

# Impact of Food Habit Changes on Dental Health due to Lockdown

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**Abstract:** *The world has indeed changed and yes, we all are working from home either full time or partly for a lot many months now owing to the extended periods of lockdowns to curb the spread of the COVID-19 pandemic. Our food habits particularly have undergone significant changes for frequency, type of food/snacks, quantity, home remedies for the pandemic, etc. We deemed it fit in the above-mentioned circumstances to conduct this cross-sectional survey. The Construct of this survey framework was with a special emphasis on the increased intake of VITAMIN C and frequent SNACKING BETWEEN MEALS impacting oral health and the repercussion it may have in the years to come on the individual's DENTAL HEALTH. Compiling the responses that have been recorded, it is evident that people have increased their frequency of food intake to more than just 3 or 4 meals a day. In addition to that, many people are unaware of the importance of gargling and rinsing post snacking and hence missed doing it. Also, as studies have proven the importance of vitamin C as an immunity booster in these trying times, people have resorted to a plethora of ways to increase the levels of the same in the body, be it in the form of natural substitutes or artificial supplements. And as is the case above, many opt to ignore following any oral hygiene protocol post intake. This ignorance may show a particular increase in the incidence of dental caries and enamel erosion.*

**Keywords:** Food habit changes, snacking between meals, Vitamin C, Dental health

## 1. Introduction

A person not going to work on an everyday basis for 18 months on the trot will not be believed when he/she says that they are working from home...WFH. The only three big alphabets we have heard apart from the humongous news of misery, depression and loss created by COVID-19 pandemic.

The world has indeed changed and yes, we all are working from home either full time or partly for a lot many months now owing to the extended periods of lockdowns to curb the spread of the COVID-19 pandemic. It is not only the way the economy works that has changed but it has also changed and impacted our lifestyle and mind set. Our food habits particularly have undergone significant changes for frequency, type of food/snacks, quantity, home remedies for the pandemic, etc.

On a broader aspect, people in general have gotten more hours in the day for self-care at the cost of travel time. This increase in leisure time has given birth to two distinct categories of people on the extreme ends of the spectrum. One end of the spectrum having people who have drastically increased their curbs on eating and the other who have rather ignored their dietary discipline. With an added strong influence of the more commonplace sedentary lifestyle<sup>4</sup>.

Strict regulations on diet denote increase in consumption of good fats, proteins and a huge load of fibres in the form of

fruits and vegetables. Such trends are commonly seen as a post- COVID diet regimen, where there is an augmented consumption of vitamin C. Social media also has a consequential role to play as it promotes increased screen time associated with binge eating at odd hours owing to easy access to food round the clock, be it owing to access to food at home or even the online food ordering apps followed by door step delivery of the same. It also strongly influences people to follow a diet on the trending charts, having half-baked knowledge of the same<sup>7</sup>.

Social media, on the other hand, has inexhaustible streaming platforms which has increased incidence of eating disorders significantly by being tarried at home for longer durations and also because of depression analogous to the unprecedented pandemic lockdown<sup>8</sup>.

All things considered, it increases the exposure of tooth surface to substrates harbouring microorganisms and strong acids which tend to have adverse effects on the teeth.

## 2. Literature Survey

Diet, of course, is just one approach to preventing illness. Limiting calorie intake is the trend now which includes various dietary patterns such as keto diet, flexitarian diet, mind diet, etc<sup>1</sup>. Another trending dietary pattern is 16/8 intermittent fasting which involves consumption of food in the 8-hour window and fasting for the next 16 hours. Due to inappropriate management of hunger, people tend to

consume voluminous amounts of food leading to prolonged exposure of tooth surface to food and microbes<sup>6</sup>. The recommended food regime (immune system support diet) for people post COVID infection includes increased consumption of Vitamin C, Zinc, Vitamin E and probiotics.

Dental erosion is the irreversible loss of superficial layers of tooth structure due to acid dissolution which does not involve plaque or presence of bacteria. It is seen significantly in conditions of prolonged exposure of tooth surface to demineralising agents like vitamin C (strong acids). It is commonly found in everyday ingestible like fruits and vegetables including oranges, pepper and broccoli<sup>2</sup>. There is a conscious effort in up scaling the consumption of Vitamin C through the pandemic as it is a proven aid for better immunity<sup>5</sup>. Due to this continual exposure to the acid irreversible loss of dental hard tissue will ensue.

Dental caries is the microbial infectious disease characterized by demineralization of the inorganic and destruction of the organic substance of the teeth. The most important cause of dental caries is the consumption of food having high sugar index. The habit of frequent snacking between the meals is also known to increase the incidence of dental caries because of incessant, substrate rich environment for cariogenic bacteria to harbour on the tooth surface and subsequently cause loss of tooth structure<sup>3</sup>.

### 3. Methods/ Approach

It was an anonymous survey of 455 people with the participants belonging to diverse age groups, social backgrounds and economic strata. The questionnaire included queries about intake of quality, quantity and frequency of food, frequency of Vitamin C intake and maintenance of oral hygiene.

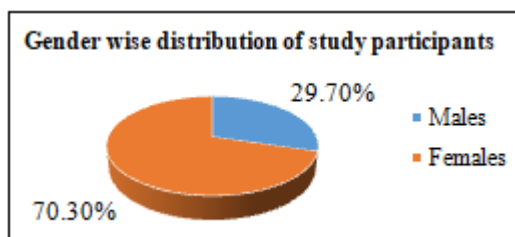
As frequent snacking and intake of Vitamin C has increased, awareness has to be created among the people to follow and maintain strict oral hygiene habits after consumption of food and vitamin C to prevent the incidence of dental caries and enamel erosion.

Brushing twice daily with proper technique is also advised to maintain a good oral health.

### 4. Results/ Discussion

Table 1

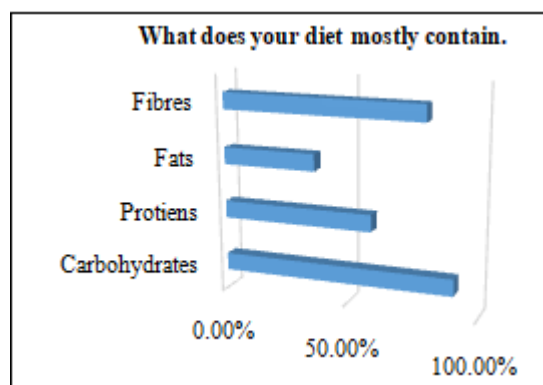
Age wise distribution of study participants			
Variable	Category	N	%
Age	< 25 yrs.	280	61.5%
	26 - 50 yrs.	128	28.1%
	>51 yrs.	47	10.4%
	Mean		SD
	Mean	25.02	1.75
	Range	15 - 78	



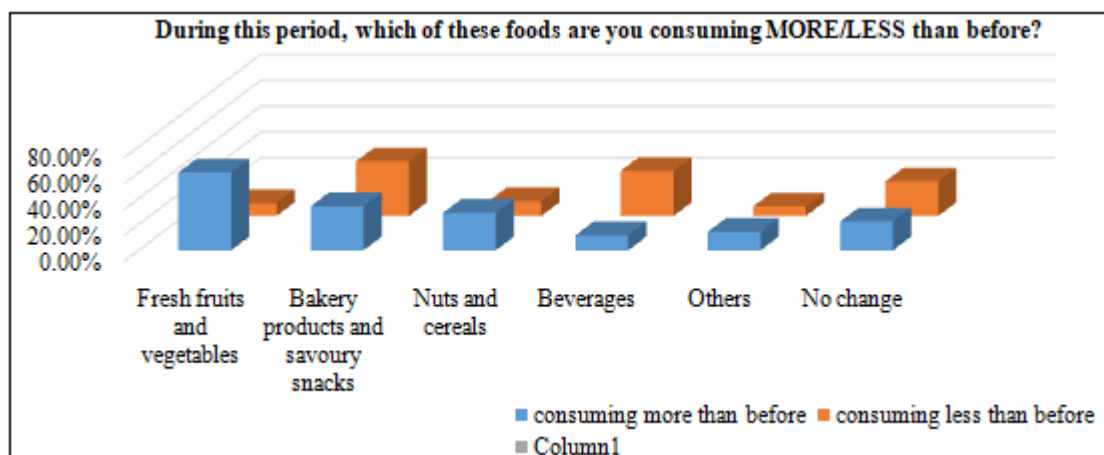
Graph 1

The survey included around 450 participants ranging between 15-78 years, the mean age being 25 years. It included 320 female participants and 135 male participants.

The results showed that there were 55.2% of the participants following a mixed diet and the remaining following a vegetarian diet barring a meagre 0.6% following a vegan diet.



Graph 2



Graph 3

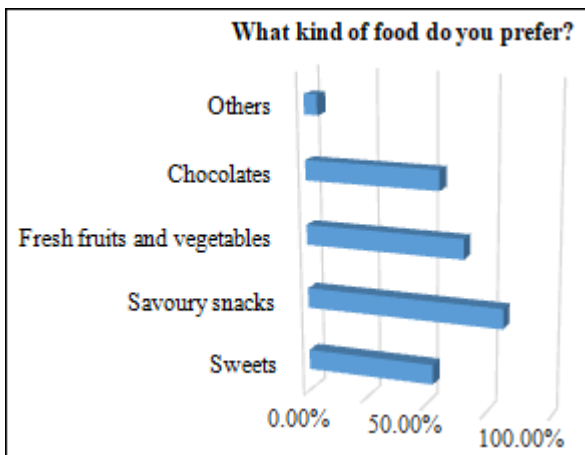
A compilation of the results showed that lifestyle and food habits indeed underwent changes during the lockdown and the diet mostly contains carbohydrates and proteins with a significant raise in the intake of fibres and a drop in fat intake as depicted by graph 2.

According to the results interpreted by graph 3 there was a marked increase in the intake of fresh fruits and vegetables which can be directly co-related with the most frequently followed diet regimens, immune system support diet, mind diet, dash diet, flexitarian diet to name a few. These diets extensively recommend additional intake of fresh fruits, vegetables and grains. There was also a noteworthy decrease in the consumption of bakery products and fast foods through the same period. This trend corresponds to the restaurants and food joints remaining shut during the lockdown period accompanied by people cooking and baking by self in their free time.

**Table 2**

*Comparison of distribution of responses for the questions on habit of snacking in between meals using Chi Square Goodness of Fit Test*

Questions	Responses	n	%	X <sup>2</sup> Value	P - Value
Over the lockdown phase, have you developed a habit of snacking between meals?	Yes	240	52.2%	1.26	0.26
	No	215	47.5%		
Do you gargle or rinse your mouth every time you snack on something?	Yes	84	35%	6.7	0.03
	No	62	25.8%		
	Sometimes	92	39.2%		



**Graph 4**

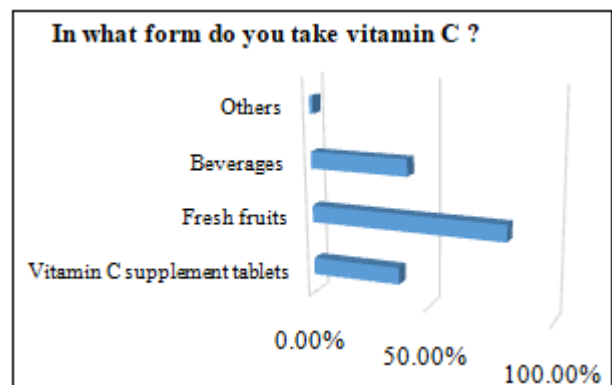
As demonstrated by table 2 (question 1) people have also increased the consumption of snacks over the phase of lockdown and mostly prefer savoury snacks, chocolates for consumption between meals. This is more so because of easier access to food and more freedom to consume anything at any time. As seen in question 2, 25% of the participants outright accept not rinsing their mouth whereas 39% of them turn out ignorant and do not consider doing it very important. This lack of awareness and abundance of ignorance put together remarkably increases the time of exposure of the tooth surface to carious pathogens as they get a substrate rich environment to thrive for longer periods

of time. This can and may result in a jump in the number of caries cases in the near future.

**Table 3**

*Comparison of distribution of responses for the questions on intake of Vitamin C as an immunity booster using Chi Square Goodness of Fit Test*

Outright Questions	Responses	n	%	X <sup>2</sup> Value	P - Value
1) Have you increased vitamin C intake?	Yes	316	69.5%	68.08	<0.001
	No	139	30.5%		
2) Do you gargle or rinse your mouth every time you take vitamin C?	Yes	44	13.9%	136.54	<0.001
	No	203	64.2%		
	Sometimes	69	21.8%		



**Graph 5**

The table 3 indicates that a majority of the participants have increased the consumption of Vitamin C as it is proven to be an immunity booster but it is also proven to have an erosive action on the tooth surface, which not many people are aware of. Over the past year and a half, majority of the people have started consuming Vitamin C rich food like citrus fruits and vegetables and also accompanied with supplements. The fact that Vitamin C is a water soluble vitamin and any excess cannot be stored in the body and is excreted as it is not known by many people. This lack of knowledge is portrayed by some of the participants reporting to have consumed supplements more than thrice a day. According to the analysis of the responses that were recorded and tabulated in table 3 (question 2), 64% of the participants do not consider rinsing their mouth after consumption of Vitamin C and an added 22% of the participants do not consider rinsing their mouth necessary. Such high dose of this harmful acid and no proper care after intake is almost sure to have an impact on the surface of the tooth. There are likely chances of the superficial layers of the tooth as well as the surrounding mucosal tissues to be harmed, thus compromising oral health.

**5. Conclusion**

The pandemic and its associated lockdown have indeed changed our lifestyle and food habits. From the survey that was conducted it is evident that people have brought in a lot of changes in their diet and are concerned about the general health but pay less heed to the ill effects it may have on our dental health.

Therefore, awareness must be spread among people to consume a balanced diet that is suited for their body and daily activities, and also about the right dosage of Vitamin C to meet the body demands.

Also with the increased ignorance of people towards practising good oral hygiene measures after snacking or vitamin C intake, there is a significant increase in the time span of exposure of the tooth to bacterial friendly substrate or high amounts of harmful, erosive acids. This is likely to increase instances of tooth related problems like caries and tooth wear.

So spreading awareness regarding the importance of practicing an apt diet regimen amongst people in general is the need of the hour. This will educate people to prioritise and embrace good oral hygiene routine, to make it more of a boon than a bane.

Through this research paper we would aim to bring this to the notice of the concerned authorities so as to facilitate timely intervention and education of the general public to help maintain healthy oral hard and soft tissues for the long run.

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