COVID-19 AND SHIFT IN LIFESTYLE BEHAVIORS AMONG ADULT POPULATION IN KERALA: A CROSS-SECTIONAL SURVEY

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ABSTRACT

COVID-19 is a global burden that continues to significantly alter daily lifestyle-related habits as the pandemic develops through its different phases To compare the changes in specific lifestyle behaviors such as eating behavior, physical activity, sleep pattern, smoking, alcohol consumption. A cross – sectional survey study was conducted on 164 people during a period of 6 months. Detailed literature review was conducted by using tertiary, secondary, primary resources. All the required study materials like informed consent document, patient information sheet, and data entry form were designed. The survey was conducted only after getting endorsement from the Institutional Ethical Committee (IEC). 164 people, who met the inclusion criteria, were enrolled in the survey. Comparison was done to assess the changes in lifestyle related behaviors before and during COVID-19 pandemic. A total of 164 responses were collected. An improvement in healthy meal consumption pattern was observed. A reduction in physical activity coupled with increase in daily screen time was found. Stress and anxiety was increased to the outbreak of COVID-19. Based on the study results, it was concluded that the COVID- 19 pandemic improved the eating habits with a decrease in physical activity coupled with an increase in daily screen time.

KEYWORDS: Eating behavior, physical activity, sleep pattern, coronavirus, pandemic.

INTRODUCTION

Coronavirus disease (COVID-19) is an infectious disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that was first discovered in Wuhan, China, in December 2019.This pandemic has currently infected more than 200 million people in approximately 220 countries, resulting more than 4 million fatalities. COVID-19 is a global burden that continues to significantly alter daily lifestyle-related habits as the pandemic develops through its different phases.

Many factors combine over time to drastically alter lifestylerelated behaviors, particularly daily eating, activity, and sleep habits, which are known to be independent risk factors for metabolic complications such as obesity, diabetes, and cardiovascular disease.[1]

VIRAL TRANSMISSION

The first instances were thought to have been caused by direct contact with sick animals at a seafood market in Wuhan, China (animal-to-human transmission).

Human-to-human transmission is currently the most common mode of transmission. Coughing or sneezing spreads respiratory droplets, which leads to transmission. The fundamental reproduction number of SARS-CoV-2 is 2.2. This means that a patient can spread the infection to two more people. According to current statistics, the virus has a three-to-seven-day incubation period.[2] SARS-functional CoV's receptor, ACE-2, has been identified and is abundantly expressed on pulmonary epithelial cells.[3] The S protein attaches to this host receptor first, allowing the virus to begin invading the host cell.[4] After SARSCoV-2 binds to ACE-2, the S protein is activated by a two-step protease cleavage: the first for priming at the S1/S2 cleavage site, and the second for activation near a fusion peptide inside the S2 subunit. The virus enters the pulmonary alveolar epithelial cells. after membrane fusion and releases the viral contents inside. The virus now replicates inside the host cell, using the pre-existing single-strand positive RNA to generate a negative strand RNA through RNA polymerase activity (transcription). This freshly produced negative strand RNA is used to generate new positive RNA strands, which are then used to synthesize new proteins in the cell cytoplasm (translation). The viral

N protein attaches to the new genomic RNA, whereas the viral M protein aids integration with the cellular endoplasmic reticulum. These freshly generated Nucleocapsids are subsequently encapsulated in the ER membrane and transferred to the lumen, where they are delivered to the cell membrane via Golgi vesicles, and ultimately to the extracellular space by exocytosis. The new virus particles are now available to infiltrate neighboring epithelial cells and provide fresh infective material for community transmission via respiratory droplets.[5]

Lifestyle behaviors and covid-19
Due to the COVID19 pandemic, the globe is facing an unparalleled, lifealtering threat. Due to the lack of a viable treatment for COVID19, non pharmacological interventions (NPI) such as social distancing and home isolation, which are risk factors for various psychological issues, are being used to limit disease transmission. Recent research suggests that current pandemic related coping techniques may exacerbate depression and anxiety symptoms. Furthermore, dread of the sickness and social isolation may trigger a stress response that might lead to additional psychological problems. NPIs, on the other hand, have been linked to change in lifestyle behavior patterns which have been linked to mental health outcomes. Poor diet, lack of physical exercise, smoking and alcohol consumption are not only substantial contributors to the global burden of disease, but that are also linked to poor psychiatric outcomes.[6] In the management of the COVID-19 outbreak, lifestyle behaviors have recently emphasized maintaining a healthy dietary status and engaging in physical activity at home.

Physical activity
Physical activity is regarded one of the primary components of healthy living.

In addition to the functions linked to the control of excess body weight, systemic inflammation and chronic non-communicable illnesses, a possible benefit of physical exercise in decreasing communicable diseases, particularly viral pathologies, is indicated. Physical activity, both acute and chronic, has a major impact on the immune system. According to studies, the immunological response to exercise is modulated by parameters such as frequency, intensity, duration, and kind of effort exerted.
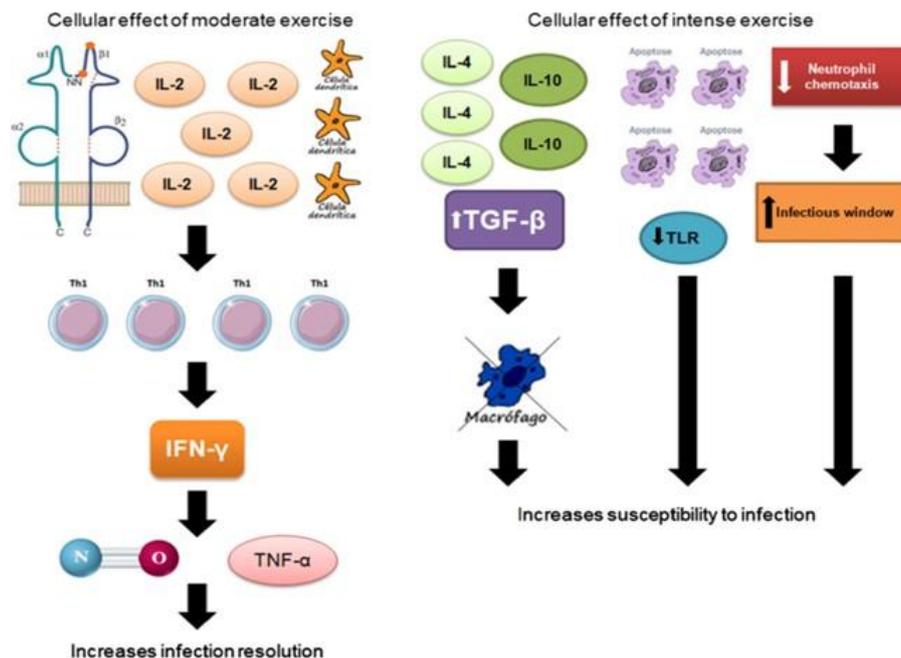

Fig No 1: Cellular effects on moderate and intense exercise.

To the disadvantage of global demographic shift and technology revolution-induced habits, the population is ageing, growing more fat, and, as a result, becoming less active when it comes to physical activity.

Finally, due to the quarantine status imposed in some countries to prevent and control the spread of SARS-CoV-2 during the COVID-19 pandemic, social isolation and limits on people's movement lowered physical activity, predisposing the population to sedentary behavior. In order to reduce the speed with which COVID-19 spreads and the number of people who die as a result of it, social distance is a must.

However, as a result of these efforts, sports clubs, gyms, and fitness centers have halted operations in order to decrease agglomerations, posing challenges to physical activity.

Eating Habits and Covid-19
Staying at home (which includes digital-education, smart working, limiting outdoor and in-gym physical activity)

and stockpiling food due to grocery shopping restrictions are two major influences. Furthermore, the disruption of the work routine caused by the quarantine may result in boredom, which is associated with a higher energy intake. Aside from boredom, constantly hearing or reading about the COVID-19 in the media can be stressful. Stress causes people to overeat, particularly on sugary "comfort foods," which is referred to as "food craving."

Maintaining proper diet is critical, especially during a time when the immune system may be under attack. In fact, people with significant obesity (BMI > 40 kg/m2) are one among the categories at risk for COVID-19 problems.

Sleeping Pattern and Covid 19 Pandemic
Sleep is essential for neurobehavioral, cognitive, and safety-related performance, as well as memory consolidation, nociception, hunger control, immunological, and hormonal functioning. To support optimal health in adults, the American Academy of Sleep Medicine (AASM) and the Sleep Research Society published the recommended amount of sleep, which is 7 or more hours each night on a regular basis.[7]

The lockdown has been extended due to an exponential growth in the number of infected patients in Nepal, as well as increasing unemployment, mental stress, and so on. According to a survey of 1,500 respondents in India on the impact of COVID-19 and the lockdown that disrupted sleep patterns, 67 percent of respondents who worked from home had changed their sleep schedule, 50 percent believed their sleep pattern had been disrupted, and 81 percent believed their sleep schedule would improve after the lockdown.[7] Based on past studies, we have cause to believe that the public's psychological state, as well as sleep quality, may be impacted during the COVID-19 epidemic.

METHODOLOGY
A web-based Cross-sectional study, entitled "COVID-19 AND SHIFT IN LIFESTYLE BEHAVIOURS AMONG ADULT POPULATION IN KERALA". The study was conducted on online by using google forms along with consent form attached to it. For the study the participants of aged 18 above was included. The questionnaire is divided into three sections that analyse socio-demographic information, changes in lifestyle-related behaviour, and COVID-19 specific causes for these changes. Questions about general information are found in section A. Section B is divided into two parts, each having 22 entries. Part A (A1 TO A22) measure baseline lifestyle-related behaviours, while part B (B1 TO B24) assesses changes in various lifestyle-related behaviours such as eating habits, physical activity, and sleep pattern during the pandemic. The specific causes for changes in lifestyle-related behaviors are in Section C, which comprises of six items, by using 5 points Likert scale.

RESULT AND DISCUSSION
A total of 164 responses were recorded. Out of all individuals who participated in the study, were 70 males while 94 were female, accounting for 42% and 57% of total responses respectively. Maximum number of participants were aged between 19-28 years. Students accounted for the majority of sample distribution, making up of responses 56%.

CATEGORIZATION BASED ON GENDER
Table 1: Categorization based on gender.

GROUP	FREQUENCY	PERCENTAGE
Female	94	57.3
male	70	42.7
Total	164	100.0

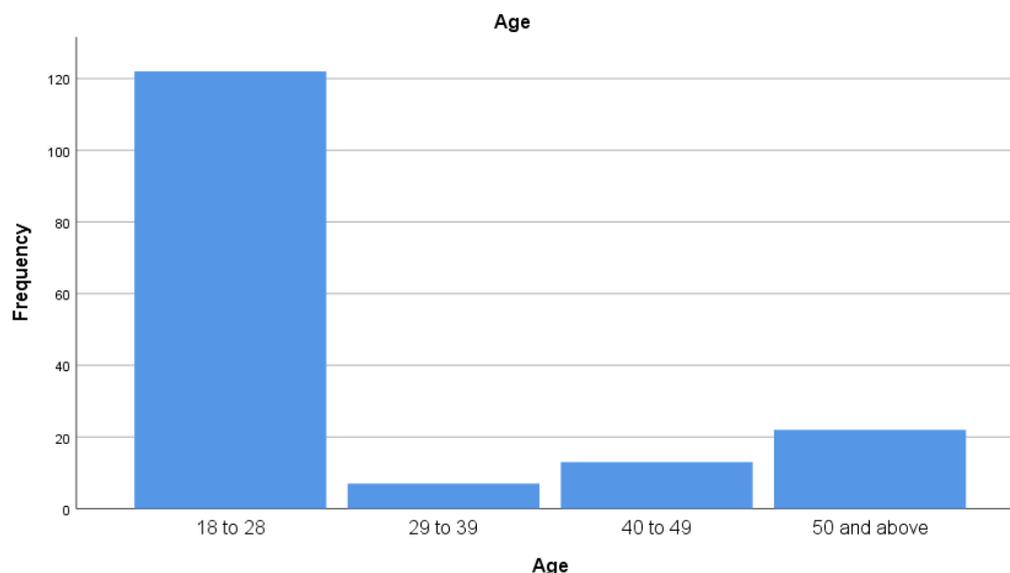The population in the study has been classified according to their age also.

Fig No. 2: Age distribution in the study.

The habit of consuming meals routinely at regular intervals has slightly increased during COVID-19 pandemic (21.3% vs 22.6%). The participants refraining from unhealthy eating behaviors such as consumption of fried food (35.4% vs 43.3%) and junk food (43.3% vs 51.8%). Participants reported marginal improvement in the frequency of consumption different food groups such as fruits and vegetable (26.2% vs 32.3%), milk and its products (27.4% vs 28.7%) and pulses, meats, and egg (17.1% vs 20.1%) during COVID pandemic.

Table No: 3 Comparison based on consumption of junk foods.

	BEFORE COVID PANEMIC		DURING COVID PANDEMIC		P value
	Frequency	Percentage	Frequency	Percentage	
Not routinely	71	43.3	85	51.8	.004
One to two times a week	50	30.5	49	29.9	
Three to four times a week	25	15.2	15	9.1	
Five to six times a week	7	4.3	4	2.4	
Almost Daily	11	6.7	11	6.7	
Total	164	100	164	100	

COMPARISON OF PHYSICAL ACTIVITY BEFORE AND DURING COVID-19 PANDEMIC
Table No. 4: Comparison based on participation in moderate intensity aerobic exercise / sports.

	BEFORE COVID PANDEMIC		DURING COVID PANDEMIC		P value
	Frequency	Percentage	Frequency	Percentage	
Not routinely	96	58.5	79	48.2	.239
One to two times a week	25	15.2	37	22.6	
Three to four times a week	10	6.1	16	9.8	
Five to six times a week	6	3.7	10	16.1	
Almost Daily	27	16.5	22	13.4	
Total	164	100	164	100	

In the physical activity domain, a decrease in participants not routinely exercising for 30 min was observed (58.5% vs 48.2%). Although, participants exercising more than three days a week (6.1% vs 9.8%) during COVID pandemic has slightly increased coupled with participation in household chores (22.6% vs 26.8%).

Participants reported an increase in daily screen time of more than five hours (16.5% vs 36.6%).

SLEEPING BEHAVIOUR
Participants reporting more than 8 hours of sleep increased (13.4% vs 29.9%) but overall quality of sleep marginally declined (1.8% vs 15.2%) and overall stress amongst participants increased (6.1% vs 11.6%).
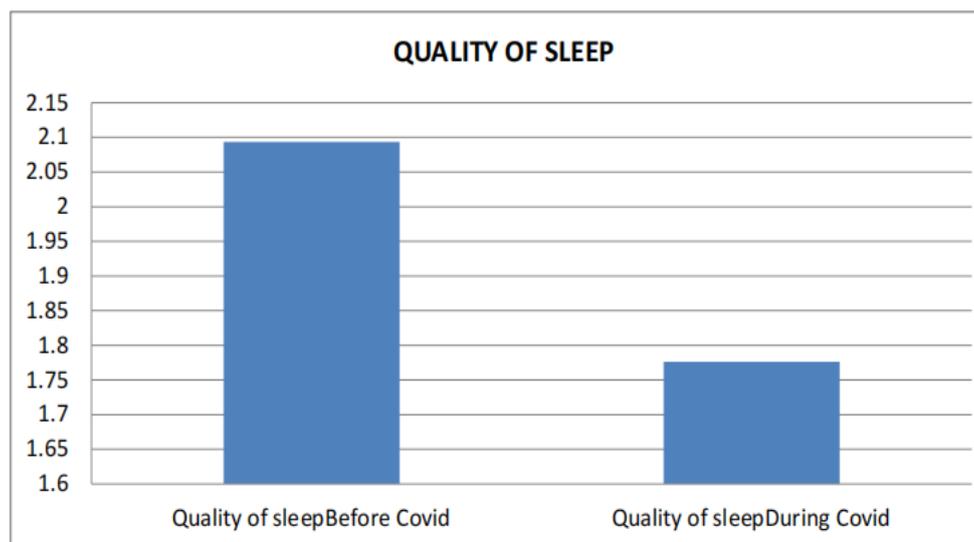
Fig No. 2: Comparison of quality of sleep.

Similar findings were reported by number of studies showing that reduced physical activity, increased stress and anxiety, lack of an appropriate schedule to work contributed to worsen the quality of sleep.[8]

SOCIAL BEHAVIOURS
In smoking pattern there was a slight increase and an increase in levels of consumption alcohol with a decrease in consumption of alcohol on special occasions (20.1% vs 10.4%) during COVID pandemic.

Similar findings were reported by a number of studies showing moderate levels of quarantine induced stress and anxiety in Indian adults with more than 80% adults preoccupied with fearful thoughts of getting coronavirus infection.[9]

LEVEL OF STRESS OR ANIXETY
Table No: 5 Comparison based on level of stress or anxiety.

	BEFORE COVID		DURING COVID		P value
	Frequency	**Percentage**	**Frequency**	**Percentage**	
Not at all	44	26.8	36	22.0	
A little	64	39	62	37.8	
Much	34	20.7	21	12.8	
Very much	10	6.1	26	15.9	.000
Extreme	10	6.1	19	11.6	
Total	164	100	164	100	

CONCLUSION
COVID-19 is a global burden that continues to significantly alter daily lifestyle-related habits as the pandemic develops through its different phases. In conclusion the result of the study indicates a mixed effects on lifestyle related behaviors with a decrease in regular meal consumption pattern and significant improvement in healthy eating behavior. Significant decrease in physical activity and increase in daily screen time, stress as a negative indicator. There was a slight increase in smoking pattern and alcohol consumption among the study participants.

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