Original article:

Diet, Physical Activity, and Screen Time among adolescent Students during lockdown period in COVID-19 pandemic in Bikaner, Rajasthan

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Abstract:

Introduction: The World Health Organization defines an adolescent as any person between the age group of 10 and 19 years. Globally, adolescents comprises about two-third of the population. In India, adolescents account for 20% of the country's population.

Methodology: A cross-sectional study was conducted between March 22, 2020 and June 30, 2020 among Class XI and Class XII school students of Bikaner city of Rajasthan state. This study had been done after taking ethical clearance from institutional ethical board. Data was taken from the children or their parents by sending them google form on What's app social platform. Adolescent whose Parents not responded and those who refused to participate were excluded from the study.

Results: 794 (70.89%) participants has increased screen time during lockdown period. Nearly 29.6%, 36.4%, and 36.4% of the participants spent around 120-180 min watching TV, using the laptop/computer, and using the Internet (except for social media), respectively, whereas 810 students (72.32%) of them used their smartphones for a duration of > 180 min.

Conclusion: Due to lockdown during COVID 19 pandemic physical activity is decreased while overeating and screen time of study population is increased. Reason behind this was restriction of movement, curfew imposed in case area, starting of online classes, increased use of smartphone to pass time and entertainment.

Keywords: COVID – 19 , pandemic , lockdown

Introduction

The World Health Organization defines an adolescent as any person between the age group of 10 and 19 years. Globally, adolescents comprises about two-third of the population.[1] In India, adolescents account for 20% of the country's population.[2] Moreover in the State of Manipur, according to Census report 2011, the adolescent population is 15.7 million (23 % of total population). Adolescence is a critical time in the development of lifelong healthy eating and exercise habits.[3] Poor diet and physical activity are established risk factors of chronic diseases.[4] Screen time refers to the amount of time spent watching TV, including videos and DVDs; playing computer games on video consoles or on computers; and using computers for other purposes.[5] It also refers to using telephones for texting and social networking. The American Academy of Paediatrics recommends that children should watch <2 h of TV per day.[6] The high prevalence of adolescents exposed to excessive screen time is a matter of concern because of its association with several health problems, such as overweight and obesity, alterations in blood glucose and cholesterol, poor school performance, decreased social interaction, and lower levels of physical activity.[7,8] With this background, the study was conducted to determine the lifestyle behaviours of adolescents in Bikaner districts of Rajasthan in lockdown period from 22th

march to 30th june period. Till date, hardly any study from this state has been conducted on the lifestyle behaviours of adolescents in Lockdown period. Therefore, this study was conducted to identify the lifestyle behaviours among school-going adolescents focusing on dietary habits, physical activity, and screen time in lockdown and also to determine the association of these lifestyle behaviours with sociodemographic characteristics.

Aims and objectives:

To find out the changes in the diet, physical activity and screen time in the adolescent of class XI and XII during lockdown period in COVID-19 pandemic and association between sociodemographic profile and these behavioural modifications.

Methodology:

A cross-sectional study was conducted between March 22, 2020 and June 30, 2020 among Class XI and Class XII school students of Bikaner city of Rajasthan state. This study had been done after taking ethical clearance from institutional ethical board. Data was taken from the children or their parents by sending them google form on What's app social platform. Adolescent whose Parents not responded and those who refused to participate were excluded from the study.

Out of the total 1120 adolescents were responded and had completely filled their form during this period were included in the study.

Study Tool:

A pretested, structured questionnaire was used which consisted of two parts-Part A which had questions on sociodemographic characteristics and Part B with questions on lifestyle behaviours i.e., physical activity, screen time and diet (including a 3-day diet chart).

Operational definitions(10)

Adequate physical activity

According to WHO adequate physical activity is activity of moderate intensity for $\geq$ 60 minutes 5 days in a week.

Overeating:

Overeating is the excess food consumed in relation to the energy requirement of the individual.

Increased screen time:

If screen time is more than 2 hr/day is called as increased screen time.

DATA COLLECTION:

The participants were briefly explained about the study and reassured about their anonymity. Data were collected using a semi-structured questionnaire on social platform (What's app).

STATISTICAL ANALYSIS:

Data were collected and checked for consistency and completeness. Data were entered in Epi info. Descriptive statistics such as mean, standard deviation, and percentage were used. The Chi-square was used to assess association between the lifestyle behaviour and the sociodemographic factors. A probability value of < 0.05 was considered as statistically significant.

Result:

There were 1120 participants enrolled in the study with a response rate of 92.10%. Mean age of participants was 16.92 ± 0.842 years.

Table 1: Sociodemographic characteristics of the study participants (n =1120)

Characteristic	Number	Percentage
Gender		
Male	661	59.02
Female	459	40.98
Religion		
Hindu	956	85.36
Muslim	116	10.36
Sikh	29	2.59
Others	19	1.70
Type of family		
Nuclear	662	59.11
Joint	458	40.89
Number of siblings		
1-2	655	58.48
3-4	358	31.96
≥5	107	9.55
Total monthly income (Rs.)		
≤10,000	301	26.88
10,001-30,000	343	30.63
30,001-50,000	253	22.59
>50,000	225	20.09

Among all the participants, 59.02% were male, 85.36% belonged to the Hindu religion, 59.1% belonged to nuclear family, 58.48% had only 1 or 2 siblings, and 30.63% had family income of Rs. 10001–30000.

Table 2: Association between selected sociodemographic characteristic with physical activity

Characteristic	Inadequate physical activity N (%)	Adequate physical activity N (%)	P value
Gender			
Male	516(78.06)	145(21.94)	0.112
Female	377(82.13)	82(17.87)	
Religion			
Hindu	756(79.08)	200(20.92)	0.196
Muslim	94(81.04)	22(18.96)	
others	43(89.59)	5(10.41)	
Type of family			
Nuclear	536(80.97)	126(19.03)	0.246
Joint	357(77.95)	101(22.05)	
Total monthly income (in Rs)			
≤10,000	263(87.64)	37(12.33)	0.0001
10,001-30,000	274(79.89)	69(20.11)	
30,001-50,000	152(60)	101(40)	
>50,000	204(91.08)	20(8.92)	

Only 20.26% of the students were physically active during lockdown period. Mean duration of physical activity of participants were 98±5.6 minutes per week.

Table no 2 shows that Male students were found to be more physically active at school than female students but association between physical activity and sex group is not statistically significant.

Nearly 21 % participants from Hindu religion were doing adequate physical activity but association between physical activity and type of religion was not statistically significant (P= 0.196).

Participants those living in Joint family were doing adequate physical activity but association between type pf family and adequate physical activity was not found to be statistically significant (P=0.246).

Max participants (101) with adequate physical activity belong to 30000 to 50000 income group and association between income group and physical activity was found to be statistically significant (p =0.0001).

Table 3: Association betwen selected sociodemographic characteristic with diet

Characteristic	Overeating, N (%)	Normal diet, N (%)	P Value
Income (Rs.)			
≤10,000	180(60)	120(40)	0.0001
10,001-30,000	275 (80.17)	68 (19.83)	
30,001-50,000	210(83)	43 (17)	
>50,000	195 (87.05)	29 (12.95)	
Type of family			
Nuclear	558(84.29)	104(15.71)	0.0001
Joint	302 (65.94)	156 (34.06)	
Number of siblings			
1-2	520(79.39)	135(20.61)	0.035
3-4	265(74.02)	93(25.98)	
≥5	75(70.09)	32 (29.91)	
Religion			
Hindu	742(77.62)	214(22.38)	0.105
Muslim	80(68.96)	36(31.04)	
Others	38(79.16)	10(20.84)	

Only 260 (23.2%) participants were taking a normal diet remaining student are overeating. Students who had a higher family income were overeating more than those with lower family income. As income is increasing overeating is also increasing and the association between overeating and income group was statistically significant (P= 0.0001). Also overeating is more seen in participants residing in the Nuclear family (84.29%) than joint family (65.94%). Association between overeating and type of family is statistically significant (P=0.0001). Overeating also seen in the participants who has 1-2 siblings (79.39%) than more than 2 siblings and association between no of sibling and overeating was found to be statistically significant (P =0.035). More overeating (79.16%) was seen in the participants of religion than Hindu and Muslim but association was not found to be statistically significant(P=0.105).

Table 4 Association between selected sociodemographic characteristics with screen time

Characteristics	Increase Screen time		P Value
	Yes, n (%)	No, n (%)	
Gender			
Male	448 (67.8)	213 (32.2)	0.007
Female	346 (75.4)	113 (24.6)	
Type of diet			
Overeating	558(64.88)	302(35.12)	0.0001
Normal diet	73(28.07)	187 (71.93)	
Physical activity			
Adequate	50(22)	177 (78)	0.0001
Inadequate	617(69.09)	276 (30.91)	

About 873(77.94%), 448(40%), 323(28.9%), and 1120(100 %) participants had a smartphone, laptop/computer, videogames, and a television set, respectively. A little more than half of the children had a WhatsApp account (748,70 %), Instagram account (700,62.05%) and Facebook account (460,38.3%). About 638 (56.96 %) participants used their laptop/smartphones late at night. Mean screen time in study population was 1750± 20.56 minutes per week.

794 (70.89%) participants has increased screen time during lockdown period. Nearly 29.6%, 36.4%, and 36.4% of the participants spent around 120-180 min watching TV, using the laptop/computer, and using the Internet (except for social media), respectively, whereas 810 students (72.32%) of them used their smartphones for a duration of > 180 min.

Table no 4 shows that female students were likely to spend more time in front of the screen than their male counterparts. Association between increase screen time and sex group was statistically significant (P =0.007). It also shows that those students with inadequate physical activity at school were more likely to spend time in front of the screen than those with adequate physical activity. Association between increase in screen time and inadequate physical activity was statistically significant (P=0.0001).and Overeating also seen in students which have more screen time than other students and association between overeating and increase screen time is found to be statistically significant. (P=0.0001).

Discussion:

The 1120 children covered a wide range of sociodemographic characteristics including place of living, religion, type of family, number of siblings, and family income which helps in understanding how these variables could influence physical activity, screen time and diet in COVID-19 lockdown period. This study utilized convenient sampling method.

The prevalence of adequate physical activity was found to be 20.26%. This is in contrast to a study conducted Lyngdoh M et al (9) in Manipur where the prevalence of adequate physical activity in before COVID 19 pandemic was higher (29.60%). In study conducted by Xiang M et al (10) also reported decrease in physical activity during covid 19 pandemic period. These findings suggest that during lockdown in COVID 19 pandemic

physical activity is restricted due to restriction of movement. Apart from it due to corona positive cases curfew is imposed in respective areas which further leads to restriction of mobility. In our mean duration of physical activity of participants were 98±5.6 minutes per week. This duration is less than the recommended duration (300 minutes per week). Almost similar mean duration of physical was found in the study conducted by Xiang M et al (10).

The proportion of students who were using smartphone in this study was found to be 77.94%. which was more than the study conducted by Lyngdoh M et al (9) in which only 56.9% students were using the smartphone. This might be because school are closed due to lockdown period and students have to attend the online classes and to do online assignment provided by their schools which further increased the number of students using smartphones.

Mean screen time in study population was 1750± 20.56 minutes per week which was more than the study conducted by the (1730 minutes per week) Xiang M et al(10).In our study 70.89 % student had increased screen time (> 3 hrs) which is much more than the study conducted by Lyngdoh M et al (9) in which increased screen time was present in only 24.4% students. Study conducted by Xiang M et al (10)also reported increased screen time during COVID 19 pandemic period. Reason behind it was due to restriction of mobility student use their smart phone for entertainment and also due to online classes assigned by the schools.

In our study significant association (P=0.0001) was found between inadequate physical activity with high screen time. Similar findings were found in study conducted by Greca et al (11). This is due to spending hours in front of the screen keeps students seated and limits them from getting the physical activity that they need.

The prevalence of overeating was found to be 76.78% which is due to sedentary life style and increased screen time during lockdown period. Students who had a higher family income were overeating more than those with lower family income. Also overeating is more seen in participants residing in the Nuclear family (84.29%) than joint family (65.94%). Overeating also seen in the participants who has 1-2 siblings (79.39%) than more than 2 siblings. More overeating (79.16%) was seen in the participants of religion than Hindu and Muslim. Statistically significant association was found between overeating and income group (p=0.0001), type of family (p=0.0001) and number of siblings (p=0.035).

Conclusion

Due to lockdown during COVID 19 pandemic physical activity is decreased while overeating and screen time of study population is increased. Reason behind this was restriction of movement, curfew imposed in case area, starting of online classes, increased use of smartphone to pass time and entertainment.

Recommendations

Increasing awareness among school students regarding the importance physical activity, exercise and proper diet can increase the prevalence of good life style. Because movement is restricted student and their parents should we educated about various indoor activities and games which can be done indoor and helps in increase physical activity such as skipping rope, brisk walk in home, dance to music, active indoor games, home based exercises like planks, sit ups, push ups, squats, side knee ups, practice meditation and yoga like surya-namaskar etc.

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