

SUMMER TRAINING REPORT

BY

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**MBA - HOSPITAL AND HEALTH
MANAGEMENT**

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“aut viam inveniam aut faciam - I shall either find a way or make one”

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ABBREVIATIONS

Covid-19 – Corona Virus 2019

C&A – Children and Adolescents

PTSD – Post-traumatic Stress Syndrome

TV - Television

WFH – Work from Home

WHO – World Health Organization

PART 1

WORK ASSIGNED BY FACULTY MENTOR

**“THE IMPACT OF LOCKDOWN ON PHYSICAL
ACTIVITIES AND SEDENTARY LIFE-STYLE IN SCHOOL
GOING CHILDREN DURING “COVID-19 OUTBREAK”.**

INTRODUCTION

The wake of December 2019 has alarmed the hospitals and health organizations in china with what appeared to be another grave virus epidemic. The virus, which manifested with symptoms of cold and allergies, has terminated the lives of many since it was first spotted in Wuhan, China. The present widespread of COVID-19 virus worldwide has greatly affected all social and economic activities around the world. WHO declared this virus as pandemic and all the nations underwent restrictions considering stay-at-home order. Businesses, schools as well as other organizations around the world have been directed to shutdown in order to avoid the increasing spread of the virus. 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 visiting anywhere; to relatives, to work, to social events, to commercial places, to schools etc. 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. We don't realize but each one of us have a sequence of activities or habits regularly followed.

Now what happens when the same people are suddenly taken out of their routine and asked to just stay at home for an indefinite period? Routine is disturbed, habits are disturbed and so is mind and body. Any sudden change is a shift from your comfort zone to a different dimension which eventually starts affecting the body and mind.

Due to being confined at home, physical activity behavior of people has affected tremendously. *WHO recommends 60 min/day of moderate-to-vigorous physical activity for 6–17-yr-olds, and 75 min/week of vigorous or 150 min/week of moderate physical activity for adults and elderly, including 3 and 2 days/week, respectively, with muscle and bone strengthening.*

However, living at home has made this quite difficult for most whereas some found time from their busy routine to actually focus on health.

DEFINITION OF PHYSICAL ACTIVITY

Physical Activity (PA) is defined as any bodily movement produced by skeletal muscles that require energy expenditure.

During the lockdown it is even more important for all people to be physically active and to create some routine to your day in these unprecedented times . Doing something as simple as walking or stretching while taking a short break from sitting at your desk will ease muscle strain, relieve mental tension along with improving blood circulation and muscular activity.

BENEFITS OF PHYSICAL ACTIVITY

- Strengthening and maintaining your immune system-being less susceptible to infections
- Reduces high blood pressure
- Helps build strong bones and muscles
- Reduces the risk of heart disease, diabetes, stroke, certain cancers
- Improves fitness levels
- Increase Energy
- Enhances flexibility
- Develops good posture
- Improves coordination and balance
- Helps maintain a healthy body weight
- Helps improve sleeping and eating habits
- Enhances development of brain functions and neural pathways

In children physical activity may:

- Support healthy growth and development
- Reduce the risk of disease in later life
- Help in development of fundamental movement skills.

THE IMPORTANCE OF PHYSICAL ACTIVITY DURING THE COVID-19 PANDEMIC(suggested by WHO)

In light of the current situation worldwide, certain benefits of physical activity may be specifically pertinent to the COVID-19 Pandemic. These benefits are:

- Physical activity enhances the body's immune function which reduces inflammation therefore it could reduce the infection's severity.
- Physical activity improves common chronic conditions like cardiovascular disease and diabetes that increase the risk for severe COVID-19.
- Physical activity reduce symptoms of anxiety and depression hence it is a great stress management tool.

- It also helps bring cortisol levels in balance. Stress and distress (such as during a pandemic) create an imbalance in cortisol levels and this negatively influences immune function and inflammation.

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.

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 accustomed to going to school and mingling with friends every day will be the major victims of mental health issues because they are confined at their homes at the ripe age of learning social skills of their lives. For many, the home is not 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.

LITERATURE REVIEW

S. N o.	TITLE	AUTHOR NAME	COUNTRY	YEAR	STUDY DESIGN	POPULATION	OBJECTIVE	METHODOLOGY	FINDINGS/OUTCOME
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1	Impact of Coronavirus Imposed Lockdown on Indian Population and their Habits	Mahendra Kumar, Sachin Dwivedi	India	2020	Cross-sectional, Observational study	People in the 18-40 years of the age group who live in their homes due to COVID-19 lockdown.	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 4% of participants agreed to use more internet data on office 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>	Italy	2020	Cross-sectional, Observational study	Italian internet users. (Entire Italy)	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. 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 Gumpen y, Madhu Kosuri, Snehalatha Tippana, Sridhar Gumpen y	India	2020	Cross-sectional, Observational study	NA	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. 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 lockdown documents the ways in which individuals lived through it in terms of the built environment at home.
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4	A Study of Effect of Corona Virus Covid-19 and Lock Down on Human Psychology of Pune City Region	Rahul Suryawanshi, Vishlesh a More	India	2020	Cross-sectional, Observational study	Residents of Pune	(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 regions, 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 Lockdown have given the positive effect on 54 respondent, Negative impact on 11 respondent and there is no effect on their mentality 30 out of 95. 2) it is found that most of the people spending their time with the family and then watching Television through Mobile phones. But major respondent gave their choice as spending time with family. 3) 62 respondents said their relation improved, only 2 respondents noted their relation is worsen and 31 respondents noted there is no effect on their relation out of 95.
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5	Behavioral 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 Roberts	UK	2020	Cross-sectional, Observational study	Residents of UK	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, 1.31-1.71), 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 household risks in narrative on coping.
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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	China	2020	Cross-sectional, Observational study	Residents of China	To evaluate the characteristics of lifestyle in China during the initial stage of COVID-19 lock down	Sampling technique: snowball sampling strategy. Sample size: 12107 Population age group: 18-80 years living in China. Study tool: The questionnaire was distributed 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.	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%). The 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	GraziaM augeri, PaolaCastrogianni, Giuseppe Battagli, RobertoP ippi, VeliaD'A gata, AntonioP alma, Michelin oDi Rosa, Giuseppe Musumeci.	Italy	2020	Cross-sectional, Observational study	Residents of Italy	(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	Italy	2020	Cross-sectional, Observational study	Residents of Italy	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 Basic Psychological Needs in a Sample of Portuguese Adults during COVID-19	Raul Antunes, Roberta Frontini, Nuno Amaro, Rogério Salvador, Rui Matos, Pedro Morouço, and Ricardo Rebelo-Gonçalves	Portugal	2020	Cross-sectional, Observational study	Portuguese adults	1) To characterize the lifestyle habits, anxiety 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.	In total, 1404 adults (36.4 ± 11.7 years; 69.6% female) answered sociodemographic data and three instruments: The International Physical Activity Questionnaire, the Basic Need General Satisfaction Scale and the State-Trait Anxiety Inventory.	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. 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 for 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	Canada	2020	Cross-sectional, Observational study	Canadians	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	Impact of school closures for COVID-19 on the US health-care workforce and net mortality: a modelling study	Jude Bayham, Prof Eli P Fenichel	USA	2020		USA	1. To measure child-care obligations for US health-care workers arising from school closures when these are used as a social distancing measure. 2. how important the contribution of health-care workers would have to be in reducing mortality for their absenteeism due to child-care obligations to undo the benefits of school closures in reducing the number of cases.	For this modelling analysis, data from the monthly releases of the US Current Population Survey to characterise the family structure and probable within-household child-care options of US health-care workers was used. The occupation within the health-care sector, state, and household structure was accounted to identify the segments of the health-care workforce that are most exposed to child-care obligations from school closures. These estimates were used to identify the critical level at which the importance of healthcare labour supply in increasing the survival	1) The US health-care sector has some of the highest child-care obligations in the USA with 28.8% (95% CI 28.5-29.1) of the health-care workforce needing to provide care for children aged 3-17 years. 2) if the infection mortality rate of COVID-19 increases from 2.00% to 2.35% when the health-care workforce declines by 15.0% school closures could lead to a greater number of deaths than they prevent.

								probability of a patient with COVID-19 would undo the benefits of school closures and ultimately increase cumulative mortality.	
12	Mitigate the effects of home confinement on children during the COVID-19 outbreak	Guangha i Wang Yunting Zhang Jin Zhao Jun Zhang Fan Jiang	China	2020	NA	Chinese children	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 schoolling 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 resources to create.
13	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	Italy	2020	Longitudinal observational study	Obese children in Italy	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	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	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 intake 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 1.25)

		Franco Antoniazzi Giorgio Piacentini S. Nicole Fearnbach Steven B. Heymsfield					disease 2019 pandemic.	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.	h/d ($P = 0.003$). Screen time increased by 4.85 (SD 2.4) h/d ($P < 0.001$).
14	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 Domenico Galimi Luca Cerniglia	Italy	2020	Qualitative study	Children of age 4-10 years.	1) To investigate the regressive behavior of children with 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 with reference to calmness, tranquility, balance, and adaptation to restrictions.	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. 8) 34.26% were nervous about the pandemic when watching TV talk-shows about the coronavirus or because of restrictions.

15	What are we doing to the children of South Africa under the guise of COVID-19 lockdown?	Lore van Bruwaene, Fatima Mustafa, Jeane Cloete	South Africa	2020	NA	Children of South Africa	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.
16	Effect of the Pandemic and Lockdown on Mental Health of Children	Kalpna Thakur & Naveen Kumar & NovRattan Sharma	India	2020	NA	Children of India	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	Children staying at home due to lockdown spend more time in front of TV and internet which can lead to psychological and social problems (like lower self-esteem), internet addiction, cyberbullying which can affect their mental health. 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. Children who are separated from their parents due to their infection 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.

17	The Mental Health of School-Going Children During Existing Lockdown Situation Due to COVID-19 Pandemic in Bangladesh	Muham mad Anwar Hossain, Sanjida Rahman, Md Rezaul Karim.	Ban glad esh	2020	Review study	Children of Banglades h	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.
18	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	Italy	2020	NA	Italian population	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.

19	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.	France	2020	NA	French	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 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.
20	Psychological impact of lockdown (confinement) on young children and how to mitigate its effects	Adrián García Ron, and Isabel Cuéllar-Flores	Spain	2020	Review study	Spanish	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.

21	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.	Greece	2020		Greece children with DM type 1	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)
22	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.	Europe	2020	Qualitative study	European children	To discuss the potential effects of social distancing and school lockdown on and children and their inaccessible support services.	NA	Lockdown has resulted in the inaccessibility of mental health and other support services for children and staying at home has shown major effect on their physical and mental health.

OBJECTIVES

- 1) To assess the impact on physical activities in school going children due to Covid-19 lockdown
- 2) To assess the problems faced by school going children in their physical and mental well-being due to school closure during Covid-19 lockdown.

RESEARCH METHODOLOGY

➤ **STUDY DESIGN:** Integrative Literature Review

➤ **METHODOLOGICAL APPROACH**

A review was conducted and researches spanning over a period of Covid-19 occurrence were studied. A total of 60 studies were studied, out of which 22 were considered, excluding the ones where there was either no connection between the effects of lockdown on children or the ones that only considered mental health of adults.

➤ **SEARCH METHODS**

Search terms identifying physical health and childcare were trialed and the accompanying inquiry terms were created: truncations "lockdown" joined with "physical OR psychological" (truncated) and "children" (truncated), utilizing the Boolean administrator "AND".

Literature collection was done using Google scholars, Medline, Pub-med, Research gate online platforms.

DISCUSSION

As the whole world is living in unprecedented times, there is a lot we don't know about the virus and its effects. So, in order to fight it, keeping up the physical activities is one of the measures that should be taken for betterment of our own immune system and mental health. A questionnaire was filled by 1366 residents of Canada on their physical behavior during lockdown and the results showed that 40.5% of inactive individuals became less active while 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. Many inactive people took up indoor exercises, started walking, cycling etc. It's seen that many active individuals increased their physical activities as their way to de-stress and refresh the brain in their days of anxiety. Inactive individuals got plenty of free time to actually workout at home.

On the other side, a quick, large cross-sectional Italian survey, participated by 2974 Italians demonstrated a statistically significant difference in physical activity of individuals before and during covid-19 lockdown. A major change in sleep cycle and quality of sleep has been noticed due to lack of physical activity. In China, more than 60% individuals were living in a sedentary lifestyle with mean screen-time of individuals increased up to 4 hours/day i.e. more use of internet and TV. As having ample of time during lockdown people were drawn to spend more time watching TV and sleeping. In another study On Sicilian population showed a significant positive co-relation between variation in physical activity and mental well-being, it also observed decrease in total weekly energy expenditure of adults. A UK study associated less intensive physical activity during lockdown with obesity, hypertension, depression, lung disease and disability.

Age is a big demographic constraint in all the studies. Most of the cross-sectional surveys involved tracking of adults of age 18 and above. This made me think about the children. So when looked into the effect of lockdown on children and their physical and mental health, schools being closed showed significant repercussions on the well-being of children.

The UN Educational, Scientific and Cultural Organization estimates that 138 countries have closed schools nationwide, and several other countries have implemented regional or local closures. These school closures are affecting the education of 80% of children

worldwide. Although scientific debate is ongoing with regard to the effectiveness of school closures on virus transmission.

Home care of C&A is known to decrease the level of physical activity and increase in sedentary time, specially screen-time. Evidence suggests that when children are out of school (for example, weekends and summer holidays), they are physically less active, have much longer screen time, irregular sleep patterns, and less favorable diets, resulting in weight gain and a loss of cardiorespiratory fitness. As we know, most C&A are vulnerable to internet, smart phones, TV, online games and social platforms. And now that the schools are closed, they tend to spend more time surfing social media and/or watching TV (increased screen time) leading to a sedentary lifestyle. Several observational and experimental studies show that increase in Sedentary behavior is associated with higher obesity and cardio-metabolic risks in C&A. And the event of lockdown indirectly promotes sedentary behavior which can lead to increase in time spent sitting or lying down which ultimately affects the mental and physical health of the children.

In addition, many families have limited resources and they have to share restricted space at home which may limit the activities that result into coping up with n number of situations. Parents who WFH rigorously for long hours might not be able to give children the time that they need to cope with such adjusting situations. Toddlers and children below 5 years of age require constant attention which end up being a difficult task for WFH parents with no help. Loss of job, a death in family, domestic violence, child abuse, family disputes etc. are major occurring events during lockdown that the child of the family has to go through. Dysfunctional families already give children of the family a hard time, anything else is an add-on.

A qualitative report on possible emotional behavior in view of lockdown on children of 4-10 years of age shows that 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. 18.17% expressed fears they didn't have before. 53.53% showed irritability, anxiety and nervousness regarding restrictions and school closures. Indian studies state that staying inside the house for more time may make children vulnerable to the effects of indoor pollution as a result affecting brain development which

can limit the development of cognitive abilities. The study also highlights the fact that children whose parents are serving in hospitals or are involved in the front run of fighting covid-19 are more vulnerable to anxiety, stress, depression and PTSD has been reported.

For many C&A, school is not just a place for learning but is also a source of eating healthy nutritious food. Research shows that school lunch is associated with improvements in academic performance, whereas food insecurity (including irregular or unhealthy diets) is associated with low educational attainment and substantial risks to the physical health and mental wellbeing of children.

Children in low income households have difficulty in home schooling as there is no availability of resources, even online learning is a huge luxury due to lack of internet and technology available to them. In Europe, a substantial number of children live in homes in which they have no suitable place to do homework (5%) or have no access to the internet (6·9%). Furthermore, 10·2% of children live in homes that cannot be heated adequately, 7·2% have no access to outdoor leisure facilities, and 5% do not have access to books at the appropriate reading level.

To mitigate the effects of lockdown on children's psychological and physical health, Italian pediatric society recommended specific recreational and physical activities according to the age of the children and respecting social distancing. The government of Spain considering recommendations by experts suggested general measures and specific measure for C&A with disabilities, neurodevelopmental disorders or mental health problems to reduce the negative psychological impact.

RECOMMENDATIONS

- 1) Taking up on walking, cycling or any activity that follows social distancing.
- 2) Adapting habits like WALK & TALK while on call, intermittent fasting (specially for obese people).
- 3) Reduction of Screen Time to avoid sedentary behavior.

4) For parents/guardians: They are the closest approachable beings to their own children. Good parenting skills can immensely help a child during confinement. Some ways by which they can help the child to improve their physical and psychological status are:

- a) **Close and open communication** with the children is the key to identifying any physical and psychological issues and to comforting children in prolonged isolation. Parents play an important role models in healthy behavior of a child.
- b) **Respecting child's identity and needs** is also very important to build the trust of own child which can help in creating a comfort zone between them.
- c) **Direct Conversations** about pandemic like news, issues faced by its effects like sedentary behavior and emotional imbalance.
- d) **Indulging in family activities** may help the children bond with the parents better and home confinement has given a good amount of time for those.
- e) **Monitoring Child's activities** be it physical activities or using mobile phones, tv, sleep schedule, eating habits etc. for e.g. Having fixed a bedtime (approved by kids), no screen-time before bedtime, healthy breakfast, encouraging sports and indoor games that enhances their body and brain which can also help children develop self-discipline skills.

5) For Schools/government:

- a) To adopt special measures during lockdown to provide e-learning facility for the children, and those who cannot access e-learning must be provided with personal home guidance and follow-up. To provide them with assignments that include use of physical energy.
- b) Post-lockdown when the school reopens, proper counselling sessions should be made available for children.

CONCLUSION

The COVID-19 pandemic has swept the world. Things are only going to get worse, not better, for quite some time as there is a lot we don't know about the virus and its effects.

So, in order to fight it, keeping up the physical activities is one of the measures that should be taken for betterment of our own immune system and mental health. The possible effects of this lockdown may have proved beneficial for some but have mainly deteriorated an individual's way of life. Keeping up with this virus is getting difficult day by day for human population. Every nation, big or small is trying it's best to fight it however humans can only do so much. Considering the co-relation between mental and physical health so to do our part as citizens, eat healthy, stay fit, sleep well, keep your children loved and help people to your limit (by obviously keeping "social distancing" at place).

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PART 2

ONLINE COURSE REPORT

NAME OF THE COURSE:- Introduction to R**COURSE DISCRPTION:-**

R is a language and environment for statistical computing & graphics, it is the most preferred open-source language for analytics and data science. R can be used for simple calculations, matrix calculations, differential equations, optimization, statistical analysis, plotting graphs, etc. I have selected the 'Introduction to R' online course from SWAYAM which is a programme initiated by GOI, and is AICTE(All India Council for Technical Education) approved FDP course. It is an elective type of course offered for UG/PG level students/teachers/trainers and duration is of 12 weeks.

Here are some of benefits of using R:

- R is free to use and is a open source.
- R has a huge library of user-contributed packages.
- R runs on windows, OSX, Linux
- R facilitates reproducible research.
- R is widely used in industry and is one of highly sought after skills by analytics and data science companies.

OBJECTIVES OF THE COURSE:-

To understand how to install R and RStudio

To learn how to read files, manipulate data using different functions in R

Access data from vectors, list, matrices using different operations

To understand major data structures

To learn how to import and explore data.

COURSE CONTENTS:-

1. Installing R and RStudio on Windows
2. Introduction to Basics of R
3. Introduction to Data Frames in R
4. Introduction to RStudio
5. Introduction to R script

6. Working directories in RStudio
7. Indexing and Slicing Data Frames
8. Creating Matrices and Data Frames
9. Operations on Matrices and Data Frames
10. Merging and Importing Data
11. Data types and Factors
12. Lists and its Operations
13. Plotting Histograms and Pie Charts
14. Plotting Bar Charts and Scatter Plot
15. Introduction to ggplots2
16. Aesthetic Mapping in ggplots2
17. Data Manipulation using dplyr Package
18. More Functions in dplyr Package
19. Pipe Operator
20. Conditional Statements
21. Functions in R

METHODOLOGY:-

This course comprises 22 audio-video spoken tutorials along with 2 spoken-tutorial sheets and 2 watch before you begin videos.

The First step is to install R and RStudio by following the steps given in installation sheet. Second step is to read from another sheet which gives an idea on how to learn from spoken tutorials. This sheet also mentions some important information about the text editors while coding, how to use the command prompt (in Windows OS), how to use the Code Files, how to do the Assignments, etc.

Third step is to follow the side-by-side learning methodology while learning from spoken tutorials, and the Assignment for each tutorial is for your self-assessment only.

KEY LEARNING:-

As I have no prior knowledge of coding because of never having computer science in my subjects, I came to know that to learn data science one must learn either R or Python to begin with and I chose the former because the style of coding is quite easy and its an open source with availability of instant access to 7800 packages.

What I learn in the course is:

1. Basics of R Programming

- How to install R/ RStudio and understand the interface of R studio (R console, R script, R environment, Graphic output)
- How to install and use R packages and
- Basic computation in R (use R console as an calculator and if have done too many calculation create a variable using <- or = sign)

2. Understanding the Essentials of R Programming

- Different objects in R : R has five basic classes of objects (everything we see or create in R is an object) that are Character, Numeric, Integer, Complex, Logical and these classes have attributes like names, dimention, class, length.
- Different Data Types in R: Includes vector, matrices, data frames and list.
- Useful R packages: ggplot2 to create advanced graphics for Data Visualization, dplyr for Data Manipulation which allows to do basic and advance computation quickly

3. Data Exploration:

- Get familiar with the terms Response and Predictive Variables, Train data, Test data
- Learn importing and exploring data (set working directory and import .csv files easily and its important to check for missing values during data exploration).
- Using graphs we can analyse the data in 2 ways; Univariate analysis and Bivariate analysis. Graphical analysis using histogram, scatter plot, box plot, bar plot, bars and pie charts.

