visionary problem. Moreover, it is also revealed that boys and girls are facing the visionary problem (blur vision), exertion, fatigue, body pain and weight gain and other problems like sleepless/dreamy nights, neck or cervical pain is also common among students. It was concluded that usage of technology for long hours during online classes has negative impact on the physical health of the students.

Keywords: Technology, Online learning, Physical health, Covid-19 pandemic

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Introduction

Physical health of an individual is a primary factor in the quality of his / her life and is important for the well-being of an individual. The students' needs to have sound physical health for achieving success in future and it is indeed very important for the adjustment in life and for the all-round development of the personality of an individual.

Pandemic has changed the society in almost every aspect of life. The regular traditional teaching and learning has been shifted to online education and this is possible only through technology. Technology has many benefits from education to entertainment, but there are also risks when it comes to excessive usage. Spending long hours with technology is not good for the health of youth. This research will focus on the negative effects of excessive use of technology and also the impact of technology and online learning on the physical health of higher secondary students, who report more overall technology use. The family, school and teachers play a great role in the development of physical health of students, students with lack of physical health has to face lot of challenges and problems in life.

In the present situation of COVID-19, globally has a big threat to the life of human beings and lot of people who became victim of this COVID had lost their lives. In this situation, all the academic institutions and universities

had closed for the safety of the students and staff. All the students are staying at home and involved in online mode of learning from past ten months and had learnt to use technology for online learning.

Students' are spending very long hours on computers and smart phones and other devices for online learning as schools and colleges are shut due to the Covid-19 pandemic and many students are complaining of headaches, eye problems, weight gain, stress and many other problems. It has been seen that online learning has negatively impacted on the physical health of the students, and it has also been observed that the time spent on screens is increasing not just for studies but for other activities as well including social media usage, games and YouTube.

To overcome these problems and negative impact of social media and technology use on the physical health of the students, the "Ministry of human resource development (MHRD) has also recommended two classes of 45 minutes each for classes 1 to 8 and four classes of 45 minutes each for classes 9 to 12". Being at the beginning of a new National Education Policy and a new situation of online education during pandemic, physical health has been looked upon as an element of fitness and social well-being.

Research Review

Purinat Yamakanith & P.Guruswamy (2015) found that "usage of social networking sites has effect on interpersonal relationship of college students particularly with their family members, friends and teachers, also found that due to availability of social networking sites the communication between college students and their family members and friend has increased".

In this earlier investigation it was revealed that "the use of technologies, including video games and computers, is one of the factors contributing to overweight and obesity and found a statistically significant difference in the rate of obesity and overweight in those who spent more time with technologies. There was also a statistically significant relationship between increased time spent on the computer and overweight" (Kautianen, Koivusilta, Lintonen, Virtanen and Rimpela). In this earlier investigation it was revealed that "Media use is directly related with obesity in pre-school and high school children" (CCM). In this earlier investigation it was revealed that "Obesity has doubled and technology is a contributing factor" (Cawley, American Academy of Pediatrics, 2014). In this earlier investigation it was revealed that "In addition, sleep deprivation found with excessive technology use can increase obesity as well" (Halupa, 2016). In this earlier investigation it was revealed that "Technology in a child's or adolescent's bedroom has resulted in increased overweight" (Department of Health and Human Services). In this earlier investigation it was revealed that "Excessive technology use caused disordered and unhealthy eating, obesity and overweight can lead to Type II diabetes and early onset heart disease" (Cp.Halupa, 2016).

In this earlier investigation it was revealed that "Ninety two percent of American teens age 13-17 reported going online daily, 24% teens reported they go online almost constantly, 56% of teens reported going online several times a day, and only 8% reported going online less than weekly. Almost 75% of teens reported they had smart phones, only 12% of teens did not have a cell phone at all" (Lenhart2 of the Pew Research Center, 2015). In this earlier investigation it was revealed that "Many teens sleep with their phones, ninety percent of teens report texting, the average number of texts a teen sends per day is 30. Girls are more likely than boys to text, while boys are more likely to engage in gaming" (Pew Research Center3). In this earlier investigation it was revealed that "Teens are major users of social media such as Facebook, Instagram, Snapchat, Twitter, Google+, Vine, and Tumblr. Facebook is the most commonly used social media platform with 71% of teens reporting they use it" (Pew3 in 2015). In this earlier investigation it was revealed that "71% of teens use more than one social media site" (Lenhart2).

In this earlier investigation it was revealed that "Media use can be associated with obesity, sleep issues, aggressive behavior and attention issues in preschool and school aged children".(The Council on Communication and Media (CCM), in the American Academy of Pediatrics Pediatrics journal, p. 1,042). "The positive and negative effects of technology on students' social and mental health as a whole as society becomes digitally-focused rather than relationship-focused" (Colleen Peters Halupa, 2016).

Research Gap

After going through various studies with regard to impact of technology and online learning on the physical health of higher secondary students in India, it is found that in India most of the studies are with regard to finding the impact of technology and online learning on the achievement of higher secondary school students and no study was found to find out the impact of technology and online learning on the physical health of higher secondary students of boys and girls studying in different streams.

Rationale of the Study

The purpose of this research is to establish that physical health plays an important role in everybody's life and is very significant in shaping up the lives of the individual and students in particular. The regular face to face classroom has shifted to the online mode resulting on the impact of physical health of the students. The curriculum framers, parents, students and schools in particular should understand the negative impacts of excessive use of technology and online learning on the physical health of the students. The rationale of this research is to develop the awareness about the negative impact of technology and online learning on student's physical health in

this current situation of covid-19 and online education. So that the utmost care must be taken to protect the physical health of the students as they can contribute valued outcomes for societies if they have sound physical health and intellect.

Objectives of the Study

The objectives of the study are as follows:

1. To find out the impact of technology and online learning on the physical health of Boys of higher secondary students.
2. To find out the impact of technology and online learning on the physical health of Girls of higher secondary students.
3. To compare the impact of technology and online learning on the physical health of Boys and Girls of higher secondary students studying in different streams (MPC, BPC, and CEC).

Hypotheses

1. There is no significant impact of technology and online learning on the physical health of Boys of higher secondary students.
2. There is no significant impact of technology and online learning on the physical health of Girls of higher secondary students.
3. There is no significant impact of technology and online learning on the physical health of Boys and Girls of higher secondary students studying in different streams (MPC, BPC, and CEC).

Methodology

The study is descriptive in nature. Population for this study is the higher secondary (Intermediate) students of Hyderabad. Purposive sampling technique is used to select the sample for this research and the sample is 180 Higher secondary students of Hyderabad studying under different colleges of Board of Intermediate, equal number of sample is selected from both Boys and Girls belonging to different subjects like MPC (Mathematics, Physics, Chemistry), BPC (Biology, Physics, Chemistry) and CEC (Civics, Economics, Commerce) of Telangana State. A closed ended questionnaire consisting of 12 items based on different dimensions was prepared as a tool for this study. The validity and the reliability of the tool is done and Alpha value is found to be more than 0.81.

The study is conducted by distributing a structured questionnaire among XII standard students. The questionnaire consists of questions based on 12 different dimensions with the option to give response on a five-point interval

scale. The option given were 1.Always, 2.Often, 3.Sometimes, 4.Rarely, 5.Never. The questions were related to the different variables of physical health. The data is collected from 180 students of XII standard of which 90 are boys and 90 are girls and equal number of students were taken from MPC, BPC, and CEC. The sample is selected from the intermediate college situated around western parts of Hyderabad. For data analysis SPSS 23.0 Version is used.

Limitations of the Study

The study is limited to the Higher Secondary Students selected from the intermediate colleges situated around western parts of Hyderabad, Telangana state of India.

Analysis and Interpretation

Physical health of boys:

Table – 1: Table showing the impact of technology and online learning on the physical health of Boys.

Table 1: Boys-Descriptive

S.no	Attribute	Always	Often	Sometimes	Rarely	Never	Mean	S.D
1	Headache	4 (4.4)	30 (33.3)	27 (30.0)	26 (28.9)	3 (3.3)	2.93	0.97
2	Eye pain	1 (1.1)	14 (15.6)	32 (35.6)	28 (31.1)	15 (16.7)	3.47	0.98
3	Visionary problem	26 (28.9)	36 (40.0)	22 (24.4)	5 (5.6)	1 (1.1)	2.1	0.92
4	Constipation	0 (0.0)	9 (10.0)	28 (38.1)	40 (44.4)	13 (14.4)	3.36	0.85
5	Neck pain	5 (5.6)	18 (2.0)	35 (38.9)	23 (25.6)	9 (10.0)	3.14	1.03
6	Weight gain	0	9 (10.0)	30 (33.3)	31 (34.4)	20 (22.2)	3.69	0.93
7	Pain in hands/wrist	2 (2.2)	16 (17.8)	29 (32.2)	25 (27.8)	18 (20.0)	3.45	1.07
8	Back pain	2 (2.2)	17 (18.9)	39 (43.3)	21 (23.3)	11 (12.2)	3.24	0.97
9	Body pain	2 (2.2)	38 (42.2)	27 (30.8)	19 (21.1)	4 (4.4)	2.83	0.94
10	Exertion	0	9 (10.0)	26 (28.9)	29 (32.2)	26 (28.9)	3.8	0.97
11	Loss of Appetite	1 (1.1)	25 (27.8)	30 (33.3)	18 (20.0)	16 (17.8)	3.26	1.09
12	Dreamy/ Sleepless nights	0	8 (8.9)	19 (21.1)	20 (22.2)	43 (47.8)	4.08	1.02

From the above Table-1, it can be observed that around 69% boys are getting the visionary problem(blur vision), followed by headache (38%), fatigue and body pain (45%) and also 29% reported loss of appetite and 22% reported body pain, 20% reported pain in hand or wrist pain, 17% reported problem of eye pain and 10% have constipation and feels exertion. 10% boys reported weight gain and 9% reported sleepless nights or dreamy nights and 8% boys feel neck pain.

The mean values also show that the boys studying under different streams often get the problem of blur vision or visionary problem (M=2.1), fatigue and exertion (M=2.83), headache (M=2.93) whereas boys rarely have dreamy

sleepless/nights ($M=4.08$). More deviation in the opinion of the boys is found with regard to neck or cervical pain ($SD=1.03$), loss of appetite ($SD=1.09$), Dreamy and sleepless nights ($SD=1.02$).

H01: Technology and online classes has no impact on physical health of Boys of Higher Secondary Students.

Table – 2: Table showing the impact of online classes on the physical health of Boys studying in different streams (MPC, BPC, and CEC).

Variables		Sum of Squares	df	Mean Square	F	Sig.	Result
Headache	Between Groups	3.200	2	1.600	1.731	.183	Accept
	Within Groups	80.400	87	.924			
	Total	83.600	89				
Eye pain	Between Groups	.467	2	.233	.236	.790	Accept
	Within Groups	85.933	87	.988			
	Total	86.400	89				
Visionary problem	Between Groups	4.867	2	2.433	2.972	.049	Reject
	Within Groups	71.233	87	.819			
	Total	76.100	89				
Constipation	Between Groups	3.267	2	1.633	2.306	.106	Accept
	Within Groups	61.633	87	.708			
	Total	64.900	89				
Neck pain	Between Groups	10.422	2	5.211	5.353	.006	Reject
	Within Groups	84.700	87	.974			
	Total	95.122	89				
Weight gain	Between Groups	4.422	2	2.211	2.640	.077	Accept
	Within Groups	72.867	87	.838			
	Total	77.289	89				
Pain in hands/wrist	Between Groups	15.356	2	7.678	7.681	.001	Reject
	Within Groups	86.967	87	1.000			
	Total	102.322	89				
Back pain	Between Groups	7.489	2	3.744	4.223	.018	
	Within Groups	77.133	87	.887			
	Total	84.622	89				
Body pain	Between Groups	.800	2	.400	.448	.640	Accept
	Within Groups	77.700	87	.893			
	Total	78.500	89				
Exertion	Between Groups	3.800	2	1.900	2.051	.135	Accept
	Within Groups	80.600	87	.926			
	Total	84.400	89				
Loss of Appetite	Between Groups	2.956	2	1.478	1.258	.289	Accept
	Within Groups	102.167	87	1.174			
	Total	105.122	89				
Dreamy/ Sleepless nights	Between Groups	23.489	2	11.744	14.638	.000	Reject
	Within Groups	69.800	87	.802			
	Total	93.289	89				

The result of Hypothesis testing reveals that there is a significant impact of technology and online classes on physical health of boys as they are facing Visionary problems, Neck pain, Pain in Hands/Wrist, Back pain,

Dreamy/Sleepless nights. Whereas there is no impact of technology and online classes on other factors as the hypothesis is accepted.

Physical health of girls:

Table – 3: Table showing the impact of technology and online learning on the physical health of Girls.

Table 3: Girls-Descriptive

S.No	Attribute	Always	Often	Sometimes	Rarely	Never	Mean	S.D
1	Headache	8 (8.9)	23 (25.6)	23 (25.6)	26 (28.9)	10 (11.1)	3.08	1.16
2	Eye pain	11 (12.2)	29 (32.2)	32 (35.6)	16 (17.8)	2 (2.2)	2.65	0.98
3	Visionary problem	45 (50.0)	24 (26.7)	20 (22.2)	1 (1.1)	0	1.74	0.84
4	Constipation	0	11 (12.2)	27 (30.0)	28 (31.1)	24 (26.7)	3.72	0.99
5	Neck pain	19 (21.1)	53 (58.1)	13 (14.4)	05 (5.6)	0	2.04	0.76
6	Weight gain	34 (37.8)	40 (44.4)	12 (13.3)	4 (4.4)	0	1.84	0.82
7	Pain in hands/wrist	0	32 (35.6)	19 (21.1)	24 (26.7)	15 (16.7)	3.24	1.11
8	Back pain	4 (4.4)	21 (23.3)	33 (36.7)	25 (27.8)	7 (7.8)	3.11	0.99
9	Body pain	3 (3.3)	42 (46.7)	23 (25.6)	14 (15.6)	8 (8.9)	2.8	1.04
10	Exertion	0	6 (6.7)	43 (47.8)	22 (44.4)	19 (21.1)	3.6	0.89
11	Loss of Appetite	25 (27.8)	25 (27.8)	32 (35.6)	6 (6.7)	2 (2.2)	2.28	1.02
12	Dreamy/ Sleepless nights	0	15 (16.7)	27 (30.0)	8 (8.9)	40 (44.4)	3.81	1.18

The above table-3 reveals that 82% of the girls are gaining weight, around 80% have the problem of neck pain, 77% gets the visionary or blur vision problem 56% has loss of appetite and 50% reported body pain and 45% girls possess the problem of eye pain, 36% girls reported pain in hand or wrist, 35% reported headache and 28% reported back pain and 17% has sleepless or dreamy nights, 13% has the problem of constipation and 7% reported exertion.

With regards to girls studying under different streams, it is found that visionary problem or blur vision ($M=1.74$), neck or cervical pain ($M=2.04$), weight gain ($M=1.84$), Sleepless/dreamy nights ($M=2.16$) and loss of appetite ($M=2.8$) are common physical health problem. More deviation in opinion among girls is found with regard to headache ($SD=1.16$), pain in hands ($SD=1.11$) and Dreamy/sleepless nights ($SD=1.18$).

H02: There is no significant impact of technology and online learning on physical health of Girls of Higher Secondary Students.

Table – 4: Table showing the impact of online classes on the physical health of Girls studying in the different streams (MPC, BPC, CEC).

Variables		Sum of Squares	Df	Mean Square	F	Sig.	Result
Headache	Between Groups	9.489	2	4.744	3.720	.028	Reject
	Within Groups	110.967	87	1.275			
	Total	120.456	89				
Eye pain	Between Groups	1.489	2	.744	.763	.469	Accept
	Within Groups	84.833	87	.975			
	Total	86.322	89				
Visionary problem	Between Groups	.956	2	.478	.669	.515	Accept
	Within Groups	62.167	87	.715			
	Total	63.122	89				
Constipation	Between Groups	4.289	2	2.144	2.227	.114	Accept
	Within Groups	83.767	87	.963			
	Total	88.056	89				
Neck pain	Between Groups	.956	2	.478	.817	.445	Accept
	Within Groups	50.867	87	.585			
	Total	51.822	89				
Weight gain	Between Groups	3.822	2	1.911	2.969	.057	Accept
	Within Groups	56.000	87	.644			
	Total	59.822	89				
Pain in hands/wrist	Between Groups	8.089	2	4.044	3.432	.037	Reject
	Within Groups	102.533	87	1.179			
	Total	110.622	89				
Back pain	Between Groups	8.289	2	4.144	4.474	.014	Reject
	Within Groups	80.600	87	.926			
	Total	88.889	89				
Body pain	Between Groups	.467	2	.233	.212	.810	Accept
	Within Groups	95.933	87	1.103			
	Total	96.400	89				
Exertion	Between Groups	.067	2	.033	.041	.960	Accept
	Within Groups	71.533	87	.822			
	Total	71.600	89				
Loss of Appetite	Between Groups	1.089	2	.544	.521	.596	Accept
	Within Groups	90.967	87	1.046			
	Total	92.056	89				
Dreamy/ Sleepless nights	Between Groups	1.356	2	.678	.482	.619	Accept
	Within Groups	122.433	87	1.407			
	Total	123.789	89				

The result of Hypothesis testing reveals that there is a significant impact of technology and online classes on physical health of girls as they are facing the problems like headache, Pain in Hands/Wrist, Back pain. Whereas there is no impact on other variables.

H03: There is no significant impact of technology and online learning on the physical health of Boys and Girls of Higher Secondary Students studying in different streams.

Table – 5: Table comparing the impact of online classes on the physical health of Boys and Girls studying in different streams (MPC, BPC, and CEC).

Variables		Sum of Squares	Df	Mean Square	F	Sig.	Result
Headache	Between Groups	13.628	5	2.726	2.478	.034	Reject
	Within Groups	191.367	174	1.100			
	Total	204.994	179				
Eye pain	Between Groups	31.561	5	6.312	6.432	.000	Reject
	Within Groups	170.767	174	.981			
	Total	202.328	179				
Visionary problem	Between Groups	11.511	5	2.302	3.003	.013	Reject
	Within Groups	133.400	174	.767			
	Total	144.911	179				
Constipation	Between Groups	7.911	5	1.582	1.893	.098	Accept
	Within Groups	145.400	174	.836			
	Total	153.311	179				
Neck pain	Between Groups	65.828	5	13.166	16.898	.000	Reject
	Within Groups	135.567	174	.779			
	Total	201.394	179				
Weight gain	Between Groups	161.333	5	32.267	43.568	.000	Reject
	Within Groups	128.867	174	.741			
	Total	290.200	179				
Pain in hands/wrist	Between Groups	25.450	5	5.090	4.674	.000	Reject
	Within Groups	189.500	174	1.089			
	Total	214.950	179				
Back pain	Between Groups	16.578	5	3.316	3.657	.004	Reject
	Within Groups	157.733	174	.907			
	Total	174.311	179				
Body pain	Between Groups	1.317	5	.263	.264	.932	Accept
	Within Groups	173.633	174	.998			
	Total	174.950	179				
Exertion	Between Groups	5.667	5	1.133	1.296	.268	Accept
	Within Groups	152.133	174	.874			
	Total	157.800	179				
Loss of Appetite	Between Groups	47.067	5	9.413	8.481	.000	Reject
	Within Groups	193.133	174	1.110			
	Total	240.200	179				
Dreamy/ Sleepless nights	Between Groups	28.317	5	5.663	5.126	.000	Reject
	Within Groups	192.233	174	1.105			
	Total	220.550	179				

The result of Hypothesis testing of Boys and Girls (combines) shows that there is no significant impact of technology and online classes on physical health on factors like constipation, Body pain, Exertion, where as there is significant impact of other health factors like eye pain, vision, visionary problems, neck pain and back pain.

Conclusion

Online teaching and learning definitely helped the students to learn during this difficult situation of pandemic but the students are not aware about the negative impacts of technology and online learning on the physical health and are getting addicted with technology and it is found that boys and girls are facing the visionary problem (blur vision), exertion, fatigue, body pain, weight gain and other problems like sleepless/dreamy nights. Neck or cervical

pain is also common among students. Hence, usage of technology during online classes effects the physical health of the students and online teaching cannot replace the traditional class room teaching. Parents, students and teachers must be cautious about excessive use of technology and balance technology with other kind of activities that promote creativity and development.

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