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Influence of Covid-19 lockdown on Eating pattern, Sleep cycle, Physical activity and Quality of life in the age group of 18-25 years

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Abstract

The Severe restriction in daily life due to Covid-19 due to lockdown had a major impact on public health, physical activity, work schedule, mental, emotional health and social relationships.

Objective: To study the effect of lockdown on eating patterns, sleep cycle, physical activity level and quality of life during COVID19 lockdown in the age group of 18-25yrs.

Methodology: A random sampling method was used for a comparative study with sample the size of 100 in the age group of 18-25 years. Both the genders were recruited in the study. Questionnaire method was used to collect the data. International Physical Activity Questionnaire (IPAQ) was used to measure physical activity level and WHO quality of life-Brief was used to assess the quality of quality. SPSS software was used for the analysis of the data and p value <0.05 was considered to be statistically significant.

Results: The significant increase in frequency of eating home cooked meals, daily consumption of tea/coffee, daily water intake, monthly consumption of oil per family, consumption of pulses and root vegetables, duration of sleep, day-time short naps, sleep latency, sitting duration was observed during the lockdown ($p<0.05$). Whereas the frequency of ordering food from outside, consumption of cereals, leafy vegetables, non-vegetarian foods, milk products, nuts, fruits and beverages decreased significantly during the lockdown ($p<0.05$). Low physical activity level and poor quality of life was observed during the lockdown.

Conclusion: The lockdown due to Covid-19 pandemic has led to poor dietary quality, sleeping pattern, physical activity, quality of life. Thus, maintaining proper physical activity, eating balance diet, managing stress and setting proper time for sleep will help to maintain good health and quality of life.

Key words: Covid-19 lockdown, Eating pattern, Sleep cycle, Physical activity, Quality of life.

Introduction:

Novel Coronavirus or Covid-19 was first suspected in the wet market of Wuhan, China and later started to spread all over the world and lead to large number of deaths. More than one third of the world's population was been put under lockdown with restricted movements to control the widespread of the virus. People were been strictly advised to maintain social distance, wear a mask and sanitize their hands frequently *(Wang C, et.al,2020)*. Students all over the world, are also experiencing distress because of the uncertainty of examinations in their schools and colleges, and with regards to availability of jobs, etc. *(Usama Rehman, et.al, 2020)*. Regarding the eating pattern the altered the meal timing and frequency of meals consumed is observed. Prolonged staying at home may cause increase in eating palatable meals, snacking, and alcohol consumption. *(Laura Di, et.al,2020)*. Due to the confinement, consumption of homemade baking increased as some people had concern related to hygiene and sanitation of restaurant and takeaways. *(Aleksandra Sidor, et.al, 2020)*. Immunity and immunity boosting foods were emphasized more during COVID-19 pandemic as it plays a vital role in maintaining optimum health. Therefore, in order to boost- immunity it was seen that instead of taking immunity boosting supplements daily the Indian population can rely on traditional foods as immunity elevator such as spices, citrus fruits, some vegetables, herbal tea, honey etc (Banerjee Swapan, et.al,2020)**.** Sleep plays a fundamental role for mental and physical health, and adequate sleep duration and quality are essential for coping with major life events such as the COVID-19 pandemic *(Charles M Morin et.al)*. Poor sleep quality or excessive daytime sleepiness can also result in lack of motivation, lack of self-efficacy, increase stress level and lower academic performance in young adults. *(sara Marelli, et.al, 2020)*. The complete lockdown during COVID-19 pandemic restricted physical activity and increase sedentary behavior in people of all the age group. Both indoor and outdoor sports and recreational facilities, such as gyms, public swimming pools and playgrounds, were closed. *(Dunton, et.al, 2020)*. The higher decrease MET-min/week, and increased sedentary behavior was observed in young adults *(Gjaka M et.al, 2020)*. The preventive measures during the lockdown had impact not only on everyday life but also social activities and personal relationships. Social support was positively correlated with quality of life during the COVID-19 outbreak. *(Anna Lardone, et.al,2020)*

Materials and Methods:

The objective was to study the effect of lockdown on eating patterns, sleep cycle, physical activity level and quality of life during COVID19 lockdown in the age group of 18-25yrs. It was approved by the Institutional Ethical Committee (IEC) of Dr. BMN College of Home Science, Matunga, Mumbai. Random sampling method was used for the study. Healthy individuals from the age group of 18-25yrs, both males and females the genders were recruited in the study. A general questionnaire along with food frequency questionnaire was used to collect the data. International Physical Activity Questionnaire (IPAQ) was used to measure physical activity level and WHO quality of life-Brief was used to assess the quality of quality. SPSS software was used for the analysis of the data and p value <0.05 was considered to be statistically significant.

Statistical analysis:

The analysis was done using Statistical Package of Social Software (SPSS, version 20). The analysis of data included Chi-Square test. p value less than 0.05 was considered statistically significant.

Results and Discussion:

analysis of data collected from participants before and during lockdown about eating pattern, sleep cycle, physical activity and quality of life is shown.

Table no.1 Socio demographic data of the participants

Categories	Options	Percentage
Gender	Males	36
	Females	64
occupation	Students	73
	Working	27
Residence	Mumbai	81
	Out of Mumbai	19
Marital status	Married	4
	Unmarried	96
Family annual income	<3 Lakhs	37
	3-8 Lakhs	45
	>8 Lakhs	18

Among the total participants 36% participants were males and 64% were females. 73% participants were students and 27% were working population. Thus, majority of participants were students. 81% of participants were from Mumbai and rest 19% were from out of Mumbai. 96% participants were unmarried and only 4% were married. 45% had family annual income between 3lakhs to 8 lakhs, 37% had Annual family income less than 3 lakhs and 18% had annual family income 18 lakhs. Thus, maximum participants had annual salary between 3lakh to 8lakhs. (Table no. 1).

Table no.2 Eating pattern of the participants (p <0.05)

Categories	Option	Before lockdown (%) (n=100)	During lockdown (%) (n=100)	P value
Home cooked meals	All the meals	59	72%	0.000
	1 meal	15%	16%	
	2 meals	21%	10%	
	3 meals	4%	2%	
	None	1%	0%	
	Total	100%	100%	
Daily cups of tea/ coffee	None	21%	22%	0.000
	1 cup	42%	33%	
	2-3 cup	31%	42%	
	3-4cup	6%	3%	
	Total	100%	100%	
daily water intake (in litre)	1L	12%	7%	0.000
	2L	25%	32%	
	3L	30%	22%	
	4L	17%	18%	
	5L or more	16%	21%	
	Total	100%	100%	
monthly oil/Ghee consumption per family	1-2L	37%	32%	0.000
	3-4L	42%	37%	
	5-6L	17%	23%	
	7-8L	4%	7%	
	more than 8	0%	1%	
	Total	100%	100%	
sugar/Jaggery consumption	None	7	5	0.000
	1-2 teaspoon	58	53	
	3-4	31	31	
	5-6	1	7	
	more than 6	3	4	
	Total	100%	100%	
Main meals in a day	1 meal	1%	0%	0.000
	2 meals	24%	23%	
	3 meals	47%	36%	
	4 meals	20%	25%	
	More than 5 meals	8%	16%	
	Total	100%	100%	
Midnight snacking	Daily	3%	4%	0.000
	two time a week	4%	16%	
	once a week	5%	5%	
	two times a month	7%	5%	
	Never	81%	70%	
	Total	100%	100%	
Skipped meals (Breakfast)	Yes	24%	35%	.844
	No	76%	65%	
	Total	100%	100%	
Skipped meals (Lunch)	Yes	16%	7%	0.44
	No	84%	93%	
	Total	100%	100%	
	Yes	5%	4%	0.000

Skipped meals (Dinner)	No	95%	96%	
	Total	100%	100%	
Frequency of skipping meals	Daily	7%	7%	0.34
	two time a week	12%	15%	
	once a week	14%	11%	
	two times a month	13%	10%	
	Never	54%	57%	
	Total	100%	100%	
Food ordered from outside	Daily	6%		0.000
	two time a week	11%	9%	
	Once a week	18%	6%	
	two times a month	37%	24%	
	Never	28%	61%	
	Total	100%	100%	
Consumption of immunity boosting foods	Yes	13%	87%	0.011
	No	70%	30%	

When chi square test was performed, it was observed that there is significant increase in number of main meals, number of home cooked meals, daily water consumption, daily sugar/jaggery consumption, monthly oil consumption and midnight snacking during lockdown as compared to before lockdown ($p<0.05$). The frequency of ordering food from outside was significantly decreased during lockdown ($p<0.05$). Also, a significant change was observed in skipped dinner during the lockdown as compared to before lockdown ($p<0.05$). There was no significant difference observed in Skipping breakfast, frequency of skipping meals, consuming immunity boosting food during lockdown as compared to before as compared to before lockdown ($p>0.005$). The tabular information is of eating pattern before and during lockdown. (Table no. 2).

Huber, B.C., et.al,2020 reported that the frequency of home cooked meals was increased during the lockdown. It was increased from 94.8% participants before lockdown to 98.5% during lockdown whereas, the number of people visiting restaurants (46.4% before lockdown to 1.9% during lockdown) or cafeterias (48.5% before lockdown to 2.5% during lockdown) decreased drastically during lockdown.

Table no.3 Sleep cycle of the participants (p <0.05)

Categories	Option	Before lockdown (%) (n=100)	During lockdown (%) (n=100)	P value
Type of sleep	Sound sleep	84	16	0.893
	Disturbed sleep	61	39	
Frequency of disturbed sleep	Daily	4	8	0.000
	2-3 times a week	12	21	
	Once a week	28	15	
	2-3 times a month	8	6	
	Once a month	9	9	
	Never	47	41	
	Total	100%	100%	
Reasons for disturbed sleep	Stress	29.4	29.4	0.000
	Wake up to use bathroom	39.2	23.5	
	Not able to breath properly	0	0	
	Bad dreams	5.9	17.6	
	Cannot sleep with in 30 mins	21.6	25.5	
	coughing or snoring	2.0	0	
	Pain/illness	2.0	3.9	
	Total	100%	100%	
At what time do you wake up in the morning	6am-8 pm	79.6	34.7	0.14
	8am-10am	12.2	36.7	
	10am-12am	5.1	22.4	
	12pm-2pm	3.1	6.1	
	Total	100%	100%	
usual bed time at night	10pm-12pm	72.0	30.0	0.001
	12pm-2pm	21.0	45.0	
	2pm- 4pm	2.0	18.0	
	4am-6am	5.0	7.0	
	Total	100%	100%	
Sleep duration	1-4	1.0	20.0	0.01
	4-8	57.0	25.0	
	8-10	41.0	63.0	
	>10	1.0	10.0	
	Total	100%	100%	
Short naps during the day	Yes	20	43	0.01
	No	46	20	
	Sometimes	34	37	
	Total	100%	100%	

When chi square test was performed it was observed that there was significant delay in sleeping time at night was observed during lockdown ($p<0.05$). Also, the sleep duration and frequency of short naps during the day were significantly increased during the lockdown. ($p<0.05$). There was no significant difference observed in wake time in the morning and type of sleep during lockdown as compared to before as compared to before

lockdown (p>0.05). The tabular form gives information about sleep cycle before and during lockdown. (Table no. 3).

The comparative study conducted between sleep cycle of pre and post lockdown showed that compared to the pre-lockdown period, there was a shift to a later bedtime and waking time, with a reduction in night-time sleep and an increase in day-time napping. (Ravi Gupta et.al,2020).

An online survey conducted during Covid-19 pandemic by Meenakshi Sinha, et.al, 2020 to assess the impact of lockdown on the sleep-wake pattern, meal timings and digital media exposure time on the Indian population during lockdown. The result showed that, the sleep timings, wakeup times and meals' time was significantly delayed during lockdown, increased sleep duration which was observed more in younger subjects whereas increased digital media duration was reported by all the age groups

Table no.4 Food frequency questionnaire (p <0.05)

Food groups	Food items	Never	Once a month	2-3times/ month	once a week	2-3 times/ week	Daily	P value
Cereals (in %)	Wheat flour BL	3	7	5	1	9	75	0.000
	Wheat flour DL	6	11	3	2	8	70	
	Rice BL	1	5	3	2	10	79	
	Rice DL	2	11	4	4	9	70	
	Bajra BL	28	31	12	13	7	9	
	Bajra DL	34	29	7	11	10	9	
	Jowar BL	31	28	11	12	9	9	
	Jowar DL	34	26	10	14	7	9	
	Refined flour BL	15	38	25	14	4	4	
	Refined flour DL	21	39	17	13	5	5	
	Oats BL	49	20	15	9	2	5	
	Oats DL	51	28	8	6	4	3	
	Noodles/pasta BL	6	27	28	18	17	4	
	Noodles/pasta DL	20	23	17	19	17	4	
	Ragi BL	40	25	13	12	7	3	
	Ragi DL	43	30	8	11	3	5	
Pulses (in %)	Chana dal BL	7	25	20	19	19	10	0.000
	Chana dal DL	10	23	23	22	9	13	
	Besan BL	7	19	32	23	16	3	
	Besan DL	5	21	25	31	11	7	
	Chole BL	5	36	28	21	9	1	
	Chole DL	8	29	28	29	4	2	
	Rajma BL	19	32	25	19	4	1	
	Rajma DL	22	35	19	18	4	2	
	Green gram BL	4	26	30	26	10	4	
	Green gram DL	6	35	25	19	10	5	
	Green gram dal BL	2	23	25	22	18	10	
	Green gram dal DL	4	31	18	23	9	15	
	Urdal dal BL	14	30	27	18	8	3	
	Urdal dal DL	14	36	22	17	6	5	
	Tur dal BL	7	21	24	16	13	19	
	Tur dal DL	7	27	17	20	10	19	

Leafy vegetables (in %)	Amaranth leaves BL	44	22	19	10	4	1	0.000
	Amaranth leaves DL	48	23	12	13	3	1	
	Fenugreek leaves BL	24	26	22	16	9	3	
	Fenugreek leaves DL	26	29	20	19	5	1	
	Shepu BL	40	18	18	15	8	1	
	Shepu DL	37	28	15	17	2	1	
	Spinach BL	16	29	20	20	13	2	
	Spinach DL	18	31	23	18	8	2	
Other vegetables (in %)	Brinjal BL	16	26	27	21	5	5	0.000
	Brinjal DL	12	34	26	21	4	3	
	Bottle gourd BL	23	26	23	16	7	5	
	Bottle gourd DL	17	34	28	15	3	3	
	Cauliflower BL	11	25	35	19	7	3	
	Cauliflower DL	10	27	36	22	4	1	
	Cluster beans BL	12	26	26	24	9	3	
	Cluster beans DL	10	22	38	23	5	2	
	Capsicum BL	3	24	30	26	12	5	
	Capsicum DL	3	25	30	27	9	6	
	Ladies finger BL	6	21	23	30	16	4	
	Ladies finger DL	4	32	28	27	7	2	
	Tomato BL	4	8	12	7	23	46	
	Tomato DL	0	17	15	16	10	42	
Root vegetables (in %)	Onion BL	6	4	5	2	9	74	
	Onion DL	5	9	5	19	12	59	
	Potato BL	5	5	9	12	37	32	
	Potato DL	5	7	12	15	33	28	
	Yam BL	59	17	12	4	3	5	
	Yam DL	64	10	11	8	6	1	
Fruits (in %)	Apple BL	4	20	25	21	21	9	0.000
	Apple DL	11	19	23	19	15	13	
	Pear BL	23	27	20	16	12	2	
	Pear DL	36	16	21	17	10	0	
	Orange BL	6	29	24	21	13	7	
	Orange DL	12	17	29	18	17	7	
	Banana BL	9	11	22	16	24	18	
	Banana DL	16	12	22	15	23	12	
	Chickoo BL	23	29	19	17	9	3	
	Chickoo DL	30	17	22	17	13	1	
	Grapes BL	19	32	22	17	8	2	
	Grapes DL	31	26	21	9	12	1	
Milk and milk products (in %)	Buffalo milk BL	55	9	7	1	3	25	0.000
	buffalo milk DL	51	11	5	5	2	26	
	Cow milk BL	20	10	6	4	5	55	
	Cow milk DL	22	14	4	5	8	47	
	Curd BL	10	19	13	17	27	14	

	Curd DL	13	19	21	14	18	15	
	Paneer BL	9	24	26	23	15	3	
	Paneer DL	17	26	22	23	9	3	
	Cheese BL	9	21	25	22	20	3	
	Cheese DL	19	24	17	16	22	2	
	Cream BL	50	30	11	5	4	0	
	Cream DL	55	23	11	7	2	2	
Nuts (in %)	Almonds BL	6	25	15	10	17	27	0.000
	Almonds DL	12	16	17	19	18	28	
	Cashew nut BL	5	31	23	10	14	17	
	Cashew nut DL	15	15	25	9	17	19	
	Walnut BL	23	24	16	10	7	20	
	Walnut DL	28	13	18	7	13	21	
Dry fruits (in %)	Fig BL	38	29	5	12	8	8	
	Fig DL	43	21	9	8	10	9	
	Raisins BL	18	30	19	8	14	11	
	Raisins DL	27	23	19	11	11	9	
	Dates BL	11	29	21	14	10	15	
	Dates DL	17	23	19	15	14	12	0.000
Poultry (in %)	Egg BL	27	8	10	16	29	10	
	Egg DL	29	8	18	15	19	11	
	Chicken BL	28	9	14	29	20	0	
	Chicken DL	31	13	20	24	12	0	
	Mutton BL	55	23	8	10	4	0	
	Mutton DL	58	15	11	15	1	0	
Sea foods (in %)	Fish BL	46	23	10	18	3	0	0.000
	Fish DL	56	16	15	9	4	0	
	Prawns BL	42	20	17	10	11	0	
	Prawns DL	50	23	13	9	4	1	
	Crabs BL	53	58	9	6	4	0	
	Crabs DL	67	21	4	7	1	0	
Fats and oil (in %)	Oil BL	2	7	6	7	6	72	0.000
	Oil DL	4	6	6	7	2	75	
	Ghee BL	5	13	13	12	21	36	
	Ghee DL	8	14	13	10	22	23	
	Butter BL	4	18	24	24	22	8	
	Butter DL	13	19	16	19	23	10	
Beverages (in %)	Soft Drinks BL	26	37	18	9	10	0	0.000
	Soft Drinks DL	46	31	9	6	7	1	
	Packed/canned fruit juices BL	28	34	16	11	11	0	
	Packed/canned fruit juices DL	53	24	13	3	7	0	
	Sugarcane juice BL	23	42	18	10	6	1	
	Sugarcane juice DL	56	29	7	3	4	1	
	Alcohol BL	79	14	6	1	0	0	
	Alcohol DL	89	7	2	2	0	0	

When chi square test was performed, it was observed that the consumption of cereals, leafy vegetables, non-vegetarian foods, milk products, nuts, fruits and fruits significantly decreased during lockdown ($p<0.05$).

The consumption of pulses and root vegetables increased significantly during lockdown ($p<0.05$). (Table no.5)

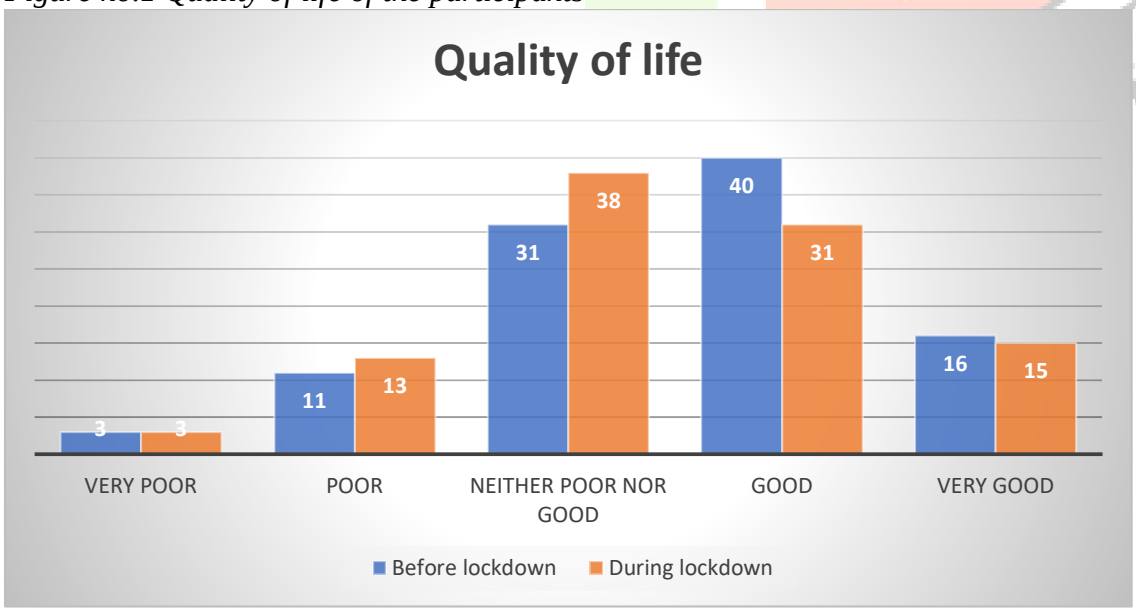
Table no.4 Physical activity level of the participants

Categories	Option	Before lockdown (n=100)	During lockdown (n=100)	P value
Physical Activity level	Low	29%	52%	0.16
	Moderate	55%	33%	
	High	16%	15%	
	Total	100%	100%	
Sitting Time	1- 3 hours	9%	3%	0.000
	3-6 hours	28%	20%	
	6-9 hours	48%	25%	
	9-12 hours	15%	51%	
	>12 hours	0%	1%	
	Total	100%	100%	

When chi square test was performed, it was observed that there is significant increase in sitting duration during the lockdown as compared to before as compared to before lockdown ($p<0.005$). There was no significant physical activity level during lockdown as compared to before lockdown ($p>0.05$). The tabular information is of Physical activity level and sitting duration before and during lockdown. (Table no.5)

A study conducted by Matsungo et al. reported that the was significant reduction in physical activity of 62.5% from total participants during the lockdown.

Figure no.1 Quality of life of the participants



From figure no.1, it can be seen that 40% participants reported good quality of life before lockdown whereas, during lockdown only 31% reported good quality of life during lockdown. 31% reported neither good nor bad quality of life before lockdown whereas, during lockdown 38% participants had neither good nor bad quality of life. 16% had very good quality of life before lockdown which decreased to 15% during lockdown. 11% had very bad quality of life before lockdown which increased to 13% during lockdown only 3% had very poor quality of life during lockdown. Thus, for maximum participants quality of life was good before lockdown but during lockdown it was reported that maximum participants had neither good nor bad quality of life.

Algahtani FD et.al, 2021 aimed to examine the predictors of the QoL during the first wave of the COVID-19 pandemic in Saudi Arabia. The tools used in the study were World Health Organization Quality of Life Instruments (WHOQOL-BREF) was used to assess the QoL The study concluded that COVID-19 pandemic has significantly influenced various aspects of individuals' QoL, as well as their physical and psychological health.

Conclusion: The lockdown due to Covid-19 pandemic has led to poor dietary quality, sleeping pattern, physical activity, quality of life. Thus, maintaining proper physical activity, eating balance diet, managing stress and setting proper time for sleep will help to maintain good health and quality of life.

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