

Research Article

Effect of COVID-19 Lockdown on Lifestyle, Internet Addiction and Media Usage among Adolescents and Young Adults in India - A Cross-sectional Survey

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A B S T R A C T

Introduction: In India, there were three major COVID-19 wave lockdowns hampering school and college education.

Aim: To understand the effect of lockdown on lifestyle, internet addiction and media usage in adolescents aged 10 to 21 years.

Methods: An analytical cross-sectional study was conducted from August 2020 to January 2021 using purposive sampling methodology. The respondents were approached through various social-media handles to fill out the Association of Adolescent and Child Care in India (AACCI)-created Google-based questionnaire consisting of 50 questions divided into five sections (aims/ objectives and consent form, demographic information, effect on lifestyle, effect on media/ gadget usage and internet addiction score). Data analysis was done using EpiInfo Version 7.2.3.1 software.

Results: Of the 318 respondents, 63.8% were females. The median (IQR) age was 18 (14-19) years. Of the participants, 72.6% were school-going, 27.4% were college students, 82% were from urban areas, 59% were from nuclear families, and 59.9% had one sibling. There were positive and negative effects on physical health, food habits, sleeping patterns, and mental health of the respondents ($p < 0.05$). Overall, 60.6% of respondents used electronic gadgets for more than four hours every day, 80% felt that the internet is a must, 69.2% accepted screen overuse, and 28.9% felt that they were addicted to the internet. The median (IQR) score for the age group of 10-13 years was 25 (9-31); for the age group of 14-17 years, it was 26 (17-40) and for the age group of 18-21 years, it was 29 (19-39) (Kruskal Wallis: 6.37, $p = 0.042$).

Conclusion: The COVID lockdown affected the physical and mental health of Indian adolescents positively and negatively.

Keywords: COVID Impact, Adolescent, Youth, Screen, Gadgets, Addiction

Introduction

COVID-19 caused a global impact in 2020 which has been carried forward in 2021-23. India has been one of the larger affected countries. In terms of adverse impact on global health and economy, it is the first time since the Spanish flu in the year 1919 that the world faced such a disastrous situation.¹

Compared to other countries, India took lockdown measures quite early in the pandemic – the first lockdown was a trial on March 22, 2020, followed by a complete lockdown. From March 2020 to June 2020, the Government of India had to keep implementing the lifting of the lockdown in phases in various states and re-imposing the lockdown in phases, depending on the number of cases and mortality figures.² The pandemic affected all the functioning, be it the healthcare sector, corporate, private or government sector, including educational institutes - schools and colleges. Working and/ or studying from home on a digital platform had become the new way of life - the new normal.³

The pandemic also adversely affected the vulnerable age group adolescents and young adults (AYAs) – who form a majority of the population in India. Nearly 42% of the world population comprises people younger than 25 years (3 billion out of 7.2 billion worldwide). Out of these 3 billion, 1.2 billion are between 10 and 19 years of age, thus nearly 25% of our population is in the adolescent age group.⁴ Analysing the data for 0-30 years, more than 50% of the Indian population falls in this age group.⁵

Adolescence is the phase of life in which the transition from childhood into adulthood takes place. There is a lot of turmoil and a need for coping in this phase due to the physical, psychological, hormonal and environmental changes occurring in the lives of adolescents. Being locked up at home during this period and not being able to go out for educational needs and meeting friends face to face have several psychological implications; lack of physical exercise and overconsumption of junk food lead to weight gain and associated problems hampering their physical and mental growth.⁶⁻⁹

It is hypothesised that during the lockdown, the hours spent on mobiles, computers or laptops are bound to increase due to educational and recreational activities being conducted through this mode. At the same time, the lockdown ensuring that people and thereby even adolescents stay at home may impact their active life as well as exercise.^{10,11} This survey was carried out with the following objective:

To understand the effect of lockdown on the lifestyle and media usage in the age group of 10 to 21 years i.e., the Adolescents and Young Adults (AYAs).

Material and Methods

This analytical cross-sectional study was conducted among the AYAs in India between August 22, 2020, and January 29, 2021, by a team of the Association of Adolescent and Child Care in India (AACCI) using purposive sampling method and Google Form.

The approval for the study was obtained from the Independent Ethics Committee of AACCI. The framed semi-structured questionnaire was formatted as a Google Form for the online survey. It consisted of five sections with a total of 50 questions. Section 1 included the aims and objectives of the survey and assent/ consent from the participants, Section 2 included general demographic information (Q 1 to Q 10), Section 3 included the effect on lifestyle (Q 11 to Q 15), Section 4 included the effect on media/ screen gadgets usage (Q 16 to Q 30), and Section 5 included the internet addiction score (Q 31 to Q 50).

The respondents were approached through social media, WhatsApp, electronic mail, Facebook and Instagram. The form was floated at biweekly intervals during the study period. The responses were generated and stored in Google Drive. The collection of data responses was stopped at midnight on January 29, 2021. A total of 318 responses were received.

Data Management

Data analysis was done using the EpiInfo Version 7.2.3.1 software for data analysis.¹² The input variables included general demographic information, effect on lifestyle, media and screen gadget usage. Kimberly's scale was used to check for internet addiction.¹³ Outcome variables were qualitative in nature (Yes/ No/ Don't know) and were analysed as proportions and reported as percentages. Kimberly's score was reported as median (Interquartile range). Data were reported at a 95% confidence interval. P value was generated and reported wherever it had a statistically significant value of less than 0.05.

Results

Demographic Characteristics

Ninety-nine per cent (99.1%) of the subjects were from India and three were from Oman. There were 63.8% female and 36.2% male participants. The median (IQR) age of the sample was 18 (14-19) years. The median (IQR) age of girls was 18 (15-19) years and in the case of boys, it was 17 (14-19) years ($p = 0.29$). More than half of the AYAs (51.97%) were between 18 and 21 years of age (late adolescents and young adults), 35.20% were aged 14-17 years (mid-adolescents) and 12.83% were between 10 and 13 years of age (early adolescents). There was a greater proportion

of girls in each of the age groups ($p = 0.022$). The majority of AYAs (72.6%) were from school and 27.4% were college students. Among the school-going students, nearly one-fifths (16.4%) were from the ninth standard. Most (82%) of them were from an urban background, 59% were from nuclear families, 24.9% were from three-generation families and 16% were from joint families. Nearly two-thirds (59.9%) had one sibling, 21.4% were single and the remaining had more than one sibling.

Effects of Lockdown on Health and Lifestyle

The observed positive effects of lockdown were bonding with mother was reported by 69.8%, with father by 57.6%, and with siblings by 51.3% of respondents. Many (38.6%) of them reported an increase in the consumption of nutritious food. The feelings of being more relaxed and of

increased confidence were reported by 28.6% and 14.5% of respondents respectively (Figure 1).

The negative effects reported were disturbed food timings (28%) and eating more junk food (13.5%). An increase in body weight was reported by 43% of AYAs, 49.7% slept late while 35.5% got up late. Decreased bonding was reported with friends (24.5%) and relatives (14.5%) (Table 1).

Other changes reported were decreased attention span (29.6%), increased aggression (28.3%), increased confusion (27.7%), and depression (22.3%) (Table 2). Physical symptoms reported were headache (41.5%), eye problems (39.6%), backache (26.4%), neck pain (23.9%), body ache (16.9%), abnormal weight gain (15.7%), pain in fingers (9.1%), frequent giddiness (7.2%), and substance abuse (1.9%) (Table 2).

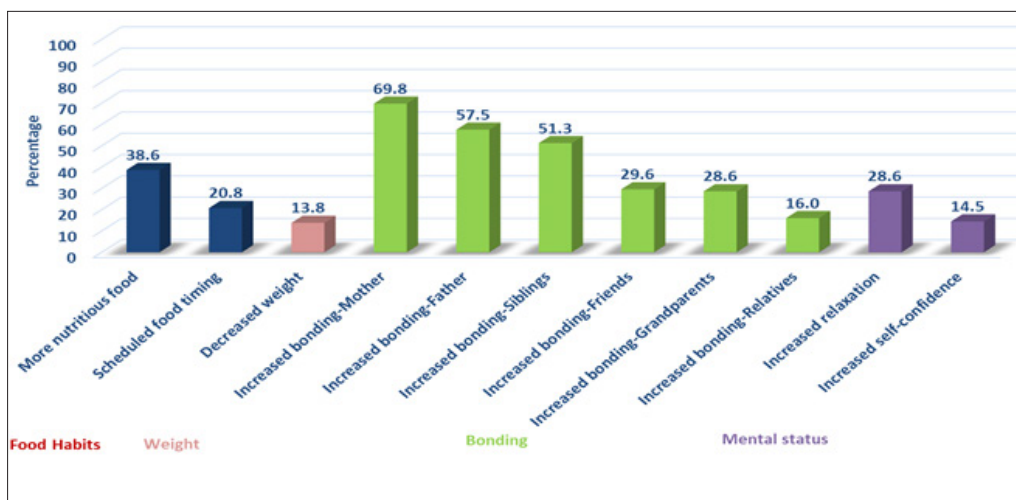


Figure 1. Positive Effect of Lockdown

Table 1. Effect of Lockdown on Lifestyle

| Variables | n (%) | 95% CI |
|-------------------------|-------------|-------------|
| Effect on eating | | |
| More nutritious food | 123 (38.63) | 29.85-47.40 |
| Disturbed timing | 89 (27.98) | 18.46-37.49 |
| Scheduled timing | 66 (20.75) | 10.76-30.73 |
| More junk food | 43 (13.52) | 03.09-23.94 |
| Not much has changed | 101 (31.76) | 22.49-41.02 |
| Others (combinations) | 31 (09.74) | -0.90-20.38 |
| Effect on weight | | |
| Increased | 137 (43.10) | 37.80-48.63 |
| Not much change | 133 (41.80) | 36.50-47.32 |
| Decreased | 44 (13.80) | 10.51-03.21 |

| | | |
|------------------------------------|-------------|--------------|
| Other | 04 (01.30) | 00.53-03.21 |
| Effect on sleep | | |
| Sleeping late at night | 158 (49.68) | 41.72-57.63 |
| Getting up late in the morning | 113 (35.53) | 26.52-44.53 |
| Disturbed sleep | 78 (24.52) | 14.78-34.52 |
| Decreased sleep | 35 (11.00) | 04.20-21.57 |
| No change | 88 (27.67) | 18.13-37.20 |
| Effect on family - positive | | |
| Increased bonding - mother | 222 (69.81) | 63.64-75.97 |
| Increased bonding - father | 183 (57.54) | 50.23-64.84 |
| Increased bonding - siblings | 163(51.25) | 43.42-59.07 |
| Increased bonding - friends | 94 (29.55) | 20.13-38.96 |
| Increased bonding - grandparents | 91 (28.61) | 19.13-38.08 |
| Increased bonding - relatives | 51 (16.03) | 05.75-26.30 |
| None | 50 (15.72) | 05.42-26.01 |
| Effect on family - negative | | |
| Decreased bonding - friends | 78 (24.52) | 14.77-34.26 |
| Decreased bonding - relatives | 46 (14.46) | 04.09-24.82 |
| Decreased bonding - father | 30 (09.43) | -1.23-20.09* |
| Decreased bonding - mother | 18 (05.66) | -5.23-16.55* |
| Decreased bonding - grandparents | 15 (04.71) | -6.22-15.64* |
| Decreased bonding - siblings | 15 (04.71) | -6.22-15.64* |
| None | 191 (60.06) | 52.97-67.14 |

CI: Confidence intervals have been reported at 95%, $p < 0.05$ is statistically significant * $p > 0.05$ is not statistically significant.

Table 2. Effect of Screen Gadget Usage during Lockdown on Mental and Physical Health

| Variables | n (%) | 95% CI |
|----------------------------------|-------------|-------------|
| Effect on mental status | | |
| Decreased attention span | 94 (29.55) | 20.13-38.96 |
| More relaxed | 92 (28.61) | 19.18-38.03 |
| Increased aggression | 90 (28.30) | 18.80-37.79 |
| Increased confusion | 88 (27.67) | 18.13-37.20 |
| Increased depression | 71 (22.32) | 12.42-32.20 |
| Increased self-confidence | 46 (14.46) | 04.09-24.82 |
| No effect | 74 (23.27) | 13.44-33.09 |
| Effect on physical health | | |
| Headache | 132 (41.50) | 32.92-50.07 |
| Eye problem | 126 (39.62) | 30.90-48.33 |

| | | |
|----------------------|-------------|--------------|
| Backache | 84 (26.41) | 16.79-36.02 |
| Neck pain | 76 (23.89) | 14.10-33.67 |
| Body ache | 54 (16.98) | 6.76-27.19 |
| Abnormal weight gain | 50 (15.72) | 5.42-26.01 |
| Pain in fingers | 29 (09.11) | -1.57-19.79* |
| Frequent giddiness | 23 (07.23) | -3.57-18.03* |
| Substance abuse | 06 (01.88) | -9.20-12.96 |
| No effect | 101 (31.76) | 22.49-41.02 |

CI: Confidence intervals have been reported at 95%, $p < 0.05$ is statistically significant * $p > 0.05$ is not statistically significant.

Possession of Screen Gadgets

Smartphones were possessed by 92.8% of AYAs and 63% possessed a laptop, while 70.4% had a television at home. Almost three-fourths (70.1%) used smartphones, 12.9% used laptops, 4.7% used television, 4.4% used iPads, 3.8% used tablets, and 3.5% used desktops. Less than 1% used PlayStations and gaming consoles. The majority (75.2%) of them owned the gadgets that they used, 16% shared them with parents, and 8.8% shared them with siblings.

Hours and Purpose of Use

Thirty-seven per cent of AYAs used the gadgets for 4-6 hours daily while 23.6% were online for 6-8 hours a day. The use of these gadgets was meant for education in 89.9%, entertainment in 80.5%, socialisation in 40%, work-related usage in 20.8%, and other work in 0.62% of cases.

The majority (67.9%) of the respondents used them for

school-related work, 56.8% for internet surfing/ searching, 54.4% watched educational videos and 34% attended online tuition (Figure 2). AYAs used these gadgets for entertainment purposes such as watching videos and movies (80.5%), listening to music (76.7%), playing video games (27%) and for other purpose of entertainment (2.8%) (Figure 2).

The most commonly used method of socialisation was WhatsApp (84.3%) followed by phone calls (69.5%), Instagram (59.4%), video calls (58.2%), e-mails (21.1%), Facebook (12.9%), Twitter (7.2%) and other media (5.7%).

Perceptions regarding Gadget Usage and Internet

Nearly 80% of respondents felt that the internet was a must and 69.2% felt that they were overusing the screen because of online learning. Almost all respondents (96.2%) were satisfied with the online education. Some respondents (28.9%) felt they were addicted to the internet.

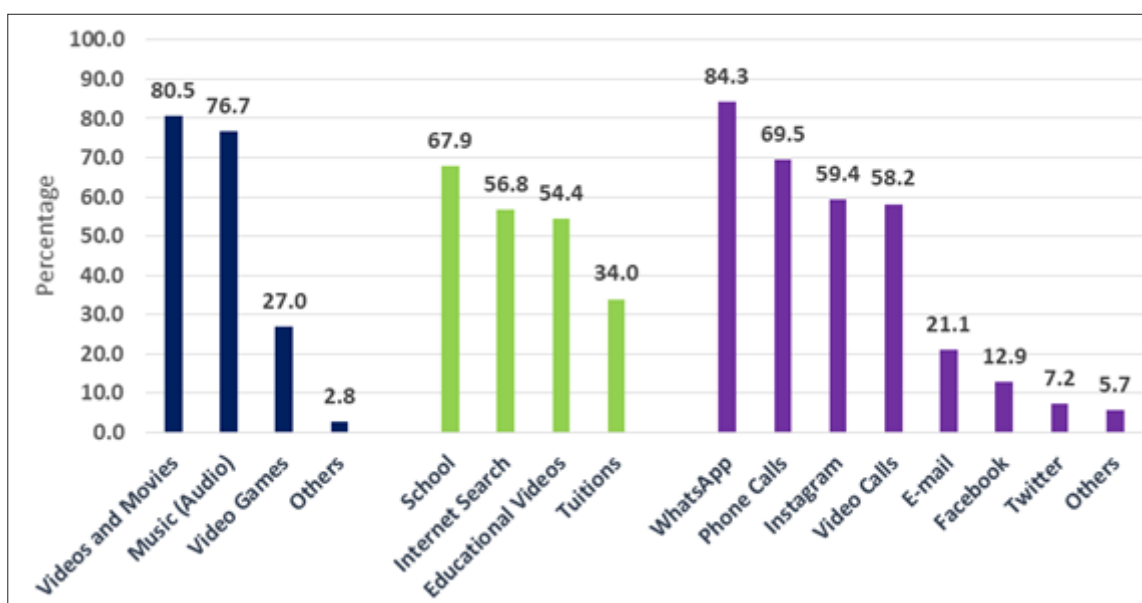


Figure 2. Usage of Screen Gadgets for Entertainment, Educational and Socialisation Activities

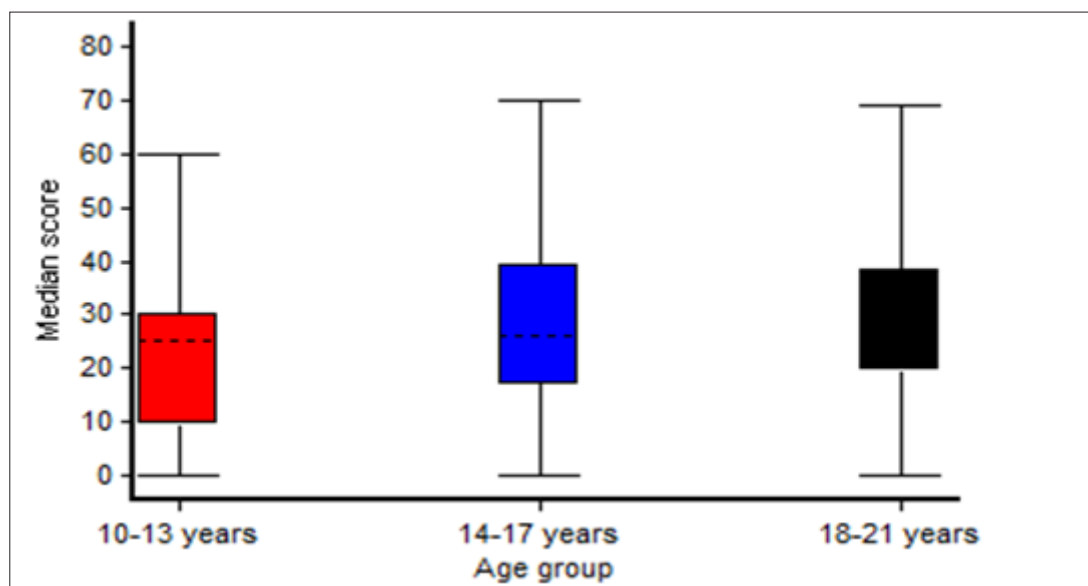


Figure 3. Age-group Wise Kimberley's Median Score

Kruskal Wallis = 6.37, $p = 0.042$. The median (IQR) score for the age group of 10-13 years was 25 (9-31), for the age group of 14-17 years, it was 26 (17-40) and for the age group of 18-21 years, it was 29 (19-39)

Kimberly's Internet Addiction Score

The median (IQR) addiction score was 28 (18-40). The median (IQR) addiction score for males was 25 (14-44) while that for females was 28 (18.5-37) ($p < 0.99$) (Figure 3). In the age group of 10-13 years, 71.79% of respondents had a normal level of Kimberley score, while in the age group of 14-17 years, 67.29% of respondents had no addiction. In the age group of 18 years and above, 35.47% of participants reported mild addiction while two of them reported severe addiction (chi-square: 15.85, $p = -0.0146$).

Discussion

The lockdown in India due to the COVID-19 pandemic led to a drastic change in the routine lives of people from all ages and all walks of life.² It forced people to change their mindset and adapt to the new normal by making significant changes to their work life, home life and lifestyle which has impacted the mental status adversely in many people. Adolescents and Young Adults (AYAs) were especially vulnerable to the adverse impact of the lockdown, as it interfered with the normal milestones of psychosocial changes by not being able to interact with peers in the school and college settings.^{6,14}

Earlier, AYAs from the affluent section of society enjoyed social media for interaction and entertainment; but during the lockdown, they were totally dependent on social media and the internet for all their interactions with peers and e-learning which led to the overuse of the internet and high risk of addiction to social media and screen gadgets. We hypothesised that the free time at hand due to lack of physical school and college interaction may have led to more dependence on the internet, screen time and use of

gadgets and would also have had adverse effects on the physical and mental health of adolescents.

A few studies have been carried out globally^{11,15,16} and in the Indian context^{6,10,14} to look into the effect of screen gadget usage and its effect on the lifestyle of adolescents and youth during lockdown.

In this study, there were more female respondents as compared to male subjects. One-fourth of the respondents were college students who would have more access and independence to reply to the surveys. More than half of them were between 18 and 21 years of age. Among the school-going students, the maximum response rate was from the ninth-standard students. This could probably be due to access to gadgets, maturity to respond, as well as relatively free time as compared to the higher grade students who are busy preparing for important board and entrance examinations.¹⁰

One-fifth of the kids were singleton kids and almost two-thirds came from nuclear families. This structure showed a more relatable figure to the real-life scenario of the increasing number of nuclear families as well as single-kid preference. This may indirectly also be the reason for the increase in affordability of gadgets, as seen in this study, wherein three-fourths of the gadgets were owned single-handedly by the respondents. Thus they also had more access to internet browsing, video games etc.

Nearly 70% of the respondents used smartphones for all their screen activities and 75% used their personal devices. Since 92.76% of the sample had smartphones, it was not surprising that this was the gadget that was used maximally. Though laptops were possessed by 62.8%, only 12.90%

used them; the reason being that smartphones give more privacy to teens as they can be carried anywhere easily. With a self-owned smartphone, there was minimal parental control, unless the parents were tech-savvy, which resulted in unmonitored excessive screen use by AYAs which has worsened during the pandemic, followed by two-thirds of them using laptops for their activities.¹⁰

Another reason for a large number of teenagers in this study using smartphones compared to other countries could be the wide range of cost of smartphones in India. The range varies from as cheap as INR 500 to the costlier ones. Also, in India, the cost of network providers is very cheap compared to the Western countries.¹⁷

The usage of video games in this study was 27.4%, which was quite low as compared to other studies pre-COVID. This could be because during lockdown, the AYAs were locked up at home with parental supervision and most parents are conscious about reducing the number of hours children and teens play video games and also prefer more time being spent in family connectedness. This could be considered as one of the positive effects of COVID.

Televisions were owned by 70% of participants in the study but were used only by 4.70%. Most of the activities along with entertainment activities like watching movies, serials or listening to songs are now possible with newer gadgets like smartphones and laptops, which may be the reason for one-third of them not having televisions at home. These results showed the changing trend of teenagers in India utilising smartphones for all their network and screen viewing needs. Further studies detailing these changing trends are recommended.

The WhatsApp usage was 84.27% which was reflective of the studies that show that Indians have the highest rate of WhatsApp usage.¹⁰ Our sample also showed that Instagram is preferred over Facebook and e-mails, which is also seen in other studies that show that Instagram is the preferred mode for teens.^{10,18}

One-third of the respondents spent 4-6 hours using different gadgets. Given the multiple uses of gadgets for studies, entertainment and socialisation, this could probably be a reasonable time for gadget use.^{10,11} Addiction level scores were seen in 27% as shown by results of Kimberley's internet addiction test scores in this study. However, 70% of respondents did feel that they were overusing the gadgets. The probable reasons as stated by them were a lack of outdoor activities and the need for using screens for online education.^{2,8,16} However, almost one-third of the AYAs (28.95%) wished the usage hours to be reduced. This reduction would indirectly also help in giving free time for relaxation, bonding and investing in other home-based physical activities.

Most (80%) of the respondents mentioned the need for the internet. All the activities nowadays, be it studying online or entertainment, need a stable internet. The use of the internet on a daily basis is the norm for the children of the digital world today.¹⁶

In this study, we also tried to find the effect of lockdown due to COVID-19. This, coupled with the overuse of gadgets, was bound to have some disturbances in routine activities and the physical and mental status of individuals. Even this study showed a disturbance in eating time and sleeping routines of adolescents and youth, decreased bonding with parents and friends and addiction to gadgets. Similar findings were noted in a study by Chaturvedi et al. wherein about 15% of respondents had health issues during lockdown, half of them thought that time was not utilised, and about 30% felt that they were not socially connected.¹⁰

As expected, sleep patterns were greatly affected among the AYAs – late night sleeping in 49.68%, disturbed sleep in 24.52%, and decreased sleep in 11%. Due to sleep disturbances, 35.53% were getting up late in the morning, which was an unhealthy lifestyle that may adversely affect health.

A lot of children had adverse effects on weight; abnormal weight gain was seen in 15.72% of the AYAs and substance abuse was reported by 1.88%. Another study showed a weight gain in more than one-third of the respondents.¹⁰

Excessive screen use can explain other physical symptoms as well as the mental effects including loss of concentration etc., as also noted in other studies.^{6,7,10,11,14,15} However, 31.76% of AYAs had no physical ill effects which could be due to close parental monitoring.

Despite many adverse effects of the lockdown, we did observe some good effects of the lockdown in this study – increased feeling of relaxation in 28.6% of participants, and increased family bonding with parents and siblings in about 51-60% of respondents. Similar findings were seen in another study by Chaturvedi et al.¹⁰ Being locked down together for the entire day brought a very positive impact of connectedness with family and increased bonding; this was highest with mothers, in 69.81% of respondents; but it was very heartening to see that 57.54% bonded more with fathers and 51.3% bonded with siblings. This reflected the presence of fathers and siblings at home as compared to pre-COVID, when most family members were out of the home. Increased bonding was also seen with grandparents, relatives, and friends. In our experience of teleconsultations, we found that happy families who had good bonding pre-COVID enjoyed more connectedness during the COVID lockdown.

Another surprising and positive finding was that 38.6% of AYAs reported an increase in consumption of nutritious food.

In our interactions with parents and youth in our regular AACCI webinars that we conducted for discussions on COVID impact, many gave reasons like working mothers getting more time for cooking because of being at home during lockdown, family members cooking together trying out new recipes, gain in awareness about increasing immunity in COVID pandemic by eating healthy food, fear of infection by eating outside food, closing of hotels and restaurants due to lockdown and financial crunch faced by families that limited ordering of outside food. We hope that this healthy trend of home cooking and eating nutritious food will have been sustained as a healthy habit in the post-COVID period too by these AYAs.

In our experience of teleconsultations, we also found that dysfunctional families who had problems bonding with each other during pre-COVID experienced worsening of relationships during the lockdown and did not get any respite.^{10,15,19} Many felt disconnected from friends since they could not interact with them in school or outside during lockdown.

Along with these effects, most studies have shown increased incidences of adverse mental health issues during the COVID lockdown in young people.^{9,10,15} Our sample also showed mental effects such as decreased attention span (29.6%), increased aggression (28.3%), confusion (27.7%) and depression (22.3%) among AYAs. Further studies to explore the multi-factorial reasons for the same can be undertaken.

However, 28.61% of respondents felt more relaxed and 14.46% experienced an increase in self-confidence. This could be due to various factors like increased family bonding, increased nutritious food, no commuting to school and long hours spent at school during regular days. Nearly one-fourth of the AYAs i.e., 23.27% remained mentally stable without any adverse effects.

The study was conducted using the Google platform, hence limitations inherent to an online survey are evident. The findings of this study were based on a self-reported survey. However, this study has given us insights into the life of AYAs pan India during the peak of the pandemic wave. It has also covered an important area of research on the effect of gadgets and screen use on the lifestyle of 10-21 years old individuals during the lockdown and also the effect on their physical and mental health.

Conclusion

COVID-19 lockdown affected the physical and mental health of Indian adolescents. Not all effects were negative - a significant number showed increased family bonding, increased consumption of nutritious homemade food, and positive mental health. Incidence of internet addiction was

also not very high probably due to parental monitoring as all were locked down at home together.

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