

Influence of the Covid 19 Pandemic on Dietary Habits and Nutritional Status

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Abstract

The lockdown due to the pandemic brought about several disruptions in our lifestyle. Studies from across the world reported a decrease in physical activity due to forcible confinement at home. Sedentary behaviour led to weight gain in individuals who did not reduce their intake proportionate to their lower energy expenditure. At the same time food insecurity among daily wagers and those laid off from work increased. Concerns were raised about nutritional consequences of school children not receiving their mid-day meals and *anganwadis* not disbursing meals to pregnant women and young children. Thus, the dual burden of malnutrition increased with both under and overnutrition in different socio-economic strata. Trends in healthy eating were driven by an increased concern about raising immunity levels. Even though there has been no evidence of coronavirus being spread through food or its packing, consumer risk perception studies revealed that eating in restaurants was considered risky but ordering in food increased. There was a revival of traditional recipes and herbal concoctions to improve immunity. An increase was seen in culinary capabilities though these necessarily did not result in production of healthy food at home. Online grocery shopping saw a surge with people hesitant in going to markets for purchases. The pandemic achieved what years of gentle cajoling with nutrition and health education could not. It made people across socio-economic groups wash hands following the WHO protocol. The pandemic taught important lessons which have implications on policies regarding food supply chain management as well as nudging people to eat healthy irrespective of the pandemic situation.

Keywords: Lockdown, food security, nutrition, dietary habits, healthy lifestyle, education

Introduction

Good nutrition is vital for a healthy immune status. Diet and lifestyle especially physical activity have a big role to play in determining the health status of individuals. India has gone through lockdowns and restrictions on the movement of people and goods since March 2020 due to the covid-19 pandemic, which have impacted not only lifestyles but also the economy of the country. India stands at rank 101 out of 116 countries in the Global Hunger Index which is calculated using measures of inadequate food supply, child mortality and child undernutrition (GHI 2021). Disruptions in food supply, essential nutrition and health services, livelihoods and social safety nets during the pandemic are projected to further increase the prevalence of malnutrition in India (USAID and CCP 2020).

We know that the pandemic challenged our food supply chains affecting a significant proportion of the population, especially the poor in both urban and rural areas. Accessibility to food reduced during the total lockdown periods. There was large scale reverse migration from the big cities back to hometowns. This paper presents a review of studies available on lifestyle changes with respect to diet and physical activity seen in people because of the pandemic and the consequences on health and nutritional status. As we recover from the effects, it is time to reflect on what we did right and how we could have managed the crisis from the purview of food and nutritional security of our populace.

Food security

Covid 19 has majorly affected lives and livelihood. While some families lost earning members others lost jobs and businesses, making it difficult for them to access goods and services. About 30 percent of the global population lacked access to adequate food in 2020, a rise of 320 million people in just one year (World Bank 2021). Three things primarily changed which significantly affected diets of all age groups. Firstly, there was disruption in access to food because of

lockdowns and restriction in movement of people and supplies. Government policy in India during the lockdown which permitted the food industry to function as well as a strong logistics support system ensured regular food supply after initial setbacks (FIA 2020a). For the higher income groups access was not so much of an issue as they had the option of ordering online.

Secondly, a rise in food prices decreased quantity and variety of foods which families from a lower socio-economic stratum could access. While many State governments distributed free rations to poor families, civil society came forward to hold '*langars*' or community kitchens for the needy. People pitched in for delivering meals to families suffering from covid who were unable to cook for themselves. After an initial suspension of supplementary meals under the Integrated Child Development Services (ICDS) Scheme and the Mid-Day Meal (MDM) Scheme, there was distribution of ration of raw ingredients to the children or cash transfers. This flexibility in the social safety nets helped protect the vulnerable population in many states from reaching a crisis. As on April 2021, the Deendayal Antyodaya Yojana- National Rural Livelihoods Mission (DAY-NRLM 2021) was being implemented across all 28 States and 6 UTs.

Building the community's capacity to anticipate and absorb shocks thus should be the strategy to avert future disasters. Flexibility should be built into social protection policies so that the vulnerable population can tide over any crisis where supply of / access to food is threatened. It would also help to promote equality in access to digital services across income groups to facilitate transfer of information and improve transactions.

Thirdly, the fear factor of contracting the virus from foods (especially those of animal origin) or food handlers changed the way people ate. The worst affected were infants of mothers who suffered from covid. Fear regarding mother to child transmission of the virus led to poorer breastfeeding practices. Infants were weaned off early and put on other feeds (UNICEF 2020).

This highlighted the importance of communicating the right messages to the population. Absence of face-to-face interaction with grass root workers made it difficult to take these messages to the last mile. Social media on the other hand was full of ‘unsolicited advice’ including unsubstantiated and unscientific suggestions which did not help the situation.

Food supply chain management

Drastic changes in logistics and supply chains were forced during the pandemic. Online delivery platforms gained importance with people afraid to step out for regular purchases as well as for eating out the world over. Wang et al’s (2020) study on US consumers revealed an increase in online grocery shopping. Reports from Turkey (Yilmaz, Aslan and Unal 2020), Qatar (Hassen, El Bilali and Allahyari 2020), Indonesia, Malaysia (Soon et al. 2020), India (Kuna and Kata 2020; Sehgal et al. 2021), Lebanon, Tunisia and Jordan (Faour-Klingbeil et al. 2021) among many other countries showed similar trends in reduction in physical visits to grocery stores, increase in online purchases and ordering in rather than eating out. Even though there has been no evidence of coronavirus spread through food or its packaging these consumer risk perception studies revealed that eating in restaurants was considered to be more risky than home orders from these restaurants. Accordingly, the industry stepped up to improve delivery systems.

In fact, in most parts of Asia, the food systems showed remarkable resilience. This in part was due to the policy measures which exempted the food supply sector from lockdown. The food supply chain logistics were managed efficiently resulting in limited shortages (FIA 2020a).

Key essential safety nets were however disrupted resulting in reduced access to health and welfare services. Though the impact has not fully been measured, reports are available which

highlight the worsening of nutritional status, the poor being disproportionately affected. The cadre of field level functionaries put in enormous effort to ensure delivery of food, medicines, and relevant messages on staying safe during the pandemic disregarding their personal safety (DAY-NRLM 2021).

These grass root functionaries contributed immensely to delivering relief measures at the last mile. They reimagined their new roles and acquired new skill sets to proactively implement health protocols of the Government. This highlighted how imperative it is to leverage technology to work out the logistics of doorstep delivery services. It also showed how it is vital to foster social cohesion in an *Anganwadi* ecosystem (KPMG 2020). The pandemic truly showed us how communities can be brought together in emergencies shedding social stigmas and discrimination.

Nutritional status

Indians already suffer from the ‘triple burden’ of malnutrition with sometimes underweight, overweight and deficiencies of micronutrients (vitamins and minerals) co-existing in the same family. Increase in obesity due to sedentary behaviour on one hand and undernutrition due to food insecurity on the other, the pandemic affected the nutritional status of people in various income strata differently. Estimates of the increase in undernutrition by 2022 among children and mothers have been given by Osendarp et al (2021). We can expect 9.3 million more wasted children (whose weights are low for their height), 2.6 million stunted children (whose heights are low for their age), 2.1 million mothers with anaemia and US\$29.7 billion productivity losses in the future due to stunting and child mortality.

The urban poor were at a distinct disadvantage during the pandemic with limited access to water to maintain personal hygiene, as well as lack of sanitation and an opportunity to follow

social distancing. Loss of livelihood was maximum among the migrant labourers and the daily wage earners as they there was no work for them during the lockdown periods. The country witnessed a huge exodus back to the rural areas. As hospitals and health centres were over-run with covid patients, the risk of contracting covid kept people away from health care facilities. People were afraid to visit doctors even after the lockdown was lifted. This resulted in a crisis of a different kind with worsening of ailments and late diagnosis of new ailments as patients waited till it was serious enough to warrant medical attention. Frequency of pre and postnatal check-ups reduced putting both mother and infant at risk of complications. Routine immunization and supplementary nutrition programs were also suspended. The primary health care system was disrupted as was medical care for routine health issues.

Increase in prevalence of overweight and obesity was seen across the world with energy imbalance. There was an increase in the intake of food and decrease in physical activity leading to weight gain. Increase in total number of meals and snacks were reported in Turkey as the university students were at home (Yilmaz et al 2020). In China, a study (Zhu et al 2021) reported weight gain in individuals whose physical activity levels decreased. Drieskens et al (2021) also reported weight gain in a survey conducted in Belgium among adults who increased their intake of snacks, beverages, and alcohol, and decreased their physical activity. One third of the participants in a survey in India reported weight gain (Chopra et al 2020).

Immunity is determined by one's nutritional status. Both in undernutrition as well as in obese individuals the immunity is lowered. Almost all nutrients have some role to play in the intricate defence mechanism of our body. Thus, a balanced diet is crucial for maintaining a good nutritional status and staving off both infections as well as chronic diet related problems like diabetes, hypertension, and other cardiovascular diseases. As immunity is not built in a day, a lesson learnt from the pandemic is to invest in our health and nutritional status by eating right and maintaining a healthy lifestyle as a way of life and not just in reaction to a crisis.

Physical activity and sleep

Forced confinement and an absolute fear of getting infected kept many indoors even if it meant sacrificing the regular walks and other forms of exercise. Gyms and sports centres including swimming pools were shut during the lockdown period and for many months thereafter. Some resorted to indoor fitness regimens with yoga gaining popularity. Others focussed on their diet as a means of staying fit.

A web-based survey was conducted to assess the impact of Covid-19 on lifestyle -related behaviours of adults across India. A total of 995 respondents commented on their eating habits, physical activity and sleep behaviour. The younger population (<30 years of age) were more likely to restrict the consumption of unhealthy food items and consume healthy meals. Men belonging to upper socio-economic group reported an increase in screen time and a decrease in overall physical activity. Overall, the study reported that moderate intensity aerobic exercises and other physical activities associated with leisure like playing a sport, going for a walk decreased significantly ($p < 0.001$) whereas amount of time in household chores increased significantly ($p < 0.001$). Participants reported increased screen time whether related to work or leisure as well as spending more hours sleeping and sitting. These lifestyle behaviours are directly linked to health, with increased sitting time being linked to increased risk of obesity and associated health problems like diabetes, hypertension, and other cardiovascular ailments (Chopra et al. 2020).

The Habbit survey (2021) also showed that owing to social distancing norms and the fear of contracting infection, more than 60 percent of Indians preferred to exercise at home rather than

visit gyms and fitness centres. Another review of 11 studies conducted in India concluded that there was an overall increase in over-eating and a decrease in physical activity resulting in weight gain. This may also be because the studies were all online surveys conducted mostly on the middle and high socio-economic group. A mapping of what happened to the urban poor is urgently needed. Sleep was affected in most studies in terms of both duration and quality (Rawat et al 2021). This is probably related to increased stress levels which most studies also reported.

Food choices

Although the dine-in facilities of restaurants and hotels were shut down for major part of the lockdown, ordering home delivered food was permitted. Consumers preferred homemade food and eating at home. This was driven by fear of contracting infection in public spaces as well as more trust in the hygiene and quality of food made at home. An increase in consumption of immunity boosting foods and spices was reported in most of the studies related to dietary habits. There was also an increase in the consumption of ultra- processed snack food probably because of ease of procurement from online delivery apps. The demand for fresh produce and immunity boosting foods and ingredients increased significantly not just in India but in other Asian markets as well. While the demand for protein rich foods increased, the surge was seen mainly for plant-based proteins (FIA 2020b). Consumer concerns regarding safety of non-vegetarian food kept the demand for meat, chicken, fish on a lower side. Part of the fear stemmed from the belief that the Covid 19 virus had originated in an animal and then infected man in the wet markets of Wuhan, China. Lower consumption of meat, fish and poultry was also linked to supply chain disruptions.

As most homes struggled without household help, frozen and instant foods and recipes which were quick and easy to make gained favour. From simple recipes made of minimal ingredients readily available and stocked in the kitchen to trending of elaborate gourmet recipes was seen because of extra time available during the work from home phase during the first lockdown in March- April of 2020. Thereafter there was a surge in demand for fresh produce and raw ingredients which consumers used for regular cooking as well as preparing their favourite foods which they would have otherwise eaten from restaurants. Vegetarian recipes and baking saw a surge in consumption of vegetables, eggs, and flour (FIA 2020a).

FIA (2020b) analysed the shift in drivers and motivations which influence consumers to choose certain foods over others. They used an elaborate prediction engine and cognitive artificial intelligence to understand how food preferences of Indians changed post Covid. In the early days of the pandemic, health was the primary driver followed by taste. However, in the following months taste had overtaken health as consumers wanted to get back to their familiar comfort food. Convenience and ease of preparation were other desirable features especially in absence of usual domestic help. Consumers were trying more of ‘natural’, ‘organic’ and ‘vegetarian/vegan’ options as these were perceived as healthier.

The Indian consumer showed a heightened interest in immunity boosting products relying more on traditional wisdom of Ayurveda and use of natural ingredients as witnessed by a surge in use of turmeric, Indian gooseberry (*amla*), and concoctions of several herbs and spices than on nutrient supplements. Advisories were issued by Ministry of AYUSH (2020) promoting diverse diets and highlighting the immunity boosting property of certain foods. A review on the role of micronutrients and bioactive substances on tackling covid 19 revealed they may have special roles to play in improving immunity (Kelfie and Biesalski 2020).

A survey conducted among 2428 adults living in major metro cities of India by Habbit (2021) revealed that more than 70 percent Indians preferred to make changes in dietary habits to improve immunity and overall health. However, lack of time, inability to understand which product is a healthier choice and not finding healthy foods tasty enough were the reasons given by others for having poor eating habits during the pandemic. About 73 percent asserted that they would continue to eat certain unhealthy foods as they liked the taste, as these foods were convenient to eat and the fact that they were habituated to consuming these foods.

Another survey on adults in India also revealed some desirable and undesirable changes. Among the positive changes were seen an increase in consuming meals on time, decrease in consumption of fast foods, high fat, salty, and sugary foods. This could partly be related to preference for home cooked meals during this time. However, there was only a marginal increase in the consumption of protective foods like fruits and vegetables, milk and milk products, pulses, meat and egg (Chopra 2020). A study from Qatar has shown a similar shift towards healthier diets with an increase in consumption of home-made food primarily due to food safety concerns. An increase in culinary capabilities was reported with homebound people experimenting in the kitchen (Hassen, El Bilali and Allahyari 2020).

What is important now is to monitor for consequences of dietary misadventures and poor lifestyle habits and take early action. Along with rise in obesity and its associated metabolic disorders it is also expected that there will be a rise in levels of undernutrition. At the same time, we need to have a very effective communication strategy which will go to the last mile and inform people about the complex relationship between a healthy lifestyle and immunity. Binge eating of immunity boosting foods will not enhance immunity in a day or two. This is a long process which is dependent on the interplay of lifestyle habits like diet, physical activity, sleep duration, and, how a person handles stress.

Food safety

With multiple theories to explain how the Covid 19 pandemic started in the first place and wet markets being conjectured as the place of origin, people were wary of articles of food especially animal products being carriers of the virus. Any food item being bought from outside into the house was being duly washed or sanitized to prevent any possibility of virus transmission. However, there was no scientific evidence of any food or its packaging being a source of infection. A study by Telang et al. (2020) demonstrated how articles of food like fruits and vegetables which were handled by Covid patients and then aired for an hour, did not have any detectable virus.

The pandemic triggered people to pay more attention to personal hygiene and sanitation. The fear of contracting covid 19 achieved what years of gentle cajoling with nutrition and health education could not. The pandemic taught important lessons like the WHO protocol for washing hands to the educated and uneducated alike. Across socio-economic groups there was a felt need to learn more about what is healthy and safe to eat. The Food Safety and Standards Authority of India released a guidance document for the general public on food hygiene, safety and nutrition to prevent the spread of Covid-19 (FSSAI 2020). It spelt out precautions to be taken while purchasing, handling and cooking foods as well as advice on diets which are healthy.

Promotion of handwashing and use of safe drinking water has been central to all WASH (water, sanitation, and hygiene) initiatives in prevention of gastrointestinal infections which are major killers. Health workers should reinforce these messages so that a good practice which has started should not be lost due to complacency or fatigue but should become part of normal behaviour.

Conclusion

The pandemic has taught us important lessons in managing food supply chains, healthcare delivery systems and strengthening our social safety nets. It is important to ensure that the vulnerable population- children, women and elderly have access to timely health services to ensure appropriate treatment for health issues. Contextualized solutions are the most effective. Supporting the access of the vulnerable people to nutritious foods through social protection is important, but it is vital to protect livelihoods. Food stocks need to be improved by reducing food losses and logistics of distribution streamlined and made resilient. Connecting small farmers and producers to markets will help improve livelihoods as well as increase supply. Schemes for enabling the civil society to pitch in and contribute should be formalised and monitored to ensure that donations are channelised and reach the unreached. Unhealthy foods which are rich in fat, salt or sugar should not be accepted even if they are donations. These can lead to obesity and associated diet related diseases like diabetes and cardiovascular ailments which are afflicting the low-income groups as well.

The due diligence followed by consumers in eating healthy and maintaining hygiene in food processing and handling should not wane. Accurate information about healthy diets and good eating habits needs to be disseminated widely through multi-media channels trusted by consumers. A healthy diet is diverse, balanced with all food groups being consumed in moderation. There is no scientific basis for any food or nutrient supplement protecting against covid. Nudging people to eat healthy and be physically fit and active always is the need of the hour.

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