

## Original Article

### IMPACT OF COVID-19 PANDEMIC ON CHILDREN AND ADOLESCENT'S PATTERNS & LIFESTYLE BEHAVIORS

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#### Abstract:

**Background:** Covid-19 pandemic has influenced all ages and both genders. The Major impact observed was our life of children and adolescent in terms of social isolation. The objective of this study was to assess the impact of COVID-19 pandemic on life style patterns and behaviors of children and adolescents.

**Material and Methods:** An analytical cross-sectional study was conducted at Akhtar Saeed Medical and Dental College, Lahore from April to September 2021. The study included 323 parents of children and adolescent (4-18) all over Pakistan through convenience sampling. Data was collected on an online google survey form. Data was analyzed by SPSS version 23. Bivariate analysis was conducted to compare the difference in lifestyles and behavioral change between children and adolescent during Covid-19, in Pakistan considering p-value less than 0.05 as significant.

**Results:** In a total of 323 children and adolescents, 189 (58.5%) were males and 134 (41.5%) were females. The mean age of children and adolescents was  $11.2 \pm 4.2$  years. A significant association with consumption of fast food per week ( $p=0.031$ ), fear of getting COVID-19 ( $p=0.041$ ), feeling anxious due to pandemic ( $p=0.040$ ) was found in behavior related to adolescent's lifestyle changes as compared to children. Also, a significant association was found in involvement in indoor physical activities per week ( $p=0.045$ ) and using social media more than 7 hours per day ( $p=0.042$ ) in children's lifestyle as compared with adolescents.

**Conclusions:** Significant difference was observed in lifestyle behaviors of adolescents with regard to their eating habits, fear of getting covid, anxious behavior due to Covid-19 pandemic whereas significant difference was observed in lifestyle behaviors of children with regard to use of social media and indoor physical activities.

**Key Words:** Lifestyle behaviors, children, adolescents, covid-19.

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## INTRODUCTION

World Health Organization (WHO), reported that the Covid-19 pandemic caused 695,367,480 confirmed cases around the world

playing a key role in the lifestyle change of children and adolescents.<sup>1</sup> Fortunately, children and adolescents have a mild clinical spectrum of COVID-19 because of variations in susceptibility. while older children and adults have protective immunity to established viruses due to earlier exposures and vaccinations. All demographic groups were previously uninfected with SARS-CoV-2.<sup>2</sup> The most

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common symptoms observed in those children and adolescent who got the disease were fever and cough, sore throat, fatigue and mild diarrhea.<sup>3</sup> The major reasons of mild presentation of disease in children and adolescents is unknown however possible contributors include an immature immune system to provide defence against harmful effects secondary to viral infection and abnormal immune system activation.<sup>4</sup> An estimated 1.5 billion children and adolescents (age less than 18 years) transitioned to online of learning because of school closures; coupled with social distancing, quarantine, and isolation had a great impacting on lifestyle and activities of children and adolescents. This resulted in lack of social interaction, lack of motivation, limited access to learning resources and support and technical difficulties in learning.<sup>5</sup> In China, only 66% of the children were rated inactive during the pandemic, and similar reports were seen in Canadian children showing reduced physical activity and increase in sedentary lifestyle.<sup>6</sup> Change in eating pattern was also observed, where 43.5% of Polish youth reported eating more during quarantine, and 51.8% of respondents admitted of increase in snacking habit during COVID home quarantine.<sup>7</sup> An Italian study found out that children had increased screen and sleeping time during COVID-19 lockdown resulting in obesity. The risk for depression, anxiety, suicide, and poor mental health were also reported among children and adolescents.<sup>8</sup> Fear of infection, uncertainty, isolation, stress, and mass panic have shown increased trend during this time period. Education institutes in Pakistan underwent remote working, variable gathering size constraints, and quarantine following contact with a COVID-19 case was maintained.<sup>10</sup> Additionally, the closures of daycare, schools, colleges and playgrounds was adopted to limit the spread of disease. These measures had produced consequences on children's and youth psychological development. They also had affected workplace environment of parents that negatively affected the health and well-being of adults.<sup>11</sup>

Psychiatric studies on children's and adolescents' mental health during this pandemic era have been widely disseminated in China and the United States. Their coping mechanisms are ineffective and emotionally immature, and their cognitive development in particular was significantly aging impacted. Despite the fact that they are still through important developmental tasks, these characteristics of young people make them susceptible to stressful situations during disasters. Therefore, because elevated anxiety hinders their ability to learn, youngsters are particularly vulnerable in disasters like COVID-19.<sup>12</sup> The nature and extent of impact of COVID-19 on this age group depends on a lot of factors and there is very little research done on this area in Pakistan. This study is planned to quantify the frequency of having impacted lifestyle due to COVID-19 pandemic among children and adolescents.

## MATERIALS AND METHODS

An analytical cross-sectional study was conducted in Akhtar Saeed Medical and Dental College Lahore between April 2021 to September 2021 using online survey tool. A sample size of 278 was calculated through Rao soft sample size calculator keeping the confidence level at 95% and the margin of error at 5%. To increase validity, a final sample size of 323 was planned. Permission to collect data was granted after getting approval from IRB Certification Number (M-19/057-CM). To access validity of questionnaire, pilot testing was done on 25 parents of children and adolescents. Changes were incorporated in the final questionnaire. An e-consent form was taken from participants. Parents of children and adolescents (3-19) living in Pakistan were included in this study. Childhood is the period from birth till before puberty, ages 3-9 years.<sup>13</sup> Adolescence were categorized as between ages of 10 to 19 years.<sup>14</sup> Lifestyle behavior have been operationalized as daily activities resulting from individuals eating habits,

educational, emotional and social context.<sup>15</sup> Data was entered in the SPSS version 23. The test of significance applied was Chi-square and *p* values were fixed at  $\leq 0.05$  to find out significant associations between child's age and lifestyle behavioral change.

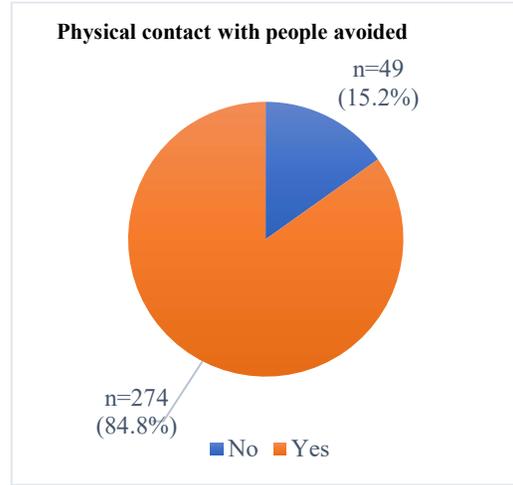
**RESULTS**

In a total of 323 children and adolescents, 189 (58.5%) were Males and 134 (41.5%) were Females. The mean age of children and adolescents was 11.2 years with a standard deviation of  $\pm 4.2$  years.

**Table 1: Socio-demographic characteristics of Children and Adolescents**

Characteristics	Frequency (n=323)	Percentage (%)
<b>Age in Years</b>		
Children 3 - 9	124	38.4
Adolescents 10-19	199	61.6
<b>Gender</b>		
Male	189	58.5
Female	134	41.5
<b>Residential Area</b>		
Lahore	188	58.2
Out of Lahore	135	41.8
<b>Family status</b>		
Joint Family	161	49.9
Nuclear Family	162	50.2
<b>Grade/ Level of education</b>		
Pre-school	70	21.7
Primary (1-5 class)	58	18.0
Middle (6-8 class)	23	7.1
Secondary (9-10 class)	33	10.2
College	139	43.0
<b>Family income in PKR</b>		
4,000 to 20,000	4	1.2
20,000 to 70,000	298	92.2
More than 100,000		

Out of total of 323 children, 274 (84.8%) avoided physical contact with people during the pandemic which was a major lifestyle change as shown in the figure below.



**Figure 1: Avoided Physical contact with people (n=323)**

Bivariate analysis of children and adolescents showed a significant association with consumption of fast food per week ( $p=0.031$ ), fear of getting COVID-19 ( $p =0.041$ ), feeling anxious due to pandemic ( $p=0.040$ ) was found in behavior related to adolescent's lifestyle changes as compared to children. Also, a significant association was found in involvement in indoor physical activities per week ( $p=0.045$ ) and using social media more than 7 hours per day ( $p= 0.042$ ) in children's lifestyle as compared with adolescents.

**Table-2: Bivariate analysis of Children and Adolescents with change in lifestyle**

Variables	Children	Adolescent	P-value
<b>Consumption of Fast Food per Week</b>			
Never	43(34.9%)	70(35%)	<b>0.031*</b>
1-2 times	42(34.1%)	80(40%)	
3-4 times	27(21.9%)	25(12.5%)	
More than 4 times	12(8.9%)	25(12.5%)	

<b>Involvement in indoor physical activities per week</b>			
Never	66(53.2%)	80(40.2%)	<b>0.045*</b>
1-2 times	27(21.8%)	39(19.6%)	
3-4 times	18(14.5%)	33(16.6%)	
More than 4 times	13(10.4%)	47(23.6%)	
<b>Feeling unhappy during lockdown</b>			
Yes	51(41.1%)	103(51.8%)	0.063
No	73(58.9%)	96(46.7%)	
<b>Afraid of getting covid-19 while going out of the house</b>			
Yes	43(34.6%)	92(46.2%)	<b>0.041*</b>
No	81(64.6%)	107(53.8%)	
<b>Feeling anxious due to the pandemic</b>			
Yes	40(32.3%)	87(43.7%)	<b>0.040*</b>
No	84(67.7%)	112(56.3%)	
<b>Facing trouble with online teaching</b>			
Yes	82(66.1%)	113(56.8%)	0.095
No	42(33.9%)	86(43.2%)	
<b>The use of social media increased during the pandemic (&gt;7 hrs per day)</b>			
Yes	105(84.6%)	149(74.9%)	<b>0.040*</b>
No	19(15.4%)	50(25.1%)	

## DISCUSSION

The negative effects of SARS-CoV-2 go beyond the infectious sickness. Indirect impacts of the COVID-19 pandemic pose substantial hazards to children and adolescents lifestyle behaviors. An imbalanced diet increases the risk of weight gain or nutritional inadequacies, sedentary lifestyle, lack of schooling, social isolation, and mental health issues.<sup>16</sup> Consumption of fast-food was higher in adolescents (12.5% of whom ate fast-food more than 4 times a week) as compared to children

(8.9%) showing a significant difference with p-value of 0.031. Similarly in a multi-country international cross-sectional study frequent fast-food consumption was reported in 23% of children and 39% of adolescents. This may be due to the fact that adolescents have more access to junk food as compared to children who are dependent on their guardians.<sup>17</sup> In this study, significant difference (p-value 0.045) was observed as higher percentage of adolescents (23%) were involved in physical activities as compared to children (10%). The results of a study conducted in Switzerland highlighted a decrease in physical activity during the pandemic ranging between -10.8 min/day and -91 min/day in children and adolescents respectively.<sup>18</sup> Although 41% of children felt unhappy as compared to 52% of adolescents during pandemic but no significant difference was observed (p value 0.063). In another study conducted in Spain Children, in general, showed high resilience and capability to adapt to new situations during lockdown as compared to adolescents who felt unhappy.<sup>19</sup> Adolescents have significantly higher percentage of being afraid regarding catching Covid-19 infection if they go out as compared to children (0.041). Similarly, a study conducted in Netherlands stated that fear of getting covid-19 infection while going out was reported for (32%) children which was lower than that of adolescents (44%).<sup>20</sup> In this study, adolescents had significantly higher percentage (44%) of feeling anxious due to the pandemic as compared to children (32%) with a p-value of 0.04. Whereas in another study conducted in Spain, child and adolescent anxiety due to pandemic were reported to be 25.2% and 20.5%, respectively.<sup>21</sup> Although in the present study 66% of children faced trouble to learn via online teaching as compared to 57% of adolescents. Similarly in a research conducted in Greece, parents/caregivers reported that their children's performance deteriorated, while those of adolescents thought that online learning was beneficial.<sup>22</sup> In this study, Children (84.6%) have a significant higher percentage of use of social media as compared

to adolescents 75% (p-value 0.040). Similarly in a Canadian study, higher levels of TV or digital media time, video games and mobile usage was reported by both children's and adolescents' parents.<sup>23</sup> The strength of this study is that there is dearth of parental point of view to compare the impact of COVID-19 on children and adolescent's lifestyle behaviors whereas in depth analysis of variables was done.

### LIMITATION

It is cross-sectional study so causation cannot be established.

### CONCLUSION

Covid-19 had a significant effect on the lifestyle behaviors among children and adolescents. The study showed that factors such as consumption of fast food, fear of getting COVID-19 and feeling anxious due to pandemic were associated with behaviors related to adolescent's lifestyle changes whereas factors like indoor physical activities and excessive use of social media in children's lifestyle as compared with adolescents.

### CONFLICT OF INTEREST

No Conflict of interest is declared by authors.

### SOURCE OF FUNDING

None

### AUTHOR'S CONTRIBUTIONS

**ZHK:** Methodology, Supervision, Review and Editing

**MBA:** Data Collection, writing Discussion and Conclusion

**MSQ:** Data Collection, writing Introduction and objective

**MBA:** Data Collection and Writing Results

**MHA:** Data Collection and Data Compilation

### REFERENCES

1. Adedoyin OB, Soykan E. Covid-19 pandemic and online learning: the

challenges and opportunities. *Interact Learn Environ.* 2023;31(2):863-75.

doi: 10.1080/10494820.2023.2175155

2. Castagnoli R, Votto M, Licari A, Brambilla I, Bruno R, Perlini S, et al. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection in children and adolescents: a systematic review. *JAMA Pediatr.* 2020;174(9):882-9.

doi: 10.1001/jamapediatrics.2020.1467

3. Lu X, Zhang L, Du H, Zhang J, Li YY, Qu J, et al. SARS-CoV-2 infection in children. *N Engl J Med.* 2020;382(17):1663-5.

doi: 10.1056/NEJMc2005073

4. Cohen CA, Li AP, Hachim A, Hui DS, Kwan MY, Tsang OT, et al. SARS-CoV-2 specific T cell responses are lower in children and increase with age and time after infection. *Nat Commun.* 2021;12(1):4678.

doi: 10.1038/s41467-021-24956-0

5. Kilani HA, Bataineh MF, Al-Nawayseh A, Atiyat K, Obeid O, Abu-Hilal MM, et al. Healthy lifestyle behaviors are major predictors of mental wellbeing during COVID-19 pandemic confinement: A study on adult Arabs in higher educational institutions. *PLoS One.* 2020;15(12):e0243524.

doi: 10.1371/journal.pone.0243524

6. Zheng C, Huang WY, Sheridan S, Sit CH-P, Chen X-K, Wong SH-S. COVID-19 pandemic brings a sedentary lifestyle in young adults: A cross-sectional and longitudinal study. *Int J Environ Res Public Health.* 2020;17(17):6035.

doi: 10.3390/ijerph17176035

7. Giblon R, Bauer GR. Health care availability, quality, and unmet need: a comparison of transgender and cisgender residents of Ontario, Canada. *BMC Health Serv Res.* 2017;17(1):283.

doi: 10.1186/s12913-017-2226-1

8. Couzin-Frankel J, Vogel G. School openings across globe suggest ways to keep coronavirus at bay, despite outbreak. *Science.* 2020;369(6501):241-5.

- doi: 10.1126/science.369.6501.241
9. Tulchin-Francis K, Stevens W Jr, Gu X, Zhang T, Roberts H, Keller J, et al. The impact of the coronavirus disease 2019 pandemic on physical activity in US children. *J Sport Health Sci.* 2021;10(3):323-32. doi: 10.1016/j.jshs.2021.02.005
  10. Annam S, Fleming MF, Gulraiz A, Zafar MT, Khan S, Oghomitse-Omene PT, et al. The impact of COVID-19 on the behaviors and attitudes of children and adolescents: a cross-sectional study. *Cureus.* 2022;14(9):e29551. doi: 10.7759/cureus.29551
  11. Ustundag G, Yilmaz-Ciftdogan D, Kara-Aksay A, Sahin A, Ekemen-Keles Y, Orsdemir-Hortu H, et al. Coronavirus disease 2019 in healthy children: What is the effect of household contact. *Pediatr Int.* 2022;64(1):e14890. doi: 10.1111/ped.14890
  12. Dong H, Yang F, Lu X, Hao W. Internet addiction and related psychological factors among children and adolescents in China during the coronavirus disease 2019 (COVID-19) epidemic. *Front Psychiatry.* 2020;11:751. doi: 10.3389/fpsy.2020.00751
  13. Racine N, Cooke JE, Eirich R, Korczak DJ, McArthur B, Madigan S. Child and adolescent mental illness during COVID-19: A rapid review. *Psychiatry Res.* 2020;292:113307. doi: 10.1016/j.psychres.2020.113307
  14. Csikszentmihalyi M. Adolescence. *Encyclopedia Britannica.* 2023.
  15. Jarosz E. Lifestyle behaviors or socioeconomic characteristics? Gender differences in covariates of BMI in Hungary. *Obesity (Silver Spring).* 2018;4(6):591-9. doi: 10.1002/oby.22255
  16. Scapatucci S, Neri CR, Marseglia GL, Staiano A, Chiarelli F, Verduci E. The impact of the COVID-19 pandemic on lifestyle behaviors in children and adolescents: an international overview. *Ital J Pediatr.* 2022;48(1):1-7. doi: 10.1186/s13052-022-01255-6
  17. Braithwaite I, Stewart AW, Hancox RJ, Beasley R, Murphy R, Mitchell EA. Fast-food consumption and body mass index in children and adolescents: an international cross-sectional study. *BMJ Open.* 2014;4(12):e005813. doi: 10.1136/bmjopen-2014-005813
  18. Rossi L, Behme N, Breuer C. Physical activity of children and adolescents during the COVID-19 pandemic—A scoping review. *Int J Environ Res Public Health.* 2021;18(21):11440. doi: 10.3390/ijerph182111440
  19. Ajanovic S, Garrido-Aguirre J, Baro B, Balanza N, Varo R, Millat-Martínez P, et al. How did the COVID-19 lockdown affect children and adolescent's well-being: Spanish parents, children, and adolescents respond. *Front Public Health.* 2021;9:746052. doi: 10.3389/fpubh.2021.746052
  20. Abawi O, Welling MS, van den Eynde E, van Rossum EF, Halberstadt J, van den Akker EL, et al. COVID-19 related anxiety in children and adolescents with severe obesity: A mixed-methods study. *Clin Obes.* 2020;10(6):e12412. doi: 10.1111/cob.12412
  21. Lavigne-Cerván R, Costa-López B, Juárez-Ruiz de Mier R, Real-Fernández M, Sánchez-Muñoz de León M, Navarro-Soria I. Consequences of COVID-19 confinement on anxiety, sleep and executive functions of children and adolescents in Spain. *Front Psychol.* 2021;12:565516. doi: 10.3389/fpsyg.2021.565516
  22. Panagouli E, Stavridou A, Savvidi C, Kourti A, Psaltopoulou T, Sergeantanis TN, et al. School performance among children and adolescents during COVID-19 pandemic: a systematic review. *Children (Basel).* 2021;8(12):1134. doi: 10.3390/children8121134

- 23.** Li X, Vanderloo LM, Keown-Stoneman CD, Cost KT, Charach A, Maguire JL, et al. Screen use and mental health symptoms in Canadian children and youth during the COVID-19 pandemic. *JAMA Netw Open.* 2021;4(12):e2140875.  
doi:10.1001/jamanetworkopen.2021.40875