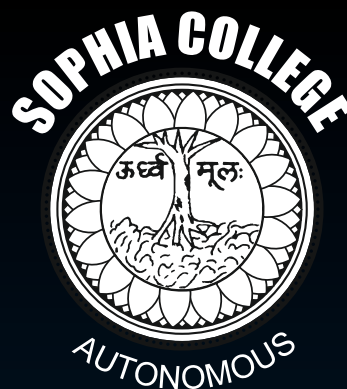


Sophia LUCID

A PEER REVIEWED
MULTI-DISCIPLINARY
JOURNAL



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CONTENTS

Editorial	
Dr T. C. Roy	3
From Social Distancing to Inclusive growth: Some Learnings from the Crisis for a New Normal	
Dr. Manjiri M. Gondhalekar	9
The Evolving Economic Order: India in Transition	
Dr. Sangeeta Dubey	23
An Economic Boycott of China: The Indian Perspective	
Dr. Sunita Jadhav	33
Attaining values and skills objectives - NEP 2020	
Dr. Pushpinder G Bhatia	45
Goa Liberation Movement: A Press Dialogue (1955 to 1962)	
Dr. Neeta M Khandpekar	49
Determinants of Healthy Life	
Dr. Anand P. Ambali	62
A Review: The Biochemistry of Methamphetamine and Behavioural Addiction, and its Physiological Effects on Immunity	
Mr. Anshit Singh & Mr. Kyle Meyers	70
Analysis of free radical scavenging activity of the aqueous and alcoholic extracts of <i>Ceiba pentandra</i> and <i>Terminalia chebula</i> : A comparative study	
Ms. Fatema Jasdanwala & Ms Rochelle Ferns	84
Food, Mood, And Covid - 19	
Ms. Neha S. Kapadia & Sneha Bince	94
ICT: The New Horizon of Learning	
Dr. Meeta Saxena	110
Threshold and Marginality: Space for Meaningful Dialogue in the New Normal	
Ms. Vidya Hariharan	135

EDITORIAL

Sophia Lucid is curated as a National level Annual Peer Reviewed Multidisciplinary Research Journal of Sophia College (Autonomous), Mumbai, which will focus on the academic research from the fields of arts, humanities and sciences. As one of the main purposes of research is to inform action and help serve the realities within us and around us, *Lucid* proposes to undertake academic research on relevant current issues and to derive information for social action. *Lucid* invites researchers to rethink the existing paradigms, perspectives and compendium of knowledge within and across the disciplines of humanities, social sciences and physical sciences.

Since December 2019, the world has been going through unprecedented times with the COVID-19 on the reel and its waves all across. An array of discrepancies and uncertainties are pushing humanity to rethink order and disorder. On one hand, there are uncertain prognoses of the pandemic and a severe shortage of resources for testing, for treatment and for protecting responders and health care providers from the infection. While on the other hand, governments are imposing unfamiliar public health measures that infringe on personal freedom. The pandemic is causing financial loss, severe emotional distress and increased risk of psychiatric illnesses. The virus questions the stability of world economy. With the ruthless political power-play by opposing camps of nations adding fuel to the fire of perennial cross-border conflicts and the unapologetic international blame games and power gimmicks the scene has become even more complex. However, every challenge is also an opportunity. It is true that every challenge tells us a Trojan tale: about a Ulysses or an Achilles. Therefore, here at Sophia College, we have decided to strengthen the journey into the untraversed terrains by arranging a platform for the world of inquiry and research. Keeping this in view, *Lucid* dawns to light by this first issue to address the pandemic scenario from an academic point of view and to further look into the avenues within the new normal. Hence the theme of the current issue of *Lucid* is “*The Globe on the move: Avenues for the Future*”.

The current issue contains eleven research articles varying in their discussions from ‘social distancing and wearing face mask’ to an invitation to a mask-less entry into the ‘thresholds of the marginalised’. The first in order is Dr. Manjiri M Gondhalekar’s article titled, “From Social Distancing to Inclusive Growth” which voices the need for inclusive systemic processes to mark progress in India. The focal points of her discussions are the strategies like social distancing and lockdown that are implemented in order to contain Covid-19. The author analyses the lack of inclusive models in the Indian state which acts as an impediment to its economic growth.

Dr. Sangeeta Dubey's article titled, "The Evolving Economic Order: India in Transition", explores the rapidly changing curves of demand and supply of an economy which is reeling under the aftermaths of recession and in the wake of a complete economic shutdown mandated by the rapid spread of the coronavirus. It throws light on the role that certain sectors can play in reviving the economy and highlights how newer economic strategies need to be continually devised in order to effectively battle the aftermaths of the pandemic. The author succinctly evaluates and assesses the economic repercussions of the pandemic and envisages remedial modalities to recuperate a floundering Indian economy from an economic limbo.

In a continuing stream of thought, Dr. Sunita Jadhav's article titled, "An Economic Boycott of China: The Indian Perspective", traces the pattern of India-China trade relationship against the backdrop of the anti-China feelings in the wake of the spread of the coronavirus from China and our Prime Minister's announcement of a new policy paradigm: a shift from "Make in India" of 2014 to "*Atma Nirbhar Bharat*" of 2020. The author lucidly analyses the feasibility of the economic boycott of China from an Indian perspective to arrive at a significant understanding of the extent of interdependence between India and China. This is undertaken by examining the bilateral trade flows and the trade balances in both the economies since 2014. The paper throws light on the formidability of this economic boycott of Chinese products and technology in the Indian economy, where China has a pervasive presence.

Dr. Pushpinder G Bhatia's invited article "Attaining values and skills objectives - NEP 2020" observes stagnation in the traditional educational system and looks at the provisions in the NEP -2020 that will address the training of the hand with the head so that India reaps the advantage of the demographic dividend. She considers that post pandemic, "many untold stories related to student dropouts, discontinuation of the education of the girl child, gap between learning capacities of privileged and underprivileged learners due to non-availability of ICT tools will throw up unprecedented challenges". Hence, she argues that the NEP 2020 may need some more revisions in its implementation strategies, but it will indeed be a welcome step to signal the 'new normal' in higher education.

Dr. Neeta M Khandpekar engages in the details of the Goa liberation movement from 1955 to 1962 in her article titled, "Goa Liberation Movement: A Press Dialogue". She closely analyses the news reportage on the dual identification of Goa as a part of India and as a Portuguese territory, through various prominent newspapers in India. The dialogue is interestingly different and history paces on with the new and the changing ethos of times trying to formulate an identity through conflicts and the new normal.

Health care providers have an important role in addressing the emotional outcome as part of the pandemic response. Public health emergencies may affect the health, safety and well-being of both individuals (causing, for example, insecurity, confusion, emotional isolation, and stigma) and communities (owing to economic loss, work and school closures, inadequate resources for medical response, and deficient distribution of necessities). These effects may translate into a range of emotional reactions (such as distress or psychiatric conditions), unhealthy behaviours (such as excessive substance use) and noncompliance with public health directives (such as home confinement and vaccination) among the people who contract the disease and among the general population. Extensive research in disaster mental health has established that emotional distress is ubiquitous in affected populations. A few articles in this volume of the journal take up discussions on the health-related scenario which is essential to any dialogue within the context of a pandemic.

As a practitioner and researcher in healthcare, Dr. Anand P. Ambali's invited paper on "Determinants of the Healthy Life" explores the significance of healthy life and the deciding factors behind hygiene and healthy living. One's health is in one's own hands and its importance is recognized when it is lost. The word 'health' does not only include physical health, free from a disease or an infection but mental health as well. Deterioration of health is always rapid and recovery is generally slow. Negative thinking and mental disorders like anxiety, depression etc could harm our health. Proper nutrition, a balanced diet, exercise, and meditation have a positive impact on physical and mental health. Symptoms of acute diseases should never be ignored. A positive attitude towards lifestyle modifications plays a major role in maintaining good health and rapid healing of diseases. The author establishes that people who exercise live longer, have a better immune system, and show an excellent recovery rate in an infection or a disease. He proposes that immunization (vaccination) can prevent many infections and communicable diseases and that personal hygiene plays a very important role in maintaining the body's cleanliness and health.

Studies on varied dimensions and boosters on immunity are essential to be undertaken to invoke strategies and to develop practices that effectively deal with a pandemic-stricken society. The review article "The Biochemistry of Methamphetamine and Behavioural Addiction, and its Physiological Effects on Immunity" by Kyle and Anshit focuses on the impact of Methamphetamine, which is a highly addictive psychostimulant drug which can cause behavioural addiction and can affect the immune system. The actual pathway of this drug is still under study. But research has shown an increase in neurotoxicity, an increase

in stress hormones and a weak immune system; all these paired up with unhygienic conditions and various infections.

As a corollary to studies on immunity, the next article focuses on studying antioxidant properties. High antioxidant content in plants is now drawing the attention of all medical and pharmaceutical companies and researches. Indian medicinal forms of Ayurveda and Unani are being practiced on large scales which use parts of plants and organic matter. Fatema Jasdanwala and Ms Rochelle Ferns in their research article, “Analysis of Free Radical Scavenging Activity of the Aqueous and Alcoholic Extracts of *Ceiba pentandra* and *Terminalia chebula*: A Comparative Study” makes a comparative study of the scavenging and antioxidant properties of the buds of *Ceiba pentandra* and the fruits of *Terminalia chebula* in alcoholic and aqueous medium using DPPH free radical scavenging activity. The researchers observe a good correlation between the two.

Neha S. Kapadia & Sneha Bince in their article “Food, Mood and Covid-19” focuses on the impact of food on mood as a determinant on stress management in pandemic times. Food has a major impact on the mood of an individual and both are deeply interlinked. Food materials stimulate the synthesis of chemicals inside the body as the nutrients present in the food are precursors of certain neurotransmitters. Many people consume sugary snacks and carbohydrates to improve their mood. Increased glucose levels increase the synthesis of acetylcholine. Levels of serotonin (5-hydroxytryptamine), commonly called as the happy hormone, are increased in the body because of rich carbohydrate meals thus enhancing the mood. Unsaturated fatty acids including omega-6 and omega-3 are essential for the human body as it serves the function of building the neuronal membrane. Regular consumption of green tea enhances the mood. Food rich in tyrosine and tryptophan should be included to control/prevent stress. In a survey study done in Mumbai with 601 valid responses, 83% of the people suffered from high levels of stress with high levels of anxiety in 73%. Due to Covid 19 pandemic, the stress in students and professionals was very common. Binge eating was used by one-sixth of the population of Mumbai to deal with the stressful year of 2020-2021. The bulk of the Mumbai Population retorted to the consumption of dark chocolate to mitigate stress as its consumption enhances mood. Others implied fast foods, ice-creams, and street foods to mitigate stress.

After disasters, most people are resilient and do not succumb to psychopathology. Indeed, some people find new strengths. The limits of the world may be redefined particularly, as technology is in the blooming side with new horizons waiting for it. Apart from medical research, the learning and teaching fields have also

emerged beyond the traditional modes. ICT has provided a new horizon for teaching-learning, argues Dr. Meeta Saxena in her article “ICT: The New Horizon of Learning”. Covid-19 has resulted in the shutdown of schools and colleges globally. Teachers around the world had to adapt to online teaching. Although many teachers were using ICT in the offline mode, the pandemic situation increased the use of ICT methods such as online classrooms, virtual labs, online games, and quizzes by teachers. Virtual labs and simulations are excellent tools of online teaching especially for conducting science experiments as it is very challenging to physically conduct science experiments in the online mode. There are numerous open education resources available for all disciplines. Virtual labs are an initiative of the Ministry of HRD, Government of India in cooperation with many other institutes. These labs provide learners with a remote access to perform experiments in the lab. Virtual labs are available for physical sciences, chemical sciences, and biological sciences. Bioman, Learn Genetics, Labster and OLABS are few examples of virtual labs. There are fears in the mind of some teachers regarding ICT because of the shortcomings such as poor connectivity, lack of devices, and good hardware due to economic problems. Nevertheless, these virtual labs and ICT methods will play a major role in revolutionizing the learning process.

Some groups may be more vulnerable than others to the psychosocial effects of the pandemic. In particular, people who contract the disease, those at heightened risk for it (including the elderly, people with compromised immune function, and those living or receiving care in congregate settings), and people with pre-existing medical, psychiatric, or substance use problems are at an increased risk for adverse psychosocial outcomes. Healthcare providers are also particularly vulnerable to emotional distress in the current pandemic, given their risk of exposure to the virus, concern about infecting and caring for their loved ones, shortages of personal protective equipment (PPE), longer work hours, and involvement in emotionally and ethically fraught resource-allocation decisions. Prevention efforts such as screening for mental health problems, psychoeducation, and psychosocial support should focus on these and other groups at risk for adverse psychosocial outcomes. Following this line of thought, Ms. Vidya Hariharan’s essay titled, “Threshold and Marginality: Space for Meaningful Dialogue in the New Normal” addresses the liminal experiences of the people of colour in the US and the migrant women in India during the pandemic. She studies the spatial anxieties faced by these communities with the help of Tess Onwueme’s play *Riot in Heaven* and the recent empirical reports on the impact of Covid-19 on gender equality as points of reference.

The Covid-19 pandemic has alarming implications for individual and collective health and emotional and social functioning. In addition to providing medical care, health care providers have an important role in monitoring psychosocial needs and in delivering psychosocial support to their patients, health care

providers, and the public. Artistic modes of expression have played a crucial role in the development and sustenance of people's emotional quotient. Internet has played in offering a space to a number of initiatives undertaken by musicians, painters and writers the world over to connect with each other, share their compositions, offer comfort and engage on universal human concerns arising from the traumatic experiences of the pandemic. It gives a ray of hope that the Covid variants, whether it be Delta or Omicron have not swayed our unending spirits from rising like the phoenix. All is not dark, brighter is the other side! We just need to turn our perspectives and extend our hands that long for action. It is not reaction that we require, but considered action response and a fight against inaction. The pandemic scene is also a privileged space for action, creation and innovation, of course with understanding and compassion.

Dr T.C Roy

**From Social Distancing to Inclusive growth:
Some Learnings from the Crisis for a New Normal**

Dr. Manjiri M. Gondhalekar

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Abstract

Until February 2020 countries in the world were unaware of the future threat of a complete halt to economic activity. It was only when WHO declared covid19, as a pandemic, on 11th March 2020, the need to take steps to prevent the spread of disease was recognized. Countries had different responses to the situation, but the commonly followed strategy was social distancing. The complete lockdown was introduced in India on 24th March 2020. It restricted peoples' movements, they were not allowed to step out of the homes unless for very urgent need. This decision brought the complete disruption of economic activity. Also, it created a paradox of health and hunger. The country witnessed herds of migrated workers walking on the roads who probably had no homes to stay in the cities, wanted to go back to their native places. Now that, the government has chosen to unlock, the need to push consumption demand to stimulate supply became the priority to activate the economy. Analysis of available information suggests that lockdown has affected different groups of people differently. The inclusion of masses in the process of economic growth is expected to reach the new normal.

Keywords – covid19, Impact on economy, Opportunities, inclusive growth

1. Introduction

It was in late March India suffered an outbreak of coronavirus pandemic. On 11th March 2020 WHO - The World Health Organization-(WHO hereafter) declared an outbreak of novel covid19 as a pandemic. By that time, it had spread to 110 countries in the world. As no specific medicine is available for a cure, prevention is the only option available to control the disease. WHO recommended maintaining at least one meter (3 feet) distance from others and suggested avoiding going to public places.¹ Countries in the world adopted various policies to restrict the movement of the people to prevent the spread of the virus. One such strategy was social distancing.

¹ WHO recommends maintaining distance, washing hands, and wearing masks. See (Corona Virus Disease Advice for Public, WHO, 2020)

Taking a cue from other countries with heavy covid19 infections, the Government of India, enforced a complete lockdown since 24th March 2020 restricting the movement of 130 crores Indians. Almost all activities except those of essential services were closed.² India's lockdown is supposed to be one of the stringent lockdowns in the world.³ The possible causes of such a stringent lockdown might be a lack of information about the severity of the life-threatening power of coronavirus in the beginning. Also, given the state of public health in the country that was the only option available to save lives. But the decision about complete lockdown took away the chance of millions of people to work and earn income to buy daily food. Many workers lost their jobs and preferred to leave the cities for a native place by walking on the roads, as transportation services were closed due to lockdown.⁴

The virus spread in major cities of India, 50% of the burden of Coronavirus is on 10 cities like Mumbai, Delhi, Chennai, Ahmedabad, Pune, Indore, Kolkata, Hyderabad, Chengalpattu, and Jabalpur.⁵ With the spike of covid19 cases in the month of May 2020, Mumbai ran out of hospital beds and faced a problem of inadequate staff. Shortage of beds with ventilators was noticed in Pune in the Month of July. Despite stringent lockdown, the virus spread very quickly, in the last week of July, confirmed total cases of covid19 were 1482503 and 33448 people lost their lives. (worldometers, July 27th, 2020)

After four stages of rigorous lockdown, the Government recognized the need to start activities. The reopening was initiated from the month of June in non-containment regions. The second phase of reopening came in the month of July. (see MHA, GOI) Now the greatest challenge for the Government is to control the spread of the virus and to bring the economy on track by creating income-generating employment and encouraging production activity. On this backdrop, this paper aims to seek answers to the following questions.

1. Is social distancing inclusive?
2. Is covid19 alone accountable for the current economic and social crisis?
3. What are the lessons for the new normal?

² Government office, commercial and private establishments, Industrial establishments, transportation services, hospitality, education services etc. were closed (see Annexure to Ministry of Home Affairs, 24th March 2020)

³ According to oxford Balavantic School of Government Response Tracker measures stringency index number from 0 to 100, India's stringency index was 100, indicating stringent lockdown.

See (Relationship between number of covid-19 cases and Government Response)

⁴ Many of them lost their lives during their journey to native place (see The Wire 30th March 2020)

⁵ Majority of these cities had higher percentage of slum population. See (India.com, 12 June 2020)

4. How one can see prospects for the future?

The paper is organized as section two analyses the information to understand whether social distancing measures are possible and affordable to all. Section three explains the economic and social fallouts of the pandemic and analyses the socio-economic condition of the country in the past and in present to understand how far the pandemic is accountable for the crisis. Section four describes the opportunities for the new normal. Section five analyzes the causes of crises and opportunities that emerged out of the situations and section six concludes.

2. Social distancing Global and Regional

As mentioned earlier, after the outbreak of the covid19 pandemic, WHO recommended social distancing norms. It was essential to maintain at least one meter of distance between two persons to control the spreading of covid19 disease. But to follow social distancing norms was neither possible nor affordable for many people. The present study analyses the research reports and information to understand whether social distancing was inclusive and affordable.

Brown, Ravallion, and Walley (2020) identified six conditions to understandability to comply with the recommendations of WHO. The conditions are 1) Availability of at least one out of the internet, a phone (land or mobile), TV, or radio. 2) No more than two people per sleeping room. 3) Own toilet without sharing with another household. 4) Closed dwelling with walls and ceiling 5) Water piped into dwelling or yard or any other private source 6) A place with handwashing soap. Based on these conditions the study observed that 90% of the developing countries in the world cannot comply with the recommendations introduced by WHO.

Social distancing was not affordable for migrant workers in different countries in the world. To control the pandemic most of the countries closed the borders, but due to acute labour shortages for harvest, Germany opened the borders for temporary workers from Eastern Europe.⁶ In a Rapid Response opinion, published on 19th May 2020, Neef Andreas mentions “Despite stringent government regulations, many migrant farmworkers live in crowded conditions—such as repurposed shipping containers or shacks in communal housing camps—where physical distancing and adhering to proper sanitary regimes is near impossible.”

⁶ Many countries in the world closed their borders immediately after covid19 outbreak but some countries were highly dependent on workers from outside of the country. See [The New York Times, May 18,2020](#)

Canada too depends on migrant workers for agricultural works, it was necessary to quarantine migrant workers at least for 14 days to control the spreading of the disease but crowded miserable housing conditions made it difficult and created challenges for physical distancing.⁷ A study by the Institute of Human rights and Business, observes that in Asian countries migrant workers stay in a single room where about 12-20 people stay together. The same is the case of migrant workers in Gulf countries. In such a situation, it is impossible to adopt social distancing norms by staying at home. To stay at home is the opposite of social distancing.⁸

The US treated farmworkers as essential workers at the time of the coronavirus pandemic, but as pointed out by Monica Ramirez and Meena Harris social distancing was not a viable option as they live in crowded houses.

For migrant unorganized workers in cities of India, working and housing conditions may not allow social distancing. A study by Dr. Neeraj Hatekar, suggests that in Mumbai, covid19 disease spread quickly with high intensity in the dense localities where people use common toilets and water source. The study further identified that even if a person in such localities takes as much as care those in the better societies, chances to get the infection is much higher.⁹

Research studies and information suggests that 1) social distancing was not inclusive. Every person should get an equal opportunity to secure life from the disease by following social distancing norms. But workers across the globe could not follow social distancing norms due to poor housing and working conditions 2) There was no other option for them than to work along with the risk of getting infected to get their daily food. 3) Pandemic affected people differently.

4) This reflects that people are socially and economically excluded and there is a need to include them in the mainstream.

⁷ It was impossible for migrant workers to follow social distancing norms in Canada. See The conversation, June 4th, 2020.

⁸ For example, Guna Subramaniam, July 2020 mentions that worker accommodations in a number of South East Asian countries and the Gulf States are sub-standard, for example, migrant workers in the construction sector in Kuwait live in workers' camps, where eight people share one bedroom.

⁹ The study uses a stochastic discrete time individual contact model.

3. Crisis- Present and Future

Covid19 pandemic has created challenges for many economies in the world. For many days production activity is completely closed. The world economy is on the verge of recession. The Indian economy is not an exception. It is expected that the rate of growth of the economy will be very slow due to the pandemic. In April 2020, IMF estimated the growth rate of the Indian Economy 1.9 %, but the latest estimates by the UN suggest that the Indian economy would grow at a rate of 1.2%.¹⁰

The immediate effects of stringent lockdown in India were 1) A sudden drop in the supply of goods and services. 2) Non-availability of workers due to restrictions on their movement 3) Reduction in consumption 4) decrease in income.

All the sectors contributing to the income of the economy like agriculture, industry, and trade got affected due to the immediate effects of the lockdown. The disrupted supply chain affected agricultural and industrial production. While complete closure of the borders affected the trade sector.

Immediately after the declaration of lockdown, when salaried people were following social distancing norms by working from home, the country witnessed a huge number of workers on the roads traveling thousands of kilometers by walking to reach their native place. They had lost their jobs and had very little resources left to survive in the cities. A study Undertaken by Janasahas to assess the rapid impact of covid19 on internal migrant workers, suggests that out of a total sample of 3196 migrant workers, across the states of Delhi. Uttar Pradesh and Madhya Pradesh 42% of the workers had no ration left for the day and 92% of them had lost the jobs due to lockdown. They had no option other than to leave the workplace.

When the pandemic hit India, it was a season of rabi harvest, the non-availability of migrant workers affected the harvest works. Due to disrupted supply chains, prices of crops and vegetables declined for the producers.¹¹ Industries like travel and tourism, electronics, hospitality, gems, and jewelry suffered as there was no demand. Production of electronic goods and gems and jewelry depends on imports of components and raw material. Complete termination of international transportation affected their business. After lockdown, many MSMEs¹² closed their business temporarily. A survey conducted by Magma Fincrop in

¹⁰ It has also been estimated that Indian Economy has potential to revive and will improve with the rate of growth of 5.1% in 2021. See [Financial Express 13th May 2020](#)

¹¹ Consumer food prices especially in the cities, increased at least in the initial days of lockdown. This may be due to scarcity of food grains due to disrupted supply chains. (See [Sudha Narayanan, July .20.2020](#))

¹² Micro Small and Medium Enterprises sector. This sector has high employment potentials. But due to stringent lockdown more than 50% of the units were closed.

the month of May 2020, for about 14444 MSMEs, indicates that 50% of the MSMEs witnessed a 20% - 50 % impact on their earnings due to the covid19 pandemic.

India's international trade components- exports and imports- were affected due to the pandemic. India's overall exports in April-July 2020-21 indicated negative growth of (-) 21.99 percent over the same period last year. Overall imports in April-July 2020-21 indicated a negative growth of (-) 40.66 percent over the same period last year. The decline in exports and imports can be attributed to an ongoing global slowdown, which got aggravated due to the current covid19 crisis¹³.

Although agricultural industrial and trade sectors suffered due to the covid19 crisis, there was a deceleration in the growth even before. (See table 1)

Table 1 Quarter-wise growth of Agriculture Industry and Services (percent)

Period	Agriculture, forestry & fishing	Industry	Services
2018-19 Q1	5.1	9.8	7.1
2018-19 Q2	4.9	6.7	7.3
2018-19 Q3	2.8	7	7.2
2018-19 Q4	-0.1	4.2	8.4
2019-20 Q1	2	2.7	6.9
2019-20 Q2	2.1	0.5	6.8

Source: Economic survey 2019-20

The table 1.1 suggests that from the first quarter of the year 2018 to the second quarter of the year 2020, the growth of all major sectors of the economy was declining. This shows that covid19 alone cannot be attributed to the current economic crisis.

The primary challenge for the Indian Economy in the covid19 crisis is the problem of unemployment. According to ILO – ADB report, almost 41 lakh youth lost their job, it was also estimated that if the containment is long term 30% of Indian youth may lose their jobs, the highest loss would be in agriculture followed by the construction sector. (ILO- ADB Report, 2020).

Due to unemployment, many households lost their income source. A survey, based on CMIE Consumer Pyramid Household data about 5779 households across 28 states, suggests that nearly 84% of the

¹³ Net export is one of the components of aggregate demand, but growth of exports became negative. This affected the demand side and aggravated the problem. See [Press Release](#) by ministry of department of commerce, Ministry of commerce and Industry.

households reported a fall in income in the period of lockdown. The study identified disparity in impact by income group and region. 90% of the middle-income group, experienced a decline in incomes. Region-wise, the rural households suffered a lot, and households from the states Tripura, Chhattisgarh, Bihar, Jharkhand, and Haryana. (Marianne Bertrand et al. 2020)

The covid19 pandemic has affected foreign investment. UNCTAD¹⁴ estimated that global FDI ¹⁵may shrink by 5% to 15% due to an outbreak of covid19. But India's FDI increased by 13% in FY 2020. It is expected that FDI flow in India would be resilient although total volume may be lower.

Analysis of research studies and information suggests that 1) The growth of major sectors of the economy indicated a declining trend. The economy had problems even before the covid19 crisis, covid19 just aggravated them. 2) Many households lost their income but there is a disparity in loss of incomes. Due to the pandemic situation, rural households suffered more than their urban counterparts. 3) Recovery of the economy will be determined by the efforts of the government to wipe out the causes of the slowdown of the economy and to remove all sorts of disparities by the inclusion of the people in the growth. This can be done by the creation of employment opportunities for the people who have lost their jobs due to the norms adopted to control the covid19 outbreak.

4. Opportunity to Improve.

India applied a very strict lockdown policy because the public health care sector was not strong to take the burden of numerous diseased people. Therefore, India followed quick preventive measures. Although the Health care Access and Quality Index (HAQ) improved for India from 27.14 in 1990 to 41.7 in 2016 (LANCET,2018). India's public health expenditure as a percentage of GDP was just 1.29% in 2019-20.¹⁶ There is greater scope for India to improve health care services.

A state-wise analysis of active coronavirus cases suggests that urban centers are more affected by covid19 cases than in rural areas. Ten cities account for 52.7% of all active cases in the country.¹⁷ These are the cities with high population density and with a high slum population¹⁸. As per census 2011. Such

¹⁴ United Nations Conference on Trade and Development deals with trade, investment, and development issues of United Nations.

¹⁵ Foreign Direct Investment

¹⁶ It is very less compared to that of developed countries. If compared with some developing countries too it is less.

¹⁷ Urban cities and districts are more affected due to covid19 virus than the rural districts. See [Hindustan Times](#) July 17th, 2020

¹⁸ The cities are Mumbai, Delhi, Bangalore, Hyderabad, Ahmadabad, Chennai Kolkata, Surat, Pune, and Jaipur.

concentration puts pressure on public health care facilities. Table 2 indicates the cities with a percentage of slum population.

Table 2 Slum Population in Major Cities in Percentage

City	Percentage of slum population
Mumbai	42%
Delhi	15%
Bangalore	8%
Hyderabad	34%
Ahmedabad	4%
Chennai	29%
Kolkata	31%
Surat	10%
Pune	22%
Jaipur	11%

Source: Computation based on 2011 Census data

As mentioned earlier, it becomes difficult to follow social distancing in the slums with congested housing. It could be one of the reasons for the concentration of disease in the cities. Consistent efforts to reduce distressed migration to cities may help to reduce the burden on health care services in the cities in the long run.

There is a scope to adopt new policies that would emphasize the development of villages and towns. There is a greater prospect to create new employment opportunities in rural areas. India has a long tradition of rural employment generation programmes. The scope of existing employment generation programmes like MGNREGA¹⁹ can be increased.

Another area where India has greater scope is to invest in research and development. India's investment in research and development has shown a consistently increasing trend over the years. But its percentage of GDP has remained constant at around 0.6% to 0.7% (Release of India's R&D expenditure eco-system

¹⁹ Mahatma Gandhi National Rural Employment Guarantee Act is an act of the parliament which provides 100 days of guaranteed employment to the rural households.

report) Improvement in expenditure on research is necessary to become self-reliant in the medical field to combat such pandemic.

On the backdrop of the complete slowdown of economic activities due to covid19, and the huge distress of migrating workers, the government came out with the announcement of a relief package for the economy called *Atmanirbhar* Bharat. The finance minister of The Government of India announced the first tranche of the relief package on May 13th, 2020. Further, four more tranches were announced subsequently covering the total package of 20 lakh crores of rupees to be spent as relief measures. It was as much as 10% of the GDP. This package has five different aspects. 1 Economy 2 Infrastructure 3 system 4 vibrant Demography 5 Demand. The package includes measures for the poor, measures for farmers, and measures for business. (see Government Press Release) The government expects that this package would help to revive the economy. But the former governor of RBI Bimal Jalan suggests that the measures of the government to revive the economy are positive but most of them are supply-side measures. Such measures will help to improve production. There is tremendous scope to improve on the demand side measures that would help to increase the demand or consumption.²⁰ Private consumption is one of the important factors in aggregate demand. Aggregate demand is composed of Consumption expenditure, Investment expenditure, Government expenditure, and net exports. RBI's Consumers Confidence Survey (CCS) for the month of July 2020 suggests that consumers' confidence about the economic and employment situation is very low. (Consumer Confidence Survey, RBI) The Government relief packages would take care of the component of the Government's spending but it may not help to increase private consumption. Income-generating measures like the creation of employment opportunities or by undertaking public investments would help to improve incomes and private consumption component of the aggregate demand.

5. Discussion

The basic purpose of this work is to understand whether the norms to prevent covid19 disease are inclusive. It has been observed by analyzing the available studies and information that the norms introduced by the WHO to prevent the disease are not inclusive. They do not include the poor and unorganized marginal workers across different countries in the world in the process of social distancing. It increases the chance of poor and marginal workers getting exposed to the disease and increases the chance to catch the infection.

²⁰ Although the relief packages announced by the Government are positive, they are not sufficient to increase the demand. Measures announced by the government can take care of production to some extent. But the problem is to improve consumption and to reduce pessimism. Demand can be stimulated by providing opportunities to earn income. For details [See Economic Times, 28th May 2020.](#)

In India, the services of front-line workers like police, doctors, nurses, bankers, and sanitation workers were not closed in the lockdown as these were essential services. Many of them lost their lives in the pandemic. It is estimated that 104 Doctors and 10 nurses lost their lives in this pandemic. (Bindu Sahajan Perappadan 2020) Although no study has been undertaken so far for sanitation workers, many sanitation workers might have lost their lives in the covid19 pandemic as they are exposed to hospitals and other kinds of biological waste.

Small and marginal unorganized workers who cannot follow social distancing norms and front-line workers due to the requirement of their jobs face a greater risk of getting infected. This brings into fore inequality of keeping oneself safe from the pandemic.

One of the prominent causes of non-inclusive social distancing is poor housing conditions. Especially migrant workers across the countries have housing conditions such that 10/12 people stay together in one room in the cities. In India, cities carry a higher burden of covid19 cases. Out of total covid19 cases, more than 50% are in 10 major cities. The cities with high population density and a greater percentage of population density have a relatively higher burden of covid19 cases.

This crisis has taught some valuable lessons to societies. One such lesson is the provision of decent housing for workers, in cities. The problem can be partly resolved by providing cheap houses, but it may not provide a long-term solution. Migrant workers would always come to cities for better opportunities. But partly the problem can be resolved by strengthening the rural economy.

There are two ways to strengthen the rural economy. 1 By reviving agriculture 2 by creating employment opportunities through rural employment guarantee schemes. Although the contribution of agriculture to National income is continuously declining, still it is an important sector due to its employment potential. Also, it is useful for food security. Policies to support investment in agriculture would help to boost production and employment in this sector.

Another area of the rural economy that needs attention is strengthening employment guarantee schemes. On the initial days of complete lockdown, there was reverse migration.²¹ Such reverse migration can be

²¹ Reverse migration is migration of migrated from cities to villages. India experienced reverse migration in the lockdown period. Due to loss of income source, poor housing conditions and inability to follow social distancing they preferred to go back to their native places. Strengthening rural economy would help to retain them in villages.

looked at as an opportunity to reduce the burden of population on cities. The rural employment guarantee scheme – MGNREGA- has the potential to reduce distressed migration to cities. It has a provision of unemployment allowance to the workers. It is an allowance to be paid if the state government fails to provide a job to the applicant in the stipulated time. If potentials of the scheme are utilized it may reduce distressed migration to the cities that can be reduced in the long run.

6. Conclusion

Like many other countries in the world, India introduced a complete lockdown to control an outbreak of the covid19 pandemic. It restricted the movements of the people. The lockdown created some social and economic problems, but it also underscored the areas where India can make improvements.

Analysis of research studies undertaken by institutions and NGOs at the time of lockdown and information collected from secondary sources suggested that the social distancing measures advocated by WHO are not inclusive. People across the countries do not get an equal opportunity to secure life from the disease through social distancing due to poor housing and working conditions. This reflects that people are socially and economically excluded and there is a need to include them in the mainstream.

Production of agriculture and manufacturing in India was completely closed at the time of the initial phases of the lockdown. But the growth rate of all these sectors was falling even before the crisis. Covid19 crisis just aggravated the situation. But many households lost their incomes and jobs due to the covid19 crisis. India witnessed reverse migration in those days. The non-availability of work and poor housing conditions drove them away from cities to their native places. This revealed that social distancing was not inclusive.

The government recognized the need to boost the economy through relief measures. *Atmanirbhar Bharta* – a relief package was announced to safeguard the interests of the poor, farmers, and businesspersons. But the measures were supply-side measures that emphasized production activities. Such measures may help to improve production but may not increase demand. Economic recovery necessitates demand-side measures like Public investment and employment generation. Also, strengthening the rural economy would help to balance the regional as well as economic disparities. Employment opportunities created through employment generation schemes like MNREGA will help to increase income and demand.

It has been observed through the previous experience of the growth of the Indian economy that economic growth has not been inclusive in India. Poverty rates and unemployment rates suggest that the economic growth has not trickled down. According to Global Multidimensional Poverty Index 2020, 27.9% of people are poor. (See UNDP, 2020 Global Multidimensional Poverty Index) The unemployment rate reached its all-time high in August 2020, the unemployment rate was 11.5%. (CMIE Report, MAY-August2020) It was higher in urban areas than in rural areas. The reverse migration, unemployment, population below poverty, poor housing conditions suggest that the growth is not inclusive. The need to boost consumption demand suggests that inclusive growth is a prerequisite for the revival of the economy.

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The Evolving Economic Order: India in Transition

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Abstract

The year 2020 will go down in history as the year of the worst recession which engulfed the entire world irrespective of their GDP or HDI rankings, due to the lockdown necessitated by Covid19 pandemic. The revival of the economies from the global contraction is unpredictable. Till a cure is found for the corona virus economies globally will have to keep devising strategies to overcome both the health and economic consequences of the virus. As economies start to open up a new economic order of functioning will have to be drawn. The pandemic will change the way we consume, work, travel and do businesses. The economic variables like demand, supply and trade will undergo a change in the short term. Economies will evolve to survive with the threat of corona virus looming and these survival strategies will become the New Normal. As the world prepares for the New Normal, India has also adopted policies for reviving the economy. The policy of ‘Vocal for Local’ for making the country *Atmanirbhar*¹ would need implementation of comprehensive economic policies. The entire supply chain in production will undergo a transition. In this paper I will present the demand and supply aspect of the new normal economy and the sectors which can play an important role in reviving the economy.

Key words: *pandemic, economic order, transition, new normal, supply, policies*

Introduction

The year 2020 will go down in history as the year of global pandemic, with unclear ending and immense human tragic. The novel corona virus engulfed all the countries in the world, enforcing lockdown and shutdown of all activities throughout the entire world. Countries went into total lockdown closing themselves completely, not just internally but also from the rest of the world. The severity of covid19 was felt equally across all the countries, irrespective of their high GDP or HDI rankings. The lockdown was imposed by the countries with twin objective, firstly to contain the rapid spread of virus and secondly to prepare the health care system for coping with the surge in cases when the lockdown would be lifted. Lockdown resulted in huge economic losses globally. Globally the economies have contracted and the

¹ ‘Atmanirbhar’ means self-reliant in English. This word would be used throughout the paper to emphasize the focus of government on making India self-reliant.

world is headed towards a steepest slowdown and recession, not witnessed since the Great Depression of 1930s. The recession that the world is facing today is due to covid19 which is a medical / health crisis, and not financial or political. Hence the knowledge and experience of countries in resolving past recessions, through monetary or fiscal tools may not be useful. There are no economic theories or models to predict the revival of countries struck by global pandemic. Hence there is not only an uncertainty about, how long will it take for the economies to revive but until a cure is found for the novel corona virus, economies globally will have to keep devising strategies to overcome both the health and economic consequences caused by the virus. According to IMF, global economy will shrink over 3 percent in 2020². All countries may either experience a sharp fall or a negative growth in their GDP. As per the World Bank's data of June 2020, almost 90 percent of the countries in the world are in recession.

As economies unlock globally, they would be faced with multiple challenges: reviving the economy, controlling the spread of virus and improving the efficacy of the health care system to not only cope with the corona virus cases but also other health related ailments. As economies start to open up, a new economic order of functioning will have to be drawn. The pandemic has changed completely the way we live, consume, work, entertain, interact, travel and do businesses. The economic variables like demand, supply, production and trade will undergo a change atleast in the short run period. Economies will evolve to survive with the threat of corona virus looming and these survival strategies will become the New Normal.

The New Normal³ and India

As the world adapted to the New Normal, so did India. India decided to unlock on June 8th, 2020 amidst the fear of the virus looming and the rising number of cases. Even before the pandemic hit, India's economy was slowing down, reeling under low investment rate of almost 3 percent over the past few years. Covid19 has only worsened the situation for India. In addition to this, the border dispute with China led the government to impose a ban on Chinese goods. The clarion call of '*Atmanirbhar Bharat*' and '*Vocal for Local*' were some of the policy decisions announced in May 2020. Thus unlock India entailed adoption of new normal and, implementing policies for reviving the economy with the goal of making it self-reliant. Reviving the Indian economy required resumption of production by the firms, by adopting the new normal work practices namely - use of face mask, thermal screening, physical distancing between workers, sanitization and scattered working hours to avoid crowding. The impact and incidence, of these new work

² World Economic Outlook, April 2020. IMF

³ New Normal refers to the new patterns of living adopted as part of carrying routine activity like- use of face mask, sanitizer and maintaining social distancing.

practices would be different on different sectors. Given the fact that businesses were shut down for almost 3 months, many small and medium firms would have none or little capital to restart their work. These new practices would increase the working capital expenses for the firms and so, some firms may delay the resumption of production activity or distressed firms may decide to shut down permanently. Further, production activities might be delayed more in those cases, where labour might have migrated to their home town. India being a labour-intensive country, maintaining social distancing would be a big challenge in several activities.

Rebooting the Economy

Covid19 is both a demand and supply side problem. The lockdown had hit production, output and so income in all sectors. According to the World Bank data, India's output is estimated to contract by 3.2 percent in FY 2020-21. Independent estimates have forecasted a decline in India's GDP by 9 to 10 percent. As per the CMIE (*Centre for monitoring Indian Economy*) data, unemployment rate was 7.6% by July end. For reviving the economy, the government had announced a stimulus package of Rs.20 lakh crores on 12th May, 2020. Rebooting the economy and making it *Atmanirbhar* would require strategies, rather than the magnitude of stimulus. The most important objective for achieving both goals and which requires immediate attention is protection of jobs, creation of new jobs, easy and timely availability of funds to restart production in the country.

The foregoing paragraphs will discuss the new normal demand and supply conditions, evolving as a part of the new economic order.

***New Normal Demand*⁴**

Several economists have asserted that, the pace of demand revival will determine the economic recovery of the countries from covid19 crisis. Till a cure for corona virus is found, world trade and hence export demand will remain low. Thus, domestic demand will play a crucial role in the recovery process. Reviving domestic demand will depend upon, the speed at which production resumes and income is generated. The income multiplier effect will be crucial for reviving the economy. However, reviving domestic demand will be challenging. As a consequence of the lockdown, many people have either lost their jobs or there has been a pay cut, postponement of promotions and hikes and a constant fear of losing job prevails. Urban unemployment rate is higher as compared to rural. Surplus labour supply in rural areas will depress rural wages. Since this is not a Keynesian unemployment situation, fiscal and monetary measures will not work

⁴ Demand for goods arising as a result of the pandemic.

successfully. It is not a demand crisis, but a covid crisis. People will have a conservative approach towards spending for a long time. Consumption would be restricted only for essential commodities like food products, medicines and hygiene related products. Demand for non-essential and conspicuous goods will either decline from the pre-lockdown era or be postponed for the future. In either cases demand for non-essentials will remain muted for a long time. The nature of demand will undergo drastic changes, at least in the short run. The new normal has created new demand in the economy - face masks & shields, sanitizers, thermal screening devices, PPE, diagnostic kits, digital services etc. Manufacturers can explore the opportunities created by these new demands. Demand for contactless service providers will gain prominence in both urban and semi-urban areas.

Remote working popularly called as '*work from home*' is the new norm. With large number of people working from home, demand for urban work spaces is bound to see a downfall. Physical offices may either become redundant or shrink in size. Private offices may relocate from expensive areas to cheaper vicinity. It could also happen that in near future the culture of shared work spaces may grow, as these would become more economical particularly in cities like Mumbai where both rental and property prices are exorbitant. Demand for digital services is bound to rise with remote working, e-learning, e-shopping, social interactions and entertainment becoming virtual. Demand for internet services, digital and electronic gadgets like computers, laptop, mobile phones, etc has risen. In the economy, demand for some industries like automobile, real estate, textile, hospitality, travel and tourism will be hit hard, and their recovery may take a very long time. Whereas the food industry, pharma and telecommunication services will experience faster revival. During the lockdown government had permitted undertaking of agricultural activities and with predictions of normal monsoon there is a hope of positivity. Hence the rural demand will play a definitive role. Digitalization will create demand for skilled manpower enforcing reskilling workforce in the economy. The crisis can be used by the government to boost infrastructure investment and thereby stimulate demand. Increased government spending in expanding telecommunication and digital infrastructure will help to generate employment and income in the economy.

Evolving supply⁵

Resumption of production activities is crucial for rebooting the economy. Considering that most states have intermittent lockdown to contain rising covid19 cases, supply bottlenecks will continue. The entire manufacturing sector is under severe financial distress. The most severely hit were the small manufacturers, traders and business units, and those who depended on imports from China. Further most of the

⁵ Resumption of production activity post lockdown

manufacturing industries like food products, apparel, leather, automobile, electronics etc. have linked processes involving several intermediaries for producing the finished goods. For them unless the entire supply chain is restored, production would not reach its full capacity. The lockdown showed how in times of crisis, people depended on local retailers for their supplies. Similarly, at the macro level till the inter-state transport movement relaxes, supply and production of goods will not normalize. The covid19 crisis can be used by the government to focus on developing the domestic manufacturing sector, paving the path for achieving the goal of ‘*vocal to local*’ policy. Here I would like to state that, emphasizing on local production does not mean imposing ‘protectionist policy’⁶. The idea is to substitute imports wherever possible, with domestically produced goods and explore the possibilities of manufacturing goods indigenously. This would help in creation of employment and strengthen the weak manufacturing base of the country. Exploring domestic supply chains, creating local value and supporting local businesses will play an important role in making India a part of global supply chain. Availability of abundant labour can help to derive labour economies of scale⁷, thus creating the possibility of making India a global manufacturing hub. In the process of adapting to the ‘new normal’, Indian manufacturers can leverage digital technology to expand their business worldwide.

India in transition

According to IMF, global economy is projected to contract sharply (-3%) in 2020. World trade is expected to fall between 13 to 32 percent in 2020 and expected recovery is highly uncertain. The only sector that has boomed during the covid19 crisis is the digital technology services. In face of global uncertainties, shrinking domestic economy and the New Normal, is it possible to achieve the dream of *Atmanirbar Bharat*? I would like to present in the foregoing paragraphs, the possibilities of turning the covid19 crisis into an opportunity to restructure the Indian economy.

1) Covid19 crisis caused disruptions in the global supply chain. Globally countries are considering plans to diversify their manufacturing bases away from China to insure against supply chain disruptions in future. Further trade war between China and US and Indo-China political dispute⁸ has already created an atmosphere of distrust towards China. Government of India has already initiated a ban on imports from China in every segment. This is the right time for India to take this opportunity to enhance its domestic manufacturing capabilities and emerge as a global manufacturing hub. The abundance of skilled and semi-

⁶ Policy adopted by countries for protecting domestic industry against foreign competition by using various fiscal instruments.

⁷ Advantages reaped by firms due to large-scale production of goods thereby reducing the average cost of production

⁸ Galwan valley dispute between the armed forces of India and China

skilled labour will support the country's ability to bulk manufacturing, assembling and processing, in a cost-effective manner. Further the democratic fabric, transparency and willingness to meet supplier's obligation can help in developing global confidence and attract business in the country. India has the capacity of emerging as a manufacturing power house and this was well demonstrated during the covid19 crisis. Despite the lockdown and ban on imports, large manufacturers and start-ups collaborated swiftly and joined hands with engineering and technological institutes from across the country, to boost production of ventilators and PPE kits indigenously to meet domestic demand. In 3 months' time, the domestic companies have manufactured 60,000 ventilators, which are much cheaper than the imported ones. Presently these companies are not only fulfilling the domestic demand, but are also exploring the possibilities of exporting it worldwide. The efforts are now geared towards becoming global suppliers of ventilators and related components. For boosting local manufacturing, India needs to improve and expand its current infrastructure, support both domestic manufacturers and potential firms planning to set up their plants in the country. We need to create facilities and amenities on par with China, if we have to attract foreign investment in the country. The government needs to develop better connectivity by investing in transport sector, telecommunication and provide stable and continuous power supply. Overcoming these hurdles will be a challenging task for the government. Also, the government needs to announce attractive investment schemes and brand itself as business friendly. For emerging as a global supply chain, Indian manufacturing sector will have to be boosted and incentivized. The government has already proposed policies to boost domestic production of goods like AC's, TV sets, toys, steel, aluminium, leather footwear, sports goods⁹ etc. To boost domestic manufacturing, government will have to implement policies related to - reforms in land and labour laws¹⁰, removal of red tapism, simplifying and rationalizing GST structure and creating a climate of ease of doing business. Efforts would be needed to improve manufacturing competitiveness of Indian firms, to bring them on par with the most competitive destinations in Asia.

2) The MSME¹¹ sector can play an important role in this mission of *Atmanirbar Bharat*, due to its high employment potential. The SMB¹² sector having vast growth potential, would be a major growth driver of the Indian economy. India has over 80million SMBs who contribute roughly 40% of the GDP. The economy will need to explore newer domestic supply chain by tapping those SMBs which are already underlying in the system like those involved in the manufacturing of electronic parts, mobile phones, accessories, apparels, pharmaceuticals, automobile components etc. Once these SMEs are boosted, it will

⁹ These are some of the goods which are imported and so government wants to promote their production domestically.

¹⁰ Reforms needed for setting manufacturing plants and working conditions of labour.

¹¹ Micro small and medium enterprises

¹² Small and Medium businesses

set the momentum for attracting mega investments in other sectors. Providing easy funds will be a pre-requisite for the growth of this sector.

3) The dream of *Atmanirbar Bharat* cannot be successful without the support of the agriculture sector, which accounts for almost 16% of GDP and employs around 40% of the population¹³ (2019). Agriculture sector has played a pivotal role in making India not only self-sufficient in food grain production but also other Agri- inputs. The agriculture sector has demonstrated its strength even during the lockdown period, when India exported seeds to its neighbouring countries for e.g., hybrid rice seeds were exported to Bangladesh. India can emerge as an important seed producer and exporter, to many developing countries in South and South – East Asia as well as Africa. In 2018-19, India produced almost 900000 units of tractor making the country, the largest producer of tractors in the world. India exported almost 92,000 tractors, largely to African and ASEAN countries. The new agricultural export policy 2018, focusses on diversification of export basket and seeks to boost exports of high value, and value-added exports, including perishables and promote exports of organic products. The aim of the policy is to make India a global power in agricultural products. A robust infrastructure and inland transportation links with farmers, will be critical for developing a value – chain for agricultural products. Emphasis will have to be on providing standardized and superior quality products, meeting international standards. A Pan India digital platform can be used to connect the farmers across the country, enabling them to access agri-related information. Few entrepreneurs have come up with the idea of introducing special apps for ‘Uberisation’¹⁴ of tractor services. This will enable the farmers to use it at a lower cost, without the need of owning it (owning it may not be feasible due to high cost). India needs a second agricultural revolution, focusing on expanding physical and digital infrastructure for making agriculture a profitable venture and, aiming to establish India in the global food chain.

4) The new normal has given a massive push to the use of digital technology. Demand for digital and cloud technology is rising with the way people are working, learning, shopping, interacting and making financial transactions. This boom in the digital space is here to stay forever due to the convenience it offers. Adopting digital technology would be imperative for the survival of businesses. Connecting with far- flung clients and providing online deliveries would decide the growth of businesses. Today digital technology is used even by small retailers, and so a strong digital infrastructure would be necessary for building and expanding businesses, both locally and globally. The lockdown has sent a very strong message of developing digital infrastructure in India. The government must focus on building ‘Digital India’. Globally Indians are

¹³ Economic survey, 2019

¹⁴ Renting of tractors as and when needed by the farmers, similar to the uber cab services used in metro cities.

amongst the top app users in the world, with almost 574 million active internet users and 65 million more to be added by the end of 2020. Hence the focus should be to encourage entrepreneurs and startups to create apps and products which are robust, scalable, and secure and cater to the digital needs of the people. Digital technology could be adopted by industries for designing products, forecasting demand and explore global markets. Digitalization can be helpful in expanding markets for both industrial and agriculture goods through demand forecasting and reducing supply chain disruptions. SMB's will have to adapt to the new normal and transition to online business for their survival. With increasing cyber-crimes, demand for apps which provide cyber security and safety for online transactions and home offices would be rising. The government will have to invest in telecommunication sector, broadband services, fibre optics etc. to digitalize the economy. These investments would also help in generating employment in the economy. Digital technology would be immensely useful for the health sector, and for e-governance. Digital entrepreneurship is the key to revive the economy. Indian tech industry can emerge as global providers of tech solutions, by providing the right IT kit and downloadable apps demanded by the clients. Digital technology will be the core of this transformation process.

Through the above four points, I have expressed my views on the areas of intervention through which the economy cannot only evolve from the covid19 crisis, but also pave the path for future growth.

Conclusion

The covid19 crisis exposed several deficiencies of the Indian economy – ailing health sector, problems of migrant labour, adverse repercussions of the growing informalization¹⁵ of work force, unplanned and haphazard urbanization and above all the problem of a large population. While the country is still fighting the battle against corona virus, the government is stressing on the goals of '*Atmanirbar Bharat*' and '*Vocal for Local*'. For achieving these goals, India needs strong structural reforms in all areas- agriculture, industry, taxation, land and labour laws. Massive investment in physical infrastructure is needed. This is the right time for the government to construct infrastructure facility so that, large scale jobs are created for all those rendered jobless due to the lockdown. This would provide immediate employment and income, and might help to reduce the escalation of absolute poverty in the country. In the absence of private investment, government driven expenditure and income multiplier will enable faster revival of the economy.

The success of '*vocal to local*' policy would depend crucially on 2 factors, – fulfilling international quality standards and affordability. The policy of promoting local products will require exploring those sectors or

¹⁵ Growth of informal sector

goods where we have comparative advantage of producing, in comparison to other countries. For achieving these it is essential to identify the products in which we enjoy economies of scale and only then, can we become the hub of global supply chain. The dream of ‘*Atmanirbhar Bharat*’ is possible only by encouraging privatization and creating competitive markets. Globally the Indian investment policies will have to be incentivizing, for luring other countries to setup manufacturing units in India. There is a need for branding¹⁶India as the best manufacturing destination. Also, the government needs to increase investment in health sector, for improving the quality of health care facilities and amenities. The pandemic has made it evident that in times of medical crisis it is only the government body which has the necessary wherewithal’s to deal with such a situation and private sector can be a partner in it. Hence identifying sectors and promoting public-private partnership will be a desirable policy. There is a need for strong structural reforms, but they would require a strong political will, foresight and vision. It is also true that these reforms will create hardships¹⁷ not only in the present, but till the time the gains begin to accrue. Structural Economic reforms are needed for long term gains and for making the nation truly self – reliant.

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An Economic Boycott of China: The Indian Perspective

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Abstract

The entire world blames China for not responding sensibly when the authorities discovered the outbreak of COVID -19 in December 2019 in Wuhan. China's poor management of the Crisis at the local level has resulted in the crisis becoming of worldwide magnitude, which has engulfed the world. This fact is resulting in growing unrest and anti-China feelings everywhere. Recent conflicts on India- China Border areas have triggered the anti-China feeling in India as well. India- China relationship has been strained since long. India & China have unable to agree to a border settlement & have led to consistent problems- troops coming into conflict with each other is becoming more common. Against this backdrop & our Prime Minister's recent announcement of a new policy paradigm- a shift from "Make in India" of 2014 to " Atma Nirbhar Bharat" of 2020. It would be interesting to trace the pattern of India - China trade relationship in recent times. This article analyses the feasibility of the economic boycott of China from the Indian perspective. The article seeks to find out the extent of interdependence between India & China by examining the bilateral trade flows, trade balances in both the economies since 2014. This paper highlights that the economic boycott of Chinese products and technology might appear to be a formidable task from the Indian perspective as China has a large-scale presence in the Indian Economy.

Keywords - *Economic Boycott of China, 'Atma Nirbhar Bharat', India- China Trade, Post COVID -19 pandemic*

1. Introduction

China is Asia's largest economy and the world's second-biggest with a GDP of about \$13.6 trillion. India is No. 3 in Asia at \$2.7 trillion. From supplying industrial components and raw materials to investments in India's start-ups and technology firms, China is India's biggest trading partner after the U. S (Kapoor, 2020). India and China traded merchandise of \$3 billion in 2000 which increased to \$95.54 billion in 2018 (Dutta, 2020). In last six years, there has been an increase in the value of total bilateral trade between India & China accounting to 20% in the areas such as infrastructure, physical goods and hi-tech sectors (Haq, 2020). According to Haq, Chinese firms have invested in India's the most important technology-based

enterprises such as the ride-hailing service Ola, a fintech company Paytm, food- delivery app Zomato and e-commerce platform Flipkart. In 2019-20, Chinese technology firms invested in India the most, according to data from FDI Intelligence, a global investment advisory firm owned by The Financial Times Ltd. In 2018, Alibaba invested \$216million in online grocer Big Basket. It also invested \$210million in food delivery app Zomato. Tencent has \$400 million invested in ride-hailing app Ola, besides \$700 million in e-commerce platform Flipkart, an investment made in April 2017. This investment set a record of being the highest foreign investment picked up by an India-based tech firm. Alibaba is a large investor also in Paytm, while Tencent has invested in Byju's, an education start-up (Haq, 2020).

The above-mentioned facts highlight the growing integration between the two giant economies of Asia. The entire world blames China for not responding sensibly when the authorities discovered the outbreak of COVID -19 in December 2019 in Wuhan. China's poor management of the Crisis at the local level has resulted in the crisis becoming of worldwide magnitude, which has engulfed the world. This fact is resulting in growing unrest and anti-China feelings everywhere. Recent conflicts on India- China Border areas have triggered the anti-China feeling in India as well. India- China relationship has been strained since long. India & China have unable to agree to a border settlement & have led to consistent problems- troops coming into conflict with each other is becoming more common. Against this backdrop & our Prime Minister's recent announcement of a new policy paradigm- a shift from "Make in India" of 2014¹ to " Atma Nirbhar Bharat" of 2020². It would be interesting to trace the pattern of India - China trade relationship in recent times. This article analyses the feasibility of the economic boycott of China from the Indian perspective. The article seeks to find out the extent of interdependence between India & China by examining the bilateral trade flows, trade and balance of payments in both the economies since 2014. This paper highlights that the economic boycott of Chinese products and technology might appear to be a formidable task from the Indian perspective as China has a large-scale presence in the Indian Economy.

¹ Make in India was launched by the Government of India on 25 September 2014 to encourage companies to manufacture their products in India and incentivize with dedicated investments into manufacturing.

² The term Aatma Nirbhar Bharat was coined by the Prime Minister of India, Mr Narendra Modi during his address to the nation on May 12, 2020. He called this campaign as Aatma Nirbhar Bharat Abhiyaan (Self- Reliant India Movement). He also defined five pillars of Aatma Nirbhar Bharat – Economy, Infrastructure, System, Demography and Demand. He stressed upon the fact that it is time to become vocal for our local products and make them global (India Brand Equity Foundation).

2. Composition of India – China Trade Basket & Recent Trends in India- China Trade

India exports mostly a basket of primary goods to China, including cotton, yarn, organic chemicals, ores, natural pearls, precious stones, and fabrics. Chinese imports into India include electric machinery, electronic equipment, nuclear reactors, boilers, solar energy components and APIs (active pharmaceutical ingredients), the backbone of India's pharma industry (Haq, 2020).

Composition of Trade: Composition of major commodities of India's trade with China for year 2019 (Jan-Nov) is given below:

Indian Exports	Indian Import
Organic Chemicals; Ores, Slag and Ash; Natural Pearls, Precious stones and Precious metals; Cotton, Including Yarns and Woven Fabrics thereof; Fish and Crustaceans, Molluscs and Other Aquatic Invertebrates	Electric Machinery, Sound Equipment, Television Equipment and parts thereof; Nuclear Reactors, Boilers, Machinery and Mechanical Appliances and Parts; Organic Chemicals; Plastics and articles thereof; Articles of Iron and Steel

(Source: General Administration of Customs, China)

Figure 1. Composition of India- China Trade Basket

Figure 1 shows the composition of India – China trade indicating Indian export basket heavily dependent on primary products whereas its imports constitute non-primary products mainly electronic items and machinery. In economics, the Prebisch–Singer hypothesis (also called the Prebisch–Singer thesis) argues that the price of primary commodities declines relative to the price of manufactured goods over the long term, which causes the terms of trade of primary-product exporting economies to deteriorate. As of 2013, recent statistical studies have given support for the idea. As suggested by Singer & Prebisch we can see in Figure 2, India - a country having in its export basket mostly primary commodities, is showing unfavourable terms of trades with its trade partner viz China. Figure 2 exhibits the trends in India – China Trade & changes in the trade account balance from 2014 to 2019. The value of India's Export to China which was 16.41 (in \$ Bn) in 2014 has remained more or less the same at 16.32 (in \$ Bn) for 2019. If we consider the change in India's Export to China on per annum basis then it shows a decline at the rate of 4.6 per cent for 2019.

INDIA CHINA BILATERAL TRADE*(Figures in \$ Bn)*

Year	India's Export to China	%Change	India's Import from China	%Change	Trade Imbalance	Total Trade	%Change
2014	16.41	-3.72	54.24	11.95	37.83	70.65	7.88
2015	13.39	-18.39	58.26	7.42	44.87	71.65	1.42
2016	11.75	-12.29	59.43	2.01	47.68	71.18	-0.67
2017	16.34	39.11	68.1	14.59	51.76	84.44	18.63
2018	18.83	15.21	76.87	12.89	58.04	95.7	13.34
2019 Jan-Nov	16.32	-4.6	68	-3.5	51.68	84.32	-3.72

*(Source: General Administration of Customs, China)***SOURCE - [HTTPS://WWW.EOIBEIING.GOV.IN/ECONOMIC-AND-TRADE-RELATION.PHP](https://www.eoibeiing.gov.in/economic-and-trade-relation.php)****Figure 2. India -China Trade from the year 2014 to 2019**

The value of India's imports from China, which was \$ 54.24 Billion has now become \$ 68 Billion. The change in imports from China if considered on per annum basis shows a decline at the rate of 3.5 per cent in 2019.

The difference in India's export to China and India's Import from China gives Net Trade Balance (Exports – Imports) between the two countries from the Indian perspective. It indicates a trade account deficit for India. There was an imbalance of \$ 37.83 Billion in 2014, which has become \$ 51.68 Billion in 2019. If we consider the change in the net trade balance on per annum basis, it is showing slight improvement for the year 2019 for India. There has been a decline in the trade account deficit with China by 3.72 per cent. But the absolute value of the trade account deficit with China remains significant at \$ 51.68 Billion in 2019.

3. Analysing Chinese Footprints in India's Economy

An article by Kapoor from the *BloombergQuint* cites the source of the Ministry of Commerce and analyses India China trade relation. This article mentions that Chinese exports to India comprise smartphones,

electrical appliances, power plant inputs, fertilisers, auto components, finished steel products, capital goods like power plants, telecom equipment, metro rail coaches, iron and steel products, pharmaceutical ingredients, chemicals and plastics and engineering goods, among other things. This article highlights the six most important areas exhibiting India's dependency on China in India – China bilateral trade relations. These areas are viz. Chinese FDI into India, presence of Chinese (indirect) investment funds and companies, Chinese Smartphones brand market in India, Chinese active pharmaceutical ingredients (APIs) used by India's pharma industry, India -China Tourism, China is important as the third-largest export market for Indian goods as of FY19-20 after USA & UAE. Over 14% of India's imports in FY19-20 were from China. Let's look at these areas showing India's dependency on China.

3.1 Foreign Direct Investments (FDI) from China

First key area according to Kapoor is foreign direct investments (FDI), foreign direct investments from China come to metallurgical industries, renewable energy (solar panels), electrical equipment, automotive and chemicals. Data compiled by *BloombergQuint* from China Global Investment Tracker showed Chinese FDI into India at \$4.14 billion in 2019. China's commerce ministry, however, pegs the figure at \$8 billion for 2018-19. They have roughly 75 manufacturing facilities for smartphones, consumer appliances, construction equipment, power gear, automobiles, optical fibre, and chemicals.

3.2 Chinese Investments in Indian start-ups

According to a Gateway House Report, Chinese funds and companies often route their investments in India through offices located in Singapore, Hong Kong, and Mauritius. For example, Alibaba Group's investment in Paytm came via Alibaba Singapore Holdings Pvt. These don't get recorded in India's government data as Chinese investments, the report said. "In several cases, the investment in India hasn't been made in the name of the Chinese entity/investor, and is, therefore, difficult to trace." Chinese tech investors have invested an estimated \$4 billion into Indian start-ups, according to the report. As of March 2020, 18 of India's 30 unicorns³ are Chinese-funded - another critical area of our dependency on China.

³ A unicorn is a term used in the venture capital industry to describe a privately held startup company with a value of over \$1 billion. The term was [first popularized](#) by venture capitalist Aileen Lee, founder of CowboyVC, a seed stage [venture capital fund](#) based in Palo Alto, California (<https://www.investopedia.com/terms/u/unicorn.asp>)

3.3 Presence of the Chinese brands in India

One more area of dependency is the presence of Chinese brands in India. There are quite a few largest Chinese brands and manufacturers viz. Oppo, Vivo, Fosun International, Haier, SAIC and Medea present in India. At the same time Adani Global Ltd., Dr Reddy's Laboratories Ltd., Jindal Steel & Power Ltd., BEML Ltd, Bharat Heavy Electricals Ltd., Godrej & Boyce Manufacturing Co. and Aurobindo Pharma Ltd. are some of the Indian firms present in China. According to Invest India, there are roughly 800 Chinese companies in the domestic market. Chinese smartphones brands, led by Xiaomi, Vivo and Oppo, are market leaders in India with an estimated 72% share put together, leaving Samsung and Apple behind.

3.4 Import of Active Pharmaceutical Ingredients (APIs) by Indian Pharmaceutical Industry

India's pharmaceutical industry is the third-largest in the world by volume and ranks 14 by value. The country exported medicines worth over \$14 billion to the U.S. in 2018-19. Two-thirds of active pharmaceutical ingredients (APIs) used by India's pharma industry are imported from China (Kapoor, 2020). India is the world's largest producer of generic pharmaceuticals and supplies roughly 20% of the world's generic drugs. But 70% of the generic drugs' active pharmaceutical ingredients, or APIs, come from Chinese factories (McGregor, 2020).

3.5 Growing India- China Tourism

Chinese Tourists arrivals in India is growing at an annualized rate of 32.4%, according to data available with the Tourism Ministry of India. Nearly 48% of the arrivals were for business purposes and another 48% for leisure. But data from official sources reveal that more Indian tourists visit China every year than Chinese that comes into India.

3.6 Dependency on China for key imports:

Figure 3 depicts India's Import dependency on China for a range of raw materials and critical components as a per cent of the overall merchandise trade between India and China. The value of India's overall merchandise imports stood at \$ 484 Billion in 2019 of which imports of value \$ 85 Billion were from China. Whereas India's overall merchandise exports were \$ 325 Billion in 2019 of which exports of value \$ 29 Billion were to China. Figure 3 indicates that Indian imports cost more than what we receive from China through our exports. The nature of imports is critical inputs and raw materials.

China-India bilateral trade -2019

India's overall merchandise imports		\$484 bn	India's overall merchandise exports		\$325 bn
Merchandise import from China		\$85 bn	Merchandise export to China		\$29 bn
% imports from China			% exports to China		
Electrical machinery	34%		Gems/Jewellery	36%	
Nuclear reactor	18%		Minerals/Ores	15%	
Organic chemicals	10%		Organic chemicals	11%	
Gems/Jewellery	6%		Aquaculture	5%	
Iron & Steel	4%		Electrical machinery	4%	
Plastic goods	4%		Cotton	4%	
Fertilisers	2%		Plastic/Polymers	3%	
Medical equipments	2%		Nuclear reactor	3%	
Auto components	2%		Iron & Steel	3%	

Source - Source: Ministry of Commerce, CRISIL, Moneycontrol Research

Figure 3. India's overdependence on China for key imports**4. Accessing Feasibility of Economic Boycott of China**

In the context of this article, an economic boycott can mean consumers refusing to buy a Chinese product or to do business with China. Let's examine the practicality of this idea by analyzing the extent of India-China interdependence. China's exports to India account for only 2% of its total exports, so even if Indians boycott all the goods imported from China, it will not make much of a difference to China (Makhdoomi). On the other hand, the range of goods that we import from China is very large: consumer durables such as electronic goods, smartphones, industrial goods, vehicles, solar cells, and essential pharmaceutical products including tuberculosis and leprosy drugs and antibiotics, among many others. Makhdoomi highlighting overdependency of India on Chinese imports in some of the key areas states.

“In 2017-18, almost 60% of India's import requirements of electrical and electronic equipment was met by China. In our smartphone industry, out of the five bestselling phone brands in India, four are Chinese – Xiaomi, Vivo, Realme and Oppo. These four brands combined dominate over 60% of the smartphone market in India. On the other hand, 30% of India's automobile components are met from China and about 90% of the country's toy market is occupied by Chinese products. Similarly, 50% of the demand in the country's bicycle market is met by imports in which China has a large share. Thus, some of the key sectors of the Indian economy are critically dependent on China”.

4.1 China's relative position as India's trade partner

Figure 4 highlights the relative position of China as one of the important trade partners of India. Given the total imports of India, imports from China accounted for over 14 per cent in Financial Year 2020 (until Feb.), the highest share among all the nations. Exports to China accounted for over 5 per cent of India's exports, the third-highest (Radhakrishnan, Sen, & Singaravelu, 2020).

Top 3 imports		Top 3 exports	
China	14.09%	U.S.	16.93%
U.S.	7.58%	UAE	9.32%
UAE	6.39%	China	5.33%

Figure 4. India's top 3 Imports & Exports partners

4.2 Many Indian unicorns (start-ups with a valuation of over \$1 billion) have a Chinese investor

The Startup India initiative was announced by Hon'ble Prime Minister of India on 15th August 2015. The flagship initiative aims to build a strong eco-system for nurturing innovation and Startups in the country that will drive sustainable economic growth and generate large scale employment opportunities. Substantial progress has been made under the Startup India initiative, which has stirred entrepreneurial spirit across the country (<https://dipp.gov.in/startup-india/startup-india-initiative>). The following chart depicts the estimated investment by Chinese companies in select start-ups (Radhakrishnan, Sen, & Singaravelu, 2020).

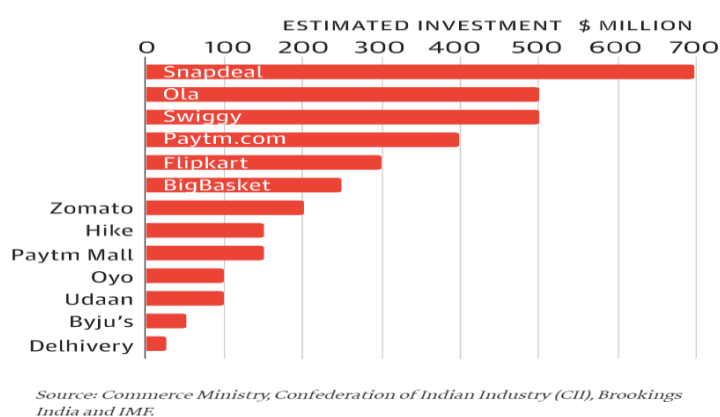


Figure 5. Estimated Investment by Chinese Companies in Indian startups

4.3 India's Dependency on Chinese Imports

The chart depicts the imported products for which India depends on China the most. For instance, over 85% of all vehicle accessories imported by India are from China.

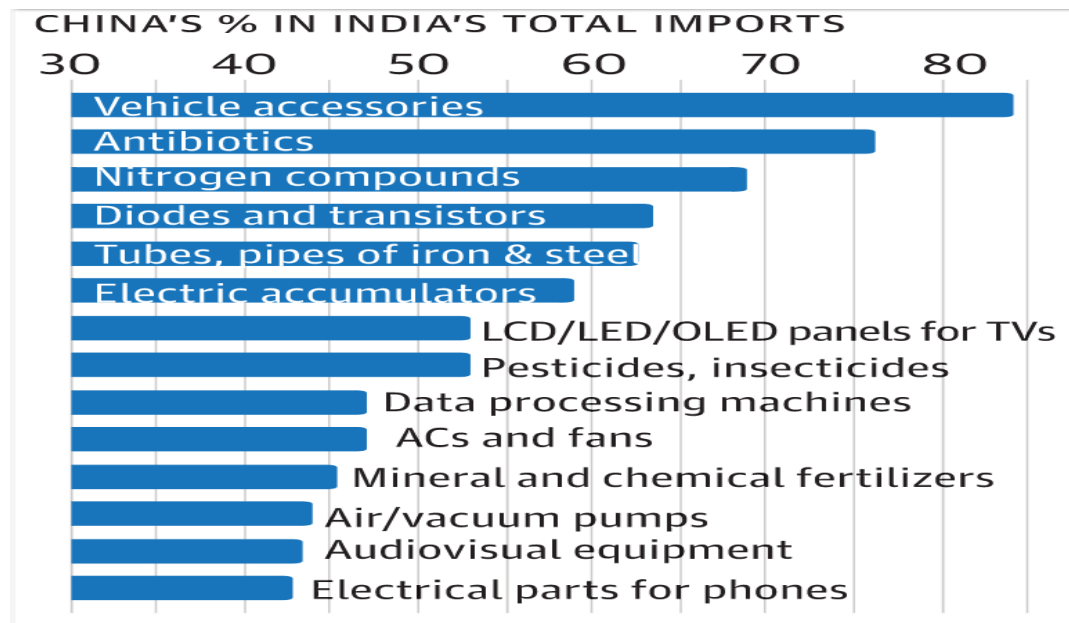


Figure 6. India's Dependency on Chinese Imports

Given the above-mentioned facts, one can fathom the level of difficulty and the risk it poses to the Indian manufacturing sector in boycotting China in the immediate future. India's domestic manufacturing sector can substitute as much as 25% of total imports from China, according to new findings from Acuité, a credit rating agency. This would lead to a reduced import bill of over \$8Billion in a single year. Handicrafts, for instance, is a category where India imported \$431Million worth of goods from China in the 2020 financial year without any significant reciprocal exports. But Mr Bhandari of Gateway House says boycotting popular Chinese apps such as TikTok might be more effective than boycotting physical goods in terms of value-added because there are multiple alternatives. But from India's standpoint, none of this is likely to play out without grave consequences to the economy, especially during a severe downturn. China, on the other hand, is less concerned since India accounts for only 3% of its exports. It would be extremely risky for India to allow anti-China groups to stir public opinion instead the focus should be on economic recovery (Inamdar, 2020).

The news article in The Economic Times expressing traders opinion on the issue, states that boycotting of Chinese products may not be feasible for India as the domestic industry is heavily dependent on input from China. Leaders in the trading community believe that our industries could be endangered due to non-availability of ready stock and disrupted the supply of Chinese industrial products such as machinery parts, bearings and other parts. Our manufacturing sector may take 1-2 years to produce goods that can be a substitute for Chinese items. We may have to reduce our dependence on Chinese imports in future but it should be done in a calibrated way and not until alternatives are in place (The Economic Times, 2020).

5. Conclusion

In a discussion moderated by Ananth Krishnan, Biswajit Dhar⁴, and Amitendu Palit⁵, discuss India's options and the challenges ahead in India's efforts to boost manufacturing at home. The edited excerpts related to this discussion highlights the extent of India's increase dependency on China. Biswajit Dhar mentions that India is exporting a lot of raw materials and intermediate products, and importing finished products from China. And, of course, certain key intermediates such as active pharmaceutical ingredients. Amitendu Palit states that critical medical supplies which India has been importing for frontline healthcare workers in the COVID-19 battle, most of these come from China. China is one of the top sources but on the other hand, there isn't a very widely diversified source of countries from which India can import these. To that extent, it's going to be a difficult choice for India to get out of this dependence and search for alternative partners (Krishnan, 2020). Biswajit Dhar reiterates the significance of Make in India initiative and states that the Make in India initiative was a good opportunity for us to get our manufacturing sector back on track. We have not taken advantage of what we had planned under this Programme. Biswajit Dhar further mentions that the Make in India strategy also aimed at attracting FDI into manufacturing, but unable to attract FDI in the manufacturing sector due to lack of acknowledged skill set and infrastructural constraints. He further cautions and mentions discarding foreign goods and promoting the production of domestic goods implies following the policy of import substitution. If for everything we start talking about indigenisation then in present times of integrated global supply chains, we can't do that. There are practical problems because to follow that policy, you have to possess huge resources which India doesn't have (Krishnan, 2020).

Given the large-scale presence of China in various forms in India's economy, the economic boycott of China appears to be a very difficult task in the immediate future. India's over-dependency on China can be

⁴ Biswajit Dhar is Professor at the Centre for Economic Studies and Planning, Jawaharlal Nehru University

⁵ Amitendu Palit, is Professor at the Institute of South Asian Studies, National University of Singapore

overcome by exploiting the full potentials of the Make in India Programme launched in the past. To realize the goals of this programme & to attract FDI in the Indian manufacturing sector, we need to promote skill sets and efficiency. Also, there has to be an emphasis on building the necessary infrastructure for the expansion of the Indian manufacturing sector.

India has several strengths that could help us develop globally competitive manufacturing sector - a large pool of engineers, a young labour force, wages which are half that of China's and significant domestic consumption of manufactured goods (Kearney). Thus, building a globally competitive manufacturing sector and diversification of our trade will help us in reducing our dependency on China in future. India: How Manufacturing in India Can Become

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“Attaining values and skills objectives - NEP 2020”

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Abstract

The first education policy of the 21st century addresses many growing developmental imperatives of our country. The skills gap between the academic training and the industry demands has led to stagnation wherein the employability of qualified students is seldom possible. School and higher education has never laid emphasis on nurturing social, emotional and soft skills in students. With a majority of population in this age group, the situation is alarming as unemployment and frustration will rise. Many measures are being taken on the economic front by the government. However, a comprehensive long-term strategy was needed in terms of revolutionary changes in the way society is shaped through education. This article looks at the provisions in the NEP -2020 that will address the training of the hand with the head so that India reaps the advantage of the demographic dividend.

Key words: NEP, education, stagnation, challenges, skills development, economic progress

Introduction

A comparative analysis of BRICS countries that was published in 2018¹ shows a clear correlation between education and economic progress. As governments work closely with industry towards creation of new jobs, structure of higher education contributes to economic expansion. India has gradually evolved as a knowledge-based economy due to the abundance of capable, flexible and qualified human capital. With globalization, there exists an immense opportunity for the large young population. Every year, around 28 million youth get added to India's workforce. As per an assessment by the National Sample Survey Office, India's unemployment rate was at a high of 6.1% in 2018. This number was lowered from 121 million job losses to 11 million in July 2020 till the pandemic stuck. Further, the Associated Chambers of Commerce and Industry of India (ASSOCHAM) reports that merely 20% of the 5 million students who graduate every year are employed in India and only 46% are employable.

¹ Vichan Chang et al, Information Discovery Delivery, Volume 46, Issue 4.

Employers have often lamented the skills gaps that exist even in the above average performers when they enter the job market. The curricula updating and upgrading in Higher Education is such a long-drawn process, that almost a generation is lost by the time it is completed with teacher training at the end point. With the fast-changing pace of a technology driven world, traditional higher education is losing its lustre. The jobs of tomorrow do not exist today. The ability to foresee and prepare for the future skills' requirement is a conundrum. It is in the middle of this ground reality that the NEP- 2020 has been drawn. The NEP 2020 sets a goal of equitable access to highest quality education for all learners regardless of social or economic background.

This first education policy of the 21st century addresses many growing developmental imperatives of our country. In the current scenario, where many youths drop out before high school and few complete their tertiary education, it is interesting to see how the NEP 2020 addresses the issues of access and equity. The purpose of higher education in terms of creation of opportunities for individual employment, knowledge creation and innovation are envisioned in the policy.

The 2030 agenda for sustainable development adopted by India along with UN member states in 2015 includes critically the sustainable development goals (SDG-4) to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all by 2030.

The National Skills Policy (NSP) of 2009 attempted to expand outreach, equity and excess of education and training by establishing vocational training schools and polytechnics, ITI's, to impart sector – specific skills to learners.² However, much resistance exists in carving a career path outside of conventional education. Hence a situation is created where opportunities are available in terms of jobs and training, but the end users are often unaware of them. Vocational education is also considered inferior to mainstream education. This article looks at the provisions in the NEP that will address the training of the hand with the head so that India reaps the advantage of the demographic dividend.

Reimagining vocational education:

The National Education Policy 2020 lays emphasis on enhancement of creative potential of each individual. Through the Integration of essential subjects, skills and capacities in the school curriculum and flexibility in choosing their individual subjects, skills will help make students adaptive and productive. The

² Cf. Knowledge paper on skill development in India learner first – September, 2012 – (FICCI).

introduction of contemporary subjects such as artificial intelligence, design thinking, holistic health, organic living at relevant stages in school education will impart values and skills and prepare them to be global citizens. Students will be taught at a young age the importance of doing what's right, human values and Indian culture will be inculcated through the curricula and pedagogies rooted strongly in the Indian and local ethos and context will be adopted.

The National Skills Qualification Framework only recently gave vertical mobility to the students from vocational backgrounds. NEP 2020 suggests that all educational institutions – Schools, Colleges, Universities integrate vocational programs into main stream education in a phased manner. This will ensure every child learns at least one skill in vocations such as plumbing, carpentry, weaving, and gardening thus instilling dignity of labour. It is predicted that by 2020, at least 50% of learners the school and higher education system shall have exposure to vocational education. The prospect of introducing 'Lok Vidya' – Vocational knowledge development in Indian local crafts and various short term certificate courses in multiple skills will integrate vocational education with mainstream.

The National higher education qualification framework NHEQF will be paired with NSQF. It is proposed to constitute the NCIVE – National Committee for Integration of Vocational education to oversee the genesis and continuation of these programs. Focus on lifelong learning and adult education will give access to interested adults.

The NEP plans vocational skill exposure starting from middle and secondary school through internship opportunities with indigenous artisans, craftsman and blue-coloured professionals. Hopefully the full potential of India's demographic dividend will be realized. NEP 2020 and its success lies in its active implementation. Revolutionary, robust changes in the structure of the current learning ecosystem will have to be made.

A case study cited in 'The Pioneer' in 2019 describes the NIFT experience which reflects the integration of academic learning and skills training. Students of the NIFT (National Institute of fashion technology) visit a cluster of weavers and artisans and stay with the locals for 21 days to learn a skill and experience the daily rigours of their lives. A diagnostic report along with a SWOT of the trade is prepared by the student. In the process, students pick up practical tips, nuances of each art and craft and also learn soft skills. Professional relationships are forged. Analytical skills of learners are honed to identify gaps in the supply chain and evolve marketing strategies. This process earns weightage in the college credits and is

part of the professional program. The impact has been visible and substantial for the artisans who have had a windfall as they are exposed to technology, design and product mix. This is a model that finds reflection in the NEP 2020.

NEP 2020 is a welcome step to signal the ‘new normal’ in higher education. Of course, the devil lies in translation from policy to action. Post pandemic, many untold stories related to student dropouts, discontinuation of the education of the girl child, gap between learning capacities of privileged and underprivileged learners due to non-availability of ICT tools will throw up unprecedented challenges. The NEP may need some more revisions in its implementation strategies. If done right, NEP will be a major step in establishing India as a knowledge super power.

Goa Liberation Movement: A Press Dialogue (1955 to 1962)

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Abstract

Goa was under Portuguese Rule for a long time and later became a Union territory before finally attaining statehood. This paper aims to describe the coverage of the liberation of Goa in Press, especially after 1955. The role played by the prominent local and Indian newspapers in the process of generating awareness amongst the people of Goa and outside is an interesting area of research. During the freedom struggle newspapers were regarded as instruments in the struggle for freedom and not as an industry (as it is today) and we know the contribution of Mahatma Gandhi, B G Tilak, Dr B R Ambedkar, Dr Rajendra Prasad, Jawaharlal Nehru etc. Dr. Prasad 's write-up titled 'Growth of the Press in India' highlights that the press should review its policy in view of fundamental change post-independence, namely preservation of the freedom already won (*The Hindu*, October 6, 1956, p.7). Between 1955- 1962 lot of articles on the Goa Liberation movement were featured in *The Times of India*, *The Illustrated Weekly of India*, *The Hindu*. Attempts have been made to cover the information stepwise in a dialogue form to bring out a balanced view of the freedom struggle in Goa from 1955-1962.

Key Words: *Liberation Movement, Goa, News Papers, Dialogue*

Introduction

Goa is rightly called the land of the cross-churches, chapels, seminaries and convents. Belfries, domes and steeples rise above palm-groves on hill slopes. The sign of the cross dots the countryside. Goa in the earlier years of the Portuguese regime, was the centre from where priests and nuns were sent out on religious missions, especially to S.E.Asia and Africa. Seminaries and a nunnery considered to be the largest in the Portuguese empire were thus built in Goa.¹

Tiatr² is a popular form of satirical comedy in Goa, lampooning the socio-political conditions of the local setting. Therefore, drama scripts were scrutinized and censored by the Portuguese government in Goa. The first show had to be performed at the residence or compound of the 'Regedor' or Village Collector, for approval. This stifling and repressive atmosphere in Portuguese Goa deterred the scripting and

¹ Kamala Mankar, When the Bells Told, *Times of India*, 2 August,1990, p.3

² A distinct Konkani Theatre

performances of Tiatr in Goa, hence Bombay (now Mumbai) became the hub of Tiatr³. But after the Liberation of Goa in 1961 from Portuguese rule, with no fear of censorship Tiatr scripting and performance regained popularity in Goa.

Peaceful decolonization did not always work, Portugal refused to cede Goa and other Indian territories that had been under its rule since the Sixteenth Century.⁴ When passive resistance was started in Goa in 1955 by Indian and Goan Volunteers, the Portuguese unleashed repression resulting in the killing of a number of *satyagrahis*. Ultimately, the Indian army intervened in 1961, and thus ended this last vestige of European colonial rule.⁵

We can see the communist countries favouring India on the issue of Goa which is visible from newspapers headlines like **“Goa as integral part of India – Krushchev Confident on liberation**, here Portugal is compared to a Blood Sucker. Nikita Khrushchev while addressing over three million people at Calcutta said that “there are some countries yet which, like insects, stick to the human body and are sucking its blood. And I have in mind Portugal, the country which does not want to leave Goa, the rightful territory of India, to its destiny. I am convinced that Goa will be liberated from foreign domination and it will enter the great republic of India as its integral part.”

While we see the opposite views expressed by the US Secretary of State Mr John Foster Dulles who said **‘Goa – part of Portugal’**⁶ and a constant support to Portugal is seen. In a small news ‘No U.S. Arms used in Goa’, the US Ambassador J.K. Galbrith’s view highlights the American attitude in case the trouble in Goa flared up, stating that he could not “bless” any solution by violence⁷.

President Mr. V.N. Lawande of Azad Gomantak Dal which claimed 400 active underground workers said that the resistance movement inside Goa would take the form of “Mass demonstrations and no tax Campaigns.” He indicated that the toddy tappers and small shop-keepers who had been deprived of their normal remunerative avocations and among whom the greatest economic discontent prevailed, would launch a no-tax campaign against the Portuguese government.

³ Patricia Trinidade, ‘Bombay To Goa- The Journey of the Tiatr’, in *The Bombay Explorer* No. 58, June 2019, p.39

⁴ John McLeod, *The History of India*, Greenwood Press, London, 2002, p.141

⁵ Sekhar Bandyopadhyay, *From Plassey to Partition and After A History of Modern India*, second Edition, Orient Blackswan New Delhi, 2015, p.503

⁶ *The Hindu*, 7 December, 1955, p.6

⁷ *The Times of India*, 3 December, 1961, front page

Dr. Domingo De Souza, a prominent figure in Goan Social life told the Goa Legislative Council that government's desire to introduce new taxes next year was not only inopportune but unacceptable as the conditions in Goa were miserable⁸. He cited the example of people owning areca nut plantations who had become bankrupt due to the fall in prices. These people are forced to fell the areca nut trees for firewood. Thousands of coastal people had unsold stocks of salt. Families of Goan emigrants did not receive any money from the Indian Union and their conditions too were miserable.

“Portuguese Must Quit Goa”, was a special issue stressed upon by Goan Doctors, passing a resolution demanding the immediate withdrawal of the Portuguese from their colonies in India⁹. Dr. M U Mascheranas (former mayor of Bombay) presided. Several doctors speaking on the occasion on the resolution said that freedom was the birthright of the Goans. Marathi Newspaper *Navashakti* in its cover page of 8th May 1960 covered the headline *Govyacha Prashna Shantata- Marganech Sodvanyachi Ichha* meaning desire to solve the Goan question in a peaceful way.

The October 1961 issues of *The Hindu* focused on the communist party of India's urge in its election manifesto for the Government of India to take immediate military action against the Portuguese to liberate the Indian territories of Goa, Daman and Diu. Secretary of the Goan political convention George Vaz said there was enough provocation for India to take action against Goa. Every delay on the part of the Indian government in the liberation of Goa would enhance the suffering of Goans and the atrocities of the Portuguese. “Goans should not be demoralized on account of unsuccessful attempt in 1954. They should now decide whether violent or non-violent action would be useful to them for the liberation of Goa”.¹⁰

Appa Karmarkar, well known Goan political worker who happened to be the first administrator of Dadra and Nagar Haveli highlighted the lack of civil liberties in Goa under Portuguese. He said that Goans had been demanding freedom for the past 30 years ever since Dr Salazar came to power. Dr Salazar introduced the colonial act, and made it clear that Goa was a colony. This position had not been accepted by nationalist Goans and whenever they raised a voice of protest they were arrested and deported to Portuguese colonies in Africa¹¹. There was inflation and Portuguese currency did not have adequate purchasing power. Goan people's distrust in banks is focused upon in the article too.

⁸ *The Hindu*, 28 December, 1955 p.4

⁹ *The Hindu* of 2 October, 1956, front page

¹⁰ B, G Kunte. (ed.) *Source Material for History of the Freedom Movement Goa Freedom Struggle vis-à-vis Maharashtra 1946-1961* Vol.VIII Part II, Gazetteers Department, Government of Maharashtra, Bombay, 1978.

¹¹ *The Hindu*, 12 December, 1961, p.9

A big write-up in *The Times of India* by F Correia Alfonso entitled **Problem of Goa** (A Barrier Between East & West)¹² starts with the de jure restoration of the French Colonies to India leading to a propitious occasion for the summing up of the national and international problem of Goa. “Is Goa Indian or Portuguese? To which country do Goans owe the patriotic tribute to love and serve as their motherland: India or Portugal? The true Goan has no doubt about the answer; he even resents that the question should be asked. It has however, been forced upon us Goans by the Portuguese, and it has to be answered”.

Motherland

“If the motherland¹³ is the land of our birth, then India is obviously our motherland. Portugal, which has been holding our land as a colony by right of conquest for the past four and a half centuries, could at best be our step motherland. But who wants a stepmother, however kind, when he has a mother? But in the present case the stepmother is not kind.....”

“Whether we consider the question from the theoretical or the practical point of view, in the abstract or the concrete, the case for the integration of Goa with the Indian Union is so clear and obvious that it beggars argument. Goa is geographically, historically, ethnically, linguistically, culturally, economically an integral part of India, and hence it must be so politically. Yet the Portuguese maintain that Goa, Daman and Diu, so obviously part and parcel of India are an integral part of Portugal, which is thousands of miles away. We Goans cannot allow this preposterous claim, because we want that our land should realize its natural and providential destiny as an integral part of India.....God made Goa a limb of mother India, borne of her bone and flesh of her flesh. We are only demanding that whom God hath joined, Portugal shall not put asunder”. This writeup quotes Dr. Salazar’s Acto Colonial¹⁴ of 1930 and says that colonialism in Goa has become worse since Goa ceased to be called a colony. “The Salazar¹⁵ regime has accentuated racialism¹⁶ in colonial administration. There is in Goa today the rule of one race over another without self-government, without civil liberties, without equality of political status”.

Historic Sense

In this paragraph Alfonso says- “the Portuguese of the twentieth Century have the mentality of the men of Sixteenth Century. They are much more reactionary than their ancestors of the Sixteenth Century”.

¹² *The Times of India*, 5 June, 1956, p.6

¹³ 11 December 1961, *TOI* says Goa must return to motherland- violence can no longer be tolerated.

¹⁴ Which said Goa is not a colony but a province of Portugal.

¹⁵ In 1926 Portugal came under the rule of Salazar

¹⁶ African troops have been brought into Goa to defend their dominion over us, Asians.

“All Goan Catholics have a deep attachment to their faith. Portugal seeks to exploit this attachment by declaring itself the champion of Christianity in the East. The Portuguese seem to think that Christianity is their monopoly; and that they alone as a nation deserve credit for missionary achievement. Christianity is a universal religion that has been known and followed in India since apostolic times. What is more, there was Christianity in India long before there was any Portugal in Europe. Portugal, no doubt, deserves credit for its apostolic work in the Sixteenth Century but other nations too have done such apostolic work”.¹⁷

A small news column entitled ‘The Goa problem’ expressed Mr. Nehru’s suggestion that drastic steps were necessary to end this colonialism and free the people from Portuguese rule over small pockets like Goa and Daman and gave a hint that the Portuguese hold on these pockets of Indian territory was bound to end very soon¹⁸.

A Small report on page 9 of the above issue says that the Lisbon Flag was seen over Anjadev. It talks of how Portuguese had put up a big flag on December 2, 1961 on Anjadev Island off Karwar, probably to emphasise their possession of that practically uninhabited island¹⁹.

December 4, 1961 (*TOI*) Cover page headline read “... Lisbon continues Its build –up In Goa”.

“Rallies held in Bid to Boost Morale. “Curfew on Pernem Mahal (Panjim, Ponda, Margoa and Mapuca) Portuguese frigate Albuquerque cruising around island of Goa mentioned”.

“December 5, 1961 (*TOI*) covers a Photo of the Goan Political Convention in Bombay with caption calling for the “END PORTUGUESE TYRANNY” is seen and mentions the Goa Governor-General supervising the buildup. It says Churches in Goa and Diu were being utilized by the Portuguese authorities for storing ammunition and camping army personnel”

“6th December 1961 (*TOI*) carried main Headline in front page is still related to Peking²⁰. “Lisbon soldiers Trespass into Dodamar and open Fire, Goan villages under wave of Terror”

“8th December 1961 (*TOI*) carried Big multiple Headlines such as- Lisbon will inform UN, Foreign Minister (Dr. Alberto of Portuguese Maligns India), Menon Assures other Fronts, Military steps taken to meet

¹⁷ According to *The Hindu* 25 December, 1955, p.7., Pope Pius XII Christmas message says Colonialism must end. Western powers urged to show spirit of Generosity.

¹⁸ *TOI*, 3 December, 1961, front page

¹⁹ Earlier Portuguese fired from Anjadev Island on November 17 (attacked Indian ship Sabarmati) and 24, to provoke Indians as said by Mr. Hosali, Mysore’s Inspector General of Police. India sent a strong note to Lisbon after this.

²⁰ Chinese Border problem was a contemporary hot issue which was given much coverage by Newspapers.

Lisbon's challenge, Nehru tells Lok Sabha, Liberation of Goa envisaged as ultimate result. India's feelings on Goa had been greatly aroused by the "horrible things" that has happened in Angola (Earlier the World Council of Churches called upon Portugal to end its act of oppression in Angola)". Page 7 reads... "GOA ACTION NOT PROVOKED BY ENSUING ELECTION' Nehru²¹ refutes Swatantra MP's Allegation"

"Mr. Nath Pai (Praja Swatantra Party) said the nation had reached the point of no return and any retracing of steps, now before a small power would be a humiliation"

"Mrs. Parvati Krishnan (Communist) pointed out that India had come under criticism from the African people for its weak policy. "Take courage in both hands and do what is expected of you"

"Balraj Madhok (Jan Sangh) also stressed that there should be no further delay in liberating Goa. We cannot remain "non-violent tigers", added Joachim Alva²² whose constituency Karwar bordered Goa. At the end of the debate the Lok Sabha approved the foreign policy of the Government"

"9th December 1961 (*TOI*) speaks of the Portuguese "rushing white troops to post on Border, Mouth of Terekhol creek mined". Portugal told to Quit Goa "In Peace and Friendship"

10th December 1961 (*TOI*²³ Cover page) mentions Dr. Mrs Laura D'Souza being held in Goa (Polem). She was carrying petitions calling for the Liberation of Goa to be signed by Goans in Goa"

"Three commando raids on Goa highlighted with a cartoon captioned POLITICAL WHO'S WHO showing a torch of Liberty and Goa situation"

"On page 9th of the same issue a column says Freeing Goa simple But Vital Task"

"Mr. Ashoka Mehta, the Chairman of the Praja Socialist Party said that the liberation of the Portuguese possessions in India was a simple but necessary operation that would brook no further delay"

Also a small news covered Pakistani Papers that back China and Portugal. It says- "newspapers in Pakistan are either siding with China and Portuguese in their dispute with India"

"The English daily, *Morning News* of Karachi is quoted "War clouds are gathering over the small, peaceful Portuguese enclaves on the Indian Coast. These little 'thorns' have always rankled in the hearts of Indian

²¹ Nehru's international travels made him one of the world's best known statesmen.

²² Mother Catherine Anderson founder of Sophia College Mumbai looked after Alva Couple children when they were courting imprisonment during Indian freedom struggle.

²³ *Times of India (TOI)*, Mumbai Edition.

irredentists. If they managed to survive, it was only because the Juggernaut of Indian imperialism required a little respite rolling over Hyderabad, Junagadh and Kashmir”

“11th December 1961 (*TOI*) mentions about 10 Portuguese Soldiers opening fire on Indians”

“Talewadi village- 300 workers in the manganese mines at Redi decided to stop work. J.M. D’Souza (President of the Goa National Union) and Mr. Bonifacio Dias (Secretary) held by Portuguese”

“The news of Dr Laura D’souza likely to be sent to India by Portuguese covered”

The December 11, 1961, p.1 issues of *Hindu* invariably carried the headlines like:

- a) Portuguese soldiers raid village (300 rounds fired to scare people of Talwadi)
- b) Quit Goa Campaign
- c) On page 7 of the same issue is the headline “Goan Commandos Action”. The commandos carried three attacks on military posts inside Goa on December 9, 1961, inflicting severe injuries to Portuguese troops (At Pastangala near Pengiri and Canacona in Southern Goa, they attacked a military post)
- d) Mrs Aruna Asaf Ali was the chairman of the national campaign committee for Goa liberation., On December 12, 1961, p.9 of *The Hindu* mentions... In her appeal she praised that Goans were united at this hour of trial and their unity would bring them success in the liberation and struggle for Goa.... without Goa’s liberation India was not complete, she said. “Our sisters and brothers in Goa were suffering untold misery. With a spirit of national unity and openness we have to organise ourselves and strive for the liberation of Goa”.

“2th December 1961(*TOI*) mentions a Goa mine blast at night heard at Majali, due to which Nationalists intensified the freedom fight.

Nehru’s reply to the debate in Rajya Sabha- “We cannot tolerate any foreign out posts in any corner of India.....”

December 13, 1961(*TOI*) talks of 5,000 volunteers ready to March into Goa along with the line-

“Take military action now, Government told”

“Page 7th of the above paper is focused on how American and German Press Backed India’s case”

The New York Times said “Colonialism of the old style is dying rapidly in Africa, and there is no longer any logical room for colonialism in Asia either. A Newspaper in West Germany supported India’s case for the Liberation of Goa”

“December 13, 1961 issue of *The Hindu*, Asaf Ali said their slogan adopted sometime back-namely “Goa must be free” was now likely to succeed”

December 14, 1961 (*TOI*) mentions the Oppression in Goa by Portuguese, India informs UN body. A Photograph showing a procession in Belgaum with Aruna Asaf Ali, Mirajkar and Mr. Nath Pai is seen

December 15, 1961 (*TOI*) says “Governor of Goa leaves by Air Force Lisbon, Nationalists Raid Post South of Quepem”.

December 15, 1961 issue of *The Hindu* highlights that the Portuguese officials have started burning and destroying documents and papers inside Goa. It also mentions “Portuguese Morale at Low Ebb”. UN Secretary General U Thant²⁴ (very much influenced by Gandhi) wrote to Nehru and Salazar. December 17, 1961 the front page head line was “UN Secretary writes to Nehru and Salazar...” (Identical telegrams addressed to Lisbon and Delhi by U. Thant)”

“On 16th December 1961 (*TOI*) a cartoon captioned ANY TIME NOW! shows Nehru about to beat a small mouse (i.e. Portuguese in Goa)”

“17th December 1961 *TOI* mentions the menacing Portuguese army built up in Goa”

“18th December 1961 (*TOI*) Cartoon says- “AT LAST a big hammer shown on the rat (i.e. Portuguese),, OUR TROOPS ENTER GOA, DIU AND DAMAN, Russia backs India on Goa issue” on the same date cover page of *The Hindu* covered the talks held between Soviet President Mr. L I Brezhnev and Prime Minister Nehru that lasted for two hour. The talks covered “all international issues, including disarmament, the German question, Colonialism and world Peace.”

19th December 1961 (*TOI*) India speaks of Tricolour hoisted on Anjadev Island. Two Big Maps of Goa were shown.

²⁴ U (meaning Uncle or Mr in Burmese) at the age of 52 headed the list of Secretary General at the United Nations on November 3, 1961 (Asian Survey Vol. 1 No. 10 December 1961)

20 December 20, 1961 (*TOI*) headline says- “Goa freed from foreign yoke”, “Panjim Capital of Goa had surrendered to Indian Troops”²⁵

December 20, 1961, on page 14 of *The Hindu*, a beautiful map of Maharashtra and Goa showing places from Banda in north to Canacona in south is printed.

The *TOI* of 20th December 1961 said- “Goa Back with the Motherland”, A big Cartoon captioned FINIS shows Nehru holding a rat in right hand and putting it in the dustbin.

Other headlines were “General K P Candeth takes over”, “Five Year Development plan for Goa”, “Goa will be Governed by Centre”, “Lisbon may not complain to UN”

“December 21, 1961 (*TOI*) issue says “Peking hails Delhi’s action in Goa”²⁶, “Arabs Jubilant at the liberation of Goa”. India was also supported by the Democratic Republic of Vietnam and Afghanistan”

On Page 6 of January 4, 1962 of *The Hindu*, Kingsley Martin’s write-up on ‘**Gandhiji and Goa Liberation**’ can be seen. The question of whether Gandhiji would have approved of Mr. Nehru’s action in regard to Goa is discussed here. It discusses about non-violent efforts to liberate Goa in 1946²⁷ and 1956. Martin justifies Nehru who said that by using the army, he forestalled the bloodshed which further demonstrations would have caused if there had been a massacre of non-violent resisters. Mr. V Krishna Menon justified Indian Government’s action in Goa and replied to western critics (December 22, 1961 *The Hindu*)

January 1, 1962 page 8 of *The Hindu* highlights “Portuguese Order on Marriage”. It talks about representation from Goan Christians against the order of the former Portuguese Government that no Goan Christian could marry without an identity card²⁸, also there was compulsion for every Goan Christian to have a Portuguese name, even though the Vatican does not insist on anybody’s name being changed when they are converted to Christianity, the former Portuguese government made it incumbent on every Goan Christian to have a Portuguese name.

The military Governor of Goa Major-General Candeth was considering the abolition of certain taxes levied by the Portuguese on the Goan people and Indians who visited Goa earlier. One such tax known as the “Tax Militan” had to be paid by every Goan if they did not wish to serve for 2 months every year as a

²⁵ Operation Vijay successful.

²⁶ Earlier also in December 29 1955, *The Hindu* highlighted Chinese support to India’s demand.

²⁷ Dr. Ram Manohar Lohia met a number of Goan freedom fighters in June 1946.

²⁸ A Goan Christian during Portuguese rule could not get married without an identity card.

conscript in the Portuguese Army. The Tax was payable annually. Further, every Indian national who came into Goa had to pay a sum of Rs 100 as registration fee per year.

Portugal will quit UN, This angry outburst by Salazar was published on p.7 of January 5 1962. Prime Minister Dr. Salazar said Portugal “Will surely be among the first countries to leave the UNO.” He added “We shall refuse them our collaboration in everything that is not in our direct interest” He sharply criticized the UN, the USA and Britain for their failure to come to Portugal’s help when India invaded Goa last month....he paid tribute to the efforts made in New Delhi by Britain and the US to try to prevent India from “using force” in Goa but regretted their impotence in this connection. In the same page Goa National Congress News is covered saying- “Leading members of the National Congress Goa have decided that their organization should have no organizational link with any of the Political Parties functioning in India. Likewise, they have also decided that the activities of the National Congress Goa, should be confined only to Goa region. They supported the Government of India’s policy to keep Goa as a separate administrative unit. Secretary of the National Congress of Goa Mr. Madhav Bir said that they had also decided to work for democratic rule in Goa. He further added an adhoc committee²⁹ consisting of Dr. Pundalik Gaitonde, Dr. Ram Hegde, Dr.J Martins, Mr.Gopal Kamat, Mr. P Mulgaonkar, Dr.Mayekar, Mr. Shankar Desai, Mr. V Almeida, Mr Peter Alvares with Mr. Anthony D’Souza and Mr. Bir as secretaries. Another decision was to set up a volunteer organization to be called “Gomantak Seva Dal”, which would immediately organize relief to those who had been rendered homeless following the blasting of bridges by the Portuguese.

Goa Integral Part of India³⁰

At Patna Nehru declared that Goa was now an integral part of India and “What has happened in Goa cannot be changed, come what may.” He said “It is crystal clear that what happened in Goa cannot be reversed. -- there are certain things which just cannot happen even if the whole world changes.” Referring to Goa Liberation and the adverse reactions it had evoked in certain Western countries, Mrs. Indira Gandhi said that Goa’s freedom not only made India’s independence complete but had to be seen in the context of a changing world in which Asian and African nations were getting out of centuries-old bondage. India could not tolerate a thorn in her flesh and an affront to its national dignity. Though troops had to be sent to Goa, the peaceful way in which colonialism was ended there was a rare event.

²⁹ Which will study special problems in Goa.

³⁰ *The Hindu*, 7 January 1962, front page

“US Will Continue to Aid India” Policy Not Affected by Goa Action³¹

Dr. Henry Kissinger³², noted American Political Scientist and special Assistant to President Kennedy on international affairs said at a press conference in 1962 that the Goa operations would not affect “the major trend” of American policy towards India. He said he was speaking on his individual capacity and not as a spokesman of the administration. He was asked why there was so much criticism in America on the Goa episode when it should’ve been apparent that there was no other alternative for India. He was also asked how injustices in the world could be remedied without resort to force. He replied that no definite plan had yet been worked out to put an end to injustices without the use of force. So far as he was concerned, he recognized that it would have been hard for India to settle the Goa problem by pursuing negotiated settlement. But he felt that India could have waited for one more year and given a chance to the UN to make a more specific proposal. Dr. Kissinger said that America believed that Goa was a colonial territory and had to be liquidated. “We are opposed to all kinds of colonialism not only the historical ones but also the modern forms of colonialism as practiced in Central Europe”.

An interesting advertisement of Bumper Issue on Goa (of February 18, 1962) is seen in *The Illustrated Weekly of India*³³(IWI) in January 28, 1962 issue. *The Illustrated Weekly of India* December 22, 1963 shows Photos of men and women waiting to cast their votes in Goa’s first free and democratic election. Some of the pertinent articles list in *IWI* is as follows:

Title	Month
Freedom comes to Goa	January 7, 1962
Cardinal Gracias article : A Cultural Aspect	February 1962
Operation Goa	February 1962
A S Raman’s Series : Impressions of Goa	March 1962

*The Bombay Sentinel*³⁴ was a daily newspaper in Tabloid format published from Bombay

Title	Month / Page
Portugal has forced its culture on Goa	October 19, 1955, p.2
Small news Goan Protest Rally Today	November 25 1955, cover page

³¹ *The Hindu* 8 January 1962, front page

³² He was on a three week tour to India under the State Department’s Cultural Exchange Programme.

³³ Published every Sunday around 65 page Weekly which covered sports, many cartoons, poetry of the month etc columns.

³⁴ *Bombay Sentinel* was eight pages Newspaper of 1 anna carrying cartoons, Daily crossword, where to go to night column etc.

Goa unhappy over U.S. Attitude	December 9, 1955, p.7
Madam Sun(Yat Sen)Backs Indian claim on Goa	December 28, 1955, p.3

The Statesman Newspaper of 1st January 1958 p10 also covered India's claim to Goa supported by Asian-African Conference Committee Resolution.

Thus we see varied information on Goa covered by print media in the second half of the Twentieth century. News Paper sources can give new insights and can present novel information before the audience. When the 50th anniversary of Goa Liberation was celebrated in December 2011, *The Times of India* covered a story entitled 'Golden memories of love in time of Goa's liberation', about Carlos Alberto Felgueiras (a Portuguese called *paklo* meaning white) who married Ana Bela (Goan girl) on December 15, 1961. Carlos was taken a prisoner of war five days after his marriage to Ana and was only released on April 20 1962. Cartoons bring more humor and help to understand the existing situation. This use of different newspaper tools and information can be employed by researchers to study about Goa's freedom struggle from totally different dimensions: political, social, economic and literary.



Slides: Cartoons indirectly depicting the world scenario contemporary to Goa's Freedom Movement in *The Hindu* (1955) and *Blitz Magazine* (1961)

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Determinants of the Healthy Life

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Abstract

The value of being healthy is valued only when we lose health. The mind set of humans is to avoid primary preventive measures and start secondary preventive measures once the disease develops. The myths and assumptions around health are plenty and many have failed to protect and promote health of a given individual. There need to be perfect balance between physical, mental and social well-being to be healthy. To have a perfect balance we need to practice protective, promotive and preventive factors that keeps us healthy. This article shares few concepts of determinants of healthy life.

Key words: *health, hygiene, determinants, preventive, promotive, nutrition, habits*

Introduction

“Every human being is the author of his health or disease. The disease is the result of disobedience to the immutable laws of health that govern life.” The importance of health is understood only when it is lost. While Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, the determinants are lifestyle, habits, nutrition, hygiene, spirituality, and peace of mind.

The issues regarding health and hygiene have received more importance during disease outbreaks and in recent days because of the COVID19 pandemic. We have suffered the epidemics of plague, Severe Acute Respiratory Syndrome (SARS), Human Immunodeficiency Virus, Ebola, HINI/ Swine flu pandemics in this century. Do we need many more such pandemics to learn to behave?

India is projected to be top five in the prevalence of major diseases worldwide. One reason is the population factor. We are now leaders in having more cases of diabetes, COVID 19, tuberculosis, ischemic heart diseases, and malignancy.

The maintenance of good health is a lifelong entity and not merely during ill health or old age. The health status during our old age largely depends upon the fitness we maintain during young and middle age. There has been enormous research in the field of medicine which has led to the eradication of certain diseases,

improved and quick diagnostic methods, newer drugs in treatment and intervention which all have collectively added to the longevity of human beings. But it is the irresponsible acts of human behaviour that have created more health-related issues. The environmental issues have also contributed significantly towards worsening health situation. Through this article, I shall discuss various aspects like facts of health and disease, acute and chronic diseases, do's and don'ts for a healthy living and prevention of diseases.

Facts about health and disease

The peculiarities of the health and the behaviour of the human being determine the outcome. Few truths about the effects of health on our life are as follows.

1.The deterioration of health is always rapid and recovery is slow

When the disease is diagnosed, more than fifty percent of damage has already occurred at the cellular level. This leads to rapid deterioration and delayed recovery.

2. Chronic diseases when not controlled, leads to permanent damage

Chronic diseases like diabetes, hypertension lipid disorders when are not under control levels, they cause permanent damage to the end organs like the eyes, brain, heart, kidneys, and nerves after 10 to 15 years of onset. This has a negative impact on health because of the disabilities it produces. These disabilities occur during old age and add to more dependency.

3.Prevention is always better than cure

The proverb has been known to mankind for many centuries. It is still in the mindset of the humans that, I will not have a disease, I can overcome them easily and there is a cure for it. All these are false beliefs and one needs to give a thought to them. It is also observed that most of the population starts lifestyle modifications only after being diagnosed with having a disease and not to prevent diseases. The use of gadgets like earphone and mobile phone have negative and detrimental effects on our health.

4.Mental health is equally important

Most of the suffering in humans is due to negative thinking and imagining what could happen to me! Diseases like diabetes, hypertension, and heart attack are due to stressful lifestyles. The core mental disorders like anxiety, depression, loneliness, and suicidal thoughts have negative effects on overall physical and social health. Poor mental health leads to reduced workdays, disturbs the family life, and adds pressure on family members.

5. Nutrition plays a major role both in prevention and recovery

Both under and over-nutrition are detrimental to health. One has to consume balanced food and always prefer the locally grown staple food and fruits. Undernutrition predisposes to infections while overnutrition to noncommunicable diseases and hormonal disorders. Binge eating should be avoided. Maintenance of good oral hygiene is key for good health. It is said that the mouth is the mirror image of your inner health.

6.Coordinated multiple determinants lead to healthy living

Lifestyle modifications like exercise (walking, cycling, swimming), yoga, meditation, keeping our hobbies active, stopping habits like smoking and alcohol consumption will all contribute to healthy living. All these factors should be applied in a coordinated manner and followed in our routine life to live a disease-free or independent life.

Acute Diseases

Human beings are subject to various diseases of acute onset. It may be in form of infectious diseases, vascular events, accidents, and complications of existing diseases. The red flag symptoms suggest the disease is serious and needs immediate attention.

Red flag symptoms

The twelve red flag symptoms¹ which should never be ignored and if, are present should seek medical help immediately are:

- 1.Abnormal bleeding through natural orifices like ears, nose, mouth, vagina and, anal canal.
- 2.Significant weight loss or weight gain
- 3.Lump in the breast /Neck
- 4.Suicidal ideas / Mood change / Anger /Isolation / Forgetfulness/ loneliness.
- 5.Unexplained Falls / Giddiness
- 6.Abnormal bowel habits
- 7.Chest pain or backache with sweating
- 8.Difficulty in swallowing
- 9.Breathlessness that restrict your daily activities
- 10.Impotence
- 11.Nagging cough
- 12.Change in voice

¹ <https://www.who.int/cancer/media/en/408.pdf>

Chronic diseases

Chronic non-communicable diseases like diabetes mellitus, hypertension, hyperlipidaemia, and thyroid disorders are now seen in middle age population and mostly are inherited. In few circumstances, they develop due to mental or physical stress. Many patients ask me why I got these diseases? The answer is that *we inherit not only property but also diseases from our parents.*

The diseases like stroke, Parkinson's, Alzheimer's, Epilepsy, and Cancer lead to debilitation and bedridden. Various modalities of care are available for the chronic diseases that lead to disabilities, in the form of physiotherapy, rehabilitation, and palliative care. These modalities have excellent outcomes provided when they are initiated in the early-stage and have to be applied for a long time for good results.

Obesity

Obesity is a new health fashion. *It runs in family because nobody runs in family!* The prevalence of obesity is on the rise and it has negative effects on mental and physical health. The quality of life is poor in them. Losing weight rapidly is no good. It is better to be overweight than underweight. This helps to have strength during illness. Exercising for one hour in the morning keeps you fit and reduces the weight while sitting for long hours in the office throughout the day adds to the weight.

Undernutrition

The irregular food habits, consumption of junk foods, and food taboos lead to a decrease in the intake of vital nutrients. This makes us prone to develop diseases. The prevalence of anaemia is to a larger extent in society. It is seen in children, middle-aged and older people. It is seen in poor and rich families as well. The most common cause in the rich class is the concept of maintaining the so-called “figure”. They eat less to maintain figure and therefore develop anaemia. Apart from this, menstrual disorders in females and haemorrhoids in the male are cause for anaemia.

A well-balanced diet usually has a mixture of food with protein (beans, peas, or eggs), carbohydrates (maize, potatoes, cassava, rice), vitamins (vegetables, fish, fruits, or milk), and fats or oils (cooking oil). The use is based on availability and economic status. Consumption of water up to two litres a day is recommended. One should avoid drinking more water at night hours preferably after 9pm so that sleep will not be disturbed due to frequent urination. The concept of the healthy eating plate in figure -1, explains the contents of the food on our plate.²

² <https://www.health.harvard.edu/media/content/files/health-report-pdfs/healthy-eating-plate.pdf>

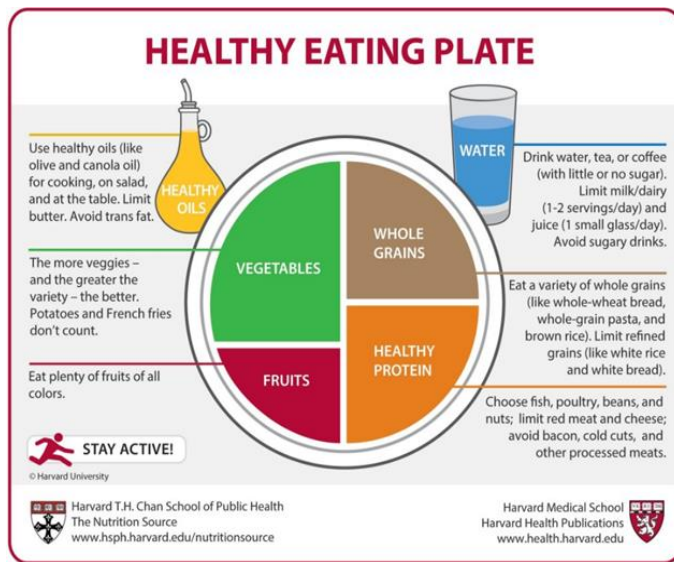


Fig-1. Healthy eating plate
Lifestyle modification should be party of life (Fig-3)



Fig-2. Food Pyramid recommended in India by National Institute of Nutrition

It is observed that the person starts lifestyle modifications only when he is diagnosed having a disease. Till then *chaltha hai* attitude!

Eat less, live long! is a new slogan. Eat healthy and locally available food daily which provides all the essential nutrients in moderate and avoid junk foods.

The methods like yoga, meditation, exercise when practiced daily are long-term determinants of positive health. They also play important role in the rapid healing of the diseases when develops. They improve our immunity and provide a feel-good effect. Stress management needs to be addressed when in need. Habits have become a new social status! Alcohol dependence and tobacco are on the rise in teens and adults of all the strata of society, which leads to poor quality of life in them.

Many think that even the people who exercise regularly in form of yoga, cycling, walking also get diseases. The answer to this is simple. These lifestyle measures have five important advantages that are scientifically proved for having a healthy life. The first is, it is proved scientifically that the people who exercise regularly and maintain a good lifestyle have excellent recovery rate, both in days for recovery and quality of life,

³ <https://www.nin.res.in/downloads/DietaryGuidelinesforNINwebsite.pdf>

when developing disease. The second is there is a delay in onset of disease, third is the disease occurs in lesser intensity which leads to lesser morbidity and mortality, the fourth is they live long and fit during old age and fifth is their immunity status is better than those who do not practice.



Figure -3

For good health, the following do's and don'ts are recommended

Do's	Don'ts
Undergo screening for diabetes, hypertension, obesity, hyperlipidaemia, kidney and thyroid disease once a year preferably on your Birthday.	Mix 'pathies' – allopathic with Homeopathy or Ayurveda or Unani.
Donate blood at least once a year.	Seek pill for every ill!
Get immunized against communicable diseases	Try unscientific methods for health issues
Get your eye, ear, and tooth check-up once a year	Ignore red flag symptoms
Promote healthy environmental / pollution-free practices	Drink alcohol/smoke
Exercise in whatever ways you can – dance, walk, swim cycling, and yoga	Consume packed or junk foods
Practice your hobbies on a regular basis	Google for treatment of disease!
Keep your sexual health active	Hesitate to inform your doctor regarding your sexual or mental health
Promote mental health through meditation / Spirituality	Compare your health with others
Keep watching comedy serials and laugh till you have tears or abdominal pain	Sit for a long-time watching television or doing work on a computer.

Accept, if the disease has been diagnosed.	Question why the disease to me? Delay the treatment or spend time seeking advice from multiple sources
Get health insurance	Ignore mental health issues.
Pledge for organ donation	Stop drugs prescribed for chronic diseases.
Maintain good hygiene	Ignore protective methods.

Prevention of diseases

Immunization in adults and older people⁴

Indradhanush coverage is recommended for all children. The adults should be immunized against typhoid, human papillomavirus (HPV), tetanus, and hepatitis B. Girls especially teenagers and just before marriage can have their shot of HPV which helps prevent malignancy of the cervix.

Older people (>60 years) should be immunized against influenza, pneumococcal pneumonia, herpes zoster, tetanus, and hepatitis B irrespective of their disease status.

Those who travel abroad or endemic places should receive a vaccine against meningococci, cholera, and yellow fever depending upon the prevalence of endemicity.

The rabies vaccine is mandatory for those who have a dog bite irrespective of the immunization status of the dog.

Good hygiene practices

The World Health Organisation defines hygiene as the conditions and practices that help to maintain health and prevent the spread of diseases. Personal hygiene refers to maintaining the body's cleanliness.⁵

Practices like hand washing, daily brushing of teeth, daily bathing, trimming nails weekly, regular haircuts, menstrual hygiene, use of washed clothes daily are few good practices for maintaining good health.

⁴ API Guidelines “Executive Summary The Association of Physicians of India Evidence-Based; Also see 5. Clinical Practice Guidelines on Adult Immunization” Expert Group of the Association of Physicians of India on Adult Immunization in India JAPI. 2009;57:345-56. https://www.geriatricindia.com/indian_vaccination_guidelines.html

⁵ "Hygiene: Overview". World Health Organization (WHO). Retrieved 29 January 2020.

Because of COVID 19, the use of face mask and social distancing are to be followed mandatorily to safeguard ourselves. The role of personal hygiene, hand wash, and good nutrition has the upper hand in preventing the spread of the disease.

Conclusion

We realize the importance of good health only when it is lost. Healthy living and active ageing should be our goal throughout.

The non-communicable diseases of the west like obesity have already conquered our population in India which is not a good sign. We need to think about what is good for our health and choose wisely.

Preventive methods and attending to the red flag symptoms should be our priority.

We need to balance physical and mental health together. The actions of our mind, heart, and behavior should be well-coordinated daily for a peaceful life.

Maintaining a healthy life is economical, while a diseased life is very costly. A holistic approach with protection, prevention, and promotion of health throughout our life should be our priority.

Preventing or delaying the disease is of vital importance in preventing physical, mental, and financial breakdown.

Do not fall prey to fabulism, misinformation, and falsehood on the internet. Remember only a human being (Doctor) can understand the emotions of another human (Patient). Good health despite diseases is the best life partner! *“To keep the body in good health is a duty... otherwise we shall not be able to keep our mind strong and clear.” Gautam Buddha.*

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A Review: The Biochemistry of Methamphetamine and Behavioural Addiction, and its Physiological Effects on Immunity

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Abstract

Methamphetamines belong to the amphetamine class of psychoactive drugs which is highly addictive and has known neurotoxic effects. Recently, the immune consequences of Methamphetamine addiction have surfaced which also involve dysfunction of the Ubiquitin-proteasome pathway (UPP). UPP is an important component of cell-mediated immunity and this disruption can lead to a higher prevalence of diseases. Behavioural addictions is a newly defined category in DSM-V, Gambling Disorder being the only entry under it. Recent studies have highlighted the similarities between substance and behavioural addictions, suggesting they share similar neurobiological pathways. The exact pathways of addiction and immune consequences remain largely unknown and require extensive investigation.

Key words: *Methamphetamines, Behavioural Addiction, Neurobiology, Immunity*

Introduction

Addiction is a chronic condition characterized by a compulsion to try and take a drug/perform a certain behaviour, a lack of control over drug consumption/behaviour and the creation of a negative emotional state (American Psychiatric Association). Developing an addiction follows modifications in the mesolimbic dopamine system which causes a series of neuro-plastic adaptations of the striatum and orbitofrontal cortex. This eventually leads to the dysregulation of the prefrontal cortex, cingulate gyrus, and extended amygdala¹. Belonging to the phenethylamine and amphetamine class of drugs, Methamphetamine (MA) is a psychoactive substance that acts on the CNS and acts as a psychostimulant². It primarily affects the monoamine transporter systems in the brain and causes excessive release of monoamines, most notably Dopamine. This drug has been widely abused all around the world and has documented neurotoxic effects. It rapidly crosses the blood-brain barrier to activate the CNS, triggering euphoria, increased alertness and self-esteem and decreased anxiety, because of its lipophilic nature^{2,6}.

Repeated indulgence in the behaviour may lead to adverse consequences, including but not limited to, diminished control on the behaviour³. This diminished control is a cornerstone for defining psychoactive substance addiction and has promulgated the concept of non-substance, behavioural addictions⁴.

Currently, Gambling Disorder is the only recognized 'behavioural addiction' under 'Substance-related and addictive disorders' in the new DSM-V diagnostic classification (American Psychiatric Association). It was formerly a part of 'Impulse Control Disorders' which also are used to group various other behaviours such as internet addiction (gaming and social media), food eating disorders and sexual addictions⁴. Internet addiction is currently listed as an area of future research in DSM-V (American Psychiatric Association) and will probably be the next to join Gambling Disorder as a behavioural addiction. This classification has been widely debated⁵ and might be resolved when neurobehavioral and neurocognitive studies are conducted for these disorders.

Biochemistry of Methamphetamine action

Upon CNS penetration MA acts primarily to cause the release of monoamines norepinephrine, dopamine and serotonin⁷ and is a substrate for the Na⁺/Cl⁻ dependant bidirectional Dopamine transporter (DAT)⁸. MA bound to the extracellular side causes transport of dopamine outside the cell. With higher concentrations of MA, extracellular binding may not be required as it would diffuse directly across the plasmalemma membrane. This mechanism is heavily regulated and the activity of DAT is dependent upon cell signalling pathways such as the calmodulin-dependent protein kinase II and phosphatidylinositol 3-kinase (PI3K)¹⁰.

Inside the neuron, VMAT-2 (Vesicular Monoamine Transporter) is an integral membrane protein that transports monoamines from the cytosol to the synaptic vesicles^{9,11}. VMAT-2 transport is coupled with vacuolar-type H⁺-pumping ATPase, generating a proton gradient across the membrane making the internal of the vesicle slightly acidic (pH 5.5)¹². MA once present in the intracellular environment disrupts this proton gradient due to its characteristics as a weak base with a pKa of 9.9-10.1^{2,13}. This disruption causes a reduction in the ability of the vacuole to sequester dopamine and the subsequent release of dopamine into the cytoplasm where it is pumped out of the cell by its transporters, this is known as the "weak base hypothesis" and requires MA concentration over 100µM to observe a strong correlation between MA and dopamine efflux^{8,14}. At lower concentrations of MA, dopamine release hasn't been observed. A possible explanation is that only a small portion of the total dopamine (unbound, free dopamine) is subject to the proton gradient-mediated efflux mechanism¹⁵. Along with this increase in the secretion of monoamines,

MA disrupts monoamine reuptake and enzymatic degradation processes ^{16, 17}. Amphetamines are competitive inhibitors of the monoamine oxidases (MAO). These enzymes are present on the outer mitochondrial membrane and are responsible for amine catabolism in the presynaptic neuron ¹⁶.

MA can act on the medulla of the adrenal glands to stimulate the release of epinephrine and norepinephrine, activating the sympathetic nervous system ^{2,18}. This causes an acute increase in heart and lung action due to vasoconstriction and bronchodilation. Following administration of MA, the levels of stress hormones (cortisol and adrenocorticotrophic hormone) rose by as much as 200% in humans and remained elevated for hours after administration ¹⁹.

Many of the acute neurological symptoms consistent with MA abuse are caused by this excessive secretion of monoamines and stimulation of the nervous system's sympathetic arm ²⁰. The repeated use of MA has shown, both in animal models and humans, depletion of dopamine reserves in the brain, and degradation of dopaminergic and serotonergic receptors. This may lead to its high potential for abuse, as addicts may have a diminished ability to feel pleasure ².

Methamphetamine-linked Neurotoxicity

Parallel to the increase of Dopamine (DA) and Serotonin (5HT) levels, MA also causes an increase in levels of striatal glutamate. This increase of glutamate is due to the dysregulation of D1DA receptor-mediated corticostriatal glutamate release ^{21, 63}. MA also causes loss of dopaminergic and serotonergic axon terminals in the hippocampus, striatum and prefrontal cortex.

The effects of MA can be observed via the decrease in tyrosine and tryptophan hydroxylase enzymes, which are a marker of this toxicity along with a decrease in DAT and SERT expression ²². The increase in DA levels due to MA administration has been linked to an increase in Reactive Oxygen Species (ROS) causing oxidative damage. MA-induced damage to the dopaminergic system has also been linked to D1DA receptors. Even with sustained hyperthermia, neurotoxicity was controlled upon administration of D1DA antagonists suggesting that D1DA receptors play an integral role in MA-linked neurotoxicity ^{23, 29}. Levels of DAT and dopamine were measured in chronic users and a marked decrease of 50-61% was seen in dopamine levels ²⁴ and DAT levels fell by approximately 33% in striatal regions ⁶. The mechanisms underlying the serotonergic toxicity due to chronic MA use are less well-understood and believed to be due to the production of free radicals and hyperthermia ⁶. Studies must be conducted to elucidate this pathway.

Production of Radical Nitrogen Species (RNS) has also been linked with MA-induced neurotoxicity. Tyrosine modification by RNS occurs in a variety of neurodegenerative diseases such as Alzheimer's disease, and Parkinson's disease ²⁵. Several studies have indicated an increase in RNS post-exposure to MA in humans and rodent models due to an increase in activation of the DDAH1/ADMA/NOS pathway ²⁶. p53 is a protein transcription factor which is responsible for the regulation of cell cycle arrest, DNA repair and programmed cell death (apoptosis). In mice models, upon acute exposure to MA, levels of p53-DNA binding increased leading to higher rates of apoptosis (neurotoxicity). p53-knockout mice showed a highly attenuated response to MA-induced dopaminergic cell damage ^{27, 28}. These findings suggest that oxidative stress due to exposure to MA leads to p53-DNA binding and subsequent activation of the downstream apoptotic pathway, contributing to MA-induced neurotoxicity ²⁸.

Long-term MA abuse has been linked with impaired impulse control, trouble with attention, working memory, and decision making ²⁹. Approximately 40% of all chronic MA users face global neuropsychological impairment ³⁰. Chronic users are also at a higher risk of developing Parkinson's disease ³¹. MA has also been shown to induce cell death through apoptosis by an increase in caspase-3 activity and Fas/FasL pathways ³².

MA users are at a higher risk of contracting HIV due to the inherent dangers of intravenous drug use and risky sexual practices. About 10-15% of HIV-1 patients report a history of MA use ²⁹. The combination of MA use and HIV-1 infection leads to alterations in dopaminergic neuron functioning via mechanisms which are poorly understood. It is believed *Tat* protein released from infected cells may be involved ³³. *Tat* can lead to an increase in reactive oxygen species (ROS) and hence, oxidative damage. Along with MA-induced hyperthermia, *Tat* significantly increases that metabolic stress on neurons and is highly toxic. The presence of *Tat* and MA in animal models shows a substantial rise in DNA binding activity of redox-activated transcription factors such as NF-κB, CREB, and AP-1 ²⁹.

Effect of Methamphetamines on the Ubiquitin-Proteasome Pathway

Proteins in a cell are constantly in a dynamic state, with a degradation, referred to as the protein turnover, and several pathways are involved in this. It plays an important role in maintaining homeostasis in a cell and the pathways participating in this are highly regulated and complex to ensure that the proteolytic processes are selective ³⁴.

Ubiquitin-mediated proteolysis is ATP-dependent and a highly specific process. It consists of three enzymes- E1 which has Ubiquitin activating activity, E2 the Ubiquitin-conjugating enzyme, and E3 the Ubiquitin protein ligase. These three enzymes work together to create a Ubiquitin tail on a protein marked for destruction. Once marked, the protein to be degraded is recognized by the 19S (regulatory) subunit of the 26S proteasome complex. This proteasome complex also consists of a 20S subunit which is known as the 'core particle' and houses the active sites of the proteasome in a barrel-shaped structure ³⁴.

The 19S subunit binds to the poly-ubiquitin chain, unfolds the substrate, and removes the ubiquitin before introducing the substrate into the 20S core particle. Chymotrypsin-like, trypsin- like, and caspase-like proteases inside the 20S core particle act upon the unfolded substrate and cleave it into short peptides ³⁶. UPP has been seen to operate both at pre-synaptic and post-synaptic sites to degrade several proteins associated with neurotransmission. In this way, UPP acts as a key synaptic plasticity modulator by regulating the magnitude and duration of neurotransmitter release at the pre-synaptic site ³⁶. At the post-synaptic site, it acts by tuning the activation of G-protein coupled neurotransmitter receptors (GPCR) and subsequent intracellular signalling events ³⁷.

This, in turn, leads to epigenetic and transcriptional events which provide a molecular basis for behavioural changes. Such events may lead to long-term, lasting behavioural changes that are independent of neurotoxicity and neurodegenerative disorders ³⁶.

MA-induced UPP inhibition is largely dependent on DA itself. The 26S Proteasome is observed to disassemble upon perfusion of DA in striatal slices, or in vivo administration of DA agonists. This gives a dose and time-dependent decrease in UPP activity ³⁸. The development of oxidative DA-derived by-products and the activation of non-canonical cascades due to abnormally intense stimulation of DA receptors on the post-synaptic neuron are possible explanations for this disassembly ^{36, 38}. Interestingly, acute inhibition of UPP mimics the mechanism of action of MA by increasing Tyrosine Hydroxylase levels (the rate-limiting enzyme in DA synthesis) and an early potentiation of DA release that happens alongside behavioural changes ³⁶. A loss of DA synaptic potency and striatal depletion of DA stores is seen due to chronic UPP inhibition ³⁹. This feedback loop of DA hyperactivity and UPP inhibition likely fuels the accumulation of specific synaptic proteins which boost DA release and promote UPP inhibition. This was supported by several studies which showed a rapid strengthening of DA neurotransmission post-UPP dysfunction ⁴⁰. Upon in vivo administration of MA, an alteration of gene expression and protein levels of synaptic vesicles (SV) associated components is observed. This is true for a family of proteins, Soluble N-

ethylmaleimide-sensitive factor attachment protein receptor (SNARE) complex proteins, and SNARE accessory proteins like Rab interacting molecule (RIM-1), Munc 13-1, and Munc 18. The SNARE complex interacts with calcium ion channels which trigger exocytosis of the SV once it is assembled ³⁶. Upon application of DA to striatal slices, it produced a 400% increase in SNARE complex assembly which can be reversed by DA antagonists ³⁵. Schizophrenia is associated with an alteration in these proteins, further increasing the similarities between MA addiction and Schizophrenia ⁴¹.

An important function of the UPP is to generate small peptides (8-10 amino acids in length) by the degradation of self-antigens (intracellular proteins). These protein fragments are then transported into the Endoplasmic Reticulum (ER) by the TAP1/TAP2 transporter system. They are then subsequently transported to the cell surface attached to an MHC class I molecule. This enables the presentation of these peptides to the cytotoxic T lymphocytes (TC cells). This is an integral part of our body's cell-mediated immunity. If a peptide displayed is foreign to our immune system, TC cells immediately eliminate the presenting cell ^{34, 42}.

Since all nucleated cells are under constant surveillance by the cytotoxic T lymphocytes, many cancerous cells are identified and nascent tumours successfully eliminated ⁴³. In contrast, upon exposure to MA, a disruption of UPP is observed. This may translate to faulty antigen presentation via MHC class I molecules and may help cancerous/virus-infected cells avoid detection. There are no studies presently exploring this link and more work must be conducted to find a concrete correlation between MA abuse and faulty MHC class I expression.

Effect of Methamphetamines on the Immune system

Chronic MA use leads to the damage of physical barriers due to a delusion of parasitosis or formication. Patients complain about being bitten by bugs which leads to constant skin picking ⁴⁴. This combined with poor hygiene can lead to various infections which include abscesses from methicillin-resistant *Staphylococcus aureus* (MRSA). Treatment with Dopamine agonists has been shown to alleviate this condition ².

Tallóczy et al. in 2008 showed that MA directly suppresses the murine immune system by altering the efficacy of dendritic cells, macrophages, and antigen presentation to T cells. It is thought that the collapsing of pH gradient (across acidic organelles such as lysosomes and autophagic organelles) due to the weakly basic nature of MA causes this suppression. A similar suppressive effect in humans would render the user

more prone to develop viral as well as bacterial diseases and is thought to contribute to the rapid progression of HIV in MA users ^{6, 45}. A similar immunosuppressive action is seen for chloroquine which is a known endosomal acidification inhibitor ⁴⁶.

It has been shown that in mice treated with MA an increased expression of IL-1 β , a pro-inflammatory cytokine, is seen for up to 21 days post-exposure ⁴⁷. Cell activation in astrocytes due to MA increases secretion of inflammatory cytokines IL-6 and IL-8 along with an increased expression of chemokines and chemokine receptors (CXCR4 and CCR5). This secretion of IL-6 and IL-8 also leads to myelin degradation in mice ⁴⁸. MA use has also been linked to an increase in the number of adhesion molecules. These pro-inflammatory molecules have been linked in damaging neurons and possibly serve to prolong and exacerbate the neurobiological symptoms, both acute and chronic ^{49, 50}.

MA has also been associated with reduced leukocyte proliferation ⁵¹, reduced immunoglobulin production ⁵², and reduced macrophage and dendritic cell function ⁵². Surprisingly, natural killer cells (NK cells) show increased levels of activation post-exposure. MA has also been shown to promote apoptosis in thymic and spleen cells as well as in cultured T-cells ⁵³.

Harms et al. in 2012 also showed that MA use leads to a decline in the number of activated/antigen-experienced CD4 and CD8 T-cells. Although their study didn't investigate the thymus. Iwasa et al. showed that MA accumulates within thymic tissue and increases the proportion of apoptotic cells in the thymus. In et al., 'Methamphetamine Administration Produces Immunomodulation in Mice' showed that an increase in the number of CD4 T cells was observed along with a decrease in CD8 and Double Positive (DP) T cells post-MA-exposure. They also observed a reduction in thymic weight. These findings suggest that MA severely limits the ability of the immune system to respond to pathogens leading to exacerbated infections and diseases ⁵³.

Neurobiology of Behavioural Addictions

Research has suggested that neural circuits in the CNS involved in the reward pathway get rewritten due to the development of an addiction. Mesolimbic dopaminergic projections from the ventral tegmental area to the nucleus accumbens have been particularly implicated. Levels of dopamine have been shown to increase in the nucleus accumbens while performing certain behaviours (sexual acts, gambling, etc.) similar to what is observed when drugs are administered. Behavioural addiction, like substance addiction, is associated with the development of a reward deficiency involving the dopaminergic pathways discussed above ⁵.

Patients suffering from Internet Addiction showed lower striatal dopamine receptor levels compared to the control population in a PET study ⁵⁵. Another imaging study found higher volumes of dopamine in the left ventral striatum of frequent players ⁵⁶. Ko, Liu, et al. in 2009 performed an fMRI study of addicted gamers and found that gaming-associated cues elicited activation of the right orbitofrontal cortex, right nucleus accumbens, right dorsolateral prefrontal cortex, and right caudate nucleus. This was not seen in the control group. These findings suggest that similar neurobiological mechanisms underlie substance as well as behavioural disorders ⁵.

Like substance addictions, behavioural addictions are also thought to run in families, with genes and early life experiences being important mediators. Two genetic polymorphisms in dopamine genes have been identified to be more frequently associated with adolescents addicted to the internet ⁵⁸. These adolescents were also found to be more likely to possess faulty serotonin transfer genes as a study conducted in South Korea shows ⁵⁹.

The Physiological Impact of Behavioural Addictions

Behavioural addictions, Internet Addiction, in particular, have been identified in causing various problems. One study reported that individuals suffering from Internet addiction have a poor diet and an irresponsible dietary attitude leading to stunted growth and development ⁶⁰. Internet addiction has also been linked with other addictive behaviours such as smoking and alcohol abuse ⁶¹. In the long run, Internet addiction can lead to various health problems such as repetitive strain injury, backache, deep vein thrombosis, pulmonary embolus, obesity, lack of energy and even a weakened immune system due to their sedentary lifestyle and a general sense of apathy ⁶².

The specific Neurobiological mechanisms underlying behavioural addictions aren't well studied and need to be elucidated further. The similarity between behavioural and substance addictions is that they both show a rise in dopamine levels suggesting dysfunction of UPP may occur in the case of behavioural addictions. This may be a possible explanation for the impaired immune response observed by Cao et al. but biochemical analyses must be conducted to investigate this.

Conclusion and Prospects

MA is a highly addictive psychostimulant drug that acts on the nervous system to cause a release of monoamines and subsequent neurotoxicity. This excessive release of monoamines and loss of receptors leads to anhedonia where the user is unable to experience pleasure and compulsively seeks the drug to

stimulate the reward pathways ². Numerous mechanisms have been established that contribute to MA-linked Neurotoxicity, such as excessive DA production, production of RNS and ROS, apoptosis due to p53 and UPP dysfunction ²⁹.

There are various immune consequences as well associated to MA-abuse which are in part caused by the UPP dysfunction which is a higher prevalence of HIV, MRSA infections and other infections ^{6, 53}. A possible result of this dysfunction could be a higher prevalence of cancer and viral infections due to faulty MHC class I presentation to T cells, but studies must be conducted to prove this.

Behavioural addictions too have been shown to act in similar ways like substance abuse, causing an increase in dopamine levels which may lead to MA-like compulsive seeking behaviour. Immune system disruption is seen in these cases as well and may be linked to excess production of dopamine which causes UPP dysfunction. Research in the Neurobiology of behavioural addictions are lacking and analyses must be conducted to elucidate the link between the mechanisms of excessive dopamine release and the disruption of the Immune system.

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Analysis of free radical scavenging activity of the aqueous and alcoholic extracts of *Ceiba pentandra* and *Terminalia chebula*: A comparative study

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ABSTRACT

The objective of the study was to evaluate the free radical scavenging activity and Total Phenol Content of the bud of *Ceiba pentandra* and the fruit of *Terminalia chebula* in alcoholic and aqueous medium. DPPH assay was used to measure the free radical scavenging activity and the corresponding IC₅₀ values were calculated. *C.pentandra* showed IC₅₀ of 0.8563±0.0085 mg/mL in aqueous medium and 24.00±38.52 mg/mL in alcoholic medium, whereas the IC₅₀ of *T.chebula* was found to be 0.0404±0.0073 mg/mL and 0.0653±0.0187 mg/mL in aqueous and alcoholic medium respectively. Both the plants showed significant antioxidant activity in aqueous medium comparable to the standards Butylated Hydroxy Toluene (BHT) and Gallic acid. Total Phenolic Content (TPC) was measured using Folin-Ciocalteu reagent and expressed as Gallic Acid Equivalent. TPC of *C.petandra* in ethanolic and aqueous medium was found to be 0.509±0.0268mg GAE/g and 0.689±0.0620mg GAE/g respectively, whereas for *T.chebula* it was found to be 0.738±0.0132mg GAE/g and 0.807±0.0120mg GAE/g. There was a linear co-relation between percentage scavenging by DPPH and concentration of the extract and the Total Phenol Content signifying the contribution of phenols towards antioxidant activity.

Keywords: Antioxidants, Total Phenol Content, traditional medicine

1. INTRODUCTION

Traditional systems of medicine like Ayurveda, Unani and Sowa Riga have gained popularity as an alternate source of medicine over the last few decades owing to the fewer side effects they may cause as compared to modern medicine. Plants play an important role in these systems of medicine as they provide an abundance of human bioactive compounds like vitamin C, carotenoids, phyloquinone, tocopherols and many phenolic compounds.¹ Plant based medicines are also an important resource for the discovery of modern drugs.² The high antioxidant content in many plants contribute to their high therapeutic value.³ Antioxidants help the body to protect itself against damage caused by various reactive oxygen species. Reactive oxygen species are a key factor in the development of various ailments such as arthritis, asthma, dementia, carcinoma and Parkinson's disease. In the body they react with various biomolecules like proteins, lipids and deoxyribonucleic acids resulting in damage to the body. Antioxidants may act by intercepting singlet oxygen, preventing first chain initiation by scavenging initial radicals and decomposing primary products to non-radical compounds. Thus, antioxidants are free radical scavengers that protect the body against degenerative diseases. Natural antioxidants from dietary sources include phenolic and polyphenolic compounds, vitamins, enzymes and carotenoids. Plants provide a rich source of natural antioxidants like vitamin C, carotenoids and phenolic compounds which play an important role in maintaining the well-being of the human body.⁴ It is evident from studies that there is an inverse relationship between the dietary intake of antioxidant-rich foods and the incidence of a number of human diseases which have prompted researchers to study the antioxidant activity of various plants.⁵

In the present study, the free radical scavenging activity and Total Phenol Content of the plants *Ceiba pentandra* and *Terminalia chebula* has been investigated in order to obtain more information about their antioxidant activity.

Ceiba pentandra is tall deciduous tree which has short and sharp prickles along the trunk and along the branches. It is commonly found in western and southern India. The buds of *Ceiba pentandra* are known as Kapok Buds or Marathi Moggu. The buds are highly aromatic and commonly used as a spice. Marathi Moggu is also used in treating diarrhoea, curing wounds, ulcers, skin diseases, haemorrhoids, urinary calculus, cystitis, inflammations and infections of the respiratory tract. It is rich in antioxidants and is also used as an anti-diabetic.^{6,7} It also shows astringent and antispasmodic properties.⁸ It has anti-inflammatory properties and is used in the treatment of asthma.⁹

Terminalia chebula is short tree found all over India. *Terminalia chebula* is the key ingredient in the Ayurvedic formulation Triphala which is used for kidney and liver dysfunctions. The dried fruit is used

in Ayurveda as a purported antitussive, cardiogenic, diuretic as well as a laxative and also often used as a household remedy for various ailments.^{10, 11} The fruit is also known to have high antioxidant content.¹²

2. MATERIALS AND METHODS

2.1 Collection of samples

The samples for the study i.e., the bud of *Ceiba pentandra* and fruit of *Terminalia chebula* were obtained from the local market in Mumbai. The samples were first washed thoroughly with distilled water and air dried. The samples were then ground individually using a mechanical grinder and then sieved to obtain a powder with uniform particle size. The powder was then stored in airtight containers.

2.2 Chemicals

All chemicals and reagents viz. DPPH [2,2-diphenyl-1-picrylhydrazyl], BHT (tertbutyl-4-hydroxy toluene), Folin-Ciocalteu reagent, gallic acid and sodium carbonate were procured from S.D. Fine Chemicals. All solvents used were of analytical grade.

2.3 Preparation of extracts

500mg of the sample was taken in 10mL of appropriate solvent to prepare the ethanolic (Et.) and aqueous (Aq.) extracts of the plant samples. The solution was kept on the rotatory shaker for 60 minutes and then filtered through Whatman filter paper no. 41. The final volume was made to 25mL using the same solvent and labelled for further study.

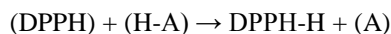
2.4 Preparation of DPPH

DPPH (2,2-diphenyl-1-picrylhydrazyl) solution was prepared by dissolving 48mg of DPPH in 250mL of ethanol.

2.5 Antioxidant Assays

2.5.1 DPPH assay (Free radical scavenging capacity)

DPPH assay was used to assess the free radical scavenging capacity of different extracts. The scavenging reaction between (DPPH) and an antioxidant (HA) is given by:



DPPH is reduced to DPPH-H which is visible by the degree of discoloration because of the interaction with an antioxidant. The discoloration causes a decrease in the absorption of the DPPH solution which is then measured spectrophotometrically. 1 mL of DPPH reagent was added to different concentrations of the plant extracts and the final volume was made up to 4 mL with distilled water. The tubes containing the reaction mixture were kept in the dark at room temperature for 30 minutes. After 30 minutes, the absorbance of the mixture was measured at 530nm using distilled water as a blank. Gallic acid (100mg/25mL) and Butylated Hydroxy Toluene (100mg/25mL) were used as standards. Percentage scavenging activity was calculated by using the following formula.¹³

$$\% \text{Radical Scavenging Activity} = \frac{(\text{Absorbance of control} - \text{Absorbance of sample}) \times 100}{\text{Absorbance of control}}$$

The relationship between percentage scavenging and equivalent sample concentration was plotted to determine the half-inhibitory concentration (IC₅₀) value of each sample.¹⁵

2.5.2 Quantification of phenols by Folin-Ciocalteu assay

The Total Phenol Content was determined spectrophotometrically according to the Folin-Ciocalteu method using Gallic acid as a standard. Different aliquots of Gallic acid (0.025-2 mL) as well as the sample were added to the test tubes containing 1.0 mL of Folin-Ciocalteu reagent. After 3 minutes, aqueous sodium carbonate (10mL, 1M) was added to each tube and the volume was made up to 16 mL. The tubes were mixed thoroughly and allowed to stand at room temperature for 30 minutes. Absorbance of the resultant solution was measured at 550 nm. The Total Phenol Content was expressed as Gallic Acid Equivalent per gram of dry sample (mg GAE/g).

All determinations were performed in triplicates. The results obtained were presented as mean \pm S.D.

3 RESULTS AND DISCUSSIONS

3.1 Radical scavenging activity by DPPH assay

DPPH is a stable organic free radical, which loses its absorption spectrum band at 515–528 nm when it accepts an electron or a free radical species.¹⁴ The discoloration of the DPPH reagent indicates the scavenging potential of the extracts in terms of the hydrogen donating ability. Both aqueous and alcoholic extracts of the plant samples showed significant scavenging activity. The scavenging activity was found to increase with increase in concentration of the sample (figures 1 to 8). The percentage scavenging was higher for the aqueous extracts than the alcoholic extracts of both plants and comparable to the percentage

scavenging activity of the standards. (figure 9). The IC_{50} values were calculated for all extracts. *Ceiba pentandra* showed IC_{50} of 0.8563 ± 0.0085 mg/mL in aqueous extract and 24.00 ± 38.52 mg/mL in alcoholic extract, whereas the IC_{50} of *Terminalia chebula* was found to be 0.0404 ± 0.0073 mg/mL and 0.0653 ± 0.0187 mg/mL in aqueous and alcoholic extracts respectively (table 1).

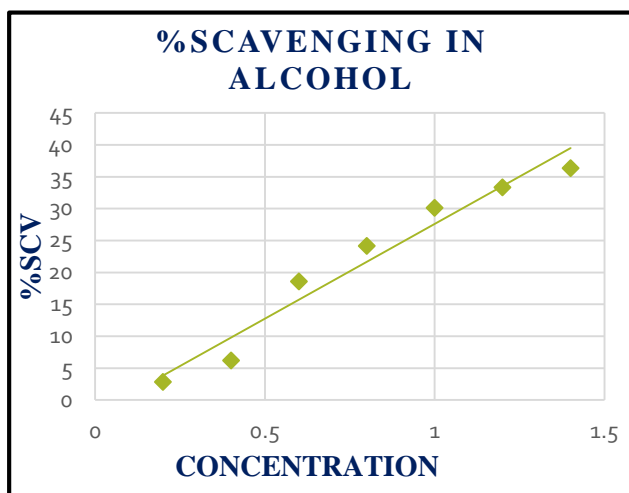


Figure 1

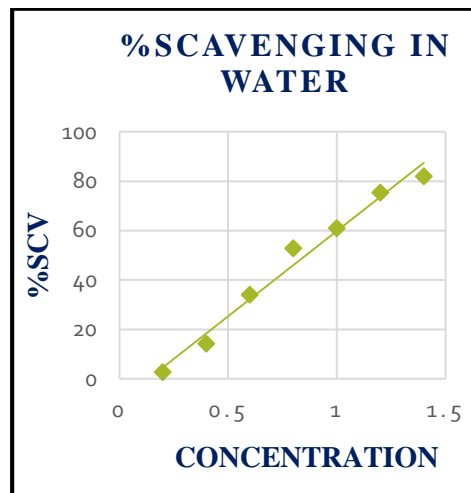


Figure 2

Figure 1&2: % scavenging activity of *Ceiba pentandra* in aqueous and alcoholic medium.

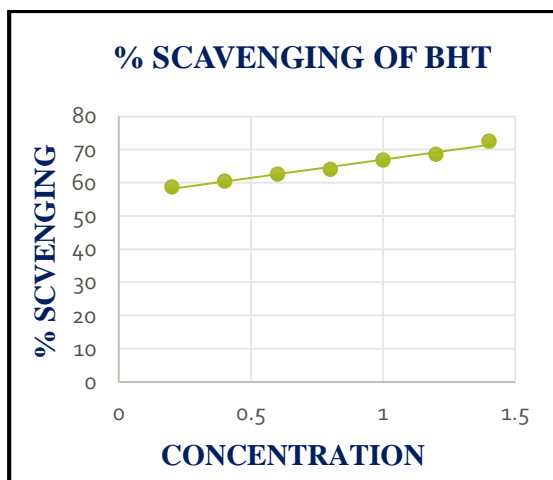


Figure 3

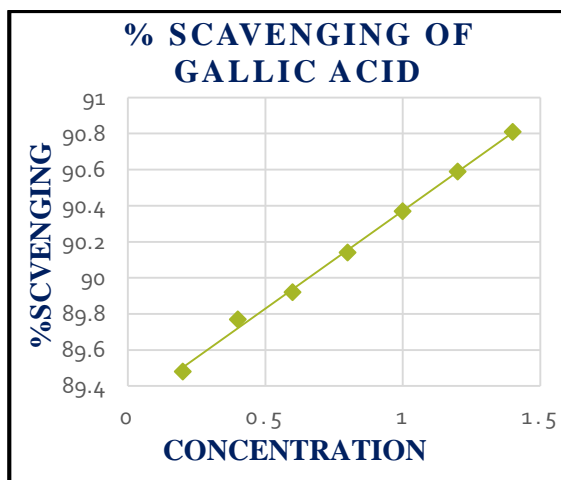


Figure 4

Figure 3&4: % scavenging activity of BHT and Gallic acid

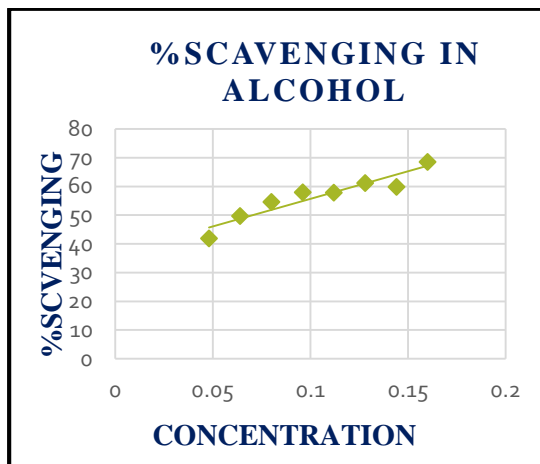


Figure 5

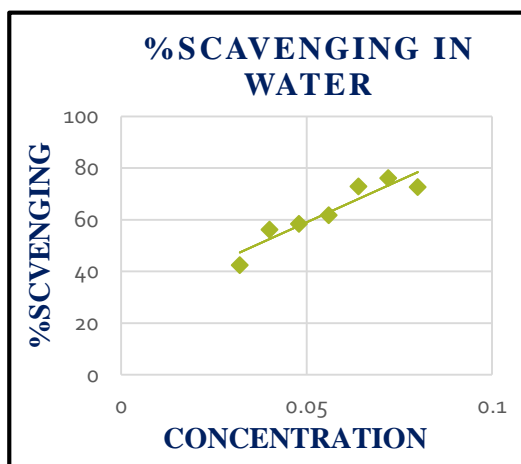


Figure 6

Figure 5&6: % Scavenging of *Terminalia chebula* in alcoholic and aqueous medium.

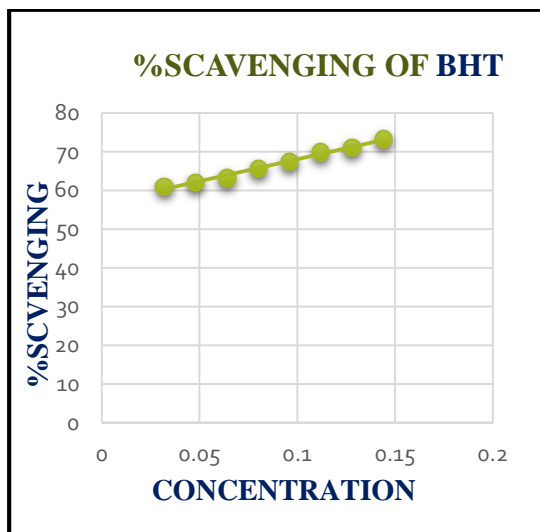


Figure 7

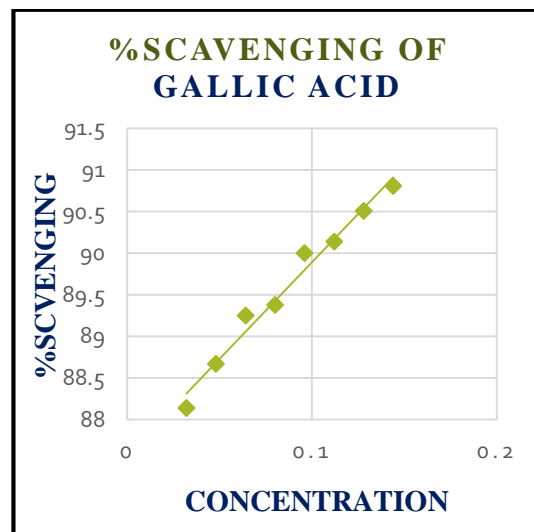


Figure 8

Figure 7&8: % scavenging activity of BHT and Gallic acid

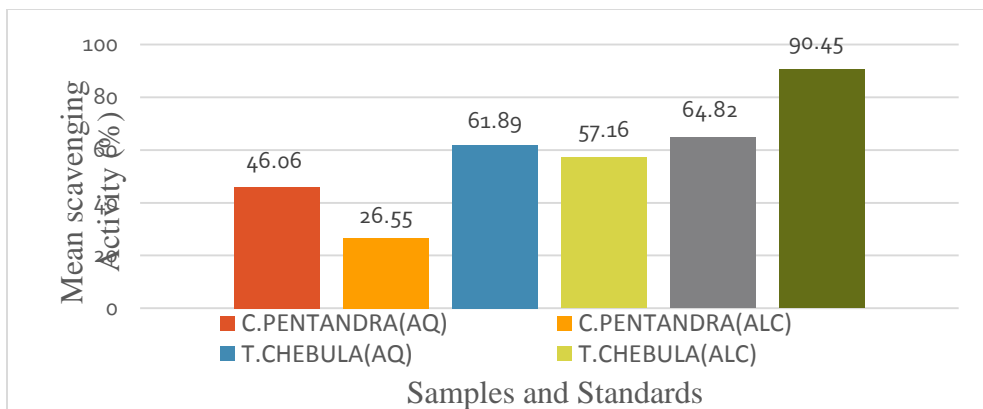


Figure 9 – Mean DPPH Radical Scavenging Activity

EXTRACT	DPPH IC ₅₀ values (mg/mL)
<i>Ceiba pentandra</i> (Aqueous)	0.8563±0.0085
<i>Ceiba pentandra</i> (Alcoholic)	24.00±38.52
<i>Terminalia chebula</i> (Aqueous)	0.0404±0.0073
<i>Terminalia chebula</i> (Alcoholic)	0.0653±0.0187

Table1: IC₅₀ values of *Ceiba pentandra* and *Terminalia chebula*

3.2 Quantifications of phenols by Folin-Ciocalteu assay

The Total Phenol Content of the ethanolic extract of *Ceiba pentandra* was found to be 0.509±0.0268 mg GAE/g and that of the aqueous extract was 0.689±0.0620 mg GAE/g. The ethanolic extract of *Terminalia chebula* had a TPC of 0.738±0.0132 mg GAE/g whereas for the aqueous extract it was 0.807±0.0120 mg GAE/g. (table 2)

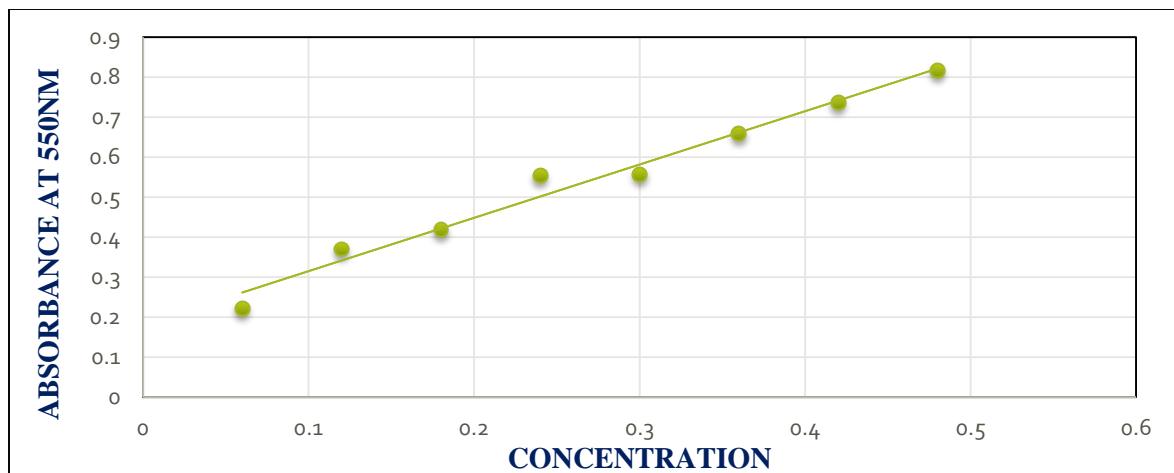


Figure 10-Total Phenol Content of *Ceiba pentandra* and *Terminalia chebula*

SAMPLES	TOTAL PHENOLIC CONTENT (mg GAE/g)
Ethanollic <i>C.pentandra</i>	0.509±0.0268
Aqueous <i>C.pentandra</i>	0.689±0.0620
Ethanollic <i>T.chebula</i>	0.738±0.0132
Aqueous <i>T.chebula</i>	0.807±0.0120

Table 2: Total Phenol Content of *C.pentandra* and *T.chebula*.

4 CONCLUSION

The results obtained shows that both the samples possessed significant antioxidant properties which were comparable to that of the standards. The aqueous extracts of the samples showed more antioxidant activity than that of ethanolic extracts. It was observed that *Terminalia chebula* showed high percentage scavenging even at low concentrations and had the minimum IC₅₀. There was a linear co-relation between percentage scavenging by DPPH and concentration of the extract and between the Total Phenol Content and the antioxidant activity of the plants signifying the contribution of phenols towards antioxidant activity. The results obtained will be helpful to researchers investigating the therapeutic value of these plants. The study also indicates spices as being potential sources of natural antioxidants and supports their use in traditional medicine.

End Notes

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FOOD, MOOD, AND COVID - 19

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ABSTRACT

The research aims at understanding the nature of the interaction between food and mood and thereby implying it to different responses in the mood concerning different food stimuli. A better understanding of this interaction also helps in taking preventive measures against contracting certain diseases and also helps to curb the worsening of the already existing symptoms. Statistical data collected from people belonging to various walks of life, supported by the experimental evaluations prove the deeply interlinked nature of food and mood. Further exploration on how certain food elements induces varied stimuli in mood and an individual's performance, in the long run, helps in the treatment of various mood disorders, psychological disturbances, and also physiological diseases¹. Appropriate manipulations on either of the two elements – 'food' or 'mood', results in the desired outcomes. An extended study on Binge – Eating/stress - eating in the pandemic year and the outcome of stress on undergraduate students and professors of Mumbai is highlighted in this research study.

Key words: *chocolate, mood, depression, diet, carbohydrate, menstrual, COVID – 19.*

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INTRODUCTION

Some varied factors like culture, economic status, price, availability of food are known to influence the choice of food in an individual. But the mood is another major factor that influences the food demand under different conditions.

The mood is recognized as one of the major factors defining an individual's well-being. The amygdala plays an important role in changes in emotion and mood for different food-stuffs. It is very important to understand the immense potential of proper food intake that can regulate one's mood. A direct relationship is found with the immune system of the human body, which leads to improved resistance to various illnesses including both physical and mental well-being. This further leads to the idea of a lifestyle reshaping, and the need for a carefully designed dietary plan coupled with the conventional treatment and medication. For enhanced outcomes in the treatment of many diseases, food and mood are deeply interlinked as research states.

Moreover, a happy mind and emotional stability can be achieved by eating the right food at the right time which eventually results in increased immunity which helps mitigate diseases in a much more effective manner. Required changes in food intake also have a positive effect on an individual's cognition, attention, learning, and even memory to a certain extent.²

Understanding how different food elements induces different emotions helps in avoiding certain undesirable changes in mood. Certain mental disorders like depression can be curbed or dealt with to a great extent if the type of food intake is properly regulated. This approach of dealing with illness not only reduces the side effects of drugs and medicines but also cuts down on the cost factor in treating a disease.

Good mood refers to the overall feel-good factor, positive energy, better attention, enhanced memory retention, a night of sound sleep, and improvement in the physical and mental well-being of an individual. As against this, a bad mood refers to the chemical imbalance in the human body thereby causing a negative shift in mood affecting the overall performance, both physically and mentally.

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NUTRITION AND MOOD REGULATION

Different food materials are proved to stimulate the synthesis of various chemicals in the body which in turn is crucial in determining the mood of the individual before and after the consumption. Nutrients present in the food were found to be the precursor of the neurotransmitters.³

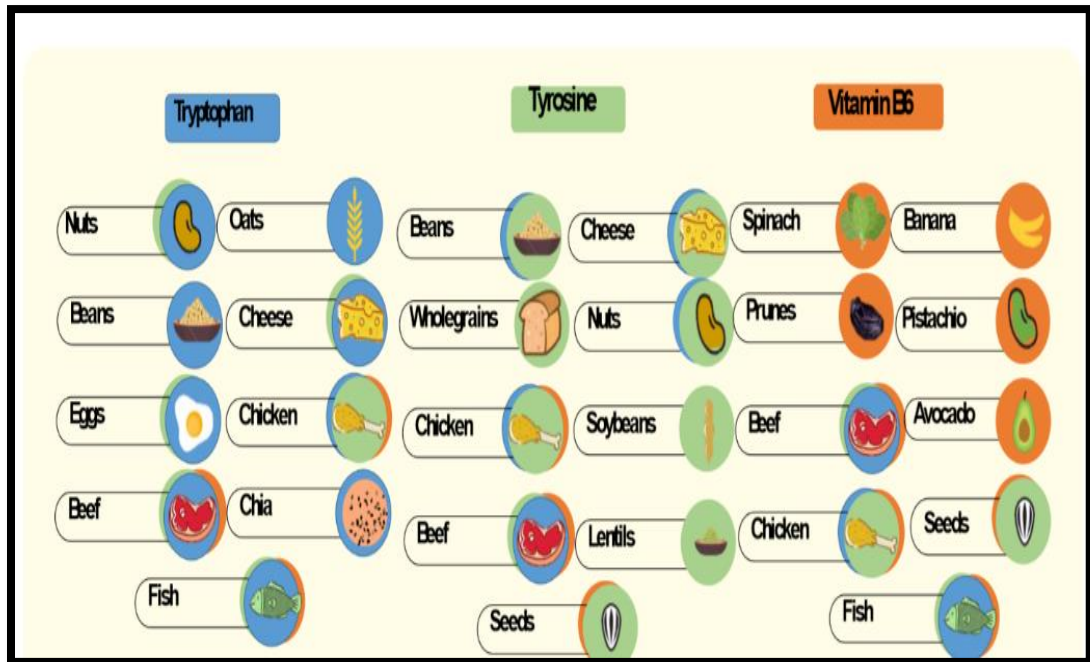


Figure 1: Presence of different monoamine transmitter precursor in various food items.ⁱⁱⁱ

1. AMINO ACIDS AND MOOD

Tyrosine acts as a precursor of catecholamine and dopamine and thus can relate to mood by reducing the effect of cold stress. Tryptophan is an amino acid that has the potential to affect neurotransmission in the brain by stimulating the synthesis of serotonin thereby leading to mood enhancement.⁴

³ Mervin Chavez-Castillo, Maria Sofia Martinez, Victoria Nunez, Milagros Rojas, Valeria Gallo, Victor Lameda, Dexty Prieto, Manuel Valesco, Valmore Bermudez and Joselyn Rojas-Quintero. "Nutrition in Depression : The Way to Recovery." *EC Nutrition* (2017): 102-108. Review Article.

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2. CARBOHYDRATES AND MOOD

Individuals prefer to eat meals with high carbohydrates to improve mood. Increased uptake of glucose levels is believed to increase the synthesis of the neurotransmitter namely acetylcholine⁵. Experimental data has concluded that a significant proportion of people prefer to consume sugary snacks when they feel low. This helps to conclude that experimental meals with a specifically higher proportion of carbohydrate in it are believed to enhance the mood in most cases.

Another mechanism discovered to enhance mood is presented by the experimental data wherein the people suffering from SAD - seasonal affective disorder showed an increased hunger for carbohydrates.

3. CARBOHYDRATES AND SEROTONIN

Serotonin is rightly attributed as the happy hormone and is scientifically named 5-hydroxytryptamine (5-HT). ⁶Increased carbohydrate consumption has led to an increase in the blood glucose level which plays an inevitable role in the release of insulin into the human bloodstream. It is a biologic action that enables the uptake of large neutral amino acids as in LNAA – tyrosine, valine, isoleucine, leucine, phenylalanine into the muscles through tryptophan is associated with albumin in the blood.

Thus, a meal rich in carbohydrates leads to an increase in the ratio of tryptophan to LNAA in the plasma which is an indicator of high higher levels of tryptophan being transported to the brain which in turn metabolizes to produce increased levels of serotonin in the body which in turn plays a crucial role in positively enhancing mood. This also helps to reason why people preferred a meal rich in carbohydrates to improve their mood. Also, a long term effect of higher sugar intake showed an increase in anger when subjects were provided with breakfast rich in protein and carbohydrate levels.⁷

4. PROTEIN AND MOOD

An experimental meal with very less or no protein content has proved to decrease anger, confusion, and depression when consumed. Highly protein-rich food items like turkey breast were experimentally shown to induce a negative shift in mood in the participants. Moreover, a protein-rich diet is proven to make an

⁵ Mc Nay EC, Fries TM, Gold PE. "Decreases in rat extracellular hippocampal glucose concentration associated with cognitive demand during a spatial task. ." *Proc Natl Acad Sci USA* (2000): 97:2881–2885.

⁶ David Benton, Samantha Nabb. "Carbohydrate, Memory, and Mood." *Nutrition Reviews* 61 (2003): S61-S67.

⁷ Angela Jacques, Selena Bartlett. "The impact of sugar consumption on stress driven, emotional and addictive behaviors." *Neuroscience and Biobehavioral Reviews*. 103 (2019): 178-199.

individual feel less energetic. A low carbohydrate ketogenic diet proved to be crucial in weight loss and was found to be associated with mood enhancement.⁸

5. LIPIDS AND MOOD

Unsaturated fatty acids including omega -6 and omega-3 are essential for the human body as it serves the function of building the neuronal membranes.⁹ Ashley Miller concluded that flaxseed oil enables a better mood and brain functioning through his experimental studies.¹⁰ Sunflower seeds were also found to result in a relaxation effect and reduce tension, due to a large amount of vitamin E, magnesium, and tryptophan which enhances mood.¹¹

6. CAFFEINE AND MOOD

Participants showed a higher demand for caffeine when exposed to external stress and thereby an enhanced mood after the consumption. This also supports the fact that food and mood are closely inter-related to each other. Consumption of coffee has resulted in increased alertness in consumers but consumption regularly harms mood as the sleep-wake cycle is disturbed which further adds to the symptoms of depression.¹²

7. COMFORT FOOD

Comfort food refers to the food materials which relieve the mind on consumption and enhances the mood¹³.¹⁴ Comfort foods are also generally found to be appealing to the eyes and this brings the whole concept of food colours into existence.¹⁵

⁸ McClernon, F Joseph. "The effects of a low-carbohydrate ketogenic diet and a low-fat diet on mood, hunger, and other self-reported symptoms." *Obesity (Silver Spring)* (2007).

⁹ Rathod R, Khaire A, Kemse N, Kale A, Joshi S. "Maternal omega-3 fatty acid supplementation on vitamin B 12 rich diet improves brain omega 3 fatty acids, neurotrophins and cognition in the Wistar rat offspring." *Brain Dev* (2013).

¹⁰ Miller, Ashley. "Flax Oil for Mood and Brain Functions." (2018).

¹¹ Anjum Faqir, Nadeem Muhammad, Khan Muhammad, Hussain Shahzad. "Nutritional and therapeutic potential of sunflower seeds : A review." *British Food Journal* (2012).

¹² Smith AP, Kendrick A, Maben A, Salmon J. "Effects of breakfast and caffeine on cognitive performance mood and cardiovascular functioning." *Appetite*. (1994): 39-55.

¹³ Troisi, J. D., & Wright, J. W. C. *Comfort Food : Nourishing our collective stomachs and our collective minds*. Society for the teaching of psychology, 2016. Article.

¹⁴ Julie L. Locher, William C. Yoles, Donna Maurer, Jillian Van Ells. "Comfort Foods: An Exploratory Journey Into The Social and Emotional Significance of Food." *Food & Foodways* (2005).

¹⁵ N. Weltens, D. Zhao and L. Van Oudenhove. "Where is the comfort in comfort foods? Mechanisms linking fat signalling, reward, and emotion." (2014).

8. CHOCOLATE, COCOA AND MOOD PYRAMID

Researchers have linked associative disorders in human beings with increased cocoa consumption. Cocoa is preferred by many due to its positive effects on the cardiovascular system of the human body but interestingly it is also proven to show a positive shift concerning mood-causing depressive symptoms.¹⁶

Ibero-Baraibar et al. experimented on the subjects by giving them a cocoa extract containing 1.4 g of cocoa every day which in turn contained 140 mg theobromine, 414 mg flavanols given as catechin, 153 mg epicatechin, 645 mg polyphenols, 99 mg procyanidin B2, 13 mg procyanidin B1, and 134 mg oligomeric procyanidins. The experiment was carried on different groups labelled randomized, placebo-controlled, double-blind including people who were over-weight, under-weight, and also obese for four weeks.¹⁷

The results obtained from the study provide facts that the subjects showed a reduction in depressive symptoms to a very large extent. Increased levels of plasma HVA (3-methoxy-4-hydroxyphenyl acetic acid) were observed in these people which further concludes that cocoa is positively related to the mood as plasma HVA is linked with the central dopaminergic activity of the brain and thus helps in mood enhancement.¹⁸

¹⁶ Y Wong, S & Lua, Pei. "Chocolate: Food for moods." *Malaysian journal of nutrition*. (2011): 259-269.

¹⁷ Ibero-Baraibar, I., Perez-Cornago, A., Ramirez, M. J., Martínez, J. A., & Zulet, M. A. "An Increase in Plasma Homovanillic Acid with Cocoa Extract Consumption Is Associated with the Alleviation of Depressive Symptoms in Overweight or Obese Adults on an Energy Restricted Diet in a Randomized Control Trial." *The Journal of Nutrition* (2015): 897S-904S.

¹⁸ Tuenter E, Foubert, K., & Pieters, L. "Mood Components in Cocoa and Chocolate: The Mood Pyramid." *Plant Medica* (2018): 839-844.

The mood pyramid (fig. 2) proposed through this experiment gives a clear understanding of the different components of chocolate.

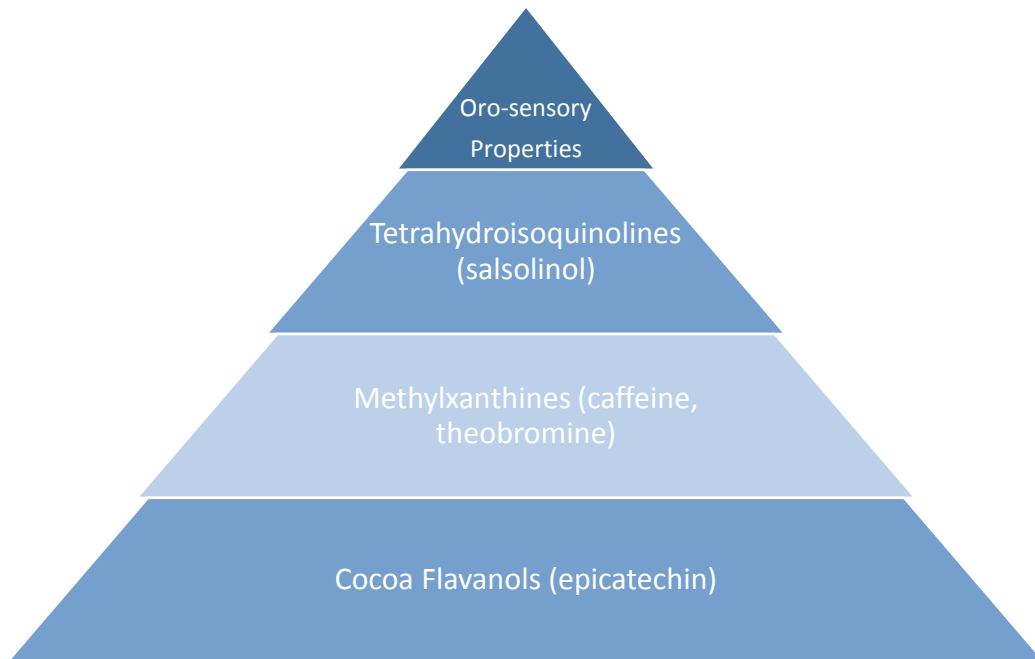


Figure 2: The mood pyramid. ²²

9. GREEN TEA AND MOOD

Green tea is believed to induce a feel-good factor in humans. The major constituent of green tea is L-theanine. It helps in enhancing the mood in an individual when consumed regularly as green tea stimulates the alpha brain waves. Due to which the beta waves considerably decrease, reducing tension and thereby enhancing mood. Green tea has been shown to reduce both cardiovascular diseases and also the diseases caused due to increased stressful lifestyle, due to its mood-enhancing properties. Tea has also helped in improved quality of sleep leading to mood enhancement.

10. ICE CREAM AND MOOD

Cold beverages and ice creams always led to a positive shift in mood under different environmental and emotional contexts¹⁹. Experiments concluded that ice creams led to an increase in the levels of the neurotransmitter namely tyrosine which in turn stimulates the levels of norepinephrine and dopamine causing a soothing effect.

¹⁹ Kate PE, Deshmukh GP, Datir RP, Jayraj Rao K. "Good mood foods." *Nutritional Health and Food Engineering* 7.4 (2017).

11. FOOD, MOOD AND THE MENSTRUAL CYCLE

The menstrual cycle provides an evidence base for the analysis of the interrelationship between food and mood.²⁰ The menstrual cycle is characterized by a series of changes in the levels of hormones produced in the body. The developing follicle produces increased levels of oestrogen. Peak levels of luteinizing hormone (LH) and follicle-stimulating hormone (FSH) in the body bring about ovulation.

In 1937, McCance was the first one to analyse and study physical and emotional periodicity in women. An increase in emotional instability, irritability, tendency to feel emotionally weak was found through analysis. These mood changes were observed to bring about different changes in food cravings and food preferences. Studies have revealed the linkage between food and mood to be predominantly significant in the luteal phase, characterized by greater food cravings and amount of food consumed, than in the follicular phase.²¹

Experimental pieces of evidence have found out that certain food intake has resulted in altering the negative shift in mood, experienced by a significant number of women. More cravings for chocolate were shown by many women during their menstrual cycle. This further brings about the topic of comfort eating and bad mood into validation.²²

Appetite is found to increase at the end of the menstrual cycle, especially increased uptake of carbohydrates was seen in women with PMS-‘pre-menstrual syndrome’.

12. AN EXPERIMENTAL APPROACH RELATING FOOD AND MOOD

A crowdsourcing experimental mobile game namely ‘FOODIE MOODIE’.²³ This mobile game collects data from its players about what kind of food they prefer to eat concerning different changes in the mood. It requires the players to edit their personal information, their food preferences, their suggestions, the shift in mood, and this data was further analysed to draw out the conclusions.

²⁰ McCance, R.A., Luff, M.C. and Widdowson, E.E. "Physical and Emotional Periodicity in Women." *Journal of Hygiene* Vol 37 (1937): 571-611.

²¹ Ira Trehub Cohen, Alison S. Fleming. "Food cravings, mood, and the menstrual cycle." *Hormones and Behavior* 21.4 (1987): 457-470.

²² Sommer. "Cognition and the Menstrual Cycle." *Richardson, JTESpringer Verlag* (1992).

²³ MennatAllah Nader ElSayed, Slim Abdennadher, Fatema Mohsen Gabr. "Foodie Moodie: A Crowdsourcing platform for Interrealting Food with Mood." *IEEE 6th International Conference on Serious Games and Applications for Health* (2018).

Two studies were carried out, one in Egypt, and the other was conducted in Germany. In Egypt, the students had their semester exams when the study was conducted. As against this, in Germany, the students underwent the experiment at the beginning of their semesters.



Figure 3: Response of the experimentation conducted. ²⁴

Sample 1 recorded a shift in mood preferentially opting for healthy food over non-healthy food. Signs of depression recorded also was to a larger extent.

Sample 2 preferred non-healthy food over healthy food and thereby recorded a happy mood.

BRIEF SUMMARY OF FOOD ELEMENTS AND MOOD

FOOD ELEMENT UNDERSTUDY.	INFLUENCE ON MOOD.	REFERENCES
Thiamine	Influences mood states & Cognitive functioning.	Benton et al., 1995, 19997; Benton and Donohoe, 1999
Folic acid	Deficiency in folic acid is associated with a depressed mood.	Coppen and Bolander-Gouaille, 2005; Young; 2007
Caffeine	Increased alertness followed by an anxious mental state. Also results in withdrawal symptoms via the cannabinoid CB1 receptor signalling pathway.	Rogers, 1995; Acquas et al., 2002; Rossi et al., 2010
Insulin	Related to a negative shift in mood, depression, and anxiety via insulin receptor signalling.	Gustatson et al., 1999, Chapman et al., 2013
Omega-3 fatty acids	Involved in mood disorders and associated with depression.	Lombard 2000; Young and Martin 2003; Gleason 2013; Grosso et al., 2014
Chocolate	A positive shift in mood via serotonin and cannabinoid receptors signalling.	Ottley, 2000; Osman and Sobal, 2006; Parker et al., 2006b; Cartwright et al., 2007; Fletcher et al., 2007
Dopamine	Associated with reward mechanism that stimulates a positive shift mood.	Schanze et al., 2008; Barim et al., 2009; Kumar et al., 2013
Serotonin	Linked to depression, anxiety, and food intake via serotonin receptor signalling pathway.	Wurtman and Wurtman, 1989; Benton and Donohoe, 1999; Shabbir et al., 2013
Tryptophan	Stimulates the synthesis of serotonin.	Dunne, Annette. "Food and mood: evidence for diet-related changes in mental health." <i>Nutrition</i> (2012).
Protein	This leads to an increase in sugar levels and thereby shows an increase in anger.	Angela Jacques, Selena Bartlett. "The impact of sugar consumption on stress-driven, emotional and

		addictive behaviors." <i>Neuroscience and Biobehavioral Reviews</i> . 103 (2019): 178-199.
Green Tea - (L-theanine)	Plays an important role in mood enhancement.	Einöther S.J.L., Rowson M., Ramaekers J.G. & Giesbrecht T., "Infusing pleasure: Mood effects of consumption of a single cup of tea." <i>Appetite</i> (2016). Manuscript.

Table 1: *Biological factors influencing Food and Mood.* (Minati, 2014)

The above table gives the relation between food and mood, which is essential in manipulating an individual's mood as per requirement. Interpreting the complex nature and interaction between food and mood guides one to prepare a diet plan. Suitable quantities of food rich in tyrosine and tryptophan should be included to control or prevent stress.

Mood enhancement is crucial and the deciding factor in food consumption. Manipulations in either of the two factors are found to induce changes in the body. Thus keenly moderated food-mood alteration is capable enough to control the neurotransmitter synthesis in the human body.

SURVEY STUDY

This study puts forward the exertion of the neurological symptoms associated with SARS- CoV-2 emphasizing majorly Food and moods encompassing depression and anxiety²⁴. The Stress Scale was accepted and validated in population samples from Mumbai. From 794 responses collected, some invalid and random responses were deleted and a total of 601 valid responses were analysed in this study. The participants were required to answer all the questions to forge ahead through the questionnaire. Out of the total participants that answered the questionnaire 58.7% were attempted by females while 41.3% were males, with a combined mean age of 44 years, the following results were obtained.

From the evaluated psychiatric symptoms frequency for all the respondents, following general areas, a higher proportion of the people (n= 501, 83%) logged in with excessive levels of stress, the high levels of

²⁴ Niazkar, H. R., Zibae, B., Nasimi, A., & Bahri, N. (2020). The neurological manifestations of COVID-19: a review article. *Neurological sciences : official journal of the Italian Neurological Society and of the Italian Society of Clinical Neurophysiology*, 41(7), 1667–1671. <https://doi.org/10.1007/s10072-020-04486-3>

anxiety were found in 73% (n=437) of the people, while 36% (n=216) of the respondents revealed that they suffered from depressive symptoms as can be seen in fig. 4.

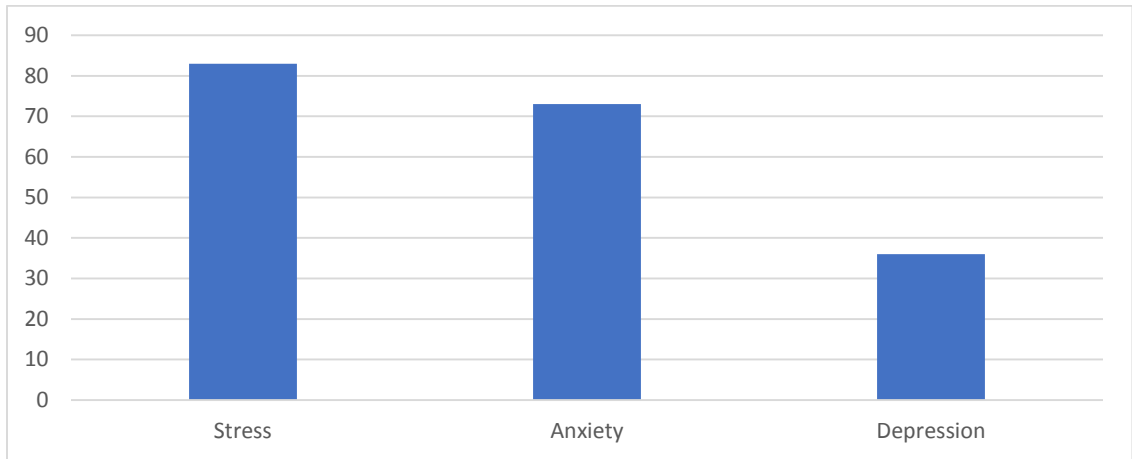


Figure 4: Percentage of the frequency of psychiatric symptoms among the communities.

Mass fear of Covid-19, termed as “Coronaphobia”, has engendered a surfeit of psychiatric manifestations across the different spheres of society.¹ The forced quarantine, nationwide lockdowns, and chances of being infected by SARS-CoV-2 can produce acute panic anxiety, obsessive behaviours, depression, and post-traumatic stress disorder (PTSD) in the long run.⁵

According to our study, some of the most common causes of stress to students, professionals and individuals of various walks of life included assignments and studies for students, work from home deadlines, health issues, finances, employment criteria, social media, and relations with significant relatives and friends. Fig. 5 shows the frequency of such stress causing factors amongst our population under study.

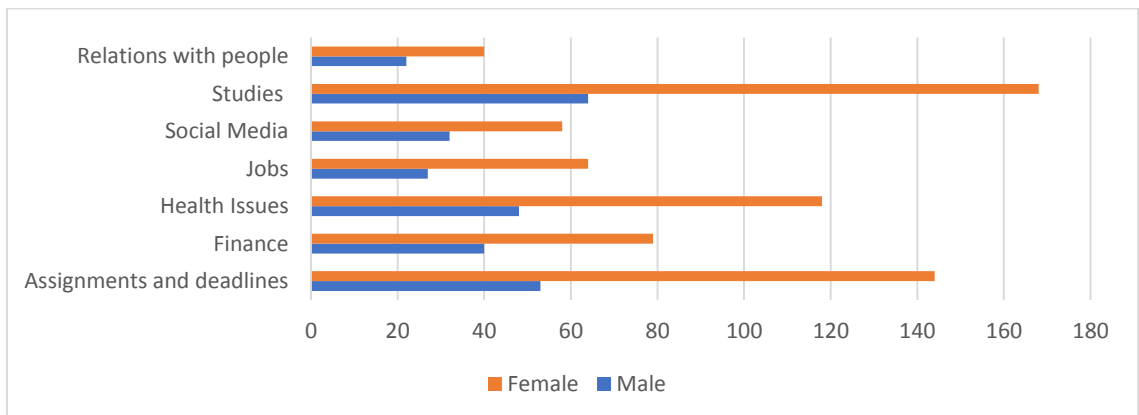


Figure 5: The frequency of stress causing factors among the population under study.

According to the survey reports people used various methods to mitigate their stress levels.

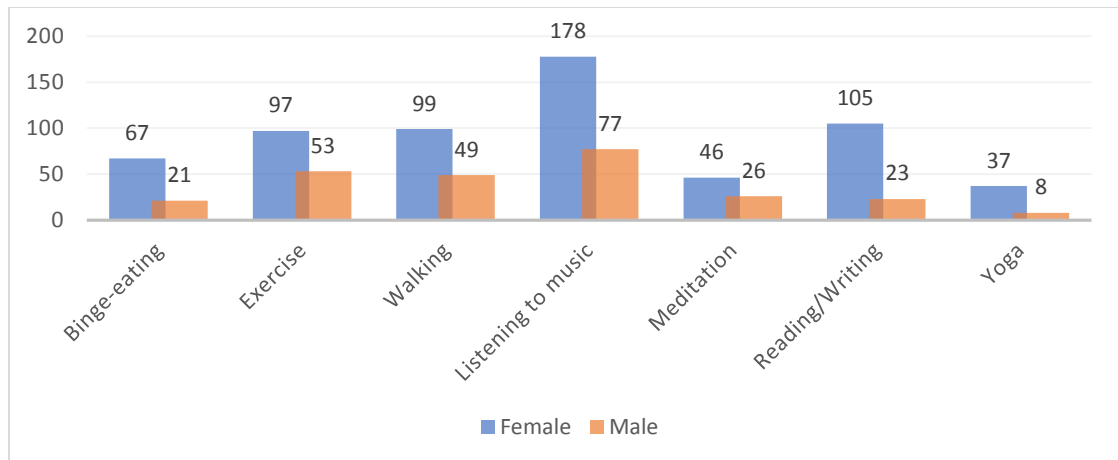


Figure 6: Frequency of methods opted to mitigate stress.

From the evaluated frequency (fig. 6) for mitigating the stress factors of all the respondents, the highest proportion of the population used music ($n = 255$; 42.43%). Meditation ($n = 72$; 11.98%) and Yoga ($n = 45$; 7.49%) were the least opted methods. Some of the key highlights in this study revolve around Exercise and Binge-eating methods to deal with the stressful year of 2020-21. Binge-eating ($n = 88$; 14.64%) showed that nearly one-sixth of the population of Mumbai used this method (a pie diagram highlighted in fig. 7 expresses the views of the individuals on a Likert Scale).

A survey questionnaire was drafted based on a five-point Likert scale to understand the usefulness of binge-eating and dealing with stress^{25,26,27}. As Likert Scale items have the inherent **advantage** of not expecting a simple yes / no answer from the respondent, but rather allow for degrees of opinion, and even no opinion at all. The format used for the questionnaire had 5 Likert items, and was scaled from 1 to 5 as follows:

1. Strongly agree
2. Agree
3. Neither agree nor disagree
4. Disagree
5. Strongly disagree

²⁵ Marazban S. Kotwal, Saima Khan and Abhilasha Jain. "Inverted Undergraduate Physical Chemistry Class: A Survey of Attitudes of Student Groups at Different Levels of Commitment towards Chemistry." *Xplore* 11.1 (2020): 80 -90.

²⁶ Bowling, A. 1997. *Research Methods in Health*. Buckingham: Open University Press. ISBN: 9780335206438.

²⁷ Burns, N., and Grove, S. K., 1997. *The Practice of Nursing Research Conduct, Critique, & Utilization*. Philadelphia: W.B. Saunders and Co.

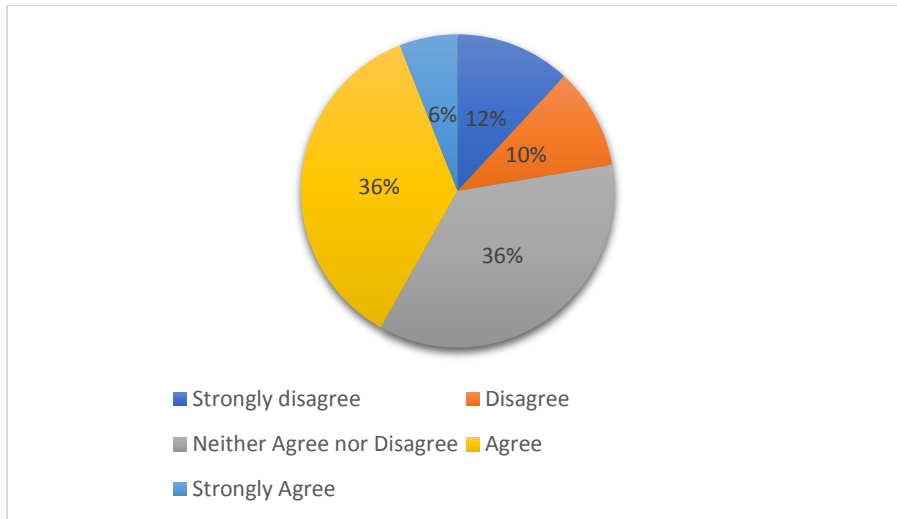


Figure 7: Percentage response to an agreement on the usefulness of binge-eating to deal with stress

The survey extends to understand the nature of foods consumed by various people, to understand the nutrient intake and balance with psychological implications.

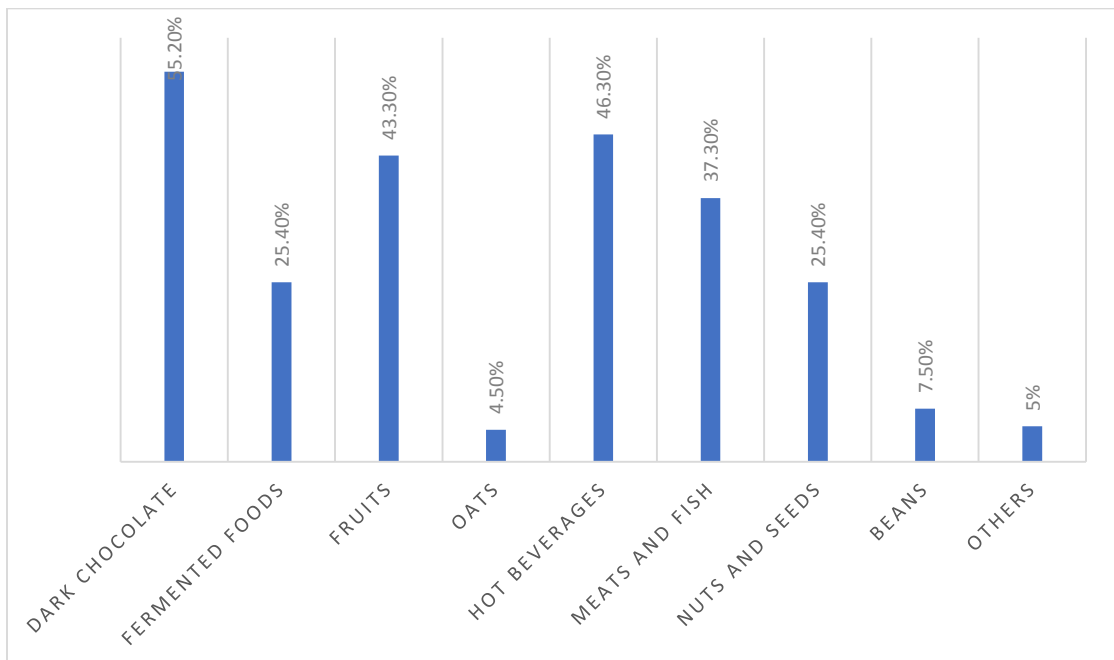


Figure 8: Percentage of food items consumed to deal with depression episodes

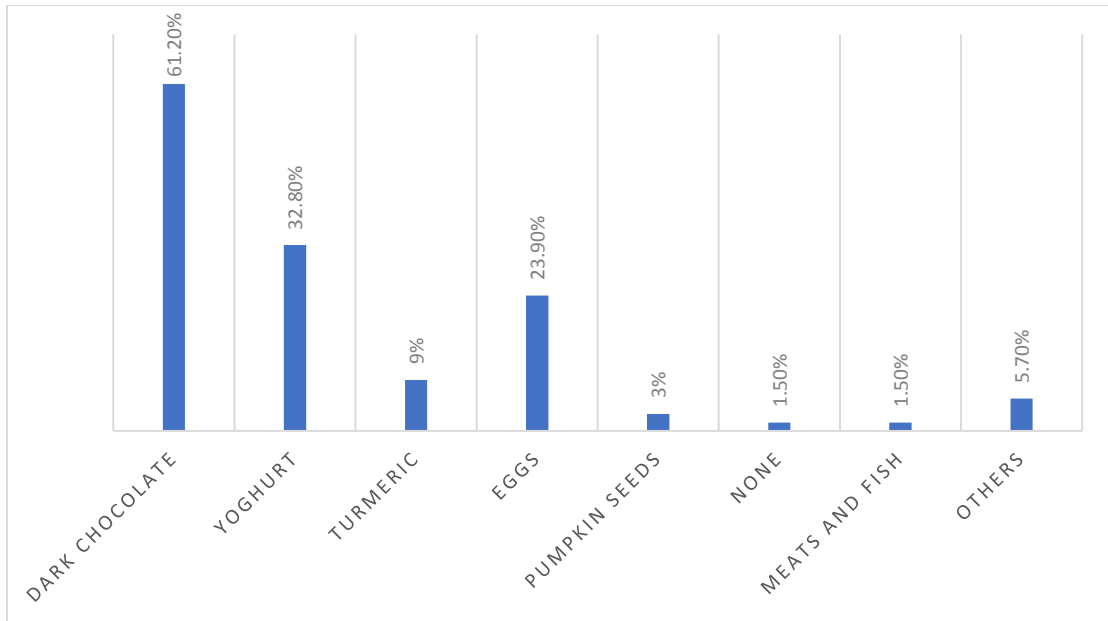


Figure 9: Percentage of food items consumed to deal with anxiety episodes

CONCLUSION OF THE STUDY

Following the results from fig. 8 and fig. 9, we see a heterogeneous and diverse array of results. We understand a bulk of Mumbai's population resorted to the consumption of dark chocolate to mitigate stress. It is only evident that from Table 1 (Biological factors influencing Food and Mood) the consumption of dark chocolate brings about a shift to a positive mood. In a world of anxious curiosity and uncertainty, chocolate was found to de-stress. According to both fig. 8 and fig. 9, others implied – fast foods, ice creams, Maggi, wafers and chips, and street food. It shows that a high proportion of Mumbai's population understands the negative influence of such nutrient-deficient foods on the body. It is only wise to understand the reason as shown observed in fig. 6, Exercise ($n = 150$; 24.95%) and Walking ($n=148$; 24.62%) show average values as a de-stressing factor. Fruits (43.40%) have also been on the high scale consumption, as it contains nutrients like vitamins A (beta-carotene), C (Ascorbic acid) and E, magnesium, zinc, phosphorous and folic acid which are pivotal in dealing with SARS-CoV-2.

With this we can conclude that food can regulate mood, boost immunity, and bring in a healthy lifestyle, thus diminishing the number of cases and deaths associated with SARS-CoV-2. However, caution must be brought upon the fact that an increased consumption of hot beverages like coffee and tea (46.30%) brings in increased alertness followed by an anxious mental state, as suggested by Rogers, 1995; Acquas et al.,

2002; Rossi et al., 2010 in table 1. However, if our respondents consumed green tea, L- theanine (table 1.), shown by Einöther S.J.L., Rowson M., Ramaekers J.G. & Giesbrecht T., showed a shift from beta to alpha brain waves which corresponds to decreased anxiety.

LIMITATIONS OF THE STUDY

This study was based on self-assessment questionnaires, so there is a possibility of biased results. The participants who indicated or expressed anxiety, psychological distress, or strain were not clinically examined to affirm their diagnosis.

ONGOING RESEARCH PROJECTS LINKING FOOD AND MOOD

1. Mood FOOD is a project undertaken in Europe to investigate the depths of the link between food and mood. It mainly aims at curbing depression with a profound understanding of mood induced changes in the brain and its further pathway.²⁸
2. Trials are carried out to understand the functionality of omega – 3 FA, l- theanine, B 12 vitamin, and folate acid²⁹.

FUTURE SCOPE

1. Inter-relation of food and mood in the treatment of depression. (Rauch, 2019)
2. Analysing the food intake in people with low mood and relating it to the lowering of serum cholesterol levels in them. (Karen M Davison, 2012)
3. The action of the mechanism of Omega 3 PUFA (polyunsaturated fatty acid) in patients with type 2 diabetes and the treatment and prevention of depression. (Jacquelyn H. Flaskerud, 2015)
4. Impact of administration of concentrated fish oil and lipoic acid in the treatment of Alzheimer's disease. (PA Dacks).

²⁸ M Cabout, IA Brouwer, M Visser. "The MoodFOOD project : Prevention of depression through nutritional strategies." *Nutrition Bulletin* 42 (1) (2017): 94-103.

²⁹ Richa Rathod, Anvitha Kale and Sadhana Joshi. "Novel insights into the effect of vitamin B 12 and omega-3 fatty acids on brain function." *Journal of Biomedical Science* (2016).

ICT: The New Horizon of Learning

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Abstract

Digital technologies provide Higher educational institutes to explore online teaching and trying to overcome with the expectations of learners such as virtual labs in online classrooms. Technology has introduced a rapid transition from asynchronous teaching to synchronous teaching. COVID-19 has provided an opportunity to faculty members to explore on ICT tools which was there with technology. To perform online experiments effectively for undergraduate and post graduate level is possible due to virtual labs. The initiative of virtual labs is taken by Minister of Human Resource Development under the National Mission on Education through ICT in cooperation with many IIT institutes, Amrita Vishwa Vidyapeetham, Dayalbagh Educational Institute, NIT Karnataka and COE Pune. The main objective of these virtual labs is to provide remote sensing facilities to students to learn and to explore their scientific knowledge.

Digital Technology with such effective tools tries to bridge the gap between teachers and students and help students to enhance their knowledge, develop critical thinking, better memory skills, to develop new understanding to solve problems etc. Thus, due to online teaching and virtual labs students are exposed to think and find their answers to open ended questions. Thus, the integration of virtual labs with online classroom teaching definitely provides knowledge and intrinsic motivation as compared to traditional teaching methods.

Keywords: *Online teaching, Virtual labs, technology, ICT tools etc.*

Introduction

COVID-19 pandemic steps in like a new eve of new year 2020. It slowly started to grab the overall economy including almost all sectors globally. The threshold of this outbreak is to implement complete lockdown by various countries. Due to these crises, higher education has taken a digital spin by initiating online classes, labs and stimulate technology for updating knowledge and skills. Till now ICT technology played a moderate role in teacher centric model of higher educational institutes. COVID-19 crises flip up the educational system from traditional model to digital model by launching ICT tools like, online classrooms, games, quizzes, virtual labs etc. So, through this drastic change, the future of teaching and learning or say digital teaching gain much attention as it focused on blended teaching and learning model.

COVID-19 crises cause the shutdown of many universities, colleges and schools worldwide. Lots of research articles and various strategies has been suggested and published in diverse bulletins on changing strategies of online teaching and learning. Adaptation of online teaching is only one effective solution in the present scenario. However, this blended teaching learning is very enchanting but creates a fear in human mind about poor connectivity, load shedding, health issues like pain and swelling in eyes etc. But today's youth not only demand traditional learning but wish to go with digital learning or e – learning which now they grab easily due to the achievements in technology. Moreover, the hopes and demands of learners is to inculcate multiple forms of interaction in online mode like teaching, gaming, hand on sessions in virtual labs, quizzes etc.

Numerous studies have been addressed on blended teaching process like incorporation of videos (Charlotte etal (2020)⁴, Foreman J (2003)⁵), online assessment tools (Penuel W R etal (2005)⁹, Liwen CHEN etal (2010)⁷, Squire K (2005)¹⁰, virtual labs (John D etal (2020)⁶). Studies have been reported on instructional strategies on online teaching (Wei Bao (2020)¹²), universal design for learning (UDL) (Suzanne Carrington etal (2020)¹¹ etc.

According to initial teaching model i.e., in traditional classroom teaching, educator put his efforts to transfer much more information to the learners by using chalk board method, streaming videos related to topics, face to face discussion, arranging concealing sessions etc. But in present scenario this traditional teaching – learning is get replaced by online teaching by using ICT technology. This e – learning has advanced and multiple frames to deliver the contents to learners, like online reading materials, open educational resources, YouTube videos related to desired topic etc. Primally, the main challenges are how much knowledge is acquired by the benefiter, effective modes to delivery fruitful contents to learners and creation of powerful

online contents. Thus, there is increasing emphasis on community, simulation, customized curriculums, constructivist learning, and social-cultural learning experiences in this new paradigm of e-learning^{4,5}. As such this teaching pattern is the framework of 21st century learning which in cooperates four C's which are critical thinking, communication, collaboration and creativity. To work with this model teachers has to opt information from media and technology, to develop a blended learning support system.

Although online education cannot replace traditional classroom education due to the personalized nature of attention, face to face interactions etc. Online education can be an effective supplement to the brick – and mortar model of education. (Payal Kanodia, BW Education Toggle Menu, 5th June 2020)

The COVID-19 crises have given us an opportunity to rethink and to redesign the new online teaching model and intensify our higher education from traditional classroom model to new digital imitation which is based on technology. This online teaching requires conscientious training to faculty members who are more comfortable to delivers asynchronous courses. This drastic transition or the need of present situation provides an opportunity and help the faculty to experience the effective transition to go for synchronous leaders. Different challenges, pedagogical issues while delivering the e – contents are still the main concern to discuss, moreover to find the best ways to understand and acquire scientific facts and knowledge in online science laboratories is main concern to discuss. The underline premise being that in order for students to be career and life ready in the information age, new models for learning needed to be adopted (Abbott, (1977)¹, Longworth & Davies, (1996)⁸).

Human is by nature a social animal and students prefer the personal interaction & one on one discussion which is somehow lacking in online teaching. Several online teaching cum meeting tools pop up in market like, Google meet, Microsoft Team, Zoom and many more. These online tools play an important role and bridging the gap of person-to-person interaction between faculty and students.

Eventually, the online teaching get boosted with the involvement of online videos, hands on session in the form of experiments in higher education system. In the present paper author wish to focus on interactive online teaching by introducing simulations especially in science lectures. To understand basic concepts of science with hands on sessions like practical using open educational resources enhance students' knowledge. Author wish to introduce some links and name of sites where teachers will take students to virtual labs and ask them to perform the experiments online.

Material and Methods

Digital based learning is an instructional method that has shown promise in adult education and learning (Bryce O. Anderson et al (2009)²). Learning occurs in the everyday life experience of an individual and the theoretical model emphasizes an authentic context for skill acquisitions (Brown et al 1989)³.

Higher educational institutes are coping and trying to incorporate technology in their daily classroom to strengthen students' interest in subject, their active engagement in class, overall performance and understanding of subject etc.

COVID-19 pandemics forced teachers to prepare for online teaching. Similar to lectures, attending online sessions on 'Virtual Labs' is very inspiring and a new learning experience. To teach science and to understand the basic concept behind scientific aspects in online classroom is slightly challenging task. Moreover, to conduct action-oriented sessions in the form of practical maintaining physical distances and lack of resources available are not possible. Virtual labs are the platform where students are able to perform the experiments, take a reading and show their results to respective subject teachers. There are numerous open education resources (OER) available according to the individuals need for all discipline. Virtual Labs are such OER specially designed to provide a remote access to labs so that students can serve the available facilities and get benefited. Virtual labs can avail provision from schools to secondary schools up to higher education scholars to stimulate experiments. In this paper author wish to focus to bring this powerful tool of virtual labs which is an OER on one platform.

Methods

Virtual lab is an Initiative of Minister of Human Resource Development, Government of India under the National Mission on Education through Information and Communication Technology (NMEICT). The initiative to create these virtual labs were taken by twelve institutes and IIT Delhi is the coordinating institute. These remote sensing virtual labs are jointly created by IIT institutes like IIT Hyderabad, IIT Madras, IIT Kharagpur, IIT Roorkee, IIT Guwahati, IIT Delhi, IIT Bombay, IIT Kanpur, Amrita Vishwa Vidyapeetham, Coimbatore, Dayalbagh Educational Institute, Agra, NIT Karnataka, Surathkal and College of Engineering, Pune.

Rural India faces additional challenges in providing online education. The internet connectivity is poor, electricity is erratic, due to economic condition smart phones/ laptops are not available to students, the familiarity with technology is far lower than urban students. These challenges are far less in urban areas.

Many governments are providing laptops to 10th and/or 12th students, which should be encouraged. We hope that governments will strive to provide better electricity with lesser power cuts and good internet connectivity to the rural areas. The pandemic has made us realise that internet, electricity and computer hardware are the necessity for quality education.

The main objective of this platform is to provide learners a remote – access to perform experiments in labs from various disciplines of Science and Engineering. These labs provide a real time experience to learners from undergraduates and post graduates levels and even for research scholars. These virtual labs cover a broad area of experiments from Electronics and communications, Computer Sciences, Electrical Engineering, Mechanical Engineering, Chemical Engineering, Biotechnology and Biomedical Engineering, Civil Engineering, Physical Sciences and Chemical Sciences etc. Thus, virtual labs provide a complete Learning Management System including study materials, video lectures, animated demonstrations for stimulation of experiments, self-evaluation etc.

Result

All students and faculty members who do not have the sophisticated instrumental set up can get benefited by accessing these online facilities. In the present scenario where, social distancing is important parameter, this open education resources (OER) virtual labs act as a most significant tool to cater learners. These virtual labs project have over 120 labs with more than 900 web enabled experiments which are remote sensitive and requires only internet connection for smooth simulation. Thus, more than hundred plus virtual labs are available on website www.vlab.co.in. (2019). The lists of websites discussed in this paper are all free of cost, as these are all open educational resources (OER).



Fig. 1. Virtual labs, MHRD 23rd February, 2010 (weblink: <https://www.vlab.co.in/>)

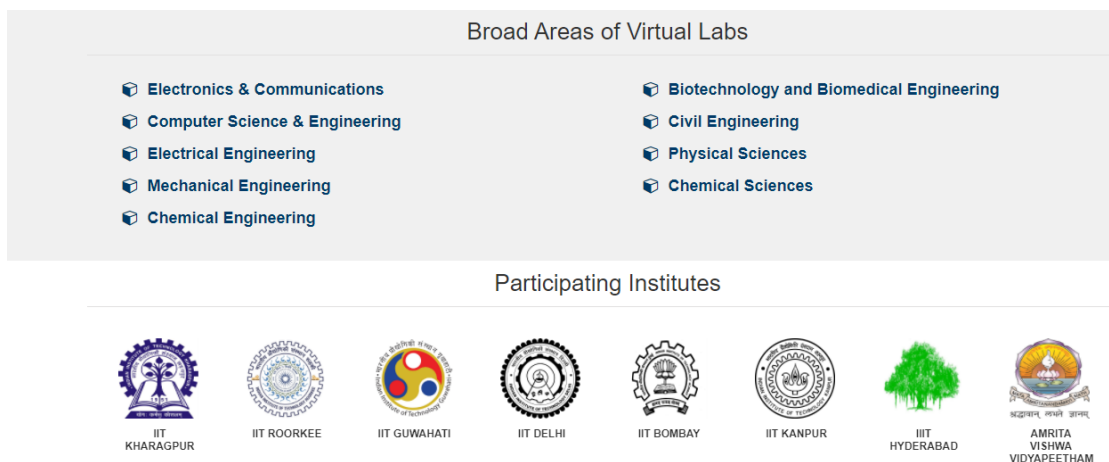


Fig. 2. Broad areas of virtual labs (weblink: <https://www.vlab.co.in>)

For basic sciences specially for Physics and Chemistry students' various experiments are available under broad heading of branches with reference books and syllabus mapping.

- A) For Physics learners, under the broad heading of 'Physical Sciences' several experiments are covered under more than ten sub headings. The list of experiments is available on each sub headings which provide detail explanation about the experiment like theory behind the experiment, procedure, stimulator, reference and feedback. Learners can get benefited by clicking on each and every heading and avail the information. Performance of experiment is possible on clicking on stimulator and get a hands-on experiment experience in the animated form.

Virtual Labs
An Initiative of
Ministry of Education
Under the National Mission on Education through ICT

HOME ABOUT US NEWSLETTER NEW LAB DEVELOPMENT BECOME NODAL CENTER OUTREACH PORTAL PARTICIPATING INSTITUTES CONTACT US

Physical Sciences

Home » Broad Areas of Virtual Labs

Labs ready for use

Molecular Interactions Lab Reference Books ▾ Syllabus Mapping ▾	IIT HYDERABAD
Advanced Analytical Chemistry Virtual Lab Reference Books ▾ Syllabus Mapping ▾	AMRITA VISHWA VIDYAPEETHAM
Solid State Physics Virtual Lab Reference Books ▾ Syllabus Mapping ▾	AMRITA VISHWA VIDYAPEETHAM
Electricity and Magnetism Virtual Lab	AMRITA VISHWA VIDYAPEETHAM

Announcements
here. [Please click here for more details.](#)

Fig. 3. Virtual labs for Physical Sciences (weblink: <https://www.vlab.co.in/broad-area-physical-sciences>)

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you are here->home->physical sciences->solid state physics virtual lab

Solid State Physics Virtual Lab

Solid-state physics is a study of rigid matter or solids. This part Includes theoretical description of crystal and electronic structure, lattice dynamics, and optical properties of different materials.

- Characteristics of Zener diode**
A Zener diode is a diode which allows current to flow in the forward direction in the same manner as an ideal diode, but will also permit it to flow in the reverse direction when the voltage is above a certain value known as the breakdown voltage
- Characteristics of Thermistor**
A thermistor is a type of resistor whose resistance strongly depends on temperature. A thermistor is a temperature-sensing element. The aim of experiment is to find its characteristics and temperature coefficient of resistance.
- Resistivity by Four Probe Method**
To determine the resistivity of semiconductors
- B-H Curve**
The lag or delay of a magnetic material known commonly as Magnetic Hysteresis. Hysteresis is the dependence of a system not only on its current environment but also on its past environment. This dependence arises because the system can be in more than one
- Hall effect experiment:- Determination of charge carrier density**
The production of transverse voltage across a current carrying conductor when placed in a perpendicular magnetic field, is called Hall effect. The voltage developed across the conductor is called Hall voltage.

Fig. 4. Virtual labs for Physical Sciences (weblink: <https://vlab.amrita.edu/?sub=1&brch=282>)

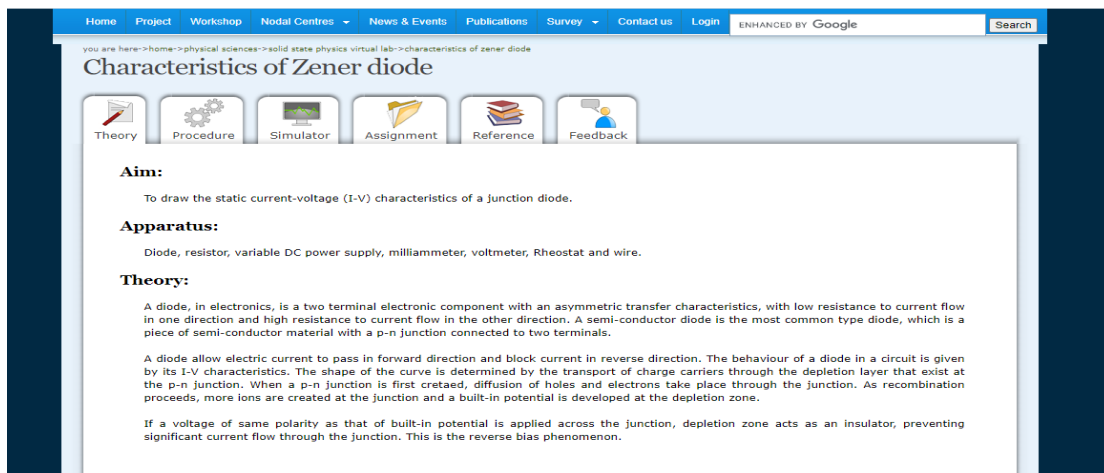
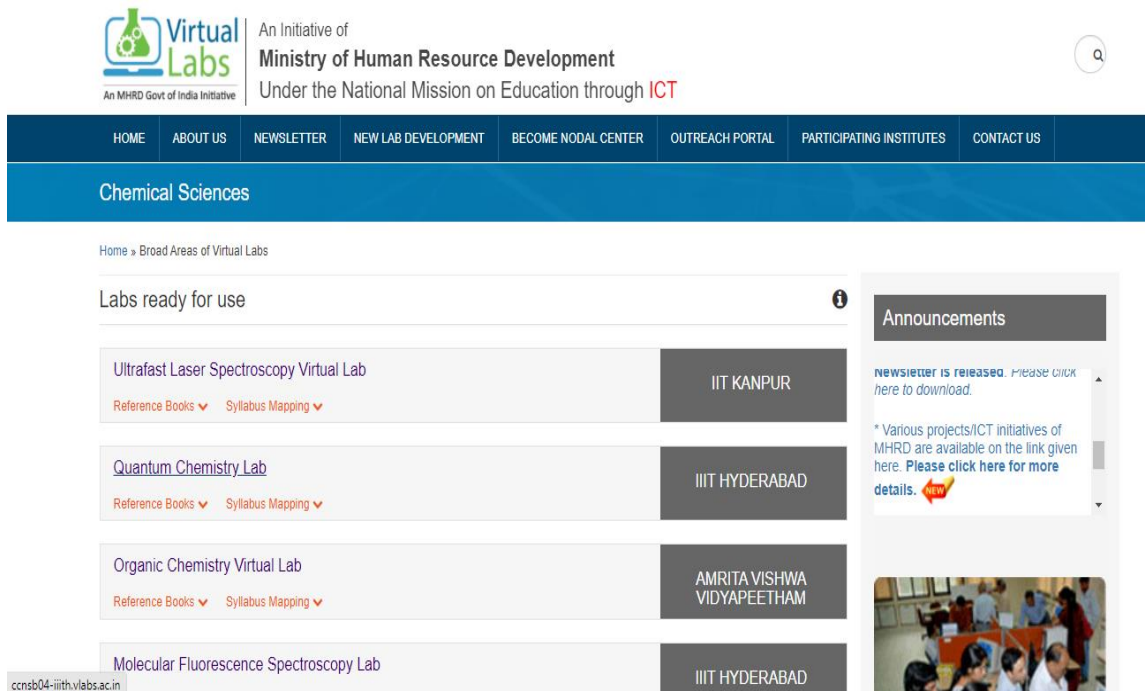


Fig. 5. Characteristic of Zener diode

(website: <https://vlab.amrita.edu/?sub=1&brch=282&sim=1522&cnt=1>)

- B) Similarly, for Chemistry sciences students, there are nine main subheadings, each one includes around eight to ten experiments. In the article author wish to explore Physical Chemistry experiments.

Fig. 6. Virtual labs for Chemical Sciences (website: <https://www.vlab.co.in/broad-area-chemical-sciences>)

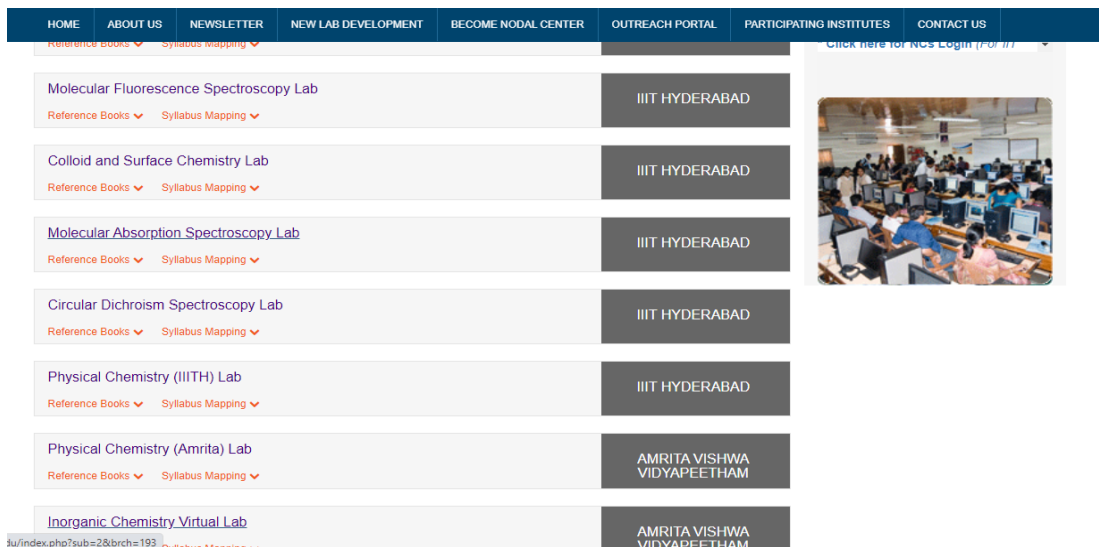


Fig. 6. Virtual labs for Chemical Sciences (website: <https://www.vlab.co.in/broad-area-chemical-sciences>)

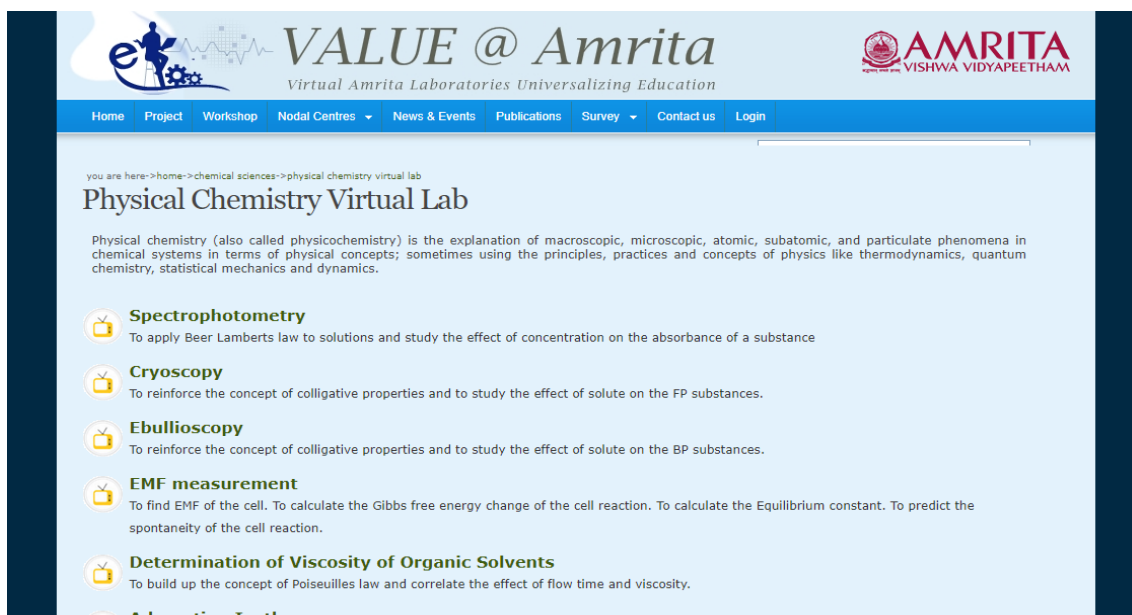


Fig 7. Virtual lab from Amrita University on Physical Chemistry (website: <https://vlab.amrita.edu/index.php?sub=2&brch=190>)

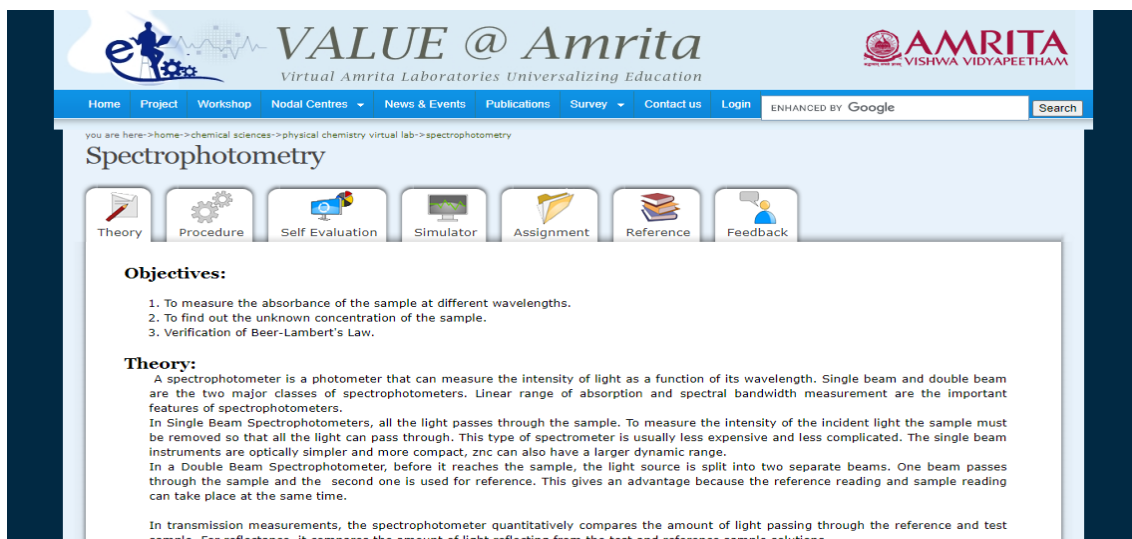


Fig 8. Virtual lab from Amrita University on Physical Chemistry (website: <https://vlab.amrita.edu/index.php?sub=2&brch=190&sim=338&cnt=1>)

In Physical Chemistry (Amrita lab) sub heading covers around ten experiments. These all experiments explain the detail information about theory, procedure, self-evaluation, stimulator, assignment, references and feedback. On clicking on theory, procedure, assignment and references, learners will be equipped with all detail information about the experiment. For self-evaluation, stimulation and feedback learners has to login or sign up free to perform the experiment by using their mail id.



Fig 9. Virtual lab from Amrita University on Physical Chemistry (website: <https://vlab.amrita.edu/index.php?sub=2&brch=190&sim=338&cnt=3>)

Students can perform experiments by their own after registration and taking instructions from faculty members.

C) There are number of virtual labs for biological science students, like

- 1) Bioman: It is an educational game as well as virtual labs for Biological Science students.

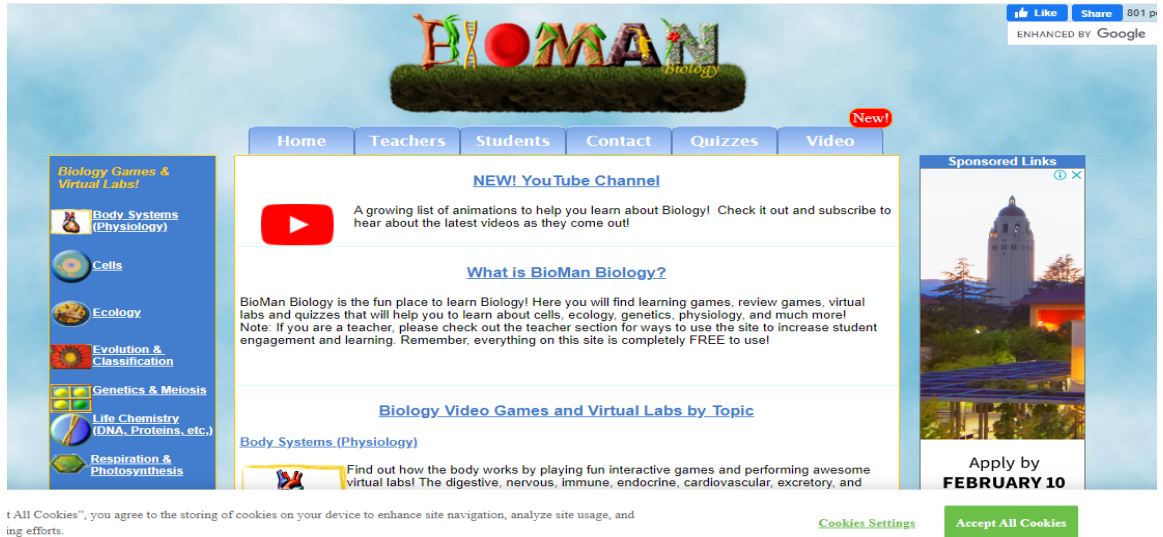


Fig: 10. Bioman virtual lab for Biological Sciences (website: <https://biomanbio.com/index.html>)

This Bioman covers total eight biological games as well as virtual labs including physiology, cells, ecology etc. Each group includes detail information about the topic in the animated picture form and added animated videos to explain the topic in an easy format. At the end of topic there is a quiz through which students able to guess their understanding about the topic.



Fig: 11. Bioman virtual lab for body system (physiology) (website: <https://biomanbio.com/HTML5GamesandLabs/Physiogames/physiology.html>)

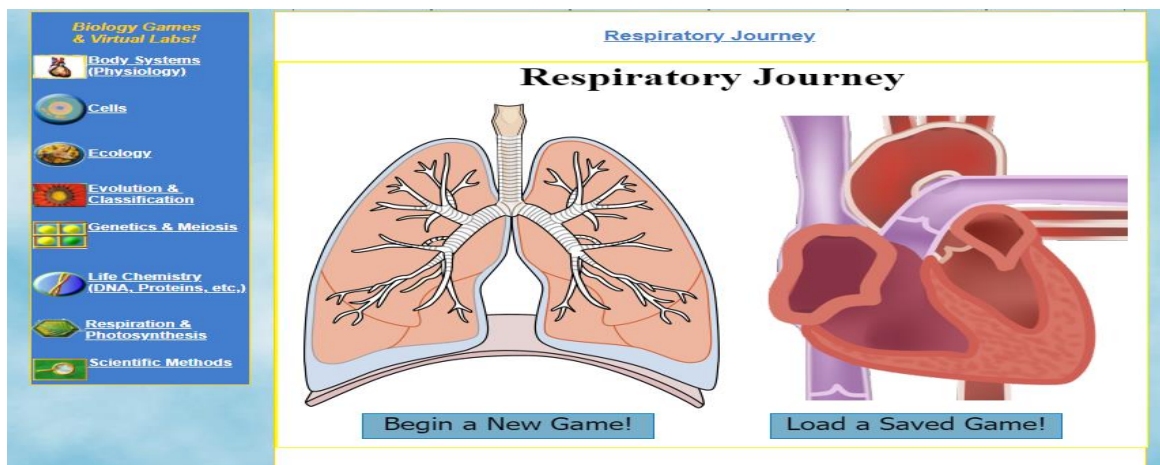


Fig: 11. Bioman virtual lab for body system (physiology) (website: https://biomanbio.com/HTML5GamesandLabs/Physiogames/respiratory_journeyhtml5page.html)

It includes some animated videos to explain the topic in a comfortable manner like endocrine ed, conflate immunity etc.

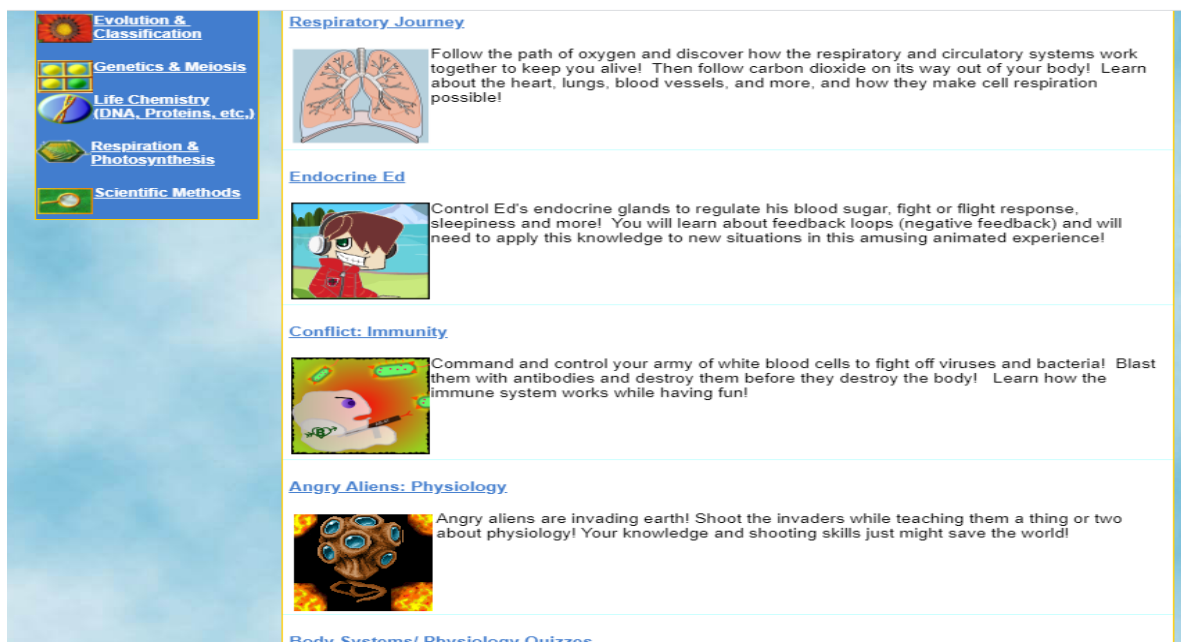


Fig: 12. Bioman virtual lab for body system (physiology) (website: <https://biomanbio.com/HTML5GamesandLabs/Physiogames/physiology.html>)

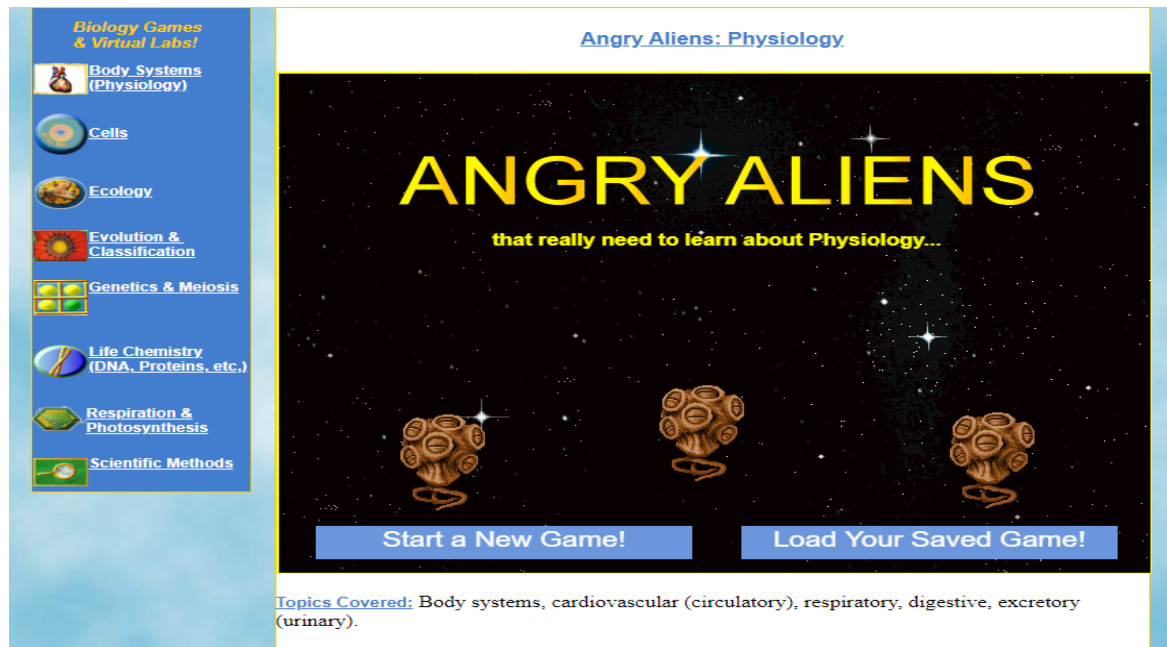


Fig: 13. Bioman virtual lab for body system (physiology) (website: <https://biomanbio.com/HTML5GamesandLabs/Physiogames/aaphysiologyhtml5page.html>)

It covers some games through which learners can understand the complex phenomenon behind the topic. At the end of each and topic learners has to attempt quizzes through which they are comfortable to know their understanding related to topic.

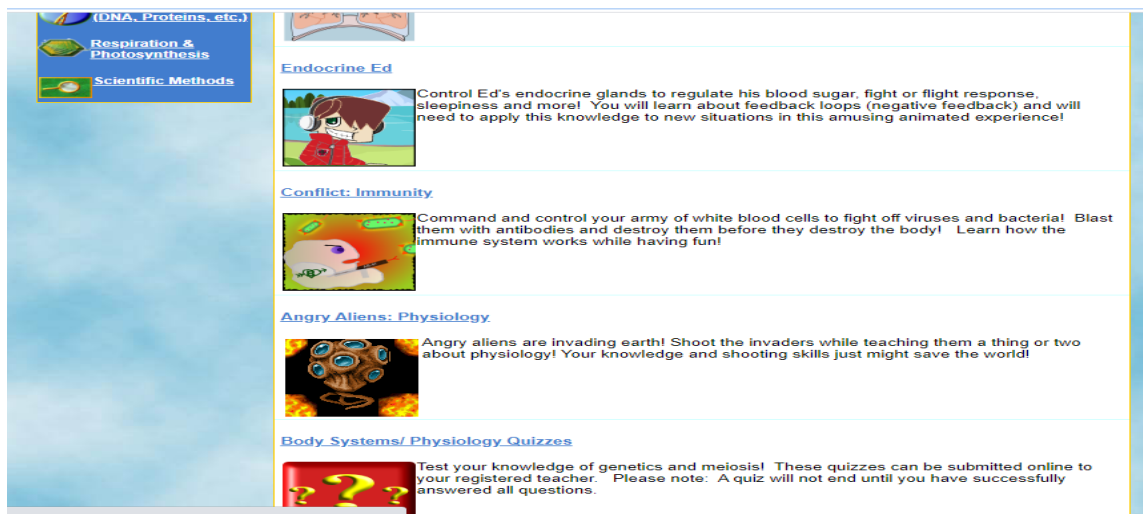


Fig: 13. Bioman virtual lab for body system (physiology) (website: <https://biomanbio.com/HTML5GamesandLabs/Physiogames/physiology.html>)

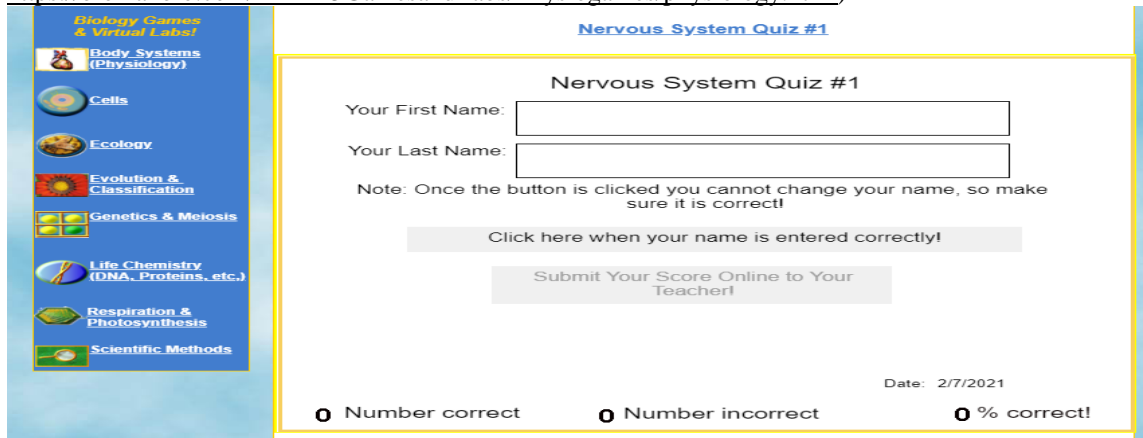


Fig: 14. Bioman virtual lab for body system (physiology) quizzes (website: <https://biomanbio.com/HTML5Quizzes/PhysQuizzes/nervousquiz1html5page.html>)

To attempt these quizzes, learners have to enter their name and start the test, they can submit their score online to faculty by clicking on submit score online.

2) Learn Genetics:

This virtual lab site has tons of multimedia activities and science laboratory experiments centred on Biological Sciences, Genetics and Human Health.

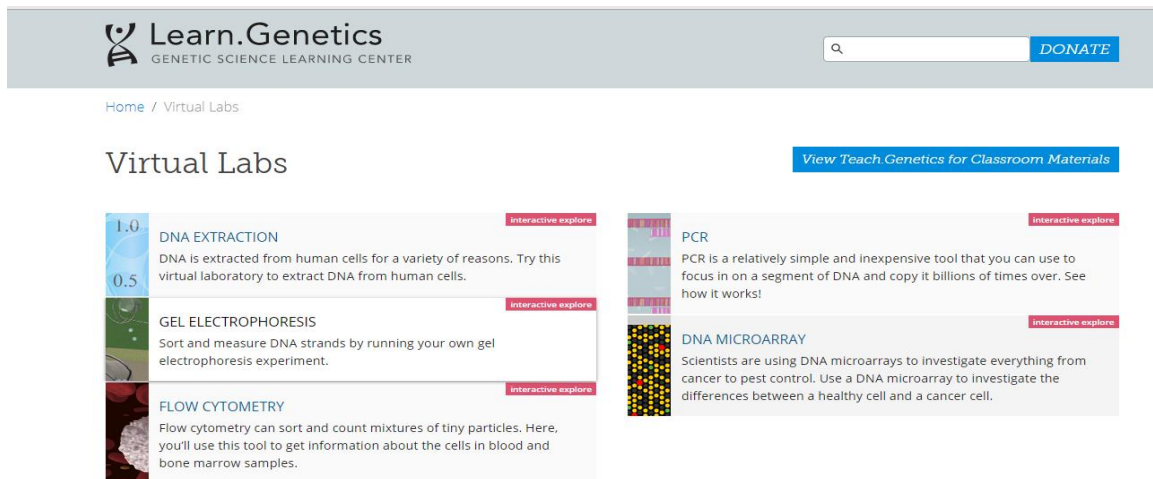


Fig. 15: Learn Genetics Genetic Science Learning Centre
(website: <https://learn.genetics.utah.edu/content/labs/>)

It covers five major topics including DNA extraction, gel electrophoresis, flow cytometry etc. Each topic covers the entire process of experiment including frequently asked questions.

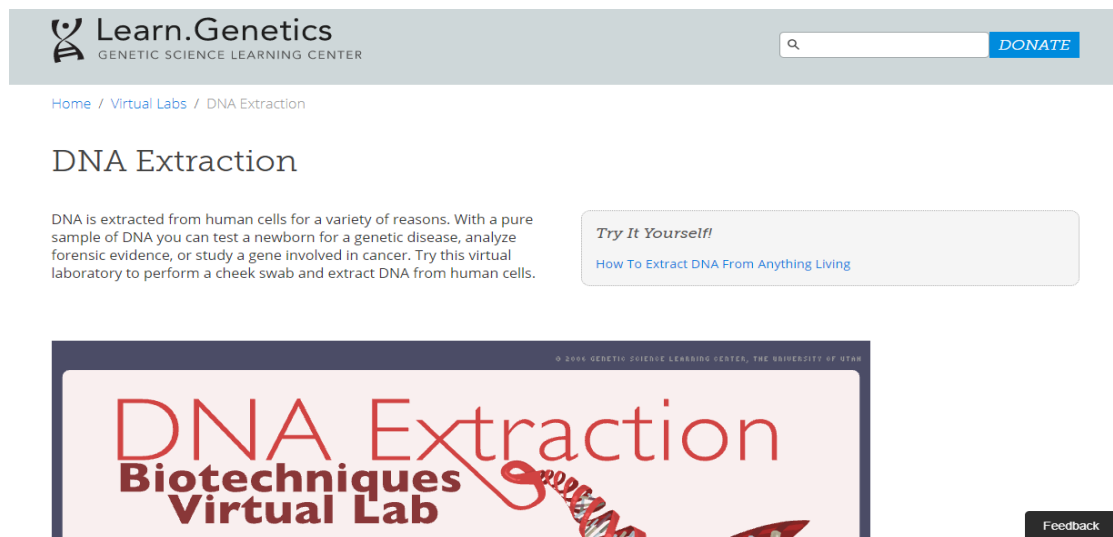
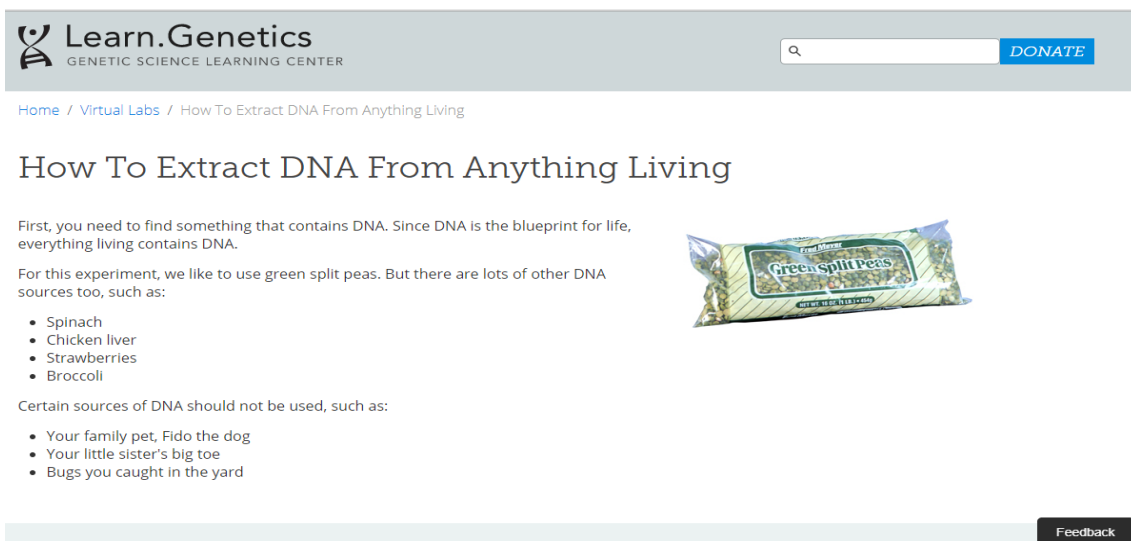


Fig. 16: Learn Genetics Genetic Science Learning Centre
(website: <https://learn.genetics.utah.edu/content/labs/extraction/howto/>)

After clicking on at a section ‘Try it yourself’ learners can avail the entire process of the experiment.



Learn.Genetics
GENETIC SCIENCE LEARNING CENTER

Home / Virtual Labs / How To Extract DNA From Anything Living

How To Extract DNA From Anything Living

First, you need to find something that contains DNA. Since DNA is the blueprint for life, everything living contains DNA.

For this experiment, we like to use green split peas. But there are lots of other DNA sources too, such as:

- Spinach
- Chicken liver
- Strawberries
- Broccoli

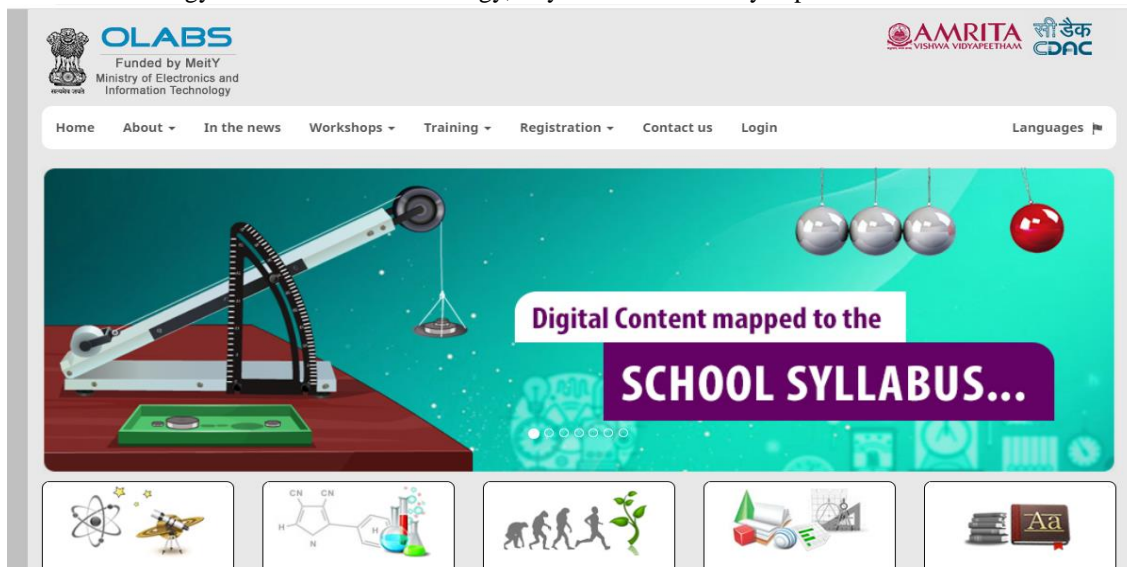
Certain sources of DNA should not be used, such as:

- Your family pet, Fido the dog
- Your little sister's big toe
- Bugs you caught in the yard

Feedback

Fig. 17: Learn Genetics Genetic Science Learning Centre: How to extract DNA from anything living (website: <https://learn.genetics.utah.edu/content/labs/extraction/howto/>)

D) Olabs is another virtual lab which is funded by MeitY Ministry of Electronics and Information Technology. This site involves Biology, Physics and Chemistry experiments.



OLABS
Funded by MeitY
Ministry of Electronics and Information Technology

AMRITA VISHVA VIDYAPEETHAM CDAC

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Digital Content mapped to the
SCHOOL SYLLABUS...

Fig 18: Olabs funded by MeitY Ministry of Electronics and Information Technology (website: <http://www.olabs.edu.in/>)

Olabs contains digital contents specially designed for school syllabus especially from 9th standard to 12th standard. On Olabs school children avail the facilities of virtual experiments for physics, chemistry, biology as well as mathematics.

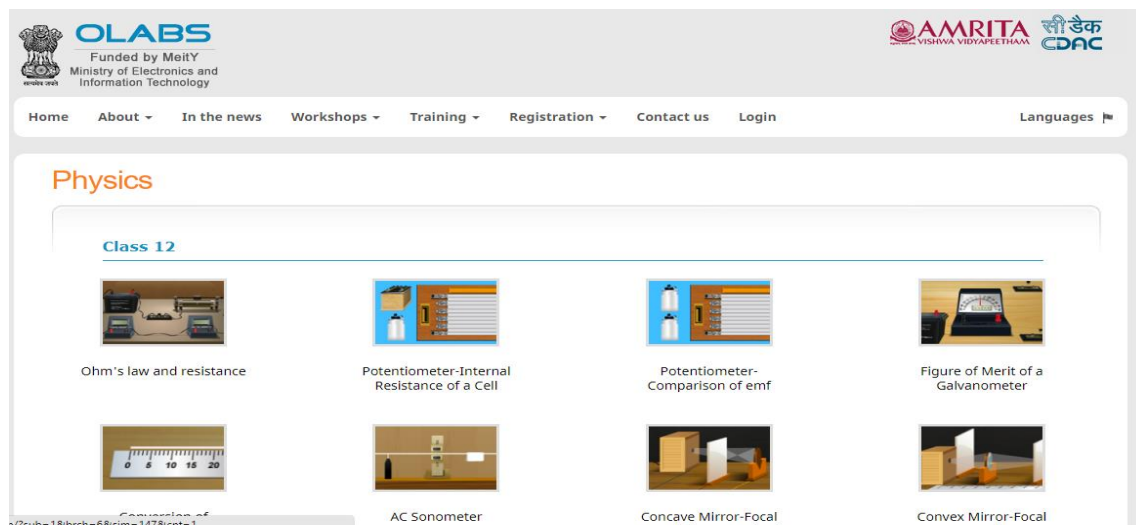


Fig. 19: OLABS from Amrita Vishwa Vidyapeeth on Physics experiments
(website: <http://www.olabs.edu.in/?pg=topMenu&id=40>)

Students have to choose any particular experiment and click on it. They can direct on the page where theory, procedure, animation, simulator, video, viva voce, resources and feedback are available. Students can stimulate the practical and understand the concept behind the experiment.

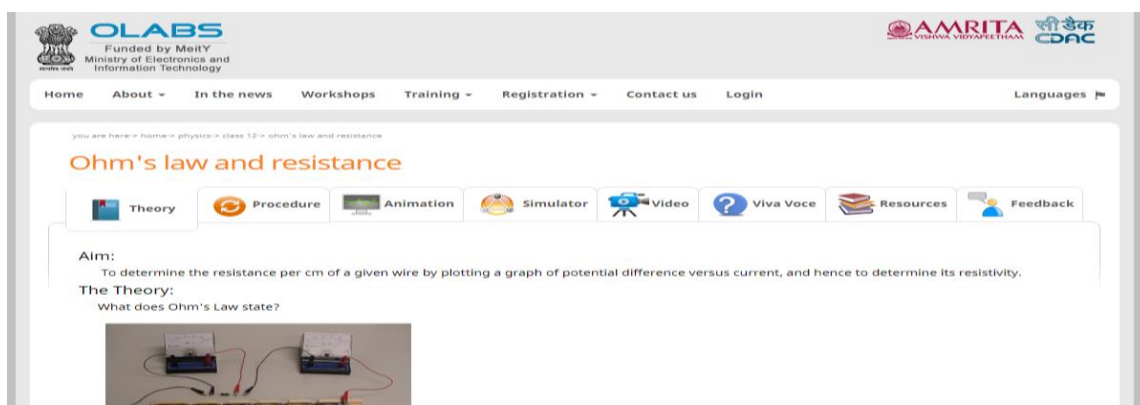


Fig. 20: Olabs, Physics experiment, Ohm's law and resistance (website: <http://amrita.olabs.edu.in/?sub=1&brch=6&sim=22&cnt=1>)

Ohm's law and resistance

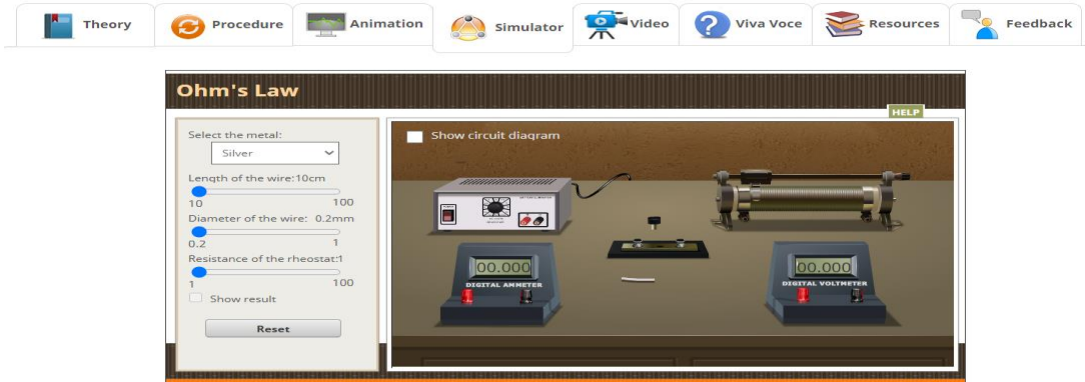


Fig. 21: Olabs, Physics experiment, Ohm's law and resistance, simulate the experiment (website: <http://amrita.olabs.edu.in/?sub=1&brch=6&sim=22&cnt=4>)

As the student click on 'simulator', apparatus related to the experiment appears and kids has to connect by drawing a line using mouse between two terminals.

Ohm's law and resistance

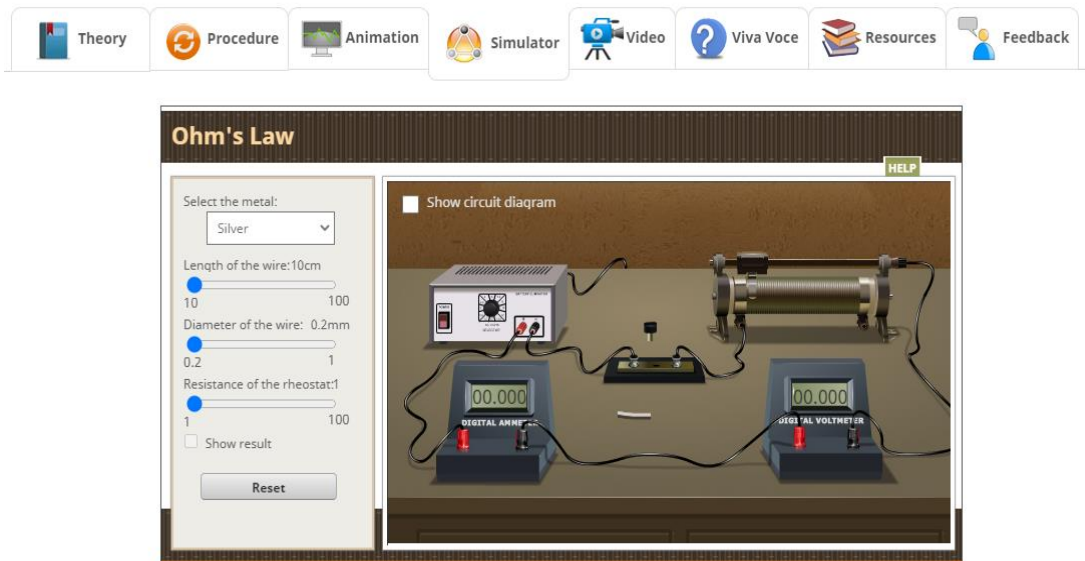


Fig. 22: Olabs, Physics experiment, Ohm's law and resistance after connection (website: <http://amrita.olabs.edu.in/?sub=1&brch=6&sim=22&cnt=4>)

Ohm's law and resistance

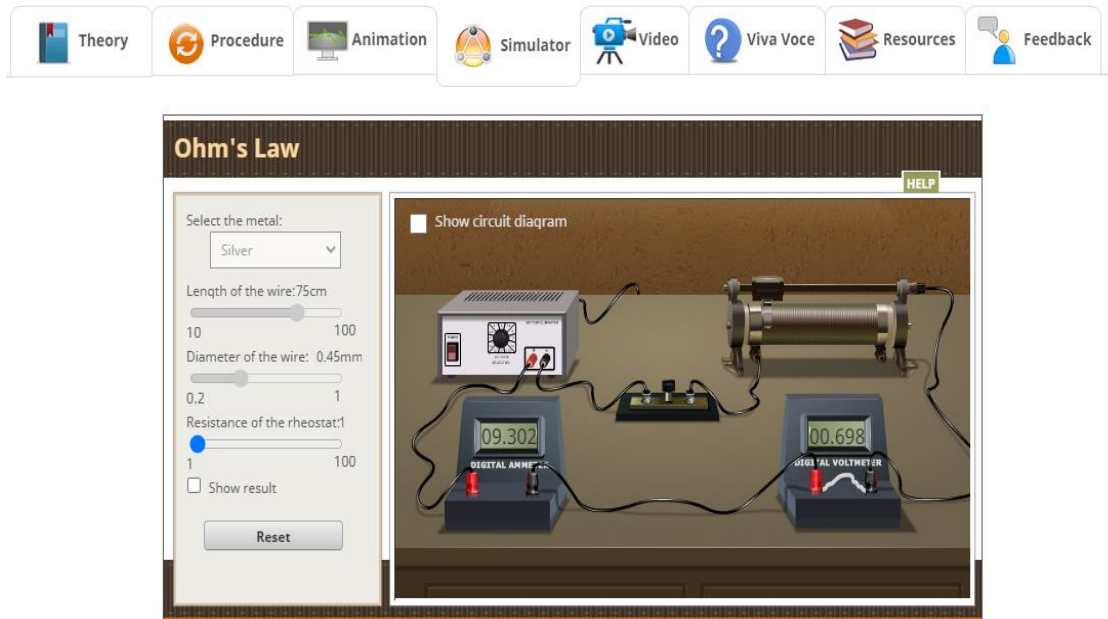


Fig. 23. Olabs, Physics experiment, Ohm's law and resistance, note reading after varying rheostat (website: <http://amrita.olabs.edu.in/?sub=1&brch=6&sim=22&cnt=4>)

As students click on 'show result' result of the experiment will appear as well as if students prefer to see graph related to readings it will appear below the instruments.



Fig. 24. Olabs, Physics experiment, Ohm's law and resistance, graph plotting (website: <http://amrita.olabs.edu.in/?sub=1&brch=6&sim=22&cnt=4>)

Similarly, students can perform experiments from chemistry, biology as well as mathematics subjects also. They can explore their subjective knowledge by repeating these all experiments and enhance their expertise in the English subject. Under English subject students can learn prepositions, active and passive voice, tenses, comprehension, etc

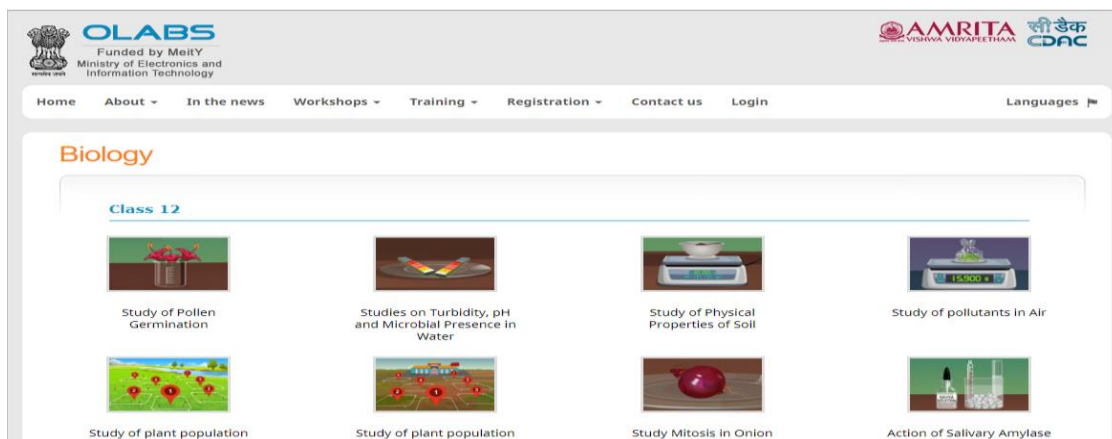


Fig. 25: OLABS from Amrita Vishwa Vidyapeeth on Chemistry experiments

(website: <http://www.olabs.edu.in/?pg=topMenu&id=41>)

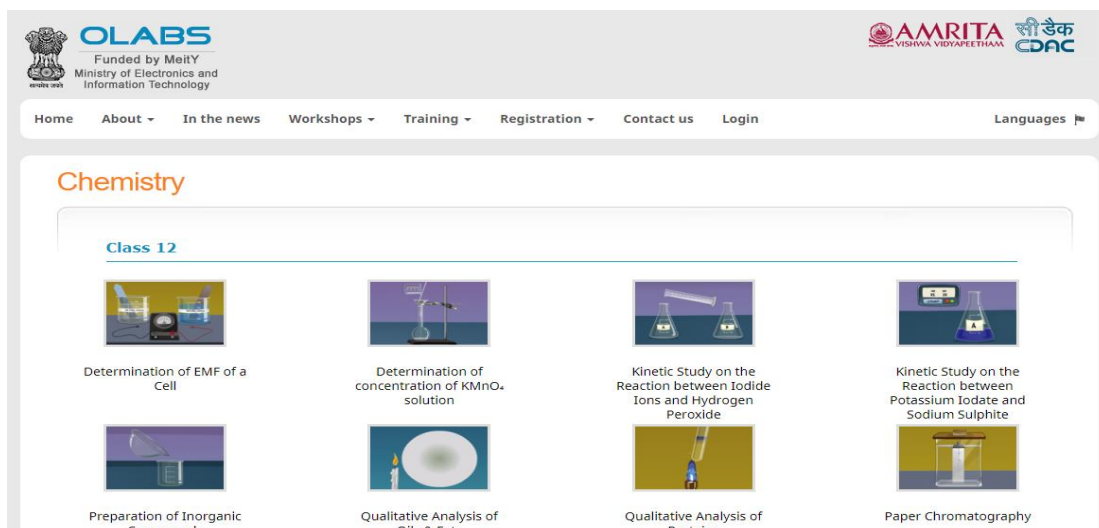


Fig. 26: OLABS from Amrita Vishwa Vidyapeeth on Biology experiments

(website: <http://www.olabs.edu.in/?pg=topMenu&id=53>)

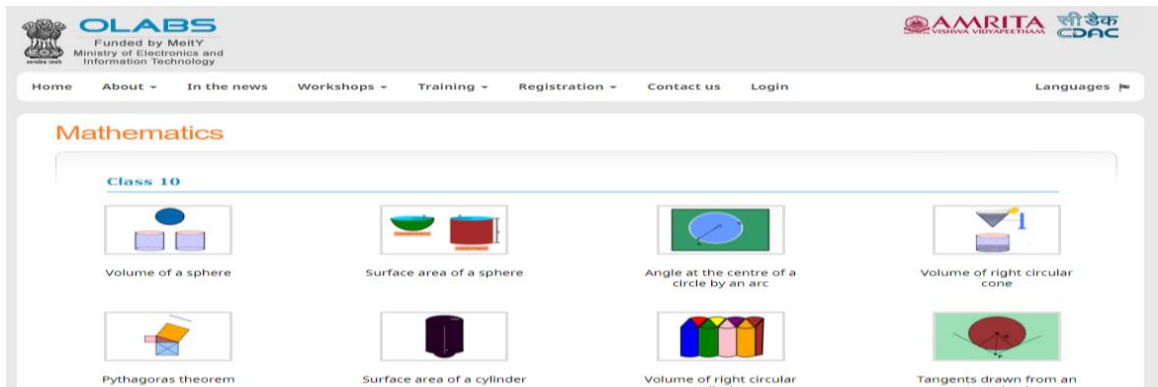


Fig. 27. OLABS from Amrita Vishwa Vidyapeeth on Mathematics experiments

(website: <http://www.olabs.edu.in/?pg=topMenu&id=58>)

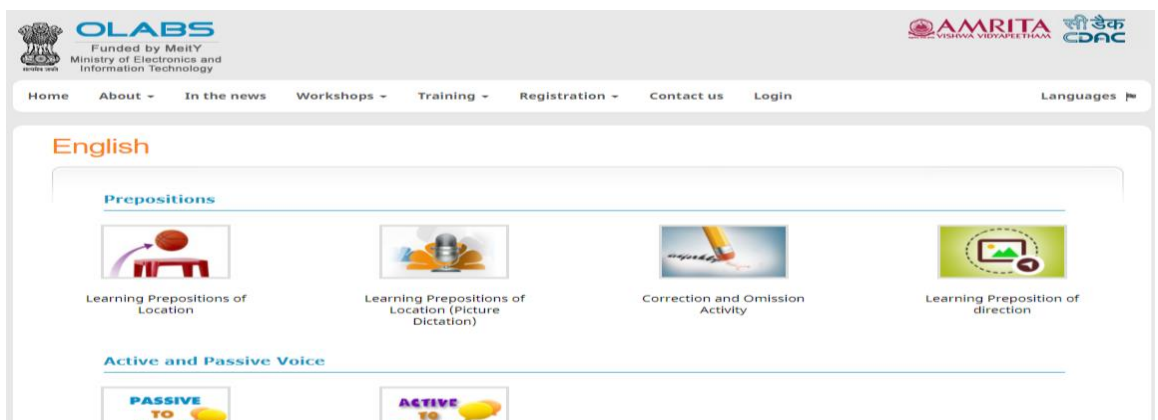


Fig. 28. OLABS from Amrita Vishwa Vidyapeeth on Mathematics experiments

(website: <http://www.olabs.edu.in/?pg=topMenu&id=58>)

E) Labster is another virtual lab for Microbiology experiments where students can explore themselves and perform the experiments. Labster is an educational company devoted to evolving fully interactive advanced lab simulations. This virtual lab simulation involves gamification elements such as an immersive 3D universe, storytelling and a self-assessment tool which provide natural curiosity and highlights the connection between science and the real world. These virtual labs are being used by California State University, Harvard, Gwinnett Technical College, MIT, Exeter University, University of New Haven, Stanford, University of New England, Trinity College, University of Hong Kong and Berkeley among others internationally.

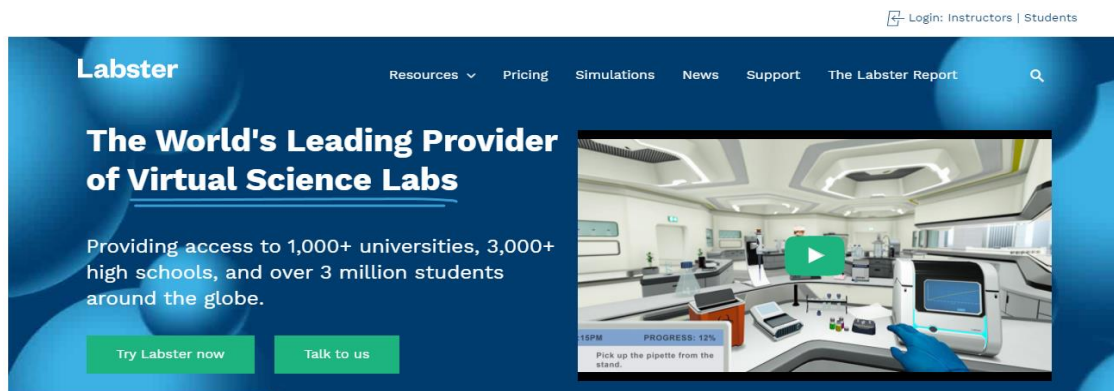


Fig. 29: Home page of Labster Virtual Lab company (website: <https://www.labster.com>)

Labster virtual lab covers experiments under five sections like biology, chemistry, medicine, engineering and physics. Each section covers experiments of all branches of that subject.

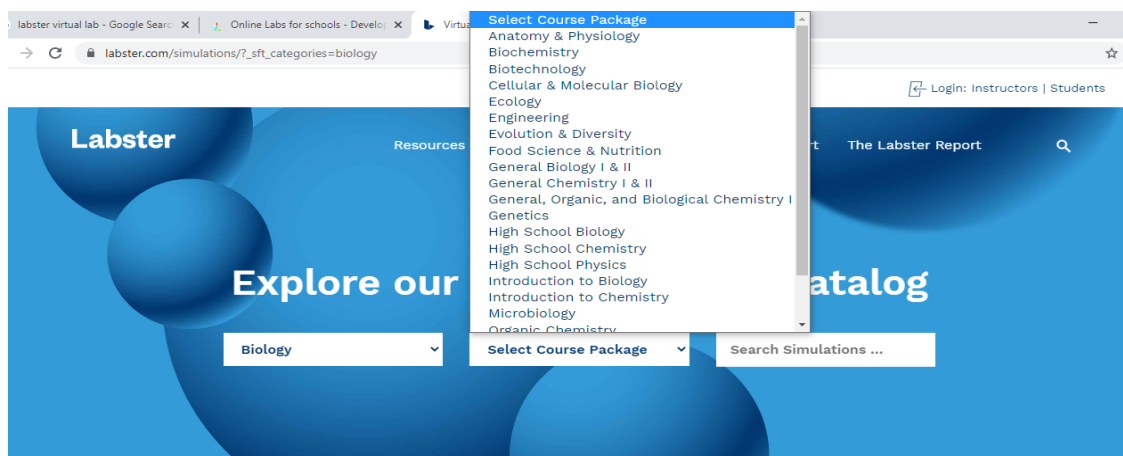


Fig. 30. Labster virtual lab, list of biology experiments
(website: https://www.labster.com/simulations/?_sft_categories=biology)

Labster covers experiments of all branches like, biotechnology, biochemistry, food & nutrition, microbiology etc.

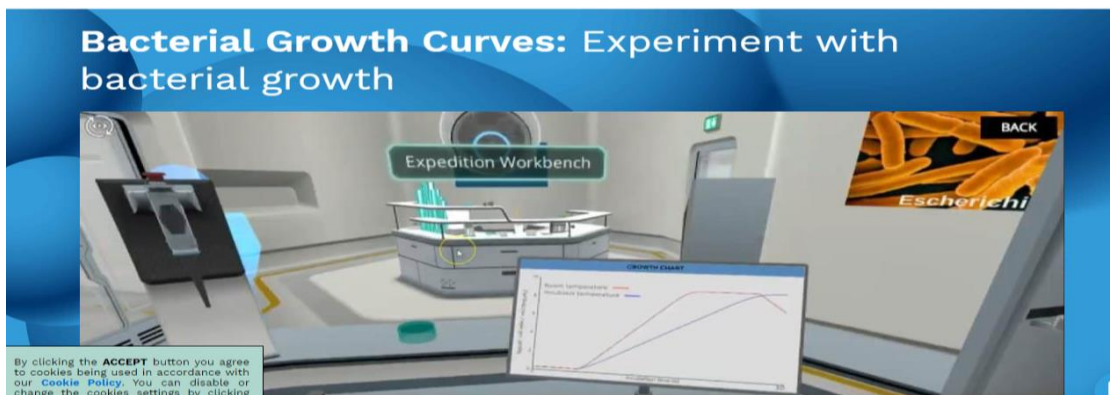


Fig. 31: Labster virtual labs on experiment ‘Bacterial Growth Curves: Experiment with bacterial growth’ (website: <https://www.labster.com/simulations/bacterial-growth-curves/>)



Fig. 32: Labster virtual labs experiment on Physics ‘Basic Electricity: Understand how electricity works’ (website: <https://www.labster.com/simulations/basic-electricity/>)

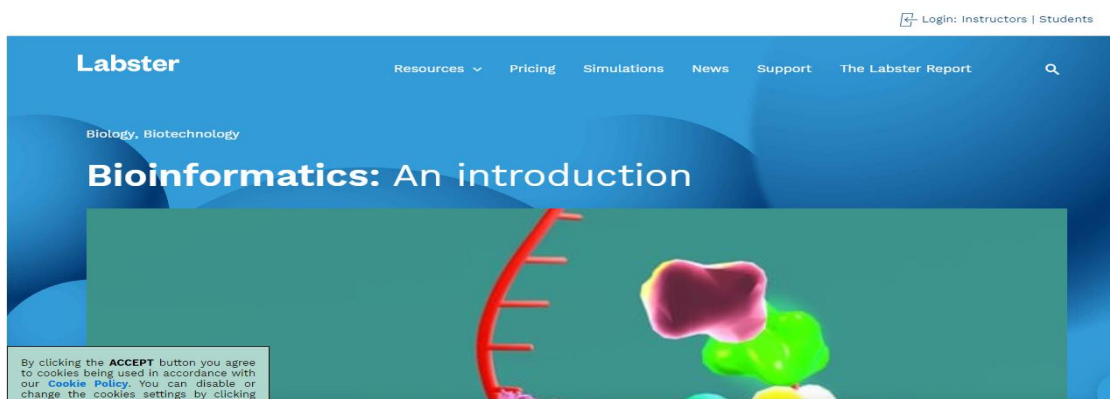


Fig. 33. Labster virtual labs experiment on Biotechnology ‘Bioinformatics: An introduction’ (website: <https://www.labster.com/simulations/bioinformatics-an-introduction/>)

Conclusion

The online teaching which initially looks like a salt mines now feels an interesting, innovating and easy task due to the presence of variegated ICT advanced tools. This advanced technology was there but we did not take an initiate to explore ourselves, COVID-19 has given this opportunity to search an alternative for effective delivery of lectures especially hands-on sessions for practical. These virtual labs are very beneficial for students as they can perform practical's any time with all safety measures while handling fire or any chemicals or electricity as they are performing it virtually. Students can perform practical's; number of times till they get satisfied as no time concern is there. These virtual labs initiatives are really a very useful tools for sciences and engineering students. However, once the pandemic is over the system which will evolve and will be the blend of physical as well as virtual classrooms. In fact, classroom can now be conducted with some students present in class, while some participating through digital medium. Many practical's have to be in physical labs, however once conducted, students can horn their skills in virtual labs. The assessment still remains a bigger challenge as chances of cheating are very-very high on virtual platform.

Author has found some common short comings: -

- Number of experiments can be increased substantially.
- FAQ & Viva-voice questions are limited and should be increased
- More challenging Viva-voice questions should be added for good students
- If chat with teachers can be added (can be on paid basis), it will be boon to students
- Feedback call should be made to students for improvement (author not sure if this is done or not)

Despite the shortcomings mentioned, this pandemic will change the teaching forever and for better. I look forward towards the end of the pandemic as a new and bright beginning, which I hope will end sooner than predicted and we humans will come out from the crises, better and stronger.

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<https://doi.org/10.1002/hbe2.191>, 'COVID-19 and online teaching in higher education: A case study of Peking University

**Threshold and Marginality:
Space for Meaningful Dialogue in the New Normal**

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Abstract

Tess Onwueme is a Nigerian playwright, activist and academic who has written several plays on the themes of marginality, formation of Black identity and racism. Her play ‘Riot in Heaven’ is performance theatre highlighting condition of Blacks in America. The Black Everyman hero Traveler X, after a rigorous journey from Earth, hopes to enter Heaven. Exhausted physically and mentally he staggers to Heavensgate and asks for entry, which is denied by the gatekeepers. The focus of this paper is not Traveler X but Sojourner Nkrumah. She occupies a very interesting space in the text which is between Heaven, Earth and Hell. This triangulated space is considered as threshold space. The threshold was interpreted by the ancient Romans as: a boundary line, intended to make one pause; or, a limen or porous border between two states of things. It is an in-between place which is a ‘non-place’; only a narrow threshold from one place to another. This paper is an attempt to relate the spatial anxieties of the marginalized in the USA, i.e. the coloured populace and the in-between condition of the so-called ‘migrants’, especially women, in India with focus on the situation in Mumbai during the pandemic. The disease and the ‘dis-ease’ that led to the mass exodus from urban financial centres and its possible aftermath in the optimistic New Normal for the ‘migrants’ will be the focus of this paper.

Keywords: *Threshold, Space, Anxiety, Dis-ease, Marginality, Dialogue, New Normal.*

Introduction

Most critics agree that ours is an “epoch of space”. In a speech given in 1967 Michel Foucault said, “The present epoch will perhaps be above all the epoch of space. We are in the epoch of simultaneity: we are in the epoch of juxtaposition, the epoch of the near and far, of the side-by-side, of the dispersed. We are at a moment, I believe, when our experience of the world is less that of a long life developing through time than that of a network that connects points and intersects with its own skein” (11). Bertrand Westphal opines that the ‘spatial turn’ in cultural and literary studies took place in the aftermath of the Second World War when societies were being restructured all over the world. History as a narrative of the progress of mankind came to be questioned after the cataclysmic events of the war. Edward Soja pointed out that time-focused

discourses in the pre-war period masked spatial realities. A great number of philosophers and critics focused their attention on spatial concerns in the 20th century.

Nigerian playwright, activist and academic Tess Onwueme's play 'Riot in Heaven' is performance theatre highlighting the condition of Blacks in America. The play focuses on themes of formation of Black identity and racism, and the marginalization of women. The Black hero Traveler X, after a rigorous journey from Earth, hopes to enter Heaven. Exhausted physically and mentally he staggers to Heavensgate and asks for entry. Two White Americans, self-appointed guards Jefferson Lugard and Stanley Livingston, stand at the gate and deny him entry. They claim that God has gone on vacation and they have been entrusted with the key to Heaven. Traveler X believes them and pleads with them to accept his history of suffering as his reward for admission to Heaven. He is a representative of Black activists and freedom fighters like Nelson Mandela, Martin Luther King and Malcolm X.

The focus of this study is not Traveler X but Sojourner Nkrumah and the unique space she occupies in the text. Sojourner represents the marginalized minority i.e. the blacks in America, but at the same time, her marginalization diverges from that of X because of her gender as well. This study attempts to co-relate her precarious position in the triangulated space between Heaven, Hell and Earth and her victimization with the position of the so-called 'migrants' in Mumbai City during the current pandemic, and what might be in store for them in the optimistically termed New Normal.

Sojourner Nkrumah is an embodiment of all the historical Black revolutionaries, women, like Sojourner Truth, Kwame Nkrumah and Harriet Tubman, who fought for Civil liberties along with their male counterparts. However, unlike Traveler X, she has not forgotten her own name, she owns her identity. She occupies a very interesting space in the text, which lies between Heaven, Earth and Hell. This triangulated space is considered as 'threshold space'. The threshold was interpreted by the ancient Romans as: a boundary line, intended to make one pause. Or, a limen or porous border between two states of things. It is an in-between place which is a 'non-place'; only a narrow threshold from one place to another.

In Italo Calvino's novel *Invisible Cities* Marco Polo, the traveller, tries to describe a place he has seen to Kubla Khan. He is frustrated because he cannot describe the place in strictly geographical or spatial terms. Often it is the narrative, which gives meaning to a place. Similarly, this triangulated space occupied by Sojourner cannot be described in geographical terms. Sojourner's train, by which she presumably arrived at Heavensgate is stalled outside the gates. The reader is not sure whether the Freedom Train by which she travelled up to Heaven is stalled or is deliberately left there by Sojourner to suggest an alternative to the

status quo. Because, obviously the narrative space cannot be the same as the ‘real’ place, the reader can only construct it imaginatively.

Is transgression possible from this narrow margin of the threshold space? Transgression requires a will to penetrate a closed and striated space, which the state apparatus will not allow easily. Transgression sometimes is the result of a poorly negotiated transition causing turbulence. Gilles Deleuze and Félix Guattari distinguish between two kinds of spaces: smooth space and striated space. They defined space with two systems: one that is State-oriented and static, the other nomadic and fluid. Striated space is gridded, linear, metric, optic, state space; smooth space is open-ended, nonlinear, intensive, haptic, nomad space. The transgressor would have to enter the striated space to become visible and this movement of course would create a state of uncertainty and instability. Sojourner not only occupies a non-place, she is also forced into invisibility by the guards who ignore her presence. Traveler X acknowledges her as his ‘sistah’ the direct result of which is violence against both of them.

Sojourner suffers from triple marginalization, because of her colour, her gender and her madness. Madness is a recurrent thread running through the text with reference to Sojourner. Her choice of the threshold as her perch is indicative of her madness. The reader is invited to study her madness in the manner of Renaissance playwrights who regarded madness as wisdom, and the mad person as able to see a different perspective on life. In 1965, Michel Foucault pointed out this in his seminal work ‘Madness and Civilization’: “The possibility of madness is therefore implicit in the very phenomenon of passion.”(21) Sojourner is passionate (about a cause) therefore she is considered mad.

The threshold is an unsafe place as is evidenced by Sojourner’s condition. When Traveller X comes upon her at the triangulated space between Heaven, Earth and Hell he is taken aback by her appearance. She is dressed in torn clothes with a belt of feathers around her hips. She also cuddles a doll, which she treats as a living baby, crooning to it and trying to feed it. There is no indication of another human presence in that space, other than Jefferson Lugard and Stanley Livingston. The playwright peppers the text with enough indications of violations. During the course of conversation between the white gatekeepers and Traveller X, Lugard attempts to molest Sojourner. When Traveller X protests. Both he and Sojourner are tied up tightly. While they are thus distracted, Lady Jefferson Lugard smuggles a blonde –haired newcomer into Heaven.

In the threshold space, conventional ideas of time and space have no meaning. There is polychrony i.e the combination of different temporalities and polytopy i.e. the composition of different spatialities. Polytopy is space understood in its plurality. In the play, Heaven, Hell and Earth are actual spaces but also ideated

spaces. The landscape during the journey taken from Earth to Heavensgate was real in the sense that the road was pitted with ruts and full of physical dangers but at the same time, it was metaphorical. In the play, the space Sojourner occupies is polytopic space: it is her home, her prison and space of her salvation.

The writer does not offer any markers of time, thereby portraying the timeless nature of the struggle of the marginalized. History has not remembered to record the progress of Black people and in particular Black women. Traveler X's appeals to Lugard and Livingston to recognize the long history of struggle of his brothers and sisters and his desire to enter Heaven based on the right this struggle has endowed him with is ridiculed by the White history makers. Sojourner's mere existence, her occupation of that threshold space and her on-going attempts to transgress with her presence and her voice forces the White men to stay alert and to recognize her as an enemy. An enemy they cannot ignore.

If we co-relate the condition of the homeless and itinerant labourers to the situation in which Sojourner Nkrumah and Traveller X find themselves then the journey from the city to the village would be considered as threshold space and time polychronic. The road, the railway station, the bus depot and the railway track are non-places. The exodus to the villages by the 'migrants' is undertaken under duress. They are caught between Government apathy, bourgeois insensibility and their own human needs. There is a feeling of 'un-home-lines' or 'dis-ease' afflicting them. The binary of 'them' and 'us' is at work here as in the play.

Under the master narrative of the disease covid-19, the narrative of these journeys is being underplayed. The possibility of meaningful dialog remains a question. The privileged few must share an empathy with the underprivileged only then will some dialog take place. Mumbai is a spatially challenged megalopolis. However, at the same time there are public domains which could be turned into temporary safe shelters. For instance, playgrounds, sports stadiums, mill land in Dadar, Chinchpokli and Parel could have been used as shelters and temporary pre-fabricated houses could have been constructed there. The feeling of homelessness and the difficulties of travelling of entire families consisting of women, children and the aged could then have been avoided.

Even within this marginalized group, the main victims of the pandemic are the women and children who are forced to hike many kilometres or wait interminably at a bus depot or railway terminus to reach their home in the village. Most of the women folk were engaged in some economic activity or the other, either in poorly paid construction work, domestic labour or as itinerant vendors in the city. The economic effects of the pandemic i.e. Covid-19 is unlike many others of its kind in various ways. In the present century the female workforce, in both skilled and unskilled labour is very large. In the current pandemic, women are worst affected as they have to face job loss due to several reasons, involuntary or voluntary. In a study

conducted by Titan Alon et al and published in the National Bureau of Economic Research, in April 2020, in the USA, on ‘The Impact of Covid-19 on Gender Equality’, it was revealed: ‘An even more important channel for differential impacts on women and men is that in the course of the pandemic, most US states along with other countries have decided to close schools and day care facilities. Worldwide more than 1.5 billion children are out of school right now. This has dramatically increased the need for childcare. In addition, grandparent-provided childcare is now discouraged due to the higher mortality rate for the elderly, and given social distancing measures; sharing childcare with neighbours and friends is very limited also. Thus, most families have no choice but to watch their kids themselves. Based on the existing distribution of child care duties in most families, mothers are likely to be more affected than fathers. Single mothers, of which there are many in the United States, and who are often in a disadvantaged economic position to begin with, will take the biggest hit. Taken together, these factors suggest that the COVID-19 pandemic will have a disproportionate negative effect on women and their employment opportunities. The effects of this shock are likely to outlast the actual epidemic.’(1)

Considering global impact of the pandemic, the results of the study apply in the Indian context as well. As more and more women stay at home and are involved in domestic chores the pressures of working from home and childcare have an adverse impact on their mental and physical wellbeing. The humorous cracks about women managing without their maids has a bitter truth hidden behind it.

The worst scenario is faced by the unskilled female workers, who, like Tess Onwueme’s Sojourner, (trapped between Heaven, Hell and Earth,) are caught between penury, lack of personal space and a state of constant worry about their own and their family’s health and future. Another serious cause for concern is the threat of violence against women trapped in their homes during the lockdown period. In a statement given in April 2020 by Phumzile Mlambo-Ngcuka, Executive Director of UN Women - ‘Violence against women and girls: the shadow pandemic’, she says -

‘Even before COVID-19 existed, domestic violence was already one of the greatest human rights violations. In the previous 12 months, 243 million women and girls (aged 15-49) across the world have been subjected to sexual or physical violence by an intimate partner. As the COVID-19 pandemic continues, this number is likely to grow with multiple impacts on women’s wellbeing, their sexual and reproductive health, their mental health, and their ability to participate and lead in the recovery of our societies and economy.’(1)

In a megalopolis like Mumbai, where space is in short supply, these women have no place to go. In the same statement Mlambo-Ngcuka, adds – ‘Less than 10 per cent of those women seeking help go to the police. The current circumstances make reporting even harder, including limitations on women’s and girls’

access to phones and helplines and disrupted public services like police, justice and social services.’(2) The task of the social service providers like counsellors and mental health workers becomes very important here.

A large percentage of women migrate to cities due to their marriage and get employed in unskilled labour sector due to economic reasons, mostly to add to the family income. The latest government data on migration in India comes from the 2011 Census. As per the Census, India had 45.6 crore migrants in 2011 (38% of the population) compared to 31.5 crore migrants in 2001 (31% of the population). Between 2001 and 2011, while the population grew by 18%, the number of migrants increased by 45%. In 2011, 99% of total migration was internal. Recognizing the severity of the situation, on April 1, 2020, the Ministry of Health and Family Affairs directed state governments to operate relief camps for migrant workers with arrangements for food, sanitation and medical services.

Taken within this larger context, the situation of migrant women takes on significance as these women are exposed to bigger threats Newspapers report pregnant women giving birth on the road- “I sit once in a while...,” said Nikita, the pregnant woman, as she walked on the road wearing a saree. (Aggarwal,1) The woman, who started her walk at 7 pm yesterday, said she had been on the road for the last 12 hours. A young man walked behind her, carrying their belongings on his head. “What will we do staying here? There are no arrangements here for our food and water,” she told NDTV. A migrant worker Shakuntala risked walking a distance of 1,000km -from Nashik to Satna, in the ninth month of her pregnancy. The woman gave birth to the baby on the roadside, rested for an hour and continued the journey with her new-born. A woman needs weeks to recover after childbirth, but, as the Times of India report says, helplessness forced the woman to walk over 200 km soon after giving birth to a baby. She is a hero indeed but it’s so tragic she was forced to be in this situation. A failure of our nation to address this migrant crisis, these stories of apathy and crisis outcome are heart wrenching. This is what migrants have to say about their situation: “I would rather die of the virus at home than die in a place I don’t know”.(Aggarwal, 1). It is not only the lack of food and water, but also the lack of clean toilet facilities and difficulty of maintaining of menstrual hygiene. These trying circumstances are driving women to leave the city. So these women are suspended in a ‘non-place’, an in – between space.

In American cities, the concern is not about migrants but about the loss of income faced by families of colour. The income disparity, which already exists, is made wider due to the pandemic situation. “People of colour have less liquidity and less savings,” said Han Lu, a policy analyst at the National Employment Law Project. “This is centuries of structural racism in the economy in education, in housing and other areas

that produces a radical racial wealth gap.”(1) There are already signs of the ways that the coronavirus is adding to that economic burden. While African-Americans were confronting the problems caused by the pandemic, the issues of race were placed at the forefront by the shooting of George Floyd. Protests erupted in many parts of the country against such brutality. In Onwueme’s play, Sojourner constantly tries to convince the White men that the space they are occupying is a non-place, a creation of their imagination. If it is not inclusive then it is not real. “You can’t shut me up! No!” she tells them “You lost your freedom when you took mine. Your freedom is a myth”. (54)

The problems, which women and other minorities face in most parts of the world, are very similar, notwithstanding their socio-economic situation. Fear and anxiety are constant companions. In *Landscapes of Fear*, Yi-Fu Tuan distinguishes between living in a state of alarm and a state of anxiety. Alarm is triggered by an obtrusive event in the environment and the instinctive response is flight. However, anxiety is more insidious as it is a presentiment of danger when the immediate surrounding cannot be classified as threatening. Therefore, our cities witnessed an exodus of ‘migrant’ workers due to their fear of the disease Covid-19, however, the large number of workers and their families left because of the ‘dis-ease’ they experienced in the city. The anxiety that Mumbai city emitted and the speed with which reaction to the disease spread and the lockdown imposed did not leave any space for protest. The chronotope of this narrative is splintered by a multiplicity of differing experiences of the same event. Storytelling and space merge here; the writer’s own literary cartography makes this space occupied by those marginalized groups, real. Therefore, in what is optimistically termed the New Normal there is no novelty and a return to normalcy is open to many interpretations. In the words of Chime Asonye, Former Senior Special Assistant on Sustainable Development Goals, Office of the Executive Governor of Abia State, Nigeria: ‘In fact, all of us should feel uncomfortable with our present condition because the 'new normal' describes a reality to which many do not have access’.(1)

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