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BRIEF REPORT

Use of Smart Phone Among Students with Intellectual and Developmental Disability

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Abstract Use of Smart phones had created new opportunities for individuals with developmental disabilities for the meaningful engagement in different activities during the pandemic situation. Online learning provides extensive opportunities for individuals during this pandemic situation when everything is closed due to the fear of transmission of COVID-19. Similarly individuals with developmental disabilities are also getting opportunity to learn online through Smartphone. Special educators were conducting online classes with students with developmental disabilities to make them meaningfully engaged during this pandemic situation. 415 students and their parents with developmental disabilities were approached by their special educators on telephone to know if they can use smartphone. This paper reports on use of Smart phones by individuals with developmental disabilities. It was found that they can learn academics like others if there is availability of Smart phones during daytime and proper training and assistance provided by parents or sibling.

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Introduction

COVID-19 has been making headlines around the world for over a year. The Covid-19 pandemic has created unique concerns for caregivers of people with intellectual and developmental disabilities including autism spectrum disorder, and muscular dystrophy or brain disorders like cerebral palsy. To reduce the risk of person-to-person transmission of the coronavirus during COVID-19 pandemic, various national governments had introduced extensive 'lockdown' measures such 'social distancing' and 'shielding' of at-risk individuals [12].

People with intellectual disability (ID) are especially vulnerable to the physical, mental and social effects of the pandemic. People with ID are at greater risk of infection for a range of reasons that include physical health problems, social circumstances and limitations in understanding [3]. Cognitive impairments can limit understanding of information to protect them, relying on caregivers to be vigilant on their behalf during quarantine [2].

Amongst all groups, children with developmental disabilities can find it very difficult to stay in confined spaces without any social exposure, which often leads

to them being easily frustrated, showing regular fidgeting, aggressive behavior etc. As all the schools were closed, caregivers were also facing challenges. Besides caregiving burden which was earlier shared between parents, schools, and vocational training centers, the learning of students which requires repetitions was being hampered. Currently the use of Smartphone has increased as it becomes medium of entertainment and medium of learning. Children with developmental disabilities enjoy the use of various applications on Smart phones.

Smartphone performs many of the functions of a computer, typically having a touch screen interface, Internet access, and an operating system capable of running downloaded apps. Smartphone provides communication through video mode like Webex meeting, Google meet, video conferencing, video calling, audio mode like calling and through messaging like simple text message or WhatsApp message.

Glumbić, et al. [3] had conducted a study in 2020 to identify possible differences in how non-disabled adolescents and their peers identified with mild intellectual disability use mobile phones. They found that Skype video calls were used significantly more often by participants identified with mild intellectual disability. They concluded that adolescents identified with mild intellectual disability should be encouraged to expand the use of mobile phones with appropriate monitoring and education so that their use does not become problematic. In an another study Begara et al. [1] explored how youth with intellectual disability or Asperger syndrome use new technologies and social media in comparison with their peers without disability. They found that percentages of use of new technologies (61% tablets, 93% computers, 97% mobiles) are similar among groups but adolescents with Asperger syndrome or intellectual disability use for lesser duration. Jenaro, et al. [5] conducted a study on Internet and cell phone usage patterns among young adults with intellectual disabilities. They found that young people with disabilities make more social and recreational rather than educational use of these tools. Kim and Lee [6] in a study from South Korea on 298 adults with IDD reported that use of internet was beneficial to participants for accessing more options for leisure and entertainment, networking with friends, and remaining updated with news. White and Forrester [11] reported that IDD have smaller friendship circles on social media but the quality of friendship was comparable or superior to typically developing adolescents.

During pandemic period, Online teaching has become commonplace, and in our institute for individuals with developmental disabilities special educators were sending assignment online. Through this paper, we report the availability of smart phones and ability to use the smart phone independently among individuals with developmental disabilities studying in a special school.

Methodology

The schools were closed in second week of March 2020 due to pandemic. Special educators and vocational guidance instructors had started sending video to students enrolled in the school and then also started with online classes by sending them worksheets. The survey of students was conducted to find out if they are able to get benefitted by online teaching, worksheets, and videos. The efficacy of online teaching which is being conducted by special educators in a school for children with ID, autism, cerebral palsy and multiple disabilities during pandemic was discussed. Both the investigators devised the questionnaire, and inputs were taken from 5 professionals comprising of mental health professionals and special educators. The target population consisted of all the students enrolled in the special school, 415 students with developmental disabilities were approached by their special educators on phone. Special educators (N = 32) filled the Google form consisting of 25 questions based on their talk with parents/guardians of IDD of their respective class. All the students enrolled in the institute were approached. The purpose of the survey was to know the availability of smartphone and ability to use of smart phones independently among individuals with developmental disabilities studying in a special school. Consent of special educators and vocational instructors was taken to use the information collected for the purpose of the report. The study was approved from Institutional research and ethics committee. Data confidentiality was maintained.

The questions were related to demographic information, availability and number of smart phones, awareness of application of smart phone, independent usage of smart phone. Questions related to smart phone use were if the student is able to do the

following with or without assistance or not; operate the phone; receive call; can read the contact list; dial number from contact list; receive message; can use phone camera; switch on/off wi fi; can download video sent by teacher; is able to send photo/video from phone gallery; can play music; can use Whatsapp; is able to receive internet phone calls; able to make a video call. These were asked from all the parents irrespective of age of the student as the purpose was to understand usefulness of online teaching.

The survey being descriptive data were summarized as the number and percentage.

An outline of survey questions is provided in Table 1

Results

Information for a total of 415 students with developmental disabilities was gathered in this study, their age range was from 6 to 42 years. Age groups were 6 to 10 years 8.34%, 11–15 years of age were 22.40%, 16–20 years of age 30.12% and above 20 years were 39.27%. Furthermore, most of the students' IQ was between mild (IQ 50–69) (42.65%) to moderate (IQ 35–49) (29.39%), followed by severe (IQ 20–34) (20%) and profound (IQ below 20)4.91%. 27.22% of total participant were of borderline IQ (70–84). Fifty percent students were independent in their activities of daily living whereas 43% need assistance and prompting for doing various activities. Six percent are totally dependent for their activities of daily living.

Table 2 shows that availability of a Smartphone at home is 263 (63%) of which only 75% were available at day time with students. Twenty seven students (6.50%) with developmental disability were having their own personal Smartphone. Other students 287 were dependent on their mother's, father's, sibling's Smartphone for use. Fifty one students did not have any Smartphone at home.

Table 3 depicts independent use of Smartphone 140 (33%) students were using it independently, 215 (52%) students could not use Smartphone, 60 (14%) students could use but with prompting. 169 (39.75%) could read name of their family members from contact list whereas 320 (77%) could not, 30 (7%) read with prompts.

56 (14%) of total students can dial number independently to call friends or relatives, 64 (15%) can dial number with prompts and 295 (71%) could not. Only 15 (3%) students could send or receive messages independently and 28 (7%) with assistance. 372 (90%) students with intellectual disability could not send text message.

Clicking photographs is a trend nowadays. Everybody likes to click their selfie and same is with students with intellectual disabilities. 159 (39%) students can click photos by using smart phones and 62 (15%) can click with prompts.

One fourth I.e. 99 (23.85%) students can switch on / off internet/wifi for use, 34(8%) can do with assistance whereas 282 (68%) could not switch on /off internet/ wifi for use. 100 students (24%) can independently download the videos sent whereas 315 (76%) could not download 62 (14.93%) students can send photos/ videos from gallery independently, 45 (11%) can with prompts and 308 (74%) could not send photos/videos from gallery.

Entertainment and fun through smart phone is becoming best entertainment mode so during survey investigator found that 139 (33%) students can play music or MP3 files independently, 45 (11%) with prompts and 231 (56%) could not play music or MP3 files. Only 33 (8%) students can reply back on message to concerned person through WhatsApp independently, 41 (10%) can with prompts and 341 (82%) could not. 85 (21%) can receive incoming internet phone calls through WhatsApp independently, 60 (14%) can use with prompts whereas 270 (65%) could not receive incoming internet phone calls through Whatsapp. 71(17%) students can use video call through social sites, 63(15%) can use video calls with prompts whereas 281 (68%)could not use video call through social sites.

Online education is only mode of teaching during this pandemic situation so students with

Table 1 Outline of survey questions

S. No	Questions
1–4	Questions related to demographic data
5	Questions related to ADL
6–7	Questions related to whether they are missing their school and to whom they are missing
8–11	Availability of smart phone/smartphones at home
12–25	Knowledge of application of smartphones by student with intellectual disabilities

Table 2 Availability of smart phone

Quiestionaire S. No		N	%
8	Availability of smart phone	263	63.37
10	Mother smart phone	194	46.74
	Father smart phone	42	10.12
	Siblings smart phone	51	12.28
11	Own smart phone	27	6.50

Table 3 Ability to use Smart Phone

Questionaire S. no	Items	n Independently	% Independently	n With prompts	% With prompts
12	Use of smart phone	140	33.73	60	14.45
13	Able to receive calls on phone	186	44.81	58	13.97
14	Read the name of person in contact list	165	39.75	30	07.22
15	Able to dial number from the phone contact	56	13.49	64	15.42
16	Able to send or receive SMS without internet	15	3.61	28	6.74
17	Able to take pictures using phone camera	159	38.31	62	14.93
18	Able to switch on/off mobile internet/wifi	99	23.85	34	8.195
19	Download the videos sent by the school/any other person by himself/herself	100	24.09	–	–
20	Able to send photos/ videos from phone Gallery	62	14.93	45	10.84
21	Able to play music or MP3 files	139	33.49	45	10.84
22	Able to answer or reply back to the concerned person through WhatsApp's by himself/ herself	33	07.95	41	9.87
23	Able to use social /online teaching Apps for study	12	02.89	68	16.38
24	Able to receive the incoming Internet phone calls through social apps	85	20.48	60	14.45
25	Able to use video call through social sites	71	70.10	63	15.18

developmental disabilities are also doing their activities and education through online. Table 3 also represents only 12 (2.89%) students can use online teaching apps independently, 68 (16%) can with prompts whereas 335 (81%) were lacking behind as they were not using online teaching apps.

Parents of 8 students reported problematic use of smart phone. These students were 13–23 years of age, two were having autistic features (IQ = 25, 34) used to watch video of tractors and music video, rest were having mild intellectual disability. They were spending 2–5 h on watching YouTube video, social media-Facebook and Instagram, playing video games, and listening to music. One student has enrolled in class tenth from open board, hence he spends time on his study along with recreational use of smart phone.

Discussion

The study was conducted to find out availability of smart phone and ability to use smart phone by persons with intellectual disability. In the current study we found that around 33% students with developmental disabilities could use the smartphones independently and around 14% could use with prompts. Most of the children were dependent on their parents or siblings for online learning as per our study.

These students were doing fairly well despite not getting any specific training for the use of Smartphones. Students with developmental disabilities face difficulties in numerous functional areas like mobility, communication, language, learning and activities of daily living. They have slow processing ability. The specific trainings and regular repetition/practice is also

required to make them learn a particular activity. But no such trainings were provided to students for the use of Smartphone. Most of the students with developmental disabilities were dependent in their ADL skills. However, they understood all the instruction given to them and follow instructions properly. Moreover most of them were familiar with Smartphone. No training was provided to students for the usage of Smartphone. Some of them were using the Smartphone independently whereas some of them were using with prompts. Use of electronic tools and services had created new opportunities for individuals with developmental disabilities for the meaningful engagement in different activities during the pandemic situation.

Similar results were found by Lord-Nelson et al. [9]; they stated that learning through Smartphone is a difficult task for children with intellectual disabilities/developmental disabilities. They need regular and continuous assistance from parents while taking the class. Online learning enhanced communication among children with special needs and increased parent participation as leading to positive outcomes for students with disabilities.

We found that 33% students can play music or MP3 files independently, 11% with prompts, 8% students can reply back on message to concerned person through WhatsApp independently, 10% can with prompts, 17% students can use video call through social sites, 15% can use video calls with prompts. Similar reports of use of mobile phone and internet for the purpose of recreation in intellectually disabled persons [4, 5], however very few have addressed the use of mobile phone for the purpose of educational instructions.

Lancioni et. al assessed a smartphone intervention in 2017, which was designed to help eight participants (four presenting with intellectual disability and blindness and four presenting with intellectual disability and hearing impairment) to independently start and carry out daily activities at appropriate time. They concluded that the use of the smartphone intervention promoted great improvement over the baseline for all participants. That is, the participants managed to independently start the activities at the scheduled times and carry out those activities with high levels of accuracy [8].

Thus a smartphone intervention may help people with mild-to-moderate intellectual disability and sensory impairments to successfully engage in daily activities. But in this study only they discussed about just starting the mobile Apps. According to our study, around 33% students with developmental disabilities could use the smartphones independently and around 14% could use with prompts.

Similar conclusion was drawn by Lancioni et al. in 2020 [7] when they evaluated a tablet-based program to help eight participants with moderate intellectual disability, sensory and/or motor impairments, and lack of expressive and receptive verbal skills to select and access leisure activities and video calls independently. They concluded that the tablet-based program can be highly beneficial for people with mild to moderate intellectual disability.

Present survey found that our students were doing fairly well as they did not get any specific training for the use of Smartphones.

Limitation of the present report is that it was carried in one institute, on a limited sample, using self-designed questionnaire, without using specific scales for the purpose of internet addiction, associated psychological problems, and other aspects of mobile phone use.

Conclusion

Individuals with developmental disabilities can use smart phones independently. This technology can also be of use for their education purpose like others without disability. They can learn academics if there is availability of smart phones during daytime and proper training and assistance provided by parents or sibling. Not only academics they can learn many co-curricular activities, fun activities and learn easy craft items through smart phone, as they have been doing during the pandemic. Online learning become possible and they will be meaningfully engaged during this pandemic situation. Parents (of children with developmental disabilities) also feel assured when their children are doing activities in front of them. With proper training and guidance these children can also use technology. Digital literacy, safe use of internet and mobile phone should be incorporated in the curriculum for individuals with intellectual and developmental disabilities.

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Declarations

Conflict of interest The authors declares that they have no conflict of interest.

Consent for Publication Both authors approved this version for publication and both agree to be accountable for all aspects of the work.

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