

**CHILDREN IN COVID-19 LOCKDOWN:
IMPACT OF SCHOOL CLOSURES ON PHYSICAL ACTIVITY AND
LIFESTYLE OF CHILDREN AND ADOLESCENTS IN INDIA.**

Dissertation submitted to



The IIHMR University, Jaipur

For the partial fulfilment for the award of the degree of

Master of business administration (MBA)

in

Hospital and Health Management

by

Kanchan Gehani

Under the Supervision and Guidance of

Dr. Susmit Jain

2021

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DECLARATION BY STUDENT

I hereby declare that this dissertation titled “Children in covid-19 lockdown: Impact of school closures on physical activity and lifestyle of children and adolescents in India” is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

Kanchan Gehani

Date:



CERTIFICATE

This is to certify that **Kanchan Gehani** in partial fulfillment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur has successfully completed her internship at **ExpressRCM Private Limited** from March 22, 2021 to June 19, 2021.

Place: Jaipur
Date: 21st June, 2021

A handwritten signature in blue ink, appearing to read "Gaurav Mundra".

Gaurav Mundra
CEO

ExpressRCM Private Limited

5th Floor, 306, 308, 309, Gomes Defence Colony, Vaishali Circle, Vaishali Nagar, Jaipur – 302 021 Rajasthan

CERTIFICATE

This is to certify that dissertation titled “Children in covid-19 lockdown: Impact of school closures on physical activity and lifestyle of children and adolescents in India” is a record of the research work undertaken by Kanchan Gehani in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and his/her approach to the research study has been sincere, scientific, and analytical.



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ABSTRACT

Title: CHILDREN IN COVID-19 LOCKDOWN: IMPACT OF SCHOOL CLOSURES ON PHYSICAL ACTIVITY AND LIFESTYLE OF CHILDREN AND ADOLESCENTS IN INDIA.

Introduction: In the wake of Covid-19, lockdown was imposed all over the country which involved shutting down of schools for indefinite period. A school which is like a second home for children was no longer functional. This sudden change impacted children in more than one way. It put children confined to home with having almost nothing to do & leaving them with plenty of leisure time at the same place.

Aims & Objective: The aim was to assess the impact of lockdown on physical health and lifestyle of children and adolescents of age 5-17 years in the country.

Methodology: A non-experimental descriptive, cross-sectional study was conducted. Responses of participants were taken using a google form was in Hindi and English. Total 139 respondents participated in the study out of which 125 were shortlisted through convenience sampling and the collected data was analysed using Ms Excel 2010.

Results & Discussion: Out of total respondents 53.6% were females and 48.8% were males. Major population belonged to urban area. Significant changes in sleep schedule, hours, eating patterns and physical activity were seen. Screen-time of children was seen to be increased up to 4-6 hours since lockdown leading to increase in sedentary time. Children complained of being bored and missing school and meeting friends, whereas parents complained about their child being constantly in front of screen and playing videogames, both ways it was found that Children are facing difficulty in following a fixed daily routine during lockdown.

Conclusion: There is a pressing need to address the change structure children are going through in this post-pandemic era. At growing age, a child is most vulnerable to obesity, malnutrition, emotional changes, puberty etc. and this pandemic has only added to it.

Keywords: Covid-19, lockdown, physical activity, sleeping pattern, eating habits in lockdown, children, adolescents, sedentary lifestyle.

ACKNOWLEDGEMENT

“The Road of Success Is Dotted with Many Tempting Places but Ultimately the Man Who Works Hard Only Gets Success”

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Submitted by: Kanchan Gehani, 0922

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Abbreviations

C&A – Children and Adolescents

Covid-19 – Coronavirus 2019

PTSD – Post-traumatic Stress Syndrome

SARS-CoV-19 – Severe Acute Respiratory Syndrome – Coronavirus 19

TV - Television

WFH – Work from Home

WHO – World Health Organization

CDC – Centre for Disease Control and Protection

Chapter 1: Introduction:

In response to Covid-19 outbreak, almost the entire world went into lockdown, given the time-period or occurrence being different or same. WHO declared SARS-CoV-19 as a pandemic and all the nations underwent restrictions considering stay-at-home order. Like any other nation, the first step India took to fight the pandemic was to announce shutting down of workplaces (except a few central govt. organizations) and schools indefinitely. People were asked to stay at home and movement outside was strictly restricted.

Any and every individual follows a routine in his/her daily life, people go to work, children go to school and colleges, elderly have their post-retirement routine, etc. People might not realize but they have a sequence of activities, habits or patterns regularly followed. Some active individuals follow a strict workout/gym routine and even the less active individuals have a schedule even if working out is or is not a part of their routine.

When people are suddenly taken out of their routine and asked to just stay at home for an indefinite period, their routine, habits, mind, and bodies are disturbed. Any sudden change is a shift from their comfort zone to a different dimension which eventually starts affecting the body and mind.

As we talk about the influential property of lockdown on individuals, one of all immensely affected categories is school going children. A child adapts going to school at a very small age and realizes that going to school is part of his/her life. In the school age, a child has a broader vision, a perspective mind, and an astonishingly high energy level. **The Telegraph, UK published an article that states** “Children have energy levels greater than endurance athletes.” It was found that children not only have fatigue-resistant muscles but recover very quickly from high-intensity exercise - even faster than the well-trained adult endurance athletes. Schools being closed and implementation of stay-at-home order has restricted their physical activity and energy usage levels leading to sedentary lifestyle, mental boredom, reduced brain activity and, excessive use of internet, TV etc. Although, the school closure has been implemented to help reduce spread of infection, specially to children who are one of the vulnerable populations to risk.

School is not just a place where a child is supposed to get education and good grades. It is one of a major foundation stone that creates the base of children's future where they learn important life lessons, morals and explore their area of interest. At such age, children who are acclimated with going to class and blending with companions each day will be the significant victims of emotional well-being issues since they are limited at their homes at the ready period of learning social abilities of their lives. Not only mental but also physical health has been impacted due to home confinement.

School was a major part of lifestyle and every-day functioning of children and adolescents. At this growing age where a child has just begun learning the sense of this God's green earth, they are instead

faced with a pandemic. For many, the home may not be a happy place, where there is a lingering threat of an unhappy and dysfunctional household. For them, their school, the safe haven, is no longer a place where they can be happy and be with friends.

AIMS & OBJECTIVES:

1. To assess the impact of school closures on physical activity and sedentarism in children and adolescents of age 5-17 years.
2. To assess the impact of school closures on lifestyle of children and adolescents of age 5-17 years

DEFINITION OF PHYSICAL ACTIVITY BY WHO

“Physical Activity (PA) is defined as any bodily movement produced by skeletal muscles that require energy expenditure.” There are two components to physical activity that need to be considered -

- Aerobic fitness: this usually includes moderate to vigorous activity that makes you feel a bit warm and causes an increase in your breathing rate, breathing depth and your heart rate.
- Strength and balance: This often are the forgotten component of physical activity but it is an essential part and has many benefits.

DEFINITION OF SEDENTARY TIME:

- Time spent sitting or lying down, making minimum to no movement of the body.

Chapter 2: Review of Literature

S N o.	TITLE	AUTHOR NAME	STUDY DESIGN	OBJECTIVE	METHODOLOGY	FINDINGS/OUTCOME
1	Impact of Coronavirus Imposed Lockdown on Indian Population and their Habits	Mahendra Kumar, Sachin Dwivedi	Cross-sectional, observational study	To assess the impact of lockdown on individuals' daily habits such as sleep/got up, social media use, work from home and more selected variables.	Sampling technique: Probability systemic sampling technique. Sample Size: 749 Study tool: A self-prepared semi-structured anonymous questionnaire was used to record the responses of participants.	1) The results of responses about work from home 55% participants are working from home since lockdown condition implementation. 2) Routine habits 3) Since lockdown 40 % of participants agreed to use more internet data on official work and 31% of participants use internet data more than usual to access social media since lockdown. 4) Change in eating, sleeping etc habits.
2	Eating habits and lifestyle changes during COVID-19 lockdown: an Italian survey	Di Renzo, L., Gualtieri, P., Pivari, F. <i>et al.</i>	Cross-sectional, observational study	To investigate the immediate impact of the COVID-19 pandemic on eating habits and lifestyle changes among the Italian population aged ≥ 12 years.	Sampling technique: Probabilistic sampling technique. Sample Size: 4500 Study tool: The survey was conducted from the 5th to the 24th of April 2020, among the Italian population, by using an online platform, accessible through any device with an Internet connection.	1) Smoking habits reduced and sleep hours increased. 2) Variation in food intake. 3) Physical activities/training : gym was the preference before lockdown which changed to home workout without weights during lockdown.

3	Effect of lockdown on activities of daily living in built environment and well-being	Sudhir Kumar Pasala, Lakshmi Gumpeny, Madhu Kosuri, Snehalatha Tippana, Sridhar Gumpeny	Cross-sectional, observational study	To assess how personal built environment affected the citizens in the first few weeks	Sample Size: 121 Study tool: The survey was administered online from 19th April 2020 to 07th May 2020, i.e. during and beyond 4 days of the second phase of lockdown.	1) Forced social isolation did not alter the television channels that were viewed. 2) Among those who worked from home, most preferred to work from their bedroom. 3) There was no change in the quality or quantity of sleep during the lockdown. This study in the early weeks of the lockdown documents the way in which individuals lived through it in terms of the built environment at home.
4	A Study of Effect of Corona Virus Covid-19 and Lock Down on Human Psychology of Pune City Region	Rahul Suryawanshi, Vishlesh More	Cross-sectional, observational study	(i) To study the human psychology in Lock Down period (ii) To study how people spending their time in Lock Down Period (iii) To Study the impact of Lock Down on their family relations.	PERIOD OF STUDY: First 6 days of Lock Down and Janata Curfew Period i.e. 22nd March to 27th March, 2020 of the selected region, Pune City. SAMPLING TECHNIQUES: Sampling Technique is used is Convenient Sampling Technique. SAMPLE OF STUDY: People who are resident of Pune City region. SOURCES OF DATA COLLECTION: The data is a primary data. The data is obtained through questionnaire framed in Google form sent to selected people.	1) The Lock Down have given the positive effect on 54 respondents, Negative impact on 11 respondents and there is no effect on their mentality is 30 out of 95. 2) it is found that most of the people spending their time with the family and then watching Television then Mobile phones. But major respondent gave their choice as spending time with family. 3) 62 respondents said their relation improved, only 2 respondent noted their relation is worsen and 31 respondent noted there is no effect on their relation out of 95.

5	Behavioural change towards reduced intensity physical activity is disproportionately prevalent among adults with serious health issues or self-perception of high risk during the UK COVID-19 lockdown	Nina Trivedy Rogers, Naomi Waterlow, Hannah Brindle, Luisa Enria, Rosalind M Eggo, Shelley Lees & Chrissy h Roberts	Cross-sectional, observational study	To examine whether the UK's lockdown measures have had disproportionate impacts on intensity of physical activity in groups who are, or who perceive themselves to be, at heightened risk from COVID-19.	Sampling technique: Probabilistic sampling technique. Sample Size: 5820 Study tool: The survey of adults aged over 20 was conducted from the 6th to the 22th of April 2020, roughly mapping to 3-5 weeks of lockdown in the UK, survey data were collected by using an online platform, accessible through any device with an Internet connection using a 'daisy-chaining' approach.	Most (60%) participants achieved the same level of intensity of physical activity during the lockdown as before the epidemic. Doing less intensive physical activity during the lockdown was associated with obesity (OR 1.21, 95% CI 1.02-1.41), hypertension (OR 1.52, 1.33-1.71), lung disease (OR 1.31, 1.13-1.49), depression (OR 2.02, 1.82-2.22) and disability (OR 2.34, 1.99-2.69). Participants who reduced their physical activity intensity also had higher odds of being females, living alone or having no garden, and more commonly expressed sentiments about personal or household risks in narratives on coping.
6	Prevalence of Insufficient Physical Activity, Sedentary Screen Time and Emotional Well-Being During the Early Days of the 2019 Novel Coronavirus (COVID-19) Outbreak in China: A National Cross-Sectional Study	Fei Qin Yiqing Song	Cross-sectional, observational study	To evaluate the characteristics of lifestyle in China during the initial stage of COVID-19 lockdown	Sampling technique: snowball sampling strategy. Sample size: 12107 Population age group: 18-80 years living in China. Study tool : The questionnaire was distributed to Chinese adults living in 31 provinces of China via internet using a snowball sampling strategy. Information on 7-day physical activity recall, sedentary screen time, and emotional state were collected between January 24 and February 2, 2020	During the initial phase of COVID-19 outbreak, nearly 60% of Chinese adults had inadequate physical activity (95% CI 56.6%-58.3%), which was more than twice the global prevalence (27.5%, 25.0-32.2%). Their mean screen time was more than 4 hours per day during home stay (261.3 ± 189.8 minutes per day). Of all participants, the positive affect score was 24.78 and the negative affect score was 19.34.

7	The impact of physical activity on psychological health during Covid-19 pandemic in Italy	GraziaMaugeri,PaolaCastrogiovanni, Giuseppe Battagli, RobertoPippi, VeliaD'Agata, AntonioPalma, Michelino Di Rosa, Giuseppe Musumeci.	Cross-sectional, observational study	(1) changes in the physical activity levels during self-quarantine in Italy; (2) the correlation between physical activity and well-being of individuals.	Study tool : a quick, large cross-sectional online survey realized through Google Forms web survey platform. 2) Sample size : 2524	1)Total physical activity significantly decreased between before and during COVID-19 pandemic in all age groups and especially in men. 2) A significant positive correlation was found between the variation of physical activity and mental well-being, suggesting that the reduction of total physical activity had a profoundly negative impact on psychological health and well-being of population.
8	Physical Activity Levels and Related Energy Expenditure during COVID-19 Quarantine among the Sicilian Active Population	Valerio Giustino, Anna Maria Parroco, Antonio Gennaro, Giuseppe Musumeci, Antonio Palma	Cross-sectional, observational study	The aim of this study was to estimate the levels of PA, expressed as energy expenditure (MET–minute/week), among the physically active Sicilian population before and during the last seven days of the COVID-19 quarantine	Sample : 802 Sicilian physically active participants were included in the study and grouped based on gender, age and BMI. An adapted version of the International Physical Activity Questionnaire—short form was administered to the participants through an online survey.	1) They observed a significant decrease of the total weekly energy expenditure during the COVID-19 quarantine. 2) In particular, the highest and the lowest levels of PA were reported by the young and the elderly, respectively, both before and during quarantine. Finally, the overweight group showed the lowest level of PA during quarantine.
9	Exploring Lifestyle Habits, Physical Activity, Anxiety and	Raul Antunes, Roberta Frontini, Nuno Amaro,	Cross-sectional, observational study	1) to characterize the lifestyle habits, anxiety	In total, 1404 adults (36.4 ± 11.7 years; 69.6% female) answered sociodemographic data and three	1)Males revealed higher values for the total energy expenditure and for the level of satisfaction of competence. 2)Females showed higher scores for the anxiety state and anxiety trait.

	Basic Psychological Needs in a Sample of Portuguese Adults during COVID-19	Rogério Salvador, Rui Matos, Pedro Morouço, and Ricardo Rebelo-Gonçalves		levels and basic psychological needs (BPN), in Portuguese adults during the Coronavirus Disease 2019 (COVID-19) pandemic, including a comparison between genders and age groups.	instruments: the International Physical Activity Questionnaire, the Basic Need General Satisfaction Scale and the State-Trait Anxiety Inventory.	Regarding age, higher values for the anxiety trait were found in the 18–34 years-old group compared to all the other age groups, also presenting significantly higher values of total energy expenditure when compared to the 35–44 years-old group.
10	The Impact of COVID-19 on Physical Activity Behavior and Well-Being of Canadians	Iris A. Lesser and Carl P. Nienhuis	Cross-sectional, observational study	The objective of this study was to assess how these preemptive measures impacted physical activity behaviour and well-being of Canadians	Study tool : An online survey was utilized to measure participant physical activity behavior, nature exposure, well-being and anxiety levels. Sampling technique : snowball sampling. Sample size : 1098	1)While 40.5% of inactive individuals became less active, only 22.4% of active individuals became less active. Comparatively, 33% of inactive individuals became more active while 40.3% of active individuals became more active. 2)Inactive participants who spent more time engaged in outdoor physical activity had lower anxiety than those who spent less time in outdoor physical activity.
11	Mitigate the effects of home confinement on children during the COVID-19 outbreak	Guanghai Wang Yunting Zhang Jin Zhao Jun Zhang Fan Jiang	NA	To ensure the academic running of the children of china by the chinese government and to evaluate the effects of home quarantine with no school on these children.	Secondary study on China government's adaptation on home schooling plan. Evaluation of the steps taken by Chinese government to advance children's activity with relation to education and physical point.	The government should provide guidelines and principles in effective online learning and ensure that the contents of the courses meet the educational requirements. promotional videos can be useful to motivate children to have a healthy lifestyle at home by increasing physical activities, having a balanced diet, regular sleep pattern, and good personal hygiene.8 To make these educational materials truly effective, they must be age-appropriate and attractive. They require professional expertise and real resources to create.

1 2	Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study	Angelo Pietrobelli Luca Pecoraro Alessandro Ferruzzi Moonseong Heo Myles Faith Thomas Zoller Franco Antoniazzi Giorgio Piacentini S. Nicole Fearnbach Steven B. Heymsfield	Longitudinal observational study	The aim of this study was to test the hypothesis that youths with obesity, when removed from structured school activities and confined to their homes during the coronavirus disease 2019 pandemic.	The sample included 41 children and adolescents with obesity participating in a longitudinal observational study located in Verona, Italy. Lifestyle information including diet, activity, and sleep behaviors was collected at baseline and 3 weeks into the national lockdown during which home confinement was mandatory. Changes in outcomes over the two study time points were evaluated for significance using paired t tests.	There were no changes in reported vegetable intake; fruit intake increased ($P = 0.055$) during the lockdown. By contrast, potato chip, red meat, and sugary drink intakes increased significantly during the lockdown (P value range, 0.005 to <0.001). Time spent in sports activities decreased by 2.30 (SD 4.60) h/wk ($P = 0.003$), and sleep time increased by 0.65 (SD 1.29) h/d ($P = 0.003$). Screen time increased by 4.85 (SD 2.40) h/d ($P < 0.001$).
1 3	A qualitative report on exploratory data on the possible emotional/behavioral correlates of Covid-19 lockdown in 4-10 years children in Italy.	Luca Pisano Domènico Galimberti Luca Cerniglia	Qualitative study	1) To investigate the regressive behavior of children with particular reference to the loss of some developmental skills previously achieved. 2) To explore the child's opposing behavior against the sudden change in lifestyle. 3) To investigate the adaptation behavior of the children	An ad-hoc questionnaire was constructed, divided into three areas, four questions per area, encompassing a total of twelve questions. The questionnaire was administered to parents living in Sardinia (Italy) who have children aged between 4 and 10 years. Sample size : 5989 parents	1) 26.48% of children, who before the Covid-19 emergency had acquired the competence to sleep alone in their own bedroom, asked to sleep in their parent's room. 2) 2.84% started suffering from enuresis. 4) 18.17% began to express fears they didn't have before. 5) 53.53% of children showed increased irritability, intolerance to rules, whims and excessive demands. 6) 21.17% showed continuous mood swings. 7) 34.26% were nervous about the pandemic when watching TV talk-shows about the coronavirus or because of restrictions.

				with reference to calmness, tranquility, balance, and adaptation to restrictions.		
14	What are we doing to the children of South Africa under the guise of COVID-19 lockdown?	Lore van Bruwaene , Fatima Mustafa, Jeane Cloete	NA	To assess children's access to healthcare and education, and maternal support for hospitalised children.	NA	Schools have been closed, and for many vulnerable pupils this has meant an experience of isolation, anxiety and hunger. These restrictions may be considered a form of abuse or neglect. Children with malnutrition are once more being admitted to paediatric wards in state hospitals.
15	Effect of the Pandemic and Lockdown on Mental Health of Children	Kalpna Thakur & Naveen Kumar & NovRattan Sharma	NA	To address the psycho-social problems, activities of children at home and problems faced by managing parents unavailability either due to covid infection or working for it in hospitals.	NA	It has been found that children staying at home due to lockdown spend more time in front of TV and internet which can lead to psycho-social problems (like lower self esteem), internet addiction, cyberbullying which can affect their mental health. Moreover, spending more time inside the house makes children vulnerable to effects of indoor pollution which can affect their brain development leading to limited development of cognitive abilities [2]. Children who are separated from their parents/ caregivers due to their infections or their parents being affected or their parents serving in hospitals are more vulnerable to depression, stress, anxiety, avoidance behavior, and PTSD has been reported.

1 6	The Mental Health of School-Going Children During Existing Lockdown Situation Due to COVID-19 Pandemic in Bangladesh	Muhammad Anwar Hossain, Sanjida Rahman, Md Rezaul Karim.	Review study	The real scenario of the mental health of school-going children of Bangladesh due to the pandemic of COVID-19 with some statements of child specialists, psychiatrists, psychological point of view and expertise.	NA	Factors disturbing the mental health of children and the factors that can help get rid of the depression.
1 7	The Italian paediatric society recommendations on children and adolescents extra-domestic activities during the SARS COV-2 emergency phase 2	Alberto Villani, Elena Bozzola, Paolo Siani & Giovanni Corsello	NA	To discuss the opportunity for children to practice safely recreational or physical activity outdoor.	NA	Suggested specific recreational and physical activities according to the age of the children and respecting social distancing.
1 8	How to deal with COVID-19 epidemic-related lockdown physical inactivity and sedentary increase in youth? Adaptation of Anses' benchmarks	Irène Margaritis, Sabine Houdart, Youssef El Ouadrhiri, Xavier Bigard, Anne Vuillemin, Pascale Duché.	NA	To suggest whether, why, and how to deal with short- or medium-term lockdown-related PI and SB increase in young children and adolescents.	NA	WHY - A sedentary lifestyle is a risk factor for chronic diseases and increased mortality. The context of lockdown promotes these SB and can lead to an increase in time spent sitting or lying down (apart from sleeping), the effects of which can be deleterious on health, including mental health. HOW - Limit the total daily duration of sedentary activities while awake; limit the duration of each sedentary activity, so as not to exceed 1 h continuously for children under 6 and 2 h for children aged 6–17 years.

19	Psychological impact of lockdown (confinement) on young children and how to mitigate its effects	Adrián García Ron, and Isabel Cuéllar-Flores	Review study	to review the available evidence on the psychological impact of quarantine on children, looking for the main stressors and protective factors during it.	A rapid review of the psychological impact of quarantine on children and adolescents has been carried out, following WHO recommendations. 3 electronic databases (PubMed, EMBASE and Google Academics) were used in addition to expert recommendations. Of 57 documents found, only 3 met the requirements and were included in this review.	Recommendations of experts with greater consensus is proposed to mitigate the negative impact of quarantine on minors.
20	Coronavirus lockdown effect on type 1 diabetes management on children wearing insulin pump equipped with continuous glucose monitoring system	Athanasios Christoforidis, Evgenia Kavoura, Aggeliki Nemtsa, Konstantina Pappa, Meropi Dimitriadou.	NA	to monitor the effect of the coronavirus lockdown in diabetes management in children with Type 1 Diabetes Mellitus (T1DM) wearing insulin pump equipped with continuous glucose monitoring system.	n 34 children with T1DM on Medtronic 640G insulin pump equipped with the Enlite Sensor uploaded CareLink data were categorized in 2 three-week periods before and after the 10th of March.	A significantly higher Coefficient of Variation (CV) indicating an increased glucose variability in the pre-lockdown period was observed. Blood glucose readings were significantly fewer during the lockdown period. the meal schedule has changed dramatically as the percentage of breakfast consumed before 10.00 a.m. has fallen from 80.67 % to 41.46 % ($p<0.001$) during the lockdown. Correspondingly, the percentage of dinner consumption before 10.00 p.m. significantly fell during the lockdown period (60.22 % versus 53.78 %, $p=0.019$).

21	Potential effects of “social” distancing measures and school lockdown on child and adolescent mental health	Vera Clemens, Peter Deschamps, Jörg M. Fegert, Dimitris Anagnostopoulos, Sue Bailey, Maeve Doyle, Stephan Eliez.	Qualitative study	To discuss the potential effects of social distancing and school lockdown on and children and their inaccessible support services.	NA	Lockdown has resulted into inaccessibility of mental health and other support services to children and staying at home has shown major effect on their physical and mental health.
22	Exercising in Times of Lockdown: An Analysis of the Impact of COVID-19 on Levels and Patterns of Exercise among Adults in Belgium.	Constandts, Bram; Thibaut, Erik; De Bosscher, Veerle; Scheerder, Jeroen; Ricour, Margot; Willem, Annick	Cross-sectional study	To examine adults' exercise levels and patterns during the COVID-19 lockdown in Belgium.	By an online survey Ordinal logistic regression analyses of 13,515 valid and population-weighted responses.	The people who were already high active before COVID-19, those above 55 years old, those with low education, those used to exercise with friends or in a sport club, and those who were not using online tools to exercise, self-reported to exercise less during the lockdown.
23	The Importance of Physical Activity to Care for Frail Older Adults During the COVID-19 Pandemic	Mylene Aubertin-Leheudre PhD a,b, *, Yves Rolland MD, PhD	NA	To identify the importance of physical activity for older adults and recommend activities.	NA	Suggested physical activities and discussed on its importance in Frail older adults during the pandemic.

24	Coping with being cooped up: Social distancing during COVID-19 among 60+ in the United States	Emerson, Kerstin Gerst Rev Panam Salud Publica	Cross-sectional study	The impact of sheltering in place and social distancing among adults aged 60 and older during the 2020 outbreak of COVID-19 in the United States	Using convenience sampling respondents were asked to complete a web-administered survey to explore impact of social distancing on loneliness, stress, and behavioral changes. The analytic sample consisted of 833 responses of persons aged 60 and older	A large portion reported being stressed (36%), and/or being lonely (42.5%). Respondents reported engaging in more solitary activity (and fewer in-person activities), using email and text messages more than usual, and spending more time on computers/tablet than usual. Approximately 2/3 reported using more social media than usual. Additionally, changes in physical activity, drinking, recreational drug use and sleeping pattern changes differed by age.
25	Immunological Implications of Physical Inactivity among Older Adults during the COVID-19 Pandemic.	Damiot, Anthony; Pinto, Ana Jessica; Turner, James E; Gualano, Bruno	Review study	To discuss the negative impact of physical inactivity on immune function and showcase evidence that regular physical activity may be an effective strategy to counter some of the deleterious effects of social isolation.	NA	promoting an active lifestyle is a key intervention to counteract the effects of social isolation, especially in older adults and other at-risk individuals, such as those living with chronic diseases associated with ageing and lifestyle.
26	Can physical activity improve the mental health of older adults?	Nicola T Lautenschlager, Osvaldo P Almeida, Leon Flicker & Aleksandar Janca	NA	To find relation between physical activity and mental health.	NA	There was relation found between physical activity and mental health of older adults.

27	Physical inactivity among older adults across Europe based on the SHARE database.	Gomes M, Figueiredo D, Teixeira L, Poveda V, Paúl C, Santos-Silva A, Costa E	Cross-sectional study	The purpose of this study was to evaluate the prevalence of, and factors related to, physical inactivity among older adults across Europe.	A cross-sectional analysis, data from participants aged 55 or older in Wave 4 of the Survey of Health, Ageing, and Retirement in Europe (SHARE) database, a multidisciplinary and cross-national panel database covering health, socioeconomic status, and social and family networks. 58,489 individuals included in this study were classified as physically active or physically inactive.	The overall prevalence of inactivity among individuals age 55 or older in the 16 included countries was 12.5%. The prevalence of physical inactivity varied between countries, ranging from 4.9% (Sweden) to 29% (Portugal).
28	Social Distancing and Outdoor Physical Activity During the COVID-19 Outbreak in South Korea: Implications for Physical Distancing Strategies	Sunhee Park, Beomso Kim, Jaeil Lee.	Cross sectional analysis	to examine effects of social distancing on the Public Bicycle Sharing System (PBSS) during the COVID-19 outbreak.	Database of PBSS in Seoul. for a cross-sectional analysis of bicycle use at 2 points in time: January to March 2019 and January to March 2020. The latter was during the COVID-19 peak, when strict social distancing was imposed in Seoul from March 22. They performed descriptive statistics (independent t tests) and difference-in-differences (DID) analyses to examine the effect of social distancing on PBSS use during the COVID-19 outbreak.	Average daily PBSS usage in 2020 doubled over that of 2019 (30 697 vs 77 996, $P < .001$) There was a significant difference in time (ie, not only time of day but also day of the week) during which individuals utilized PBSS. DID analysis showed statistically significant positive effects of high levels of social distancing on PBSS usage and number of commuters, weekend users, and new subscribers after controlling for day

29	Recommendations for physical activity in older adults	Phillip B Sparling and colleagues	NA	To recommend physical activities for older adults.	NA	Recommendations
30	Coronavirus Lockdown: Forced Inactivity for the Oldest Old?	Gil Caspi, Jacob Chen, Sigal Liverant-Taub	NA	To analyse the implication of lockdown on oldest old	NA	Rationalizes between mortality of older people and forceful stay at home order leading to inactivity.

Chapter 3: Research Methodology

STUDY DESIGN:

- Non-Experimental Descriptive, cross-sectional study

STUDY POPULATION:

- School going Children & Adolescents (5-17 years of age)

TARGET RESPONDENTS:

- School going children & Adolescents (5-17 years of age)
- Parents/Guardians of the Children & Adolescents (5-17 years of age)

STUDY DURATION:

- 1 month – 30th May 2021 to 30th June 2021.

SAMPLING TECHNIQUE:

- Non-Probability convenient sampling.

SAMPLE SIZE:

- 125, out of which 78 respondents were Parents and 47 responses were from Children & Adolescents

METHODOLOGICAL APPROACH

The study is based on non-experimental descriptive survey approach using convenience sampling technique through which 125 out of 139 responses were taken into consideration as the rest were excluded due to incomplete data. An online survey (Annexure A), using a google form in Hindi and English, was conducted involving parents/guardians as the respondents of the survey, to fill the survey on behalf of their children or even children themselves. Written consent was taken from respondents willing to participate in the survey and no information on identity was taken. The form included simple Yes or No questions, Multiple Choice Questions, Check boxes, and open-ended question required to be filled for details timed before lockdown (regular offline school), & during lockdown (post shutdown of schools).

INCLUSION CRITERIA

1. Parents of school going children willing to participate in the survey.
2. Students willing to participate in the survey.
3. Children and Adolescents of age 6-18 years enrolled in a full-time school.

EXCLUSION CRITERIA

1. Parents unwilling to participate in the survey.
2. Students unwilling to participate in the survey.
3. Parents of children of age below 5 years.
4. Children and Adolescents of age 6-18 years not admitted to any school.
5. Incomplete data given by respondents

Chapter 4: Results

DEMOGRAPHICS		
Characteristics	Frequency	Percentage
Age		
13-17 years	48	38.4
5-12 years	77	61.6
Gender		
Female	67	53.6
Male	56	44.8
Prefer not to say	2	1.6
Environment		
Rural	12	9.6
Sub-urban	19	15.2
Urban	94	75.2
Siblings		
Yes	83	66.4
No	42	33.6
Family Composition		
Lives alone/in hostel/away from home	1	.8
Lives with both parents	51	40.8
Lives with joint family (cousins, relatives etc)	17	13.6
Lives with parents and grandparents	54	43.2
Lives with single/separated parent	2	1.6
Long term Illness		
Yes	3	2.4
No	122	97.6

Table 1. Shows basic information about the sample.

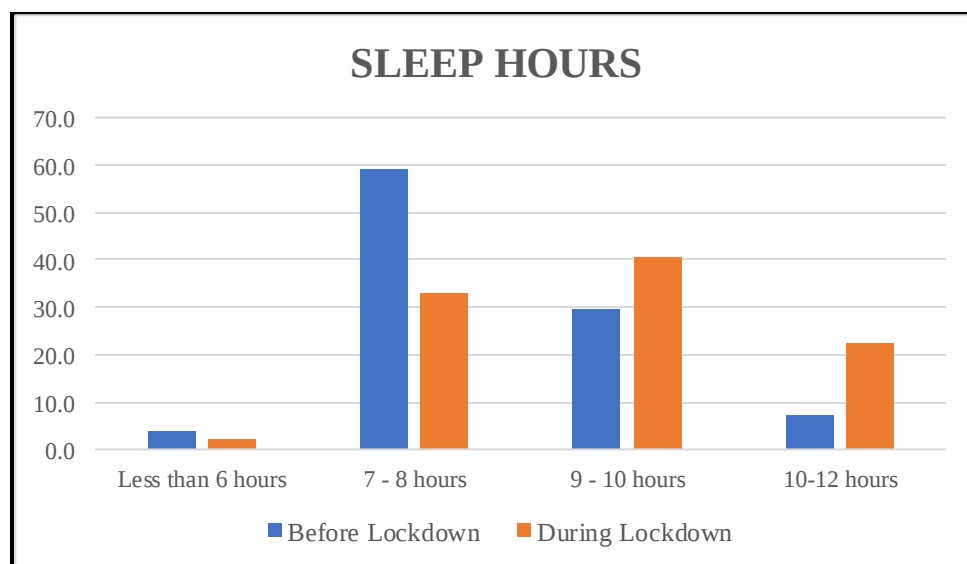


Figure 1. Shows changes in eating pattern of Children & Adolescents before lockdown and during lockdown.

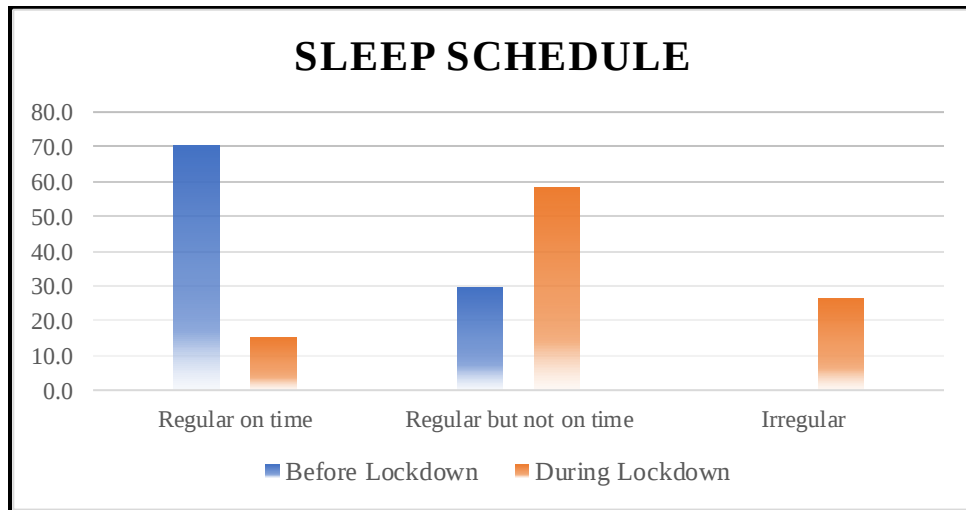


Figure 2. Shows changes in sleep schedule of Children & Adolescents before lockdown and during lockdown

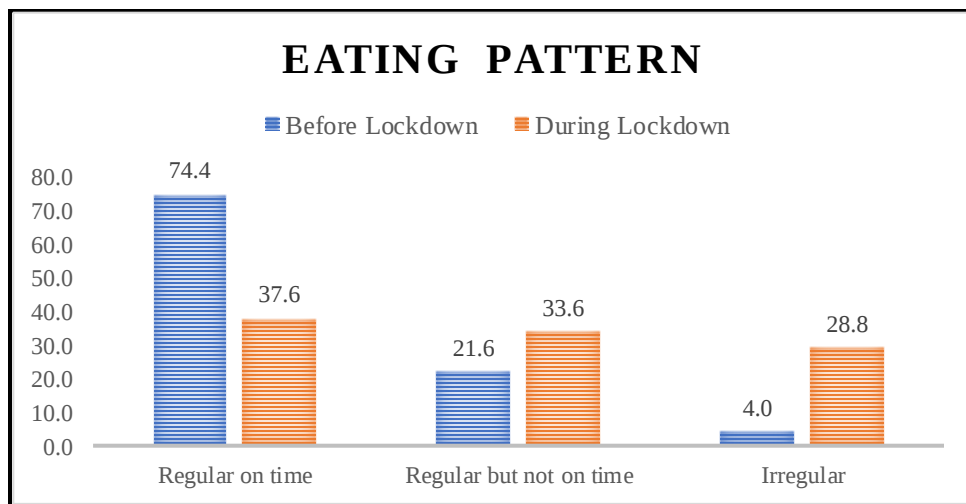


Figure 3. Shows changes in eating pattern of Children & Adolescents before lockdown and during lockdown

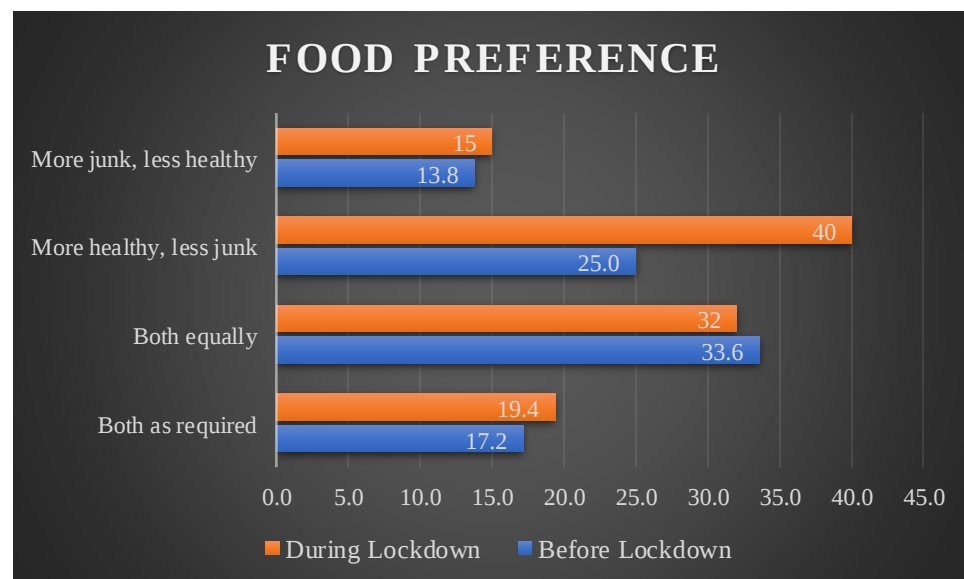


Figure 4. Shows changes in food preference of Children & Adolescents before lockdown and during lockdown

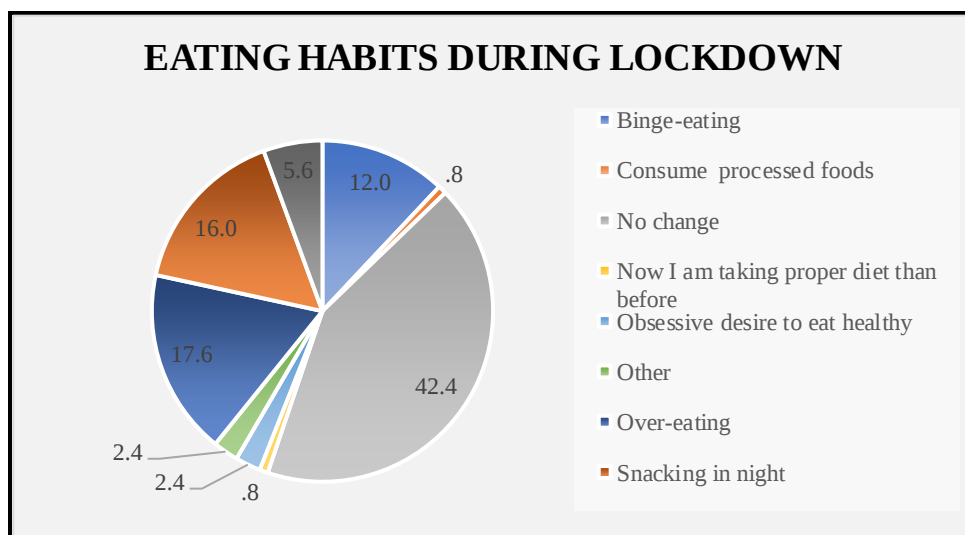


Figure 5. Shows change in eating habits of Children & Adolescents during lockdown

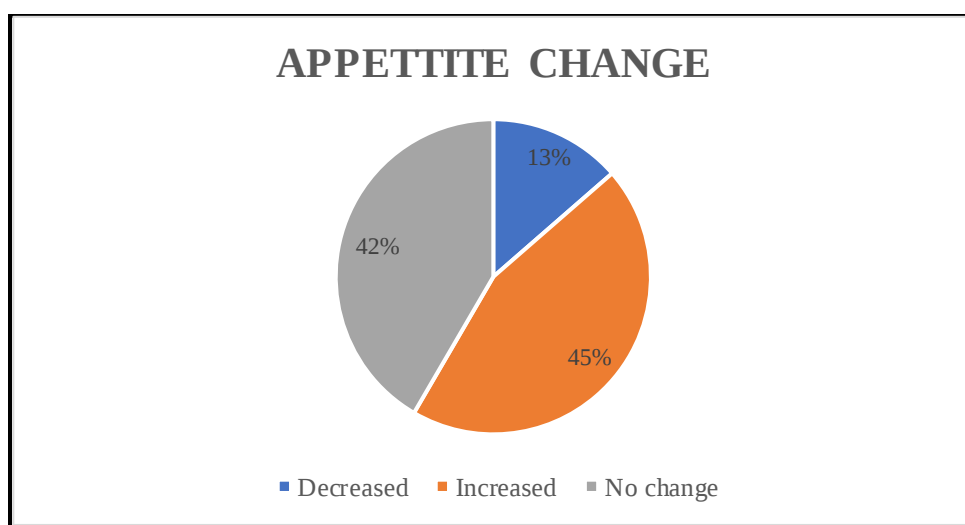


Figure 6. Shows change in appetite of Children & Adolescents during lockdown

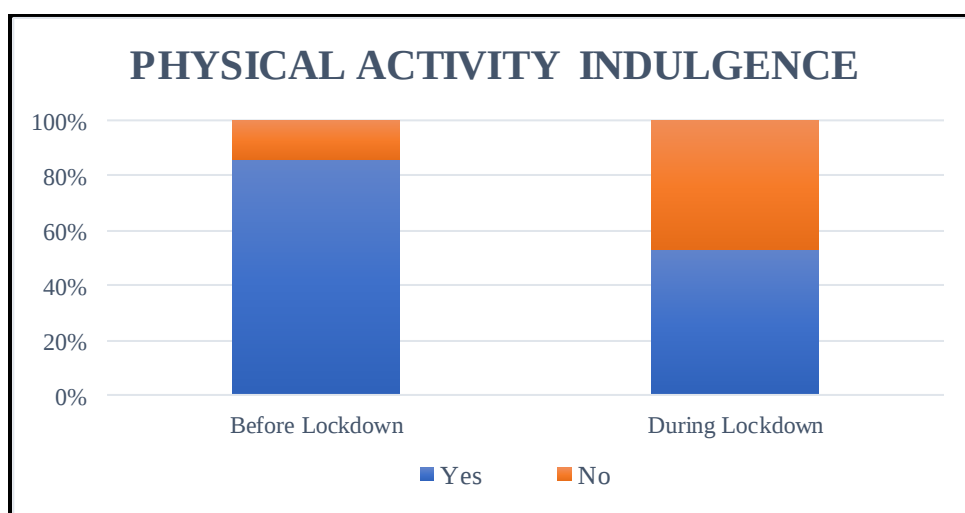


Figure 7. Shows changes in indulgence in physical activity of Children & Adolescents before lockdown and during lockdown

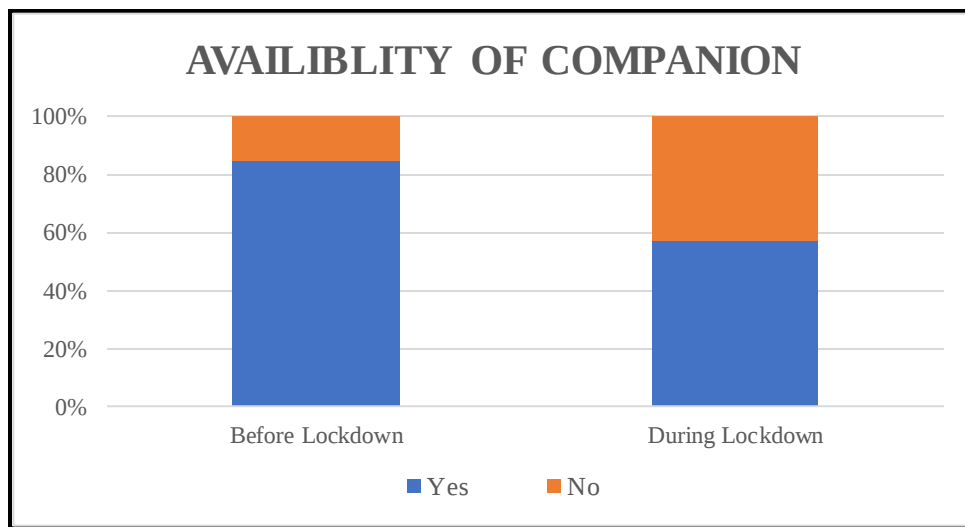


Figure 8. Shows changes in availability of companion to perform physical activity with sample Children & Adolescents before lockdown and during lockdown

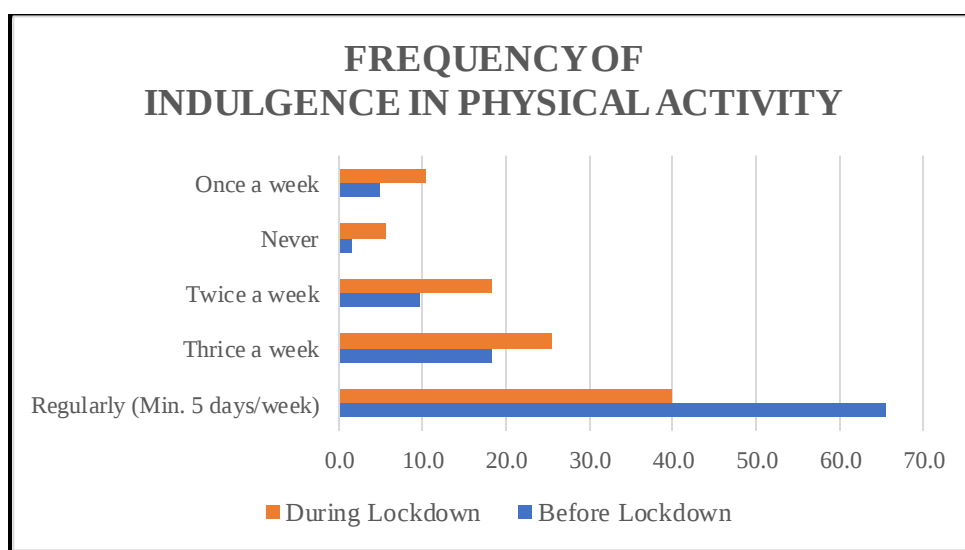


Figure 9. Shows impact on frequency of indulgence in physical activity of Children & Adolescents before lockdown and during lockdown

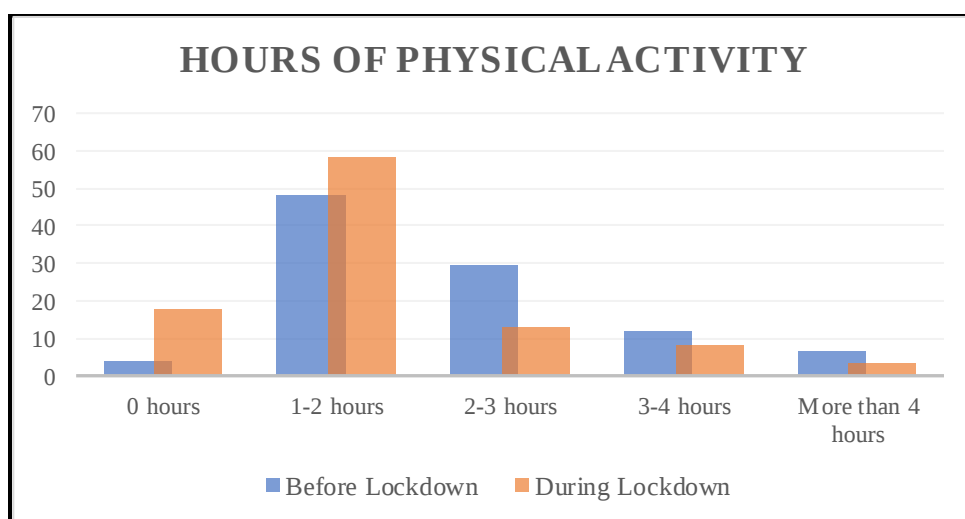


Figure 10. Shows impact on hours of physical activity of Children & Adolescents before lockdown and during lockdown

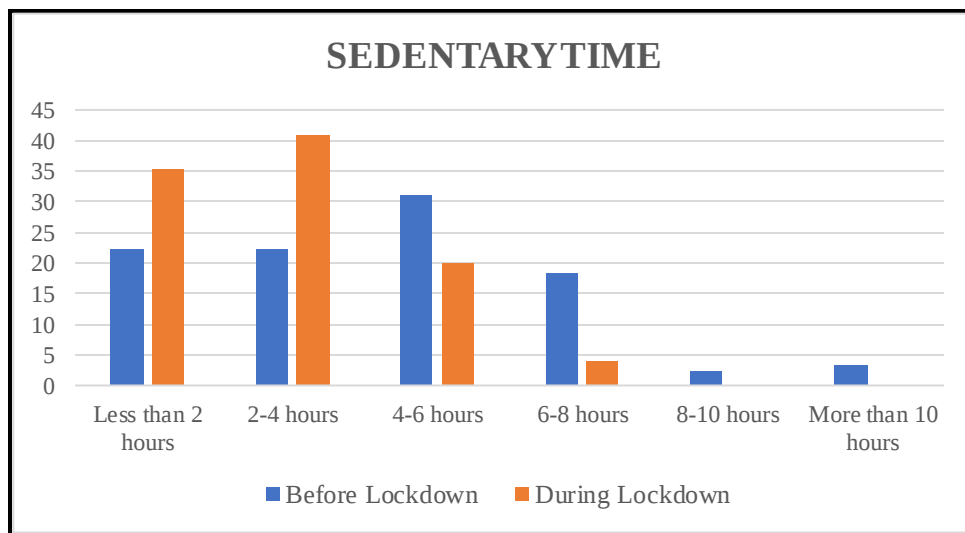


Figure 11. Shows impact on sedentary time of Children & Adolescents before lockdown and during lockdown

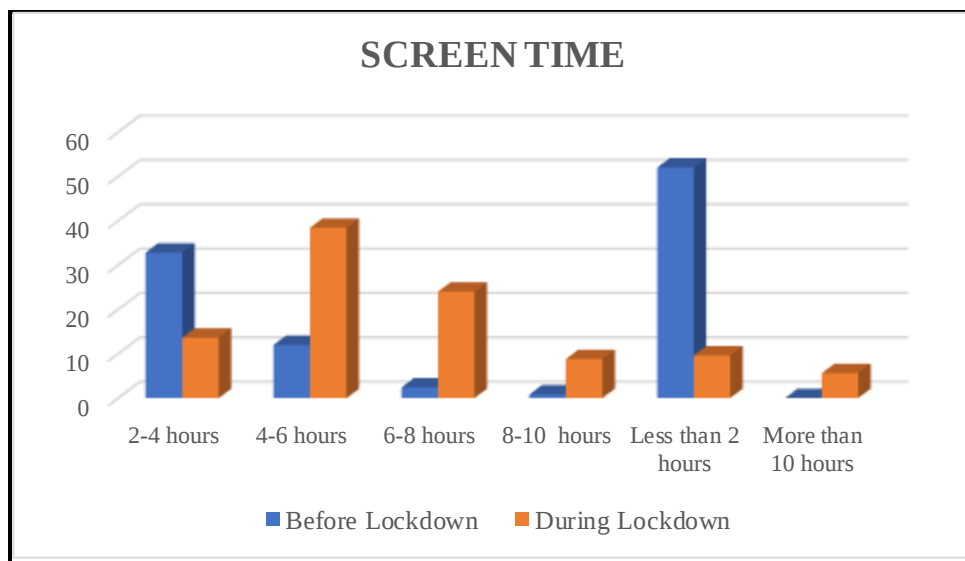


Figure 12. Shows impact on screen time of Children & Adolescents before lockdown and during lockdown

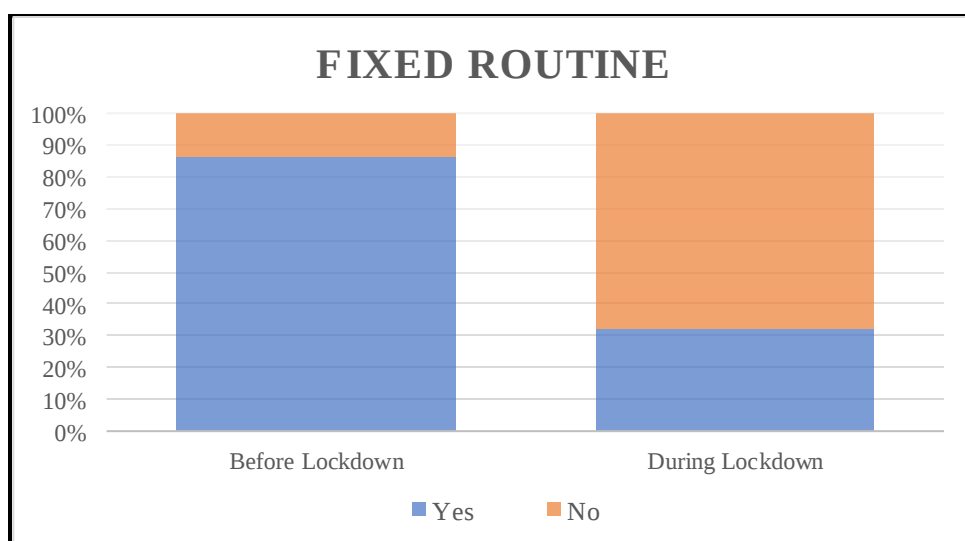


Figure 13. Shows impact on Daily fixed routine of Children & Adolescents before lockdown and during lockdown

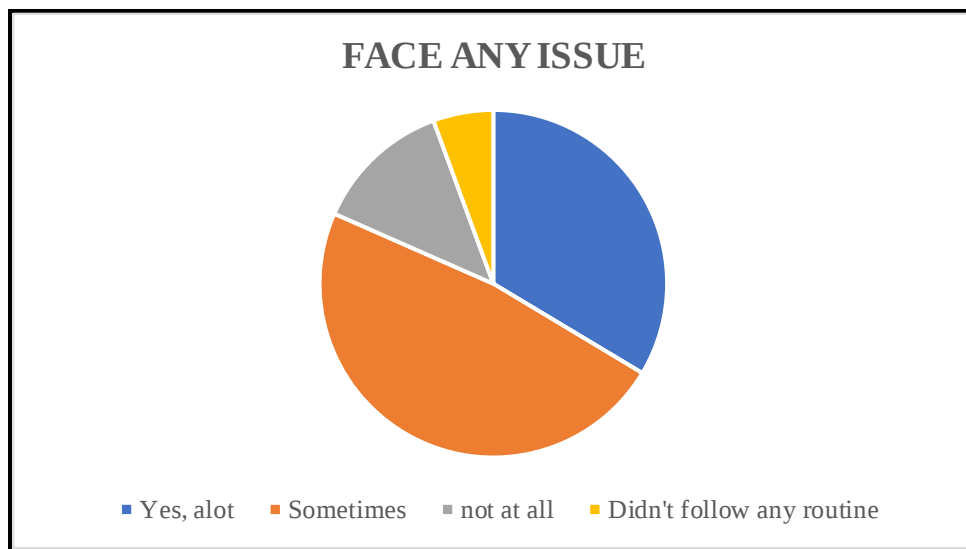


Figure 14. Shows data of Children & Adolescents facing any issues in following their fixed daily routine during lockdown

Chapter 5: Discussion

This study assessed the effects of school closures on lifestyle and physical activity in children and adolescents and as expected the results show absolute shift in their sleeping and eating patterns during lockdown as compared to before lockdown. As the data suggests not even a single child had regular sleep pattern ever since lockdown, which means all the sample children had been sleeping on random, off beat time which in turn resulted into 45% of the sample population sleeping for 9-10 hours. Before lockdown a bare minimum of 7% children slept for more than 10 hours which increased to 21% during lockdown. Almost 85% of children had disrupted sleep pattern, which means untimely sleeping for longer hours during lockdown where before lockdown 70% of the sample were regular in their sleep schedule. Studies suggest that irregular sleep pattern as a lifestyle in growing age has effects on mental and physical growth of children; irritation, lower energy levels, gastrointestinal issues etc can be seen.

The eating pattern of children forms one of the major constituents in health and well-being of growing age population. A child's eating habits consist of many factors such as their food preferences, meal schedules, eating disorder etc. It defines a lot about the type of nutrition being consumed by the child. The data shows 74.4% of the sample population had regular; fixed meal schedule, eating pattern before lockdown which decreased by approx. 37% during lockdown. It also shows that before lockdown, a bare minimum of 4% population were irregular which increased to almost 30% during lockdown. Possible reason could be the disrupted sleeping pattern and daily routine. On the other hand, children were more likely to prefer healthy food over junk when asked about food preferences during lockdown. The preference of healthy food increased from 25% before lockdown to 40% during lockdown, possible side benefit of living in home confinement. One of the possible reasons could also be living around grandparents as 43% of our sample population did during lockdown. Possible reason could be the family composition as having parents at home 24/7 or even living with grandparents around has influence on children's food habits.

The data shows no effect in 42.4% of children when asked about experiencing any eating disorders effects on children during lockdown. Although a significant population showed over-eating and snacking at night as a newly acquired habit in lockdown. In the open remark section of the survey form, some of the parent respondents commented about their child eating and snacking a lot than before. It also explains the data showing an increased appetite of 45% of the children of sample population during lockdown. Possible reason could be the disrupted sleeping pattern, snacking on junk, kuchisabishi; a Japanese word for boredom eating, influence of pampering of grandparents etc.

When it comes to lifestyle of generation Gen Z, smartphones and screen utilization have been known to take the attention. The amount of time a child spends on screen; watching tv/tab, series, surfing he

internet, playing video games, and what not is called screen time. It can be counted as an addition to sedentary time. Sedentarism is an inevitable product of screen time and inactivity. Before lockdown, 41% of the children spent less than 2 hours of their day sitting or lying, not including screen time whereas during lockdown 31% of the population spent 4-6 hours doing the same. Other than the time spent sitting/lying down, the screen time of 62% of children varied between 4-8 hours a day. This shows that at an average a major amount of sample population has sedentary time of at-least 8 hours a day. Researches have proven the effects of sedentary lifestyle on physical health and mental well-being from time and again. Studies have shown direct association of sedentarism with obesity and diabetes, not to mention Cardiovascular diseases especially in women. Sedentary lifestyle has been a part of general population in India for more than a decade now, and it has been developing ever since.

Sedentarism is indirectly proportional to physical activity. As lockdown happened in 2020, WHO gave recommendations on average amount of time one should spent on physical activity on a regular basis according to age. When asked about indulgence of children in physical activity before and during lockdown, 85.6% of children were indulged in daily physical activity before lockdown which decreased to 52% during lockdown. Possible reason could be the change of not having a companion or siblings to perform physical activity (or play) with during lockdown. Children participating in regular physical activity that is Min 5 days/week, 150 mins a day reduced to 40% from 66%, Earlier before lockdown children spent more time playing or doing other physical activities than spending more hours on screen, sitting/lying which has been the case during lockdown.

Before lockdown, a pre-pandemic era is what they say, 86% children had a fixed daily routine; sleep schedule, meal schedule, going to school, playing, studying, etc. However, during lockdown it decreased to 36%. Children had trouble following routine almost always and are struggling every day like a see-saw between missing school and attending online classes. The open remarks section had 29 responses and the one thing common in all was mood swings and irritation, which shows that not only physical health but mental well-being of children has also been tickled by lockdown.

In such times, Children are highly vulnerable and might feel disoriented and thus this age group needs to be given attention as a pressing need. Parents, being the first point of contact for their children not only need to help keep up their child's daily routine and physical activity but also help develop their child's understanding of the situation by maintaining conversations and addressing their issues.

Chapter 6: Conclusion

There is no doubt that pandemic led school closures & home confinement disrupted routines and have come in the way of individual function. From waking up in the morning to going to sleep at night, every activity has been turned upside down. In such times, Children and Adolescents; the growing age population has been affected on a large scale. Their vulnerability and level of understanding is different from adults, making them more susceptible to damage. Considering the fact that availability of vaccine for this age group is not known till now which keeps them at risk all the time, home confinement and online classes might be the only option to keep them at minimal risk. Although, parents, schools & government must address the issues faced by this age group and come up with ways to help them cope with this pandemic, as they are the future of the country.

REFERENCES

1. Kumar M, Dwivedi S. Impact of coronavirus-imposed lockdown on Indian population and their habits. *International Journal of Science & Healthcare Research*. 2020; 5(2): 88-97.
https://ijshr.com/IJSHR_Vol.5_Issue.2_April2020/IJSHR0013.pdf
2. Renzo, Laura & Gualtieri, Paola & Pivari, Francesca & Soldati, Laura & Attinà, Alda & Cinelli, Giulia & Leggeri, Claudia & Caparello, Giovanna & Barrea, Luigi & Scerbo, Francesco & Esposito, Ernesto & Lorenzo, Antonino. (2020).
Eating habits and lifestyle changes during COVID-19 lockdown: An Italian survey. *Journal of Translational Medicine*. 18. 10.1186/s12967-020-02399-5.
https://www.researchgate.net/publication/342019254_Eating_habits_and_lifestyle_changes_during_COVID-19_lockdown_an_Italian_survey
3. Sudhir Kumar Pasala , Lakshmi Gumpeny , Madhu Kosuri , Snehalatha Tippa , Sridhar Gumpeny, R Effect of lockdown on activities of daily living in built environment and well-being 2020 <https://ucl.scienceopen.com/hosted-document?doi=10.14324/111.444/000047.v1>
4. Suryawanshi R, More V. A Study of Effect of Corona Virus Covid-19 and Lock Down on Human Psychology of Pune City Region. *Studies in Indian Place Names*. 2020;40(70):984–94
5. Roberts, C, Rogers, N, Waterlow, N, Brindle, H, Enria, L and Lees, S (2020). *Behavioural change towards reduced intensity physical activity is disproportionately prevalent among adults with serious health issues or self-perception of high risk during the UK COVID-19 lockdown. [Data Collection]. London School of Hygiene & Tropical Medicine, London, United Kingdom.* <https://doi.org/10.17037/DATA.00001753>.
6. Qin, Fei and Song, Yiqing and Nassis, George P. and Zhao, Lina and Cui, Shuqiang and Lai, Lili and Wu, Zhaozhao and Xu, MinXiao and Qu, Chaoyi and Dong, Yanan and Wang, Zhongwei and Geng, Xue and Zhao, Cuicui and Feng, Yiwei and Han, Zhining and Fan, Zhengzheng and Zhao, Jiexiu, Prevalence of Insufficient Physical Activity, Sedentary Screen Time and Emotional Well-Being During the Early Days of the 2019 Novel Coronavirus (COVID-19) Outbreak in China: A National Cross-Sectional Study (3/31/2020). Available at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3566176
7. Maugeri G, Castrogiovanni P, Battaglia G, et al. The impact of physical activity on psychological health during Covid-19 pandemic in Italy. *Heliyon*. 2020;6(6):e04315. Published 2020 Jun 24. <https://pubmed.ncbi.nlm.nih.gov/32613133/>
8. Shahid Z, Kalayanamitra R, McClafferty B, Kepko D, Ramgobin D, Patel R, et al. COVID-19 and older adults: What we know. *J Am Geriatr Soc*. 2020;68(5):926–929.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7262251/>

9. Sunhee Park, PhD, RN, Beomsoo Kim, PhD, Jaeil Lee, BA
 Social Distancing and Outdoor Physical Activity During the COVID-19 Outbreak in South Korea: Implications for Physical Distancing Strategies
https://journals.sagepub.com/doi/10.1177/1010539520940929#_i2
10. Margaritis, Irene; Houdart, Sabine; El Ouadrhiri, Youssef; Bigard, Xavier; Vuillemin, Anne; Duche, Pascale Arch Public Health
 How to deal with COVID-19 epidemic-related lockdown physical inactivity and sedentary increase in youth? Adaptation of Anses' benchmarks.
<https://www.ncbi.nlm.nih.gov/research/coronavirus/publication/32514348>
11. Gil Caspi, Jacob Chen, Sigal Liverant-Taub.
 Coronavirus Lockdown: Forced Inactivity for the Oldest Old?
[https://www.jamda.com/article/S1525-8610\(20\)30285-1/pdf](https://www.jamda.com/article/S1525-8610(20)30285-1/pdf)
12. Gomes M, Figueiredo D, Teixeira L, Poveda V, Paul C, Santos-Silva A, Costa E. Physical inactivity among older adults across Europe based on the SHARE database. Age Ageing. 2017 Jan;46(1) 71-77. doi:10.1093/ageing/afw165. PMID: 28181637; PMCID: PMC6402309.
<http://europepmc.org/article/MED/28181637>
13. Lautenschlager, N.T., Almeida, O.P., Flicker, L. et al. Can physical activity improve the mental health of older adults?. Ann Gen Hosp Psychiatry 3, 12 (2004).
<https://doi.org/10.1186/1475-2832-3-12>
14. Villani, A., Bozzola, E., Siani, P. et al. The Italian paediatric society raccomandations on children and adolescents extra-domestic activities during the SARS COV-2 emergency phase 2. Ital J Pediatr 46, 62 (2020). <https://doi.org/10.1186/s13052-020-00826-3>
15. Moore, S.A., Faulkner, G., Rhodes, R.E. et al. Impact of the COVID-19 virus outbreak on movement and play behaviours of Canadian children and youth: a national survey. Int J Behav Nutr Phys Act 17, 85 (2020). <https://doi.org/10.1186/s12966-020-00987-8>
16. Sparling PB, Howard BJ, Dunstan DW, Owen N. Recommendations for physical activity in older adults. BMJ. 2015;350:h100. Published 2015 Jan 21. doi:10.1136/bmj.h100
<https://pubmed.ncbi.nlm.nih.gov/25608694/>
17. Emerson, KG. Coping with being cooped up: Social distancing during COVID-19 among 60+ in the United States. Rev Panam Salud Publica. 2020;44:e81.
<https://doi.org/10.26633/RPSP.2020.81>
18. Constandt, B.; Thibaut, E.; De Bosscher, V.; Scheerder, J.; Ricour, M.; Willem, A. Exercising in Times of Lockdown: An Analysis of the Impact of COVID-19 on Levels and Patterns of Exercise among Adults in Belgium. Int. J. Environ. Res. Public Health 2020, 17, 4144.
<https://www.mdpi.com/1660-4601/17/11/4144#cite>

19. Damiot A, Pinto A, J, Turner J, E, Gualano B: Immunological Implications of Physical Inactivity among Older Adults during the COVID-19 Pandemic. Gerontology 2020. doi: 10.1159/000509216. <https://doi.org/10.1159/000509216>
20. Goethals L, Barth N, Guyot J, Hupin D, Celarier T, Bongue B. Impact of Home Quarantine on Physical Activity Among Older Adults Living at Home During the COVID-19 Pandemic: Qualitative Interview Study. JMIR Aging 2020;3(1):e19007 DOI: 10.2196/19007 PMID: 32356777 PMCID: 7207013. <https://aging.jmir.org/2020/1/e19007>
21. Physical Activity and COVID-19. https://www.physio-pedia.com/Physical_Activity_and_COVID-19#cite_note-0-3
22. Mylene Aubertin-Leheudre PhD , Yves Rolland MD, PhD
The Importance of Physical Activity to Care for Frail Older Adults During the COVID-19 Pandemic. [https://www.jamda.com/article/S1525-8610\(20\)30353-4/pdf](https://www.jamda.com/article/S1525-8610(20)30353-4/pdf)
23. Qin, Fei and Song, Yiqing and Nassis, George P. and Zhao, Lina and Cui, Shuqiang and Lai, Lili and Wu, Zhaozhao and Xu, MinXiao and Qu, Chaoyi and Dong, Yanan and Wang, Zhongwei and Geng, Xue and Zhao, Cuicui and Feng, Yiwei and Han, Zhining and Fan, Zhengzheng and Zhao, Jiexiu, Prevalence of Insufficient Physical Activity, Sedentary Screen Time and Emotional Well-Being During the Early Days of the 2019 Novel Coronavirus (COVID-19) Outbreak in China: A National Cross-Sectional Study (3/31/2020). Available at SSRN: <https://ssrn.com/abstract=3566176> or <http://dx.doi.org/10.2139/ssrn.3566176>
24. García Ron A, Cuéllar-Flores I. Psychological impact of confinement on children and how to mitigate its effects: rapid review of the evidence [Psychological impact of lockdown (confinement) on young children and how to mitigate its effects: Rapid review of the evidence]. An Pediatr (Barc) . 2020; 93 (1): 57-58. doi: 10.1016 / j.anpedi.2020.04.015. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7174150/>
25. Muhammad Anwar Hossain, Sanjida Rahman, Md Rezaul Karim. The Mental Health of School-Going Children During Existing Lockdown Situation Due to COVID-19 Pandemic in Bangladesh. <https://doi.org/10.20944/preprints202005.0346.v1>
26. Wang, Guanghai et al. Mitigate the effects of home confinement on children during the COVID-19 outbreak.. The Lancet, Volume 395, Issue 10228, 945 – 947. <https://www.thelancet.com/action/showCiteFormats?doi=10.1016%2FS0140-6736%2820%2930547-X&pii=S0140-6736%2820%2930547-X>
27. Chen P, Mao L, Nassis GP, Harmer P, Ainsworth BE, Li F. Coronavirus disease (COVID-19): The need to maintain regular physical activity while taking precautions. J Sport Health Sci. 2020;9(2):103-104. doi:10.1016/j.jshs.2020.02.001. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7031771/>

28. University of Strathclyde. (2020, April 29). 'Make physical activity part of children's routine' during lockdown. ScienceDaily. Retrieved July 25, 2020 from www.sciencedaily.com/releases/2020/04/200429191851.htm
29. Antunes, R.; Frontini, R.; Amaro, N.; Salvador, R.; Matos, R.; Morouço, P.; Rebelo-Gonçalves, R. Exploring Lifestyle Habits, Physical Activity, Anxiety and Basic Psychological Needs in a Sample of Portuguese Adults during COVID-19. Int. J. Environ. Res. Public Health 2020, 17, 4360. <https://www.mdpi.com/1660-4601/17/12/4360#cite>
30. Giustino, V.; Parroco, A.M.; Gennaro, A.; Musumeci, G.; Palma, A.; Battaglia, G. Physical Activity Levels and Related Energy Expenditure during COVID-19 Quarantine among the Sicilian Active Population: A Cross-Sectional Online Survey Study. Sustainability 2020, 12, 4356. <https://www.mdpi.com/2071-1050/12/11/4356#cite>
31. Pietrobelli, A., Pecoraro, L., Ferruzzi, A., Heo, M., Faith, M., Zoller, T., Antoniazzi, F., Piacentini, G., Fearnbach, S.N. and Heymsfield, S.B. (2020), Effects of COVID-19 Lockdown on Lifestyle Behaviors in Children with Obesity Living in Verona, Italy: A Longitudinal Study. Obesity, 28: 1382-1385. doi:10.1002/oby.22861. <https://onlinelibrary.wiley.com/action/showCitFormats?doi=10.1002%2Foby.22861>
32. Pisano, L., Galimi, D., & Cerniglia, L. (2020, April 13). A qualitative report on exploratory data on the possible emotional/behavioral correlates of Covid-19 lockdown in 4-10 years children in Italy. <https://doi.org/10.31234/osf.io/stwbn>
33. VAN BRUWAENE, Lore et al. What are we doing to the children of South Africa under the guise of COVID-19 lockdown?. SAMJ, S. Afr. med. j. [online]. 2020, vol.110, n.7 [cited 2020-07-25], pp.1-2. Available from: http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0256-95742020000700007&lng=en&nrm=iso. ISSN 2078-5135. <http://dx.doi.org/10.7196/SAMJ.2020.v110i7.14932>.
34. WHO and physical activity. https://www.who.int/health-topics/physical-activity#tab=tab_1
35. Christoforidis, Athanasios et al. Coronavirus lockdown effect on type 1 diabetes management on children wearing insulin pump equipped with continuous glucose monitoring system Diabetes Research and Clinical Practice, Volume 166, 108307 <https://www.diabetesresearchclinicalpractice.com/action/showCitFormats?doi=10.1016%2Fj.diabres.2020.108307&pii=S0168-8227%2820%2930559-3>
36. Physical Activity and Daily Routine among Children Aged 0–12 during the COVID-19 Pandemic in Spain (Javier Cachón-Zagalaz, 2021) <https://www.mdpi.com/1660-4601/18/2/703/htm>
37. The Impact of COVID-19 on Children and Adolescents: Early Evidence in India <https://www.orfonline.org/research/the-impact-of-covid-19-on-children-and-adolescents-early-evidence-in-india/>

ANNEXURE

ANNEXURE A: STUDY TOOL (NEXT PAGE)

Children in Covid-19 lockdown : A study on impact of school closures on the physical health and lifestyle of school going children and adolescents in India.

Hello all! I hope you find this in pink of your health.

This study is been conducted by Dr. Kanchan G. as a part of her dissertation research project. The purpose of this survey is to assess the impact of school closure & home confinement (lockdown) on physical health and lifestyle of school going children and adolescents and to study the changes in their lifestyle, if any.

***Important :** This form is to be filled by a parent/guardian of children between 5-17 years of age.

Consent:

Your participation in this research study is voluntary. You may choose not to participate and have the option to withdraw at any point. If you decide to not participate or withdraw from participation at any point during the survey, you will not be penalized. The procedure involves filling an online survey that will take approximately 5-10 mins of your time.

Your responses will be confidential since we do not collect any identifying information such as name, id or contact number. To help protect your identity survey will not contain information that will personally identify you.

Clicking on the "Agree" button below indicates that:

- You have read and understood the above information
- You voluntarily agree to participate
- You would fill true information in the survey with utmost honesty and integrity

***Required**

1. If you wish to participate in this survey, please click on the "Agree" button *

Mark only one oval.

☐ Agree

Bio of your
child: Basic
Details

This section consists of details like age, gender, geography & living environment, family composition, health condition etc of your child.

2. I.1 Age of the child *

Mark only one oval.

- ☐ 5 years
- ☐ 6 years
- ☐ 7 years
- ☐ 8 years
- ☐ 9 years
- ☐ 10 years
- ☐ 11 years
- ☐ 12 years
- ☐ 13 years
- ☐ 14 years
- ☐ 15 years
- ☐ 16 years
- ☐ 17 years

3. I.2 Gender of the child *

Mark only one oval.

- ☐ Female
- ☐ Male

4. 1.3 Which State/UTs you reside in? *

Mark only one oval.

- ☐ Andaman & Nicobar island
- ☐ Andhra Pradesh
- ☐ Arunachal Pradesh
- ☐ Assam
- ☐ Bihar
- ☐ Chandigarh
- ☐ Chattisgarh
- ☐ Dadar & Nagar Haveli and Daman & Diu
- ☐ Delhi
- ☐ Goa
- ☐ Gujarat
- ☐ Haryana
- ☐ Himachal Pradesh
- ☐ J&K
- ☐ Jharkhand
- ☐ Karnataka
- ☐ Kerela
- ☐ Ladak
- ☐ Lakshadweep
- ☐ Madhya Pradesh
- ☐ Maharashtra
- ☐ Manipur
- ☐ Meghalaya
- ☐ Mizoram
- ☐ Nagaland
- ☐ Orissa
- ☐ Pondicherry
- ☐ Punjab
- ☐ Rajasthan
- ☐ Sikkim
- ☐ Tamil Nadu
- ☐ Telangana

- ☐ Tripura
- ☐ Uttar Pradesh
- ☐ Uttrakhand
- ☐ West Bengal

5. 1.4 What environment do you live in? *

Mark only one oval.

- ☐ Urban
- ☐ Sub-urban
- ☐ Rural

6. 1.5 Does your child has siblings/cousins living in the same house? *

Mark only one oval.

- ☐ Yes
- ☐ No

7. 1.6 Family composition of your child *

Mark only one oval.

- ☐ Lives with single/separated parent
- ☐ Lives with both parents together
- ☐ Lives with parents and grandparents
- ☐ Lives with joint family (cousins, relatives etc)
- ☐ Lives alone/in hostel/away from home

8. 1.7 Does the child has any long-term illness? *

Mark only one oval.

- ☐ Yes
☐ No
☐ Maybe

Sleeping patterns and
 Eating Habits of the
 child/adolescent.

Below questions are about sleeping pattern & eating habits of your child/adolescent.
 You need to answer/select options in both rows; Before lockdown and During lockdown.

*BEFORE LOCKDOWN: Time before March 2020, when schools had ongoing classroom teaching.

*DURING LOCKDOWN: Since Covid-19 lockdown when schools were/are closed (Preferably before start of online classes)

*Important: If you are viewing in a smart phone, while answering some questions you might need to scroll to right for more options.

9. 2.1 For how many hours does your child sleep (including naps) per day? *

Mark only one oval per row.

	Less than 6 hours	7 - 8 hours	9 - 10 hours	10-12 hours	More than 12 hours
Before lockdown	☐	☐	☐	☐	☐
During lockdown	☐	☐	☐	☐	☐

10. 2.2 What has been the sleep schedule of your child on most days? (Regular on time: Following fixed sleep schedule everyday, Regular but not on time: Fluctuating sleep timings but same hours of sleep, Irregular: Random sleep hours and timings) *

Mark only one oval per row.

	Regular on time	Regular but not on time	Irregular
Before lockdown	☐	☐	☐
During lockdown	☐	☐	☐

11. 2.3 How has been the eating pattern of your child on most days? (Regular on time: Following fixed schedule and quantity of breakfast, lunch, dinner everyday, Regular but not on time: Same amount of food intake but fluctuating eating timings, Irregular: Random eating timings and quantity) *

Mark only one oval per row.

	Regular on time	Regular but NOT on time	Irregular
Before lockdown	☐	☐	☐
During lockdown	☐	☐	☐

12. 2.4 What best describes your child's food preferences? *

Mark only one oval per row.

	More junk, less healthy	More healthy, less junk	Both equally	Both as required
Before lockdown	☐	☐	☐	☐
During lockdown	☐	☐	☐	☐

13. 2.5 Have you noticed any of the below changes in eating habits of your child during lockdown? *

Mark only one oval.

- ☐ Over-eating
☐ Under-eating (restricted food intake)
☐ Binge-eating
☐ Obsessive desire to eat healthy
☐ Snacking in night
☐ No change
☐ Other: _____

14. 2.6 How has been your child's appetite during lockdown? *

Mark only one oval.

- ☐ Increased
- ☐ Decreased
- ☐ No change

Physical activity
and Sedentarism

Below questions are about physical activity, sedentary lifestyle & screen time of your child/adolescent.

You need to answer/select options in both rows; Before lockdown and During lockdown.

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*DURING LOCKDOWN: Since Covid-19 lockdown when schools were/are closed (Preferably before start of online classes)

*Important: If you are viewing in a smart phone, while answering some questions you might need to scroll to right for more options.

15. 3.1 Does your child indulge in regular physical activity? (Physical activity here includes any bodily movements like walking, doing household chores, cycling, running, playing outdoor games, skipping, exercise etc.) *

Mark only one oval per row.

	Yes	No
Before lockdown	☐	☐
During lockdown	☐	☐

16. 3.2 Does your child have/had any companion to perform physical activities with? (Companion can include parents, grandparents, cousins, relatives, neighborhood kids etc) *

Mark only one oval per row.

	Yes	No
Before Lockdown	☐	☐
During lockdown	☐	☐

17. 3.3 How often does your child indulge in physical activity in a week? (Physical activity here includes any bodily movements like walking, doing household chores, cycling, running, playing outdoor games, skipping, exercise etc.) *

Mark only one oval per row.

	Regularly (Min. 5 days/week)	Thrice a week	Twice a week	Once a week	Never
Before lockdown	☐	☐	☐	☐	☐
During lockdown	☐	☐	☐	☐	☐

18. 3.4 How many hours a day does your child perform physical activity? *

Mark only one oval per row.

	0	1-2	2-3	3-4	More than 4
Before lockdown	☐	☐	☐	☐	☐
During lockdown	☐	☐	☐	☐	☐

19. 3.5 On average, not counting screen time, how much time does your child spend sitting or lying down per day (excluding sleep time), at home reading, playing board games, sitting at the table, or doing homework? *

Mark only one oval per row.

	Less than 2 hours	2-4 hours	4-6 hours	6-8 hours	8-10 hours	More than 10 hours
Before lockdown	☐	☐	☐	☐	☐	☐
During lockdown	☐	☐	☐	☐	☐	☐

20. 3.6 On average, how much time does your child spend in front of a screen each day ?
(including using computer, tablet, telephone, television, watching videos/series, video games, classes etc)? *

Mark only one oval per row.

	Less than 2 hours	2-4 hours	4-6 hours	6-8 hours	8-10 hours	More than 10 hours
Before lockdown	☐	☐	☐	☐	☐	☐
During lockdown	☐	☐	☐	☐	☐	☐

21. 3.7 Does your child practice a fixed daily routine? *

Mark only one oval per row.

	Yes	No
Before lockdown	☐	☐
During lockdown	☐	☐

22. 3.8 During lockdown, did your child face any changes/issues/irregularities/fluctuations in following the routine? *

Mark only one oval.

- ☐ Yes, alot
- ☐ Sometimes
- ☐ Not at all
- ☐ Didn't follow any routine

23. 3.9 During lockdown, did your child face any health issues (except/ not-related to Covid-19) mentioned below? (*You can tick on more than one option) *

Tick all that apply.

- ☐ Gastrointestinal issues: Upset stomach/acidity, gas/diarrhea/constipation etc
- ☐ Mental health issues: Irritation/stress/anxiety/lower energy levels/behavioural changes
- ☐ Eye-related issue: Recurring Headache/Weak eyesight/sinusitis
- ☐ Bodyache/Fatigue/Weakness/lower energy levels
- ☐ No issues

Other: ☐ _____

24. 3.10 Remarks, if any (any health or other issues/good or bad changes/patterns/ acquired new habits etc you noticed in your child's you would like to talk about)

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