

IMPACT

The Future Makers

Vol. VIII. 2022-23



Central Research Committee
Shri Shikshayatan College, Kolkata

STUDENTS PROJECT REPORT

MANGROVES AND COASTAL LIFE IN INDIA

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INTRODUCTION

Unique group of plants adapted to coastal environment, representing an ecologically distinct group of halophytic plant communities found in tropical and subtropical coastal areas may be defined as mangroves. They are among the most productive and biologically crucial ecosystems of the world. Mangroves are vital in maintaining coastal water quality, reduces severity of storm, wave and flood damage. They nourish biodiversity as nursery grounds for many coastal and marine species and support fisheries in the coastal areas. They stabilise coastlines and slow or reduce soil erosion.

However mangroves are declining rapidly in recent times for different man made projects like agriculture, aquaculture, tourism, urban development and over exploitation. India lost 40% of its mangrove area during the last century.

Reduced mangrove area will increase the threat to coastal life as there is a drastic increase in fields such as erosion, flooding, storm waves, cyclones and tsunami, as observed during 1999 super cyclone in Odisha, 2004 Indian Ocean tsunami and 2020 tropical cyclone “Amphan”.

As per the Indian State of Forest Report 2019, the current data shows that mangrove cover in the India is 4,975 sq. km., which is 0.15 per cent of the country's total geographical area. West Bengal has the highest mangrove cover of 2,112 sq. km. followed by Gujarat having 1,177 sq. km. and the Andamans having 616 sq. km. Restoring mangroves can make coastal areas more resilient to environmental changes. With an increase in extreme weather-related events along the coastal states or areas, an expert panel of the Union Environment Ministry suggested that mangrove forests can lessen the devastation amidst rising sea levels in the coastal areas. Effective governance structures, better planning for the restoration of degraded mangroves, education and awareness building in local communities are needed to conserve, protect and restore the coastal areas.

The current project aims in framing a composite study of causes of mangrove decline in recent times, rise of cyclones over the last 2 decades, role of adaptive characters of mangroves in protection coastal areas, restoration of mangrove projects and awareness campaigns designed in current times.

LIST OF SOME OF THE SPECIES OF MANGROVES FOUND IN WEST BENGAL

- ***Heritiera fomes*** – it grows in less saline environments and on drier ground; clayey soil is ideal for its growth; its local name is “sundari” which gives the Sundarbans region its name.

- ***Xylocarpusmekongensis*** – these are moderately sized trees; found along the borders of backwater creeks in association with other mangroves species.
- ***Xylocarpusgranatum*** – found in areas which are subjected to both high and low tides; also found in estuaries.
- ***Sonneratiaapetala*** – these are small to medium sized columnar tree; grows in moderate to high saline areas.
- ***Bruguieragymnorhiza*** – they grow in intertidal muddy region and estuaries; the species grow on a variety of soils type.
- ***Ceriopsdecandra*** – grows in muddy swamps and tidal creeks.
- ***Aegicerascorniculatum*** – these are shrubs or small trees; grows in estuarine areas
- ***Rhizophoramucronata*** – found in estuaries, tidal creeks and level coastal areas subjected to daily tides; might occur in association with other species.
- ***Rhizophoraapiculata*** – grows well in wet, muddy and silty soil; found in highly saline areas.
- ***Nypafruticans*** – grows in soft mud and slow river waters; grows well in moderate salt concentration; pure seawater is not suitable for its growth; it prefers the brackish waters of estuaries.
- ***Avicennia alba*** – it grows along the banks of tidal rivers and on muddy portions of the seashore.
- ***Avicennia officinalis*** – it is found occasionally on the river banks and rarely found near the sea. It prefers clayey soil and usually found inland

The Sundarbans flora is characterised by the abundance of sundari (*Heritierafomes*), gewa (*Excoecariaagallocha*), goran (*Ceriopsdecandra*) and keora (*Sonneratiaapetala*) all of which occur prominently throughout the area. The characteristic tree of the forest is the sundari (*Heritiera littoralis*), from which the name of the forest had probably been derived. It yields a hard wood, used for building houses and making boats, furniture and other things. New forest accretions is often conspicuously dominated by keora (*Sonneratiaapetala*) and tidal forests. It is an indicator species for newly accreted mudbanks and is an important species for wildlife, especially spotted deer (*Axis axis*). There is abundance of dhundul or passur (*Xylocarpus granatum*) and kankra (*Bruguieragymnorhiza*) though distribution is discontinuous. Among palms, *Poresiacoaractata*, *Myriostachyawightiana* and golpata (*Nypafruticans*), and among grasses spear grass (*Imperatacylindrica*) and khagra (*Phragmites karka*) are well distributed.

REASONS OF INCREASE OF CYCLONES IN RECENT TIMES :

The proportion of strongest storms is increasing about 8% a decade. The possibility of higher rainfall during these storms has also increased. As the planet's atmosphere heats up due to carbon

emissions, it can hold more moisture, which often results in extreme rainfall that multiplies the chances of flooding.

Rising sea levels due to global warming also lead to increased storm surges that can inundate coastal areas. Global sea levels have risen by about 23 cm compared with pre-industrial times and are rising by 3.3 mm every year, according to NASA.

The rapid warming of the Indian Ocean due to climate change is leading to more cyclones pummeling South Asia, as storms gather more quickly and become more intense

- Climate change amplifies the cyclonic storms that typically form in the northern Indian Ocean.
- Increasing sea surface temperatures can make cyclones more powerful.
- Warmer oceans mean there is higher rainfall during storms.
- Rising sea levels due to global warming make for higher storm surges, which reach larger inland areas.
- Higher temperatures also lead to cyclones forming much faster, as was the case with Aila, Nisarga and Amphan.

Although this is a global phenomenon, it is especially true for the Indian Ocean (comprising the Arabian Sea and the Bay of Bengal, which generates 7% of the world's cyclones, according to a May 2018 research paper by Sushil Gupta), which is the warmest of all five oceans, partly because the African-Asian landmass obstructs the entry of cold water from the Arctic.

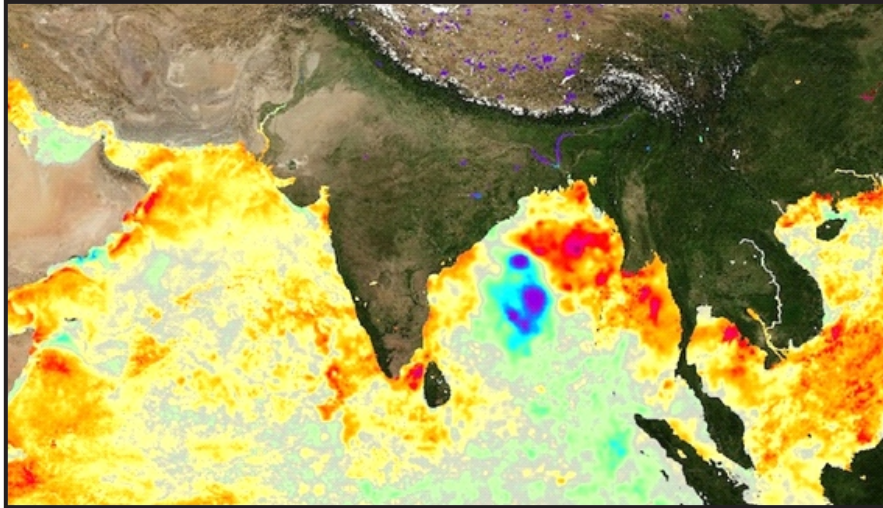
Nisarga, the first cyclone to have threatened Mumbai in more than 70 years, South Asia has been hit by two cyclones with Cyclone Amphan ravaging parts of eastern India and Bangladesh on May 20. Similar Catastrophe was experienced in 2009 as a part of Aila which caused excessive damage in South Bengal and Mangroves as well.

Threat to coastal cities

South Asia has a large number of cities along the coast. They house millions and have massive unplanned growth, with the poor constantly shifted to low-lying areas, making them particularly vulnerable to severe storms and flooding.

Natural storm breakers such as mangroves have been cut down in recent years. The vanishing mangroves around Mumbai are a case in point. The damage from Cyclone Amphan would have been much greater if the mangroves of the Sundarbans forest had not blunted the storm's fury somewhat.

The damage cyclones cause is made worse by inadequate drainage systems and loss of ponds that used to hold water, encroachment over existing drainage systems and reduction in coastal mangroves



A satellite image showing temperature anomalies in north Indian Ocean on May 19, a day before Cyclone Amphan made landfall in eastern India. There was a variation of more than 2C on May 19 in the Bay of Bengal (Image by PODAAC/NASA)
<https://indiaclimatedialogue.net/2020/06/05/cyclones-rise-as-climatechange-heats-up-indian-oce>

The scientists stated that the cyclones are of significant risk and increase the vulnerability among communities living along the coastal regions. They mentioned that atmospheric parameters like higher relative humidity, especially at mid-atmospheric level, weak vertical wind shear as well as warm sea surface temperature were the primary reasons for this disturbing development. Scientists pointed out that global warming has a role to play in bringing about this increasing trend. The study said that strong mid-level relative humidity (RH), positive low-level relative vorticity (RV), weak vertical wind shear (VWS), warm sea surface temperature (SST), and suppressed outgoing longwave radiation (OLR) are factors responsible for increased tropical cyclone activity in the North Indian Ocean.



Intensity of severe cyclonic storms increased in past 4 decades, say scientists;
Hindustan Times, New Delhi; Published on Jul 29, 2021 04:16 PM IST

MANGROVES ACT AS A NATURAL BARRIER IN COASTAL AREAS AGAINST CYCLONE AND TSUNAMI

Due to the natural and anthropogenic activities coastal areas are under threat. Coastal erosion and environmental degradation are accelerating at a huge rate since the last few decades. A number of coastal countries are facing the same problems, satellite images have detected changes in coastal areas over the years without any restoration. Natural sea or ocean waves have become more destructive and its incentive increased due to the artificial dam (water break) constructed on water bodies.

Mangroves have many ecological and economic significance in restoration and protection of coastal lands. Mangrove generally can be found towards tropical and subtropical areas around the world. They are considered as the shelter for different species from fisheries to invertebrates.

- ❖ They act as an interface between the Marine and interstellar environment growing at the mouth of river tidal swamps and coastlines surrounded by saline and brackish water. Over the years coastal mangroves have been recognised as the store line stabilizer as it protects the local coastal communities, physical properties, local agriculture and industry.
- ❖ Also from natural disasters like storms, erosion, tidal waves, reducing water flow, cyclones, typhoons, hurricanes , regulates flooding level, small tsunami waves, rising sea level that put us at risk. On the other hand mangroves are also threatened by land use by these industries and aquaculture practices.
- ❖ They act as a biological filter separating sediment erosions and nutrients from the environment before depositing. The roots of mangroves bind or hold the soil together increasing the soil strength.
- ❖ Mangroves indirectly help in human survival as they are converted into harvesting areas or culture areas or fishing grounds for crabs, shrimps, molluscs etc. Few species of mangroves also provide sugary saps which interns local people use to make sugar and alcohol, Woods for fuel and leaves for making roofs etc. Scientists have searched for mangrove bands to act as carbon storage for millennia; they have stored carbon inside their trunk, roots in their biomass over and soil.
- ❖ Destruction of mangroves may lead to massive release of carbon dioxide in the atmosphere which will create imbalance. The magnitude of the mangroves to observe the wave energy depends upon the complex root system stems of show slopes and density is spectral characteristics housed in dissipating the energy spectrum and wave power. As researched mangrove losses impact coastal communities economically, economically important social management conservation and Restoration affairs for the world worldwide.
- ❖ Disaster prone coastal communities increase mangrove conservation activities during the economic recovery phase. Anecdotal estimates are that up to 50% of all mangroves that historically existed may have been lost to date and that current rates of loss may be as high as 1% per year.



PNEUMATOPHORES



VIVIPARY XEROMORPHIC FEATURES

ADAPTATIONS PRESENT IN MANGROVES TO THRIVE IN SALINE CONDITIONS

REASONS WHY MANGROVES ARE ENDANGERED IN CURRENT TIMES

Mangroves are getting endangered in current times due to over exploitation, urbanization and pollution. Industrial development and agricultural practices in coastal areas also play a vital role in this.

Overall reasons behind deterioration of the mangrove forestry can be classified into :

- Anthropogenic
- Natural
- Other (Miscellaneous)

Anthropogenic Causes :

1. Over exploitation and illegal forest cutting :

Over exploitation due to growing requirement of people is one of the main reasons behind the destruction of the mangrove forests. Encroachment and illicit removal of timber and firewood

from the forest to meet up the demand also play a very crucial role in this. These forests have been continuously exploited for timber, fuel wood, bark tannin, medicine as a result of which the mangrove forest is disappearing at a very quick rate.

2. Shrimp farmingx :

The growing shrimp farming industry is another reason behind the deterioration of mangrove forestry. There are 14 different fishing methods among which Shrimp Fry Fishing is considered to be the most destructive. Large areas of mangrove forests are being cleared to construct shrimp ponds. Around 15 tons of waste including natural and synthetic chemicals like di chlorides, malachite green are introduced to the water on a daily basis resulting into destruction of mangrove forests.

3. Pollution :

Increase in population, industrial development, agriculture and aquaculture has led to production of huge amount of pollutants, garbage and wastes. The mangrove ecosystem has become vulnerable to pollution, among which oil pollution being one of the most serious threats.

Crude oil and its derivatives enter the mangrove forests as a result of oil transportation and cause severe damage to it. Oil attached to the leaf surface blocks the stomata and affect photosynthesis, respiration and water metabolism of the trees.

4. Management failure :

Management failure and poor knowledge about mangrove ecosystem lead to the destruction of the forest resources.

5. Diseases :

'Top dying' disease in dominant Sundari trees (*Heritiera fomes*) is the leading cause behind the deterioration of the forest. Recent index shows that nearly 70% of *H. fomes* are affected by this disease. A number of other diseases has been reported as chief causes of decline of trees like *Avicennia* sp. , *Rhizophora* sp. , *Heritiera* sp. , *Phoenix* sp. , *Acanthus* sp.

6. Fire :

Fire have caused some of the most serious damage of the mangrove ecosystem in recent years. The mangrove forests inhibit various species of nectar producing trees. These floral resources are used by honey bees to produce honey. In order to collect this honey from nests fire has to set up and this sometimes spreads and destroys larger areas of the forest.

Natural causes :

Another main cause of mangrove forest destruction is natural calamities like cyclones, floods, storms, coastal erosion, naturally shifting hydrology, climate change and change in sea level. In current times global warming has become a serious issue to cause abrupt effects in climate pattern causing extreme natural disasters. Nutrient depletion also plays a role, especially phosphorus and nitrogen was found to be directly connected with decline in forest cover.



GLIMPSES OF AMPHAN CYCLONE AFFECTED SUNDARBAN MANGROVES

Other Causes :

Certain geomorphological changes, loss of soil fertility, high salinity, ecological succession, inadequate regeneration and low yield serve as the other causes behind the depletion of mangrove forestry

LOCAL NGOS AND GOVERNMENT PROGRAMMES FOR RESTORATION AND PLANTATION :

★ **MAHARASHTRA MANGROVE CONSERVATION MODEL**

The Government of Maharashtra has declared a mangrove conservation model on 6 October 2005. Under this initiative government land having Mangrove plantations were declared as protected areas under Indian Forest Act. The Maharashtra government formed various cells or units to restore Mangroves.

The Mangrove Cell was formed in January 2012 and then the Mumbai Conservation Unit in 2013 to protect Mangroves. About 15,088 hectares of land containing Mangroves were declares as 'RESERVED FOREST' which kept the lands away from Human Influence such as Afforestation etc. for their own benefits.

They also took the initiative to plant Mangroves. About 200ha of Mangrove plantations have been successfully done because of all the above initiatives there has been an 20% increase in Mangrove cover between 2013-2015.

★ **KANNAR MANGROVE MISSION**

The mission was taken up by District Collector, Kannar along with the forest department in May 2014. They took an initiative to raise mangrove plantation and restore them. They transferred 236 hectares of land to 'Reserved Forest' and acquired 1200ha of private lands successfully.

★ **CANAL BANK PLANTING**

A large number of mangroves were degraded in both Tamil Nadu and Andhra Pradesh due to high salinity of dry soil. M.S. Swaminathan Research Institute situated in Chennai along with the

Forest Department introduced the 'Canal Bank Planting' technique with FISH BONE design. Due to the above efforts undertaken, reportedly there has been a 90% increase in Mangrove cover.

OTHER INITIATIVES

Bangladesh Forest Department along with International Union for Conservation of Nature and Friendship group together organized an international conference for collaboration between the government and local NGOs to restore Mangroves of Sunderban. The main aim was to take private lands for Mangrove Plantation.

Paschim Banga Vidyan Mancha along with a group of students has taken an initiative to restore mangroves of Sundarbans which were destroyed during Amphan. Under this drive 30,000 mangroves saplings were planted covering a stretch of 1.5km.

CONCLUSION

RESTORATION OF COASTAL AREAS BY MANGROVES

Mangroves are salt-tolerant vegetation that grows in intertidal regions of rivers and estuaries. They are referred to as 'tidal forests' and belong to the category of 'tropical wetland rainforest ecosystem'. Mangrove forests occupy around 2,00,000 square kilometres across the globe in tropical regions of 30 countries. India has a total mangrove cover of 4,482 sq km. A mangrove ecosystem is the interface between terrestrial forests and aquatic marine ecosystems. Mangroves are salt-tolerant vegetation that grows in intertidal regions of rivers and estuaries. They are referred to as 'tidal forests' and belong to the category of 'tropical wetland rainforest ecosystem'. The structural complexities of mangrove vegetation create unique environments which provide ecological niches for a wide variety of organisms. Mangroves give protection to the coastline and minimise disasters due to cyclones and tsunami. Recent studies have shown that mangroves store more carbon dioxide than most other forests. Mangroves are an intermediate vegetation between land and sea that grow in oxygen deficient waterlogged soils which have Hydrogen Sulfide (H₂S). They perform important ecological functions like nutrient cycling, hydrological regime, coastal protection, fish-fauna production, etc. Mangroves act as shock absorbers. They reduce high tides and waves and help prevent soil erosion. They also provide livelihood opportunities to coastal communities. Sundarbans in the Gangetic delta with an area of 2.12 lakh hectares (ha) supports 26 plant species of mangrove with a maximum height of more than 10 metres. Pichavaram in Tamil Nadu with an area of 1,100 ha supports 12 plant species growing to a height of 5 metres. Muthupet is the biggest mangrove forest in Tamil Nadu with an extent of 11,885.91 ha with poor species diversity due to lack of fresh water supply. But mangroves are being destroyed and facing severe threats due to urbanisation, industrialisation, and discharge of domestic sewage, industrial effluents and pesticides. Saltpans and aquaculture also pose major threat to the mangroves. As a result, mangroves get depleted to the tune of 2-8 per cent annually at global level; 40 per cent of mangrove forests in West Coast of India have been converted into farmlands and housing colonies over the last three decades. Some of the mangrove species like *Bruguiera cylindrica* and *Sonneratia acida* are at the verge of extinction. Due to shrimp farming, about 35,000 ha of mangroves

have been lost in India. Though we have the Environmental (Protection) Act, the Supreme Court's order banning semi-intensive and intensive aquaculture in the coastal areas, and the Coastal Regulation Zone (CRZ) notification with strict enforcement of the legislative measures, scientific management practices are very much essential for conservation and sustainable management of the precious mangrove forests. So far, none of the mangrove species has been included in the Red List of the International Union for Conservation of Nature (IUCN). A scientific study reported that 100 per cent of mangrove species, 92 per cent of mangrove associates, 60.8 per cent of algae, 23.8 per cent of invertebrates and 21.1 per cent of fish are under threat. Periodical monitoring of the mangrove forest is very much necessary to assess the status.

The impact of environmental and human interference on marine flora and fauna needs to be assessed. Mangrove forests play a major role with more valuable ecological services, scientific management of the same is the need of the hour not only for the wellbeing of the mankind but also for coastal biodiversity

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COVID-19 VACCINES

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INTRODUCTION :

The world is fighting against the historic health crisis. Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered corona virus. These viruses are positive stranded RNA virus(+ss). It got its name corona from Latin term coronam which means crown since it resembles crown under electronic microscope due to the presence of spike glycoproteins on the envelope. The index case of the disease, caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) was identified since then necessary precautions are taken. Now, the biggest question arise is how corona virus spread and how can we prevent them. Recent studies show that SARS-CoV-2 has greater affinity to angiotensin-converting enzyme 2 (ACE2) receptors which means fewer SARS-CoV-2 virions are necessary to establish an infection in humans.

The World Health organization (WHO) declares COVID-19 as a pandemic. Among the WHO's current recommendations, *'people with mild respiratory symptoms should be encouraged to isolate themselves, and social distancing is emphasized and these recommendations apply even to countries with no reported cases.'*

Since this virus spread by droplets and there is no specific cure for this disease. So, we should follow following steps :

- I. use mask (double masking is more efficient),
- II. avoid gatherings,
- III. maintain social distancing by six feet
- IV. sanitize and wash hands (for at least 20 seconds)

Since the outbreak of COVID 19 several countries take drastic measure towards vaccine development. Vaccines have been widely considered as part of the exit strategy to enable the return to previous patterns of working, schooling and socializing. To control this vicious virus, we need to immunize the world population against it. To achieve this the countries, need to develop an effective vaccine against it. In the past few months several vaccines are developed but still a question arise which vaccine is more relevant ? At least 13 vaccines are developed within December 2020. Some of them are the Pfizer/Biotech Comirnaty, The SII/Covishield and AstraZeneca/AZD1222 vaccines, The Janssen/Ad26.COV 2.S, The Moderna, etc.

Some of approved vaccines that are given to the people of India are :

- **COVISHIELD** : The Serum Institute of India (SII) locally produce Oxford-AstraZeneca vaccine and named it Covishield. Its effectiveness hit 90% after full vaccination. However, it is found that

it is 70% efficient after first dose. Over 50 million doses are manufacture within Jan,2021. In February 2021 Govt. of India ordered over 21 million doses.

- **COVAXIN** : The Bharat Biotech, produced first Indian based vaccine and named it Covaxin. Its effectiveness hit 81% after full vaccination. The Bharat Biotech stockpiled over 20 million doses by the end of the last year. However, the company targeted to produce 500 million within the end of this year.
- **SPUTNIK V** : This vaccine is specifically developed by Moscow's Gamaleya Institute, Russia and imported and approved to India when the country strike second wave. Its effectiveness strike 92%.

Many vaccines are developed in India but still going through the trials. Some of them are Corbevax, Covovax and ZyCoV-D.

Even after vaccines are developed, we should still follow precautions to prevent Corona Virus. Since we all know '*prevention is better than cure*'

DISCUSSION

There are 20 WHO approved vaccine and many vaccines are still in their trial stage. Every country put their own effort in vaccine development. Let's take a look in some important vaccines :-

ASTRAZENECA (Covishield) :

There are several COVID-19 vaccines out right now, including one from AstraZeneca. Although it has been approved for use in other countries, it has not yet been approved by the Food and Drug Administration (FDA). Survey carried out in 2020, showed efficiency of this vaccine is 76.0% at preventing symptomatic COVID-19 beginning at 22 days following the first dose and 81.3% after the second dose. The vaccine was first developed by the collaboration between Oxford University's Jenner Institute and Vaccitech.

Knowing more about the AstraZeneca vaccine can help you make informed decisions about which vaccine to get if it does get approved for use in the United States.

The AstraZeneca COVID-19 vaccine, now called Vaxzevria, is a viral vector vaccine, just like the vaccine from Johnson & Johnson.

The vaccine uses a chimpanzee adenovirus to carry spike proteins from the coronavirus into your body to create an immune response. It can be produced on a large scale and inexpensively, which is crucial during a pandemic. It can also be kept in a regular refrigerator, unlike the vaccines from Pfizer and Moderna.

Despite initial pauses about its safety with blood clots, it has been deemed safe by the European Medicines Agency (EMA) and is still recommended by the World Health Organization (WHO).

On 30 December 2020, the vaccine was first approved for use in the UK vaccination programme, and the first vaccination outside of a trial was administered on 4 January 2021. On 4 June 2020, the

WHO's COVAX (COVID-19 Vaccines Global Access) facility made initial purchases of 300 million doses from the company for low- to middle-income countries. Also, AstraZeneca and Serum Institute of India reached a licensing agreement to independently supply 1 billion doses of the Oxford University vaccine to middle- and low-income countries, including India (which is named Covishield)

COVAXIN :

The covaxin codenamed BBV152 is developed by Bharat Biotech in collaboration with the Indian Council of Medical Research. It is an inactivated virus-based COVID-19 vaccine. In July 2021 Bharat Biotech reported the vaccine to be 93.4% effective against severe Covid-19 infection, 77.8% effective against symptomatic infection, 63.6% effective against asymptomatic infection, and 65.2% effective against the Delta variant. On 23 June 2021, Bharat Biotech had submitted 90% of the documentation needed for WHO's EUL.

The vaccine was also approved for emergency use in Iran and Zimbabwe. Nepal granted EUA for Covaxin on March 19, 2021. On 7 April Mexico gave emergency authorization for Covaxin. On 19 April 2021, Philippines granted EUA to Covaxin. Additionally, Covaxin was granted EUA in Guatemala, Nicaragua, Guyana, Venezuela and Botswana.

JOHNSON & JOHNSON :

The Janssen or Johnson & Johnson COVID-19 vaccine is a COVID-19 vaccine that was developed by Janssen Vaccines in Leiden, Netherlands, and its Belgian parent company Janssen Pharmaceuticals, subsidiary of American company Johnson & Johnson. the vaccine was 66% effective in a one-dose regimen in preventing symptomatic COVID-19, with an 85% efficacy in preventing severe COVID-19, and 100% efficacy in preventing hospitalization or death caused by the disease.

The vaccine is based on technology similar to the Sputnik V COVID-19 vaccine and the Oxford–AstraZeneca COVID-19 vaccine.

Many countries give authorization to this vaccine including United States, European states, etc. Given the Johnson & Johnson vaccine is a single dose and has a lower cost, it is expected that it will play an important role in low and middle-income countries. Since it is a single dose vaccine, it has been a popular vaccine to distribute to the homeless, the incarcerated, and refugee populations. This is due to the fact that it is difficult for these aforementioned demographics to be contacted for vaccines that require a second dose. Due to this advantage of the Johnson & Johnson vaccine many countries authorise it.

PTIZER :

The Pfizer–BioNTech COVID-19 vaccine (INN: tozinameran), sold under the brand name Comirnaty, is an mRNA-based COVID-19 vaccine developed by the German company BioNTech. A study data showed a potential efficacy of 91.3% in preventing symptomatic infection within seven days of a second dose. It is authorized for use in people aged 12 years and older in some jurisdictions

and for people 16 years and older in other jurisdictions, to provide protection against infection by the SARS-CoV-2 virus, which causes COVID-19. For its development BioNTech collaborated with Pfizer an American company, for support with clinical trials, logistics, and manufacturing.

The vaccine is supplied in a multidose vial as "a white to off-white, sterile, preservative-free, frozen suspension for intramuscular injection". It must be thawed to room temperature and diluted with normal saline before administration.

CONVIDECIA :

AD5-nCOV, trade-named Convidecia developed by CanSino Biologics. It is a single-dose viral vector vaccine for COVID-19. In February 2021, global data showed that the vaccine had a 65.7% efficacy in preventing moderate symptoms of COVID-19, and 91% efficacy in preventing severe disease. It has similar efficacy to Johnson & Johnson's Ad26.COV2. S, another one-shot adenovirus vector vaccine with 66% efficacy in a global trial. Convidecia is a viral vector vaccine similar to AstraZeneca's AZD1222 and Gamaleya's Gam-COVID-Vac.

Convidecia is approved for use by some countries in Asia, Europe, and Latin America. Production capacity for Ad5-NCov should reach 500 million doses in 2021. Manufacturing will take place in China, Malaysia, Mexico, and Pakistan.

SPUTNIK-V :

The Russian COVID-19 vaccine Sputnik V (Gam-COVID-Vac) is an adenoviral-based, two-element vaccine towards the SARS-CoV-2 coronavirus. Initially produced in Russia, Sputnik V makes use of a weakened virus to supply small components of a pathogen and stimulate an immune response. On April 13, 2021, researchers from the Argentina-based CONICET, below the coordination of the Ministry of Health of the Province of Buenos Aires, introduced 94% of those who obtained just one dose of the Sputnik V vaccine produce unique antibodies.

The Sputnik V (Gam-COVID-Vac) vaccine reduces the time taken for the real improvement of immunity to SARS-CoV-2, the virus behind the COVID-19 pandemic. It is a vector vaccine primarily based totally on adenovirus DNA, wherein the SARS-CoV-2 coronavirus gene is integrated.

Emergency mass-distribution of the vaccine began in December 2020 in countries including Russia, Argentina, Belarus, Hungary, Serbia and the United Arab Emirates. By February 2021 over a billion doses of the vaccine had been ordered for immediate distribution worldwide.

BBIBP-CorV:

BBIBP-CorV (Sino pharm) COVID-19 vaccine is developed by Sino pharma's Beijing Institute of Biological Products. BBIBP-CorV shares similar technology with CoronaVac and Covaxin, other inactivated virus vaccines for COVID-19. The studies showed that this vaccine is 78.1% effective against symptomatic cases and 100% against severe cases.

On 7 May 2021, the World Health Organization approved the vaccine for use in COVAX. BBIBP-CorV is being used in vaccination campaigns by certain countries in Asia, Africa, South America, and Europe. By May, Sino pharm had supplied 200 million doses across all countries. Although many controversies arise during its trial period but after the approval given by WHO it has been authorised by many countries for emergency uses.

MODERNA :

The Moderna COVID-19 vaccine (pINN: elasomeran) codenamed mRNA-1273 (also known as Spikevax) is a COVID-19 vaccine developed by Moderna, the United States National Institute of Allergy and Infectious Diseases (NIAID) and the Biomedical Advanced Research and Development Authority (BARDA). It is an RNA vaccine composed of nucleoside-modified mRNA (modRNA) encoding a spike protein of SARS-CoV-2, which is encapsulated in lipid nanoparticles. The vaccine study by US shows High efficacy is achieved with full immunization, two weeks after the second dose, and was evaluated at 94.1%. Moderna's technology uses a nucleoside-modified messenger RNA (modRNA).

The most common adverse events were pain at the injection site, fatigue, headache, myalgia (muscle pain), and arthralgia (joint pain).

On 30 April 2021, the World Health Organization (WHO) approved this vaccine for clinical purposes. The Moderna COVID-19 vaccine is authorized for use at some level in 53 countries, including Canada, European Economic Area countries, Philippines, South Korea, Thailand, the United Kingdom, and the United States.

NOVAVAX :

The Novavax COVID-19 vaccine, codenamed NVX-CoV2373, is a COVID-19 antibody competitor created by Novavax and the Coalition for Epidemic Preparedness Innovations (CEPI), that is going through preliminaries in India under the brand name Covovax. On 12 March 2021, Novavax declared their antibody competitor was 96.4% viable in forestalling the first strain of COVID-19 and 86% powerful against the Alpha variation. Serum Institute of India has begun the creation of the first cluster of Novavax (known as Covovax in a while) Coronavirus immunization. Serum Institute of India (SII) CEO Adar Poonawalla said the Novavax vaccine has extraordinary potential to ensure our people in the future below the age of 18. Preliminaries are progressing. US-based Novavax Inc. has an immunization fabricating concurrence with Serum Institute of India, which additionally makes the Covishield antibody right now controlled in the country. Although it is still in trial stage.

Above 8 vaccines (except novavax) are adversely used worldwide against Covid-19 disease. Other remaining vaccines are *CoronaVac*, *Sputnik Light*, *WIBP-CorV*, *EpiVacCorona*, *ZF2001 (ZIFIVAX)*, *Soberana 02*, *Abdala*, *CoviVac*, *QazCovid-in (QazVac)*, *Minhai COVID-19 vaccine (KCONVAC)*, *COVIran Barakat (COVIRAN)* and *Chinese Academy of Medical Sciences COVID-19 vaccine (Covidful)*.

Within a year of Covid-19 pandemic, it is a great achievement in science field that we are able to make this amount of progress in vaccine development. And with necessary precautions we will be able to cope it too.

CONCLUSION

Sputnik V will be available in India in the next few weeks. But it's not vaccines that will stop the pandemic, it's vaccination. We must ensure fair and equitable access to vaccines, and ensure every country receives them and can roll them out to protect their people, starting with the most vulnerable. In India, 31.2 cr people have been vaccinated in a population of 1.4 billion people. Technical problems connected with the production of billions of doses and ethical ones connected with the availability of these vaccines also in the poorest countries, are imminent challenges facing us. It is our tenet that in the long run more than one vaccine will be needed to ensure equitable global access, protection of diverse subjects and immunity against viral variants.

AstraZeneca anticipates producing 3 billion doses in 2021, Pfizer–BioNTech 1.3 billion doses, and Sputnik V, Sinopharm, Sinovac, and Johnson & Johnson 1 billion doses each. Moderna targets producing 600 million doses and Convidecia 500 million doses in 2021.

The use of novel technologies for vaccine development requires extensive testing for the safety and efficiency of vaccine. The scientific community needs to construct various processes and capabilities for the large-scale manufacturing and administration of covid vaccines.

This pandemic should serve as a guide post to the international research community to not only acknowledge the outbreak but also inactivate the following coronavirus crossing into mammals. A pan coronavirus vaccine is urgently needed as the delays in vaccine rollout even by one week will accompany millions of deaths. It appears to be a scientifically feasible task if sufficient resources are made available in due time.

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BOOK REVIEW

**ARISTOTLE AND DANTE DISCOVER THE SECRETS OF
THE UNIVERSE : A QUEST FOR QUEER IDENTITY BY A LONELY BOY**

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Set in 1987 in the borderlines of the US, this work deals with the very idea of liminality, that is, the narrative is situated at a stage of transition from one phase to the next, from the questioning of self to the final understanding and affirmation. An adolescent boy, a second-generation immigrant, is born to a family where the father is silenced by the horrors of the Vietnam war and a "dead" brother who is in prison. Aristotle grapples with the failure of identifying with an adult figure who would aid him in his quest for recognition. He attempts to follow the rigid laws of sexuality and suffers from anxiety and loneliness as he navigates through his feelings and tries to accept his love for Dante.

In this paper, I will map out Aristotle's transition from an adolescent to an adult by following two branches of analysis- reconnecting with his family and the development of identity and Ari's acceptance of his sexuality. And finally, how with time, he learns and matures and begins a new chapter in his life. He will be the "boy(s) who've had to learn to play by different rules" (dedication by Benjamin Saenz) since the moment one emerges to be different, one has to fight and set new rules to survive.

Growing up, we all in some way or other end up mimicking one of our parents. By recognizing ourselves as parental figures we slowly grow into our being. However, this does not happen with Aristotle Mendoza, the fifteen years old Mexican-American boy growing up in the borderlines of America, El Paso. Aristotle or Ari, as he renames himself, is a boy who lives within the space of his mind. The entire story is narrated from his point of view. Even though Ari seemingly enjoys being alone and romanticises the idea of sadness and pain, he constantly tries to connect with his parents and the people around him. But this attempt to affix becomes a taxing procedure since his family keeps everything hidden and, in that way, Ari grows up repressing his emotions. This elimination of emotions can be connected with the idea of rigid masculinity. As he writes, "I had been born knowing how to hide what I felt." (242) It is interesting how later on this form of masculinity will be challenged by Dante and his father who are openly emotional and affectionate, compelling Ari to question his repressed self and allow himself to feel. Ari writes "I looked like my dad. I didn't think that was such a great thing" (9) and yet he wears the same old T-shirt gifted by his father on his birthday. He suffers from this dilemma of whether to connect or not to connect and that is because his father, like Ari, is smothered, expressing himself through silence. His father who served in the war in Vietnam and was once an art student had returned with the war inside of him and with it, an ocean of pain and loss. As Ari writes, "So I was the son of a man who had Vietnam living inside him." (14) For Ari, his father was ultimately a "mystery" that he promised to solve. (37)

Lost in his thoughts and conversations with his mind, Ari, again and again, tries to reach out to his father, tries to manifest a bond with him. "I (Ari) liked being alone. Maybe I liked it too much, maybe my father was like that too." (57) For him, everything relating to his father was a "maybe".

This break or the absence of a father figure starts to mend when Ari takes upon the task of communicating first. His desire to connect with his father seeps into his unconscious and in all of his dreams, he searches for his lost father. And this search, in turn, happens to be a symbol for Ari's search for himself. Ari steps out of the walls of his mind and shares a private thought with his father. Something even as small as telling him that he always has bad dreams happens to be a huge step towards the building of the bridge. This conversation becomes significant in the process of identification and self-formation :-

"Are you (Ari) always lost ? / In most of them, yeah. / And are you always trying to find me ?" "Mostly I think I'm trying to find me, dad." It was strange to talk to him about something real."

... "I'm sorry," he said. "I'm sorry I'm, so far away."... "I have bad dreams too, Ari." (65)

Ari equates himself with his father. And he is quite like him. But Aristotle is multifaceted. He is a collection of all the people he loves. The taciturn and pain attribute he borrows from his father, the wit from the mother, the heart from Dante, and aggression from his older brother, Bernardo.

Adolescence is defined as the years between the onset of puberty and the beginning of adulthood. (Walinga) As an adolescent, Ari is in that stage of transition and he is an outsider. The main task that he undertakes is the search for a unique identity – the ability to answer the question "Who am I ?" And to answer that, he must face confusion and choose between identities- absent and present, negative or desirable and form an identity unique to himself.

Ari's problem with identification grows more difficult as even his siblings become unreachable to him.

"My twin sisters were twelve years older. Twelve years was a lifetime...And my brother, he was eleven years older. He was even less accessible to me than my sisters. I couldn't even mention his name. who the hell likes to talk about older brothers who are in prison ?" (13)

The alienation that Ari suffers is due to the inaccessibility to anyone close to him who will help him in understanding himself and in turn, assist in the shaping of his identity. His "twin" sisters, close to each other due to their very nature of birth and in juxtaposition, his age and the contrasting gap enhances the feelings of the loneliness. The silence surrounding his brother deeply affects Ari. He becomes obsessed with Bernardo, his brother and starts to identify with him even though he has no clear memory or idea of him. He bases his self-formation on an absent figure.

Nevertheless, Ari's slow acceptance of feelings and his connection with his parents sprouts with his meeting with Dante. It is the difference between Dante's family and his own, that he starts to open up and feel. Such as, Dante's father is frankly fond and loving and stands, very much in contrast to Ari's father.

"It made me (Ari) smile, the way they got along, the easy and affectionate way they talked to each other as if love between a father and a son was simple and uncomplicated... But me and my dad, we didn't have that, I wondered what that would be like to walk into a room and kiss my father." (26)

In light of these sentiments, the idea of liminality emerges which is heavily connected to the masculine regulation and repression of emotions and homosexuality. Ari seems to be in this state of transition from one stage to another. To become a person or an adult, to understand himself better, he needs to connect and rethink everything. And yet, due to the unavailability of siblings and father figures, Ari is stuck in limbo, unable to move onto the next stage. It will be ultimately, Dante, whose love will bring him from the liminal space to the centre as he will accept his sexuality and seek out his family. All the questioning and grappling with himself will finally start to make sense and resolve as he will accept that he is innately different from everyone, from his parents and his siblings. His failure to connect can be traced back to the fact that he, himself cannot be identified with them since he is a queer body. So, in order to accept oneself, before the last stage of acceptance and maturing, we are introduced to Aunt Ophelia who lived with her lover, Franny and who was a unique soul too.

"I did call her(Ophelia) sometimes. It was strange, but I could talk to her. She always made me feel so loved. I wondered how she did that." (262)

"I remembered what my aunt had told me once. "The body is a beautiful thing." No adult had ever said that to me. And I wondered if I would ever feel like my own body was beautiful. My aunt Ophelia had solved a few of the many mysteries of the universe... I hadn't even solved the mystery of my own body." (263)

The idea of the body is closely linked to the studies of queer theory. And it is no wonder that Ari felt differently about her compared to the other uncles and aunts. Naturally, he connected with Ophelia on a deeper level. The queer body needs to be under control to curb one's desires since it was considered "unnatural". Ari's inability to know his own body can be linked to his shame of being in love with another boy, though at this point, unconsciously.

"Paradoxically – and the human body is a paradox – there are those people who are so detached from the body that they hide it or hurt it out of shame, conditioned by experience or religion to think of it as a humiliation, an inadequacy, even a source of evil... To shortcut our lives because of fear of death or because of the fate of the body, to experience the body only as a territory to explore free of the strictures of our society – liberating and exhilarating as that is – is never to realize our potential. Beyond the exterior potential, an interior one awaits our realization.

To fit in, to conform, is to be safe, to keep control; it is to be closed off from the interior of ourselves. The physical life houses an interior no scientist can discern; its rooms are a labyrinth connected to the labyrinth of other lives, other worlds. To stop short of exploring it beyond getting one's toes wet is understandable. It's scary. What assurance do we have that we won't lose ourselves, won't be torn apart, and never be on familiar ground again? Yet, to explore and become all we can be as human beings and, more specifically, as gay men with a spiritual consciousness, means we must risk losing

control. For to confront the miracle of who we are utterly is to confront more than our finite bodies; it is to confront the miracle of the world itself. (Darrell g.h. Schramm,432,436-437)"

In order to solve the mystery of the body, Ari would need to accept his feelings, give them validity and cross the liminal space. Ari would have to believe in the words of Aunt Ophelia that the body is beautiful and that it must be loved no matter what is deemed "beautiful".

With the passing away of Aunt Ophelia, the Mendoza family embarks on a journey of love and healing. The loss of her sister compels Mrs Mendoza to realize that they have been alienating Aristotle by hiding their emotions. The unspoken name of Bernardo is finally uttered. His picture is framed and put up. His untold history was retold.

Mrs Mendoza tells Ari of the rite of passage every teenager must undergo in an effort to grow up "...We all have to bear things, Ari. All of us. Your father has to bear the war and what it did to him. You have to bear your own painful journey to becoming a man. And it is painful for you, isn't it, Ari?" (321)

Ari's culmination towards becoming an adult would be the acceptance of his sexuality. Ari realized that people are cruel and they are crueller to the ones who are different. He writes about Dante who had been beaten up brutally simply because he was kissing a boy- " I knew that a part of him would never be the same. They cracked more than his ribs." (325) In the 80s, with the breakout of AIDS, the queer community was under attack and this is the setting of this novel. Being queer meant an open rebellion to the existing rigid laws of sexuality and societal norms. According to Neal King, "If we learned anything in the gay male community during the early days of the HIV/AIDS epidemic in the United States, it was that. No one knew what had hit us, and people were dying in huge numbers all around us. The community lost friends, colleagues, and intimate partners. Initially mislabeled "gay-related immune deficiency" (GRID), valuable time was lost in responding to the crisis because most felt safe in the belief that they were not at risk. Since early victims were predominantly gay men, the stigma attached to homosexuality in the medical, governing, law enforcement and ecclesiastical institutions became a barrier to understanding, prevention, and treatment." (UN Chronicle) Being gay meant being an outsider and someone who would be the victim of violence. Dante experienced it and Ari was afraid and angry. To make Ari realize his love for Dante, his parents' positive reaction was crucial towards the acknowledgement of his identity and sexuality. It is the parent's act of love that forms the closing act towards Ari's transition. He attempts to unravel the mystery of love and the body with the identification of his sexuality and the connection with his family.

"What am I (Ari) going to do ? I am so ashamed."

"Ashamed of what ?" my mother said. "Of loving Dante ?"

"I'm a guy. He's a guy. It's not the way things are supposed to be. Mom-"

"I know," she said. "Ophelia taught me some things, you know ? All those letters. I've learned some things. And your father's right. You can't run. Not from Dante." (349)

Ari's father reminds him how one must never be afraid of one's identity, that it is not them who are at fault but the society and he says this using the least number of words – "My father's voice was soft, "Dante didn't run. I keep picturing him taking all those blows. But he didn't run." (350)

To conclude, with all things considered the author through the character of Aristotle, engages with diverse aspects of society and presents how every single one of them affects the young members of the community. The quite smooth and significant transition of Ari from a lonely adolescent to a young adult is due to the availability of a positive environment. It depicts the importance of words and emotions for the psyche to develop so that a queer boy can identify and grow into a person of his own.

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BOOK REVIEW

I AM MALALA : THE GIRL WHO STOOD UP FOR EDUCATION AND WAS SHOT BY THE TALIBAN

RIYA AGARWAL

Semester II, Department of English (PG)

Author : Malala Yousafza with Christina Lamb

Publisher : Weidenfeld & Nicolson, Little, Brown, and Company

Genre : Nonfiction / Biography & Autobiography / Personal Memoirs

"I am Malala" is the true story of a fourteen-year-old girl who spoke out when the Taliban took control of the Swat Valley in Pakistan and stood up for women's right to education. Malala Yousafzai, in 2011 was shot by the Taliban in a bus on her way home from school. Two men who boarded the school bus asked – "Who is Malala ?" and fired gunshots; two lodged in Malala's head. The events that followed are described in Malala's voice, are remarkable – the politics, the media frenzy, and her recovery.

ABOUT AUTHOR : Malala Yousafzai (12 July 1997)

"I am Malala. My world has changed, but I haven't. "

Inspired by her father's activism, Malala Yousafzai began advocating publicly for girls' education, attracting international media attention and awards. Malala received the Nobel Peace Prize, the youngest ever to do so, in recognition of her efforts to see every girl complete twelve years of free, safe, and quality education. She also received numerous other awards, including the International Children's Peace Prize (2013), the Sakharov Prize for Freedom of Thought, and the Amnesty International Ambassador of Conscience Award.

Yousafzai with Christina Lamb co-authored the children's edition of the memoir I Am Malala : The Girl Who Stood Up for Education and Was Shot by the Taliban (2013). She also wrote the picture book Malala's Magic Pencil (2017) which is based on her childhood. In 2018, her book, We Are Displaced : True Stories of Refugee Lives was published.

Malala Yousafzai wants her book, "I Am Malala" to reveal and help children, especially girls across the world who still struggle to get to school, as education is every child's birthright. Looking deeper it challenges readers to examine the role of education, its purpose, and how withholding education from certain groups hinders the progress of the society at large.

TREATMENT OF SUBJECT :

The personal details of everyday life in Malala's village of Swat have been intermingled with her retelling of living through turmoil under the Taliban. The Taliban had controlled a lot of territories, attacked girls' rights, and strengthened their powers. When the public was afraid of retaliation for showing any disagreement with the Taliban, Malala Yousafzai stood up: "How dare the Taliban take

away my basic right to education?". Malala's story not only emphasizes education's value but her approach also challenges the readers to examine the role of education and its purpose and function in the society.

"I Am Malala" begins with an epigraph from traditional Pashto poetry, and Yousafzai includes many other poems, proverbs, and quotations from influential figures, texts, and events. It contains viewpoints of important personalities like Gordon Brown, OwaisTohid, Zofeen T. Ebrahim.

Malala Yousafzai, a girl growing up in Pakistan when it was under the Taliban's control, narrates the memoir in the first-person past tense. Malala utilizes various rhetorical strategies to convey her message that education is a basic human right to both men and women. She employs pathos to evoke emotions towards the audience on reasons why education should be a right and resorts to influential ethos, a tenacious tone, and vigorous pathos to get the reader to perceive that a girl's education is just as crucial as a boy's education.

The cover of the book catches the lovely expression on Malala's face and the readers get a glimpse of what is to follow : 'The Story of the Girl Who Stood Up for Education and was Shot by the Taliban'. The book, 'I am Malala' continues to be available in leading bookstores and has sold at least 1.8 million copies worldwide. It remains a popular read among educated people, especially young girls. Malala's message of 'pens and books instead of guns and violence' has captured the minds of many and led to further advocacy of education for all. Some schools in Pakistan do encourage students to read this book by keeping it in their libraries however, there is also an association of private schools that has banned the book claiming that it "corrupts the young students' minds".

CONCLUSION :

"If you don't raise your voice, it is unlikely anyone will hear you"-those are the words that Malala Yousafzai uses and lives by. When a fourteen-year-old girl was asked, "Who is Malala ?" by an armed man on a bus on her way home from school, she did not hesitate to answer. While the Taliban aimed to silence Malala and tried to use it as an example to discourage people from going against them, it only made her stronger and turned the entire incident into an international outrage.

Malala sheds light on the plight of children who were discouraged from attending school and brings global attention to the state of the women of her country who were being tied down to misconceptions of righteousness. She represents millions of girls who, since childhood, have been made to believe in this distorted fate that the Taliban presented. She says, "When the whole world is silent, even one voice becomes powerful". Malala's act of bravery not only brought an important issue to light but also gave voice to those who are scared to speak up.

Malala has constantly cried out for peace and has wished for something that should be the basic right of every child in this world - to sit down on a chair and read books with all their friends at school. But the fact that millions of such wishes have been extinguished by a few people only speaks of the world we live in. Malala's fight for education has been carried on by her after her miraculous recovery and inspired people all around the world. She is an inspiration to millions of children who believe that even a single voice can bring about change.

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PYGMALION AND ITS POPULAR FILM ADAPTATIONS

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INTRODUCTION

George Bernard Shaw's play *Pygmalion* has influenced popular culture to such an extent that there have been multiple adaptations of it in the theatres and films, and even several television adaptations and influences on tv series can also be seen.

Pygmalion (1912) is very loosely based on the Greek myth where a sculptor named Pygmalion falls in love with his own creation. Shaw took this concept and gave it a spin in his play, where a professor of phonetics, Henry Higgins takes upon the responsibility of teaching a Cockney flower girl, Eliza Doolittle the language of the higher class. After Eliza's grooming is complete, she even passes off as a Duchess. However, unlike the Greek myth where the creator does end up with his creation, Galatea with the blessing of goddess Aphrodite who brings the sculpture to life, Eliza decides on marrying Freddy and does not wish to be taken for granted by Higgins. "To form a romantic attachment to Higgins would be the very thing that would prevent Eliza from shaping her own subjectivity, the very thing that would undercut Shaw's claims for his character – and of course it is the very thing that audiences have insisted upon since the play premiered." (Utell 60)

This 'Pygmalion trope' has become very popular in the film industry and has even fulfilled the desired ending from the original. There are several film adaptations following this path which have gone to become cult classics. The first and one of the most popular films among them is *My Fair Lady* (1964) starring the evergreen Audrey Hepburn. And this was followed by movies like *Educating Rita*, *Pretty Woman*, *Ruby Sparks* and several others.

MY FAIR LADY (1964)

The Academy Award winning 1964 *My Fair Lady* movie was an adaptation of the 1956 play of the same name based on Shaw's *Pygmalion* starring the famous actress, Julie Andrews. The movie also features famous actors, Audrey Hepburn as Eliza Dolittle and Rex Harrison as Professor Henry Higgins. Bosley Crowther of *The New York Times* opened his contemporary review saying :

As Henry Higgins might have whooped, 'By George, they've got it !' They've made a superlative film from the musical stage show My Fair Lady – a film that enchantingly conveys the rich endowments of the famous stage production in a fresh and flowing cinematic form. (Crowther)

Unlike *Pygmalion*, this movie is a musical comedy drama. The songs really change the whole aspect of the movie, making the experience a more wholesome one for the audience. In both stories,

the characters are basically identical. Mr. Higgins is the self-centered character that he is and only cares about his success and accomplishments he will gain by transforming Eliza. As for Eliza Doolittle, in both cases she is drawn to the idea that if her pronunciation gets better, she will live a better life. During the period of transformation, she realizes that she is an object to Higgins and decides to rebel against him. Eliza at the end decides to marry Freddy.

However, the ending of *My Fair Lady* seems to differ in respect to Higgins' character development. Thinking about his life without Eliza, he feels lonely and reflects upon his callous behaviour. And later when Eliza extends a hand of friendship, he takes it and approves of Eliza and Freddy's union.

EDUCATING RITA (1983)

“One of the first film adaptations to alter Shaw's original work, *Educating Rita* follows Liverpool hairdresser Rita (Julie Walters), who goes to English professor Frank Bryant (Michael Caine) to overcome her working-class life.” (Feldman) Susan finds Frank's tutelage opens doors to a bohemian lifestyle and a new self-confidence. Frank is cynical and bitter towards Susan as she adopts the hypocritical university culture he abhors. When a friend attempts suicide, Susan realizes that she has become a part of the same ostensible and perfidious social niche she hoped to escape. The film ends with Frank moving to Australia on a sabbatical hoping for a new beginning.

Rita and Eliza's change in identity is presented as a struggle but seems to be a little different. Rita's change goes both ways interior and exterior as she believed in changing everything she was. Whereas, Eliza's change is external as the only change is what one can see, she changes her voice and appearance but internally she still has the mind of a flower girl. Despite the differences, both works “speak to the same negotiation between individual and society, self and other.” (Grindstaf 166)

PRETTY WOMAN (1990)

This *Pygmalion* based adaptation has become a cult classic. “Originally intended to be a dark cautionary tale about class and prostitution in Los Angeles, the film was re-conceived as a romantic comedy with a large budget. The film saw the highest number of ticket sales in the US ever for a romantic comedy.” (Prince)

The 1990 film about a businessman, Edward (Richard Gere) and a prostitute, Vivian (Julia Roberts) is a bit of a stretch, but its basis lies in a rich man helping a poor woman change her life. *Pretty Woman* does adhere to most of the themes of the 'Pygmalion trope', with the prostitute learning proper comportment and clothing choices while teaching the uptight tycoon to see the better side of his profession.

Even though the film is far from reality, it managed to attract the audience with its happy fairytale ending, where for once Eliza, that is, Vivian ends up with Higgins, that is, Edward. The movie got mixed reception on its release. Carina Chocano of *The New York Times* said the movie "wasn't a love story, it was a money story. Its logic depended on a disconnect between character and narrative,

between image and meaning, between money and value, and that made it not cluelessly traditional but thoroughly postmodern." (Chocano)

THE SHAPE OF THINGS (2003)

This movie is a gender reversed *Pygmalion* adaptation by American author and film director Neil LaBute. Central themes in *The Shape of Things* focus on the nature of stoicism, art, psychopathy, intimacy, explorations of love, and people's willingness to do things for love.

Neil LaBute adapted his own play for this messed-up movie that seems at first to be an innocent rom-com but turns out to be a drama that sort of calls out the situational gimmickry of much of that genre. (Campbell)

Evelyn Ann Thompson played by Rachel Weisz is the Higgins/Pygmalion here, an art student who takes on the task of sculpting a guy named Adam Sorenson played by Paul Rudd so that he's more attractive and to 'change his world' as a social experiment for her thesis of which Adam is unaware of. The film ends in a very surreal way where Adam finds out that Evelyn and his relationship was all an act and is left distraught. Unlike *Pygmalion*, it is the Higgins or the sculptor here who rejects the creation.

CONCLUSION

Shaw's *Pygmalion* continues to inspire films in popular culture. Several other movies like *La Femme Nikita* (1990), *Trading Places* (1983), *Can't Buy Me Love* (1987), *She's All That* (1999), *Ruby Sparks* (2012) and *The Makeover* (2013) have followed in the steps of the 'Pygmalion trope'.

The British Museum contains "images of the Polish production...; a series of shots of a wonderfully Gallicised Higgins and Eliza in the first French production in Paris in 1923; a fascinating set for a Russian production of the 1930s. There was no country which didn't have its own 'take' on the subjects of class division and social mobility, and it's as enjoyable to view these subtle differences in settings and costumes as it is to imagine translators wracking their brains for their own equivalent of 'Not bloody likely'." (Summers)

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ANALYZING MAHESH DATTANI'S WOMEN PROTAGONISTS : THIRTY DAYS IN SEPTEMBER AND SEVEN STEPS AROUND THE FIRE

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INTRODUCTION :

Mahesh Dattani is a colourful man and so his characters are colourful too. He is a playwright who places his characters in such a way that they inherently expose the social maladies and hypocrisies. His plays are both powerful and disturbing at the same time, they make the audience ask questions on their own, rather than throwing the questions directly at them. As commented by Alka Tyagi on Dattani's play *On a Muggy Night in Mumbai* : *Dattani deals with a difficult subject with bold pen and lays open the hypocrisies of social life which imposes stereotypical roles to men and women and acknowledges and legitimizes only these roles. Male and female – there are only sexual categories which have secured social existence and society's approbation. People who do not fit into these two classes either keep trying to fit into the rut and suffer throughout their lives a burden of living the big lie, or if they choose to live with the truth they have to bear social ostracism and contempt.* (Dhawan 120) The same can be said for all his plays. Dattani's focus on the ostracized sections of our society brings special reference to his women characters.

“To separate the women characters in Dattani's plays and analyze them as different from the other characters is a little difficult because Dattani writes about women in much the same style as he writes about anybody.” (Multani 27) However, his work is evidence towards the abuse of this section; and in this context characters like Dolly and Alka in *Bravely Fought the Queen*, Mala in *Thirty Days in September*, Uma Rao in *Seven Steps Around the Fire* hold special mention.

MALA : TURNING AROUND OF A CHILD ABUSE VICTIM

Thirty Days in September is probably the hardest hitting of all Dattani's plays till date. Dattani himself has said, “...I sometimes see the funny side of even the tragic events that I am concerned with. But in this, [Thirty Days], I did not have the scope. There's no way you can see the funny side...” (Vardhan) The play was commissioned by an NGO called RAHI (Recovery and Healing from Incest) that helps survivors of child sexual abuse.

Setting and Perspective

The play is entirely Mala's story with little use of subplot. We mostly see the play through Mala's perspective, dealing with the memories of her childhood molester, visualizing him as result of her trauma and confronting those terrifying moments that leave us shaken to the core. Dattani makes us

feel the conflict inside Mala and the mental torture she had to suffer. Dattani like his many other plays, chooses the setting of his incestuous child abuse story to be an upper middle-class family as he did not want his audience to feel that it is something that does not happen to people like them.

Development of the character

Dattani takes his audience through an unnerving journey with his character Mala. As the character develops through the play, so does the sense of the audiences about the harsh realities of child abuse. We see two versions of interviews of Mala with her counselor, one that takes place in February 2004, just after the death of her uncle Vinay who was her molester. In this interview, she is confident and depicted as a fully grown personality, she has rejected the need she felt for male validation as a result of her systematic abuse as a child. The other interview is recorded in the past on September 30, 2001 when she goes to her counselor for the first time. Here one can clearly see a person who is mentally tormented, is in a self-dilemma and considers themselves as responsible for their miserable situation, "I know it all my fault really... it is not anybody's fault except my own." (Dattani 9)

Throughout the play Dattani plays with this self-accusation pattern as it more so reveals Mala's trauma and the reality of the situation. Even Mala's mother falls in this pattern as she accuses her mother to be responsible for all this. Mala becomes a victim of serious psychological repression which acts a major setback to her development and obstructs her growth into maturity. She constantly identifies herself with her childhood image and this stationary effect makes her incapable of developing humane relationship with other men, for example Deepak. This is a reminder of the 'bonsai' from Dattani's play *Bravely Fought the Queen*, which is a symbol of the stunted growth of women's personality as a result of repression since childhood. Mala's trauma seems to be more severe when one analyzes her infidelity as an attempt to replicate those thirty days of abuse every summer in her childhood by marking on the calendar the thirty days of pleasure with someone similar to her uncle.

In this entire scenario, Deepak is a Freudian figure, and acts as a catalyst in the play to mobilizes Mala to bring her out of this loop of her past. His instigation makes Mala determined to face the repressed truth. So at the end, a more confident Mala confronts her uncle and mother :

Mala : Yes you did. He just didn't buy a flat. He bought you!

Shanta : That's not true! Oh God!

Mala : He bought your silence so you can never tell anyone what he did to your daughter !
(Dattani 52)

This where Mala turns around from her past and stands up to defend herself as the truth behind her mother, Shanta's numbness is revealed. She suffered the same fate as her daughter in the hands of her brother for ten years. Mala's development as both a human being and a character in the play comes to full circle when she empathizes with her mother and forgives her. This shows that she out of her pattern of self-accusation and lives in the present rather than the past.

UMA : A SOCIAL WORKER ON A QUEST OF TRUTH

Seven Steps Around the Fire is a radio play of Mahesh Dattani commissioned by the BBC. The play deals with the lone attempt of a social researcher, Uma Rao to bring justice to the eunuch Kamla and her entire community. Dattani has made a major attempt at breaking the stereotypical constructs of the Indian society in this play. Miruna George has said, *Althusser's ideological apparatuses such as Family, Church, Educational Institutions, Arts, and Culture in the name of social norms have ensured the rules of subservience and conscious conditioning. By enabling the Subject with an opportunity to doubt his self-righteous attitude, the individual in Dattani's plays can break free of this bondage. More than the material, it is the mental and the emotional states that need a transformation.* (Multani 145) This draws a parallel with Mala's character in *Thirty Days in September* who suffers an identity crisis due to her childhood trauma, but later breaks out from that emotional state.

Uma's position in society

"I think we are all into role-playing – as somebody's wife, somebody's father – but don't touch the core where we may be someone quite different," (Banerjee 164) says Dattani in an interview.

The woman protagonist of the play, Uma Rao is a Ph. D research scholar who is introduced to us as the daughter-in-law of the Deputy Police Commissioner, the wife of the Chief Superintendent, Suresh Rao and the daughter of the Vice-Chancellor of Bangalore University. By introducing Uma in relation to these men, Dattani on one hand gives an idea to the audience that she probably can exercise some power in the society, but at the same time also establishes that women are powerless in our society without the support of patriarchy. However, he goes on to prove that neither of these facts is true. On one hand, Uma is very self-sufficient at investigating Kamla's murder and help Anarkali. On the other hand, she is the victim of a system to which both her husband and father-in-law is a part of.

Discovery of self along with the discovery of reality

Uma Rao is seen as a considerate, kind and honest character who cannot act against the call of her conscience. She boldly makes search for truth, as she respects even the rejected transsexuals. She treats them exceptionally well and is more conscious in treating them as humans rather than transgender. While in the quest of finding the truth behind Kamla's murder, she finds herself in a situation where no one is ready to help her, on the contrary people like her husband, Munaswamy, the police constable and Mr. Sharma, a minister stands as an obstruction in her path. Here, Uma as character breaks out from the bonds the patriarchal relations of being a wife or a daughter. We see her character grow from a submissive wife who obediently dressed for her husband to satisfy his sexual pleasures at the beginning of the play to a social worker with a purpose as she says, "If my family throws me out, I hope that doctorate will come handy." (Dattani 262) At the end when Uma finally finds out with Subbu's death that his father Mr. Sharma was responsible behind Kamla's murder for marrying his son, Uma hopes that the culprit will be punished. But to her dismay, it is her

own husband and father-in-law who are responsible for dismissing the case and culprit escapes with impunity. Uma understands that she is the only person who wants to see justice done, but her voice will be silenced like the hijra community if she attempts to do so. Dattani leaves the play here with the audience to reflect upon the marginalization of subaltern groups in our society.

CONCLUSION

Mala and Uma are strong women protagonists who hold up a mirror of the society to us. Both the characters stuck in the web of patriarchy fight to find their individual identity and do so at a great cost of revealing the hypocritical practices in society. These characters have a great impact on our society by making people think for own selves and giving the ostracized groups a voice. Lillite Dubey, the director of *Thirty Days in September notes down her experience : After every performance, women have come backstage with their own traumatic stories writ large on their faces, grateful for the catharsis the play offers, but even more, I think, for the expiation of their guilt which they have carried as a long burden for so long... For through it they believe their silent screams have been heard.* (Dattani 4) In the same way, through Uma, Dattani gives the transsexual community the humanity they deserve, also at the same time show their voiceless situation and the abuses against them. Dattani through his women protagonists deliberately foregrounds the underdogs. He does not pity them, but endows them with self-dignity and inner strength to endure their pain and struggle. He purposely leaves the plays open ended like Rabindranath Tagore's short stories, for his audience to imagine and deliberate upon the harsh realities.

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AWARENESS IS THE KEY TO REJUVENATE RIVER GANGA

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INTRODUCTION

The river flows through 100 cities with populations over 100,000, and 97 cities and 48 towns with populations between 50,000 to 100,000. A large proportion of sewage water with higher organic load in the Ganges is from this population through domestic water usage. Because of the establishment of a large number of industrial cities on the bank of the Ganges like Kanpur, Prayagraj/Allahabad, Varanasi and Patna, countless tanneries, chemical plants, textile mills, distilleries, slaughterhouses, and hospitals prosper and grow along this and contribute to the pollution of the Ganges by dumping untreated waste into it. Industrial effluents are about 12 percent of the total volume of effluent reaching the Ganges. Although a relatively low proportion, they are a cause for major concern because they are often toxic and non-biodegradable. Despite being a lifeline of millions of people staying along its course Ganga is steadily getting sick for many reasons; some due to apathy of people and some due to natural phenomena. Lifeline of a large number of Indians and a spiritual mooring for a large number of Hindus not only in India but all over the world, Ganga is reckoned as one of the most polluted river in the world today. Some of the important reasons are discussed in succeeding paragraphs. Sewage from many cities along the river's course, industrial waste especially from the tanneries and religious offerings wrapped in non-degradable plastics, add large amounts of pollutants to the river as it flows through densely populated areas. During festival season immersion of idles having large amount of plastic and chemicals further add to the pollution of the water. The River is also used for throwing the half burnt dead bodies and animal carcass which add to the pollution of the water. During Monsoon when river water invades the flood plains, the pesticides and chemical manures used in the fields located near the river course; further contaminate the water.

Despite the religious significance and daily importance of the Ganges River for the people of India, it is one of the most polluted rivers in the world. Pollution of the Ganges is caused by both human and industrial waste due to India's rapid growth as well as religious events. India currently has a population of over 1 billion people, and 400 million of them live in the Ganges River basin. As a result, much of their waste, including raw sewage, is dumped into the river.

STUDY AREA

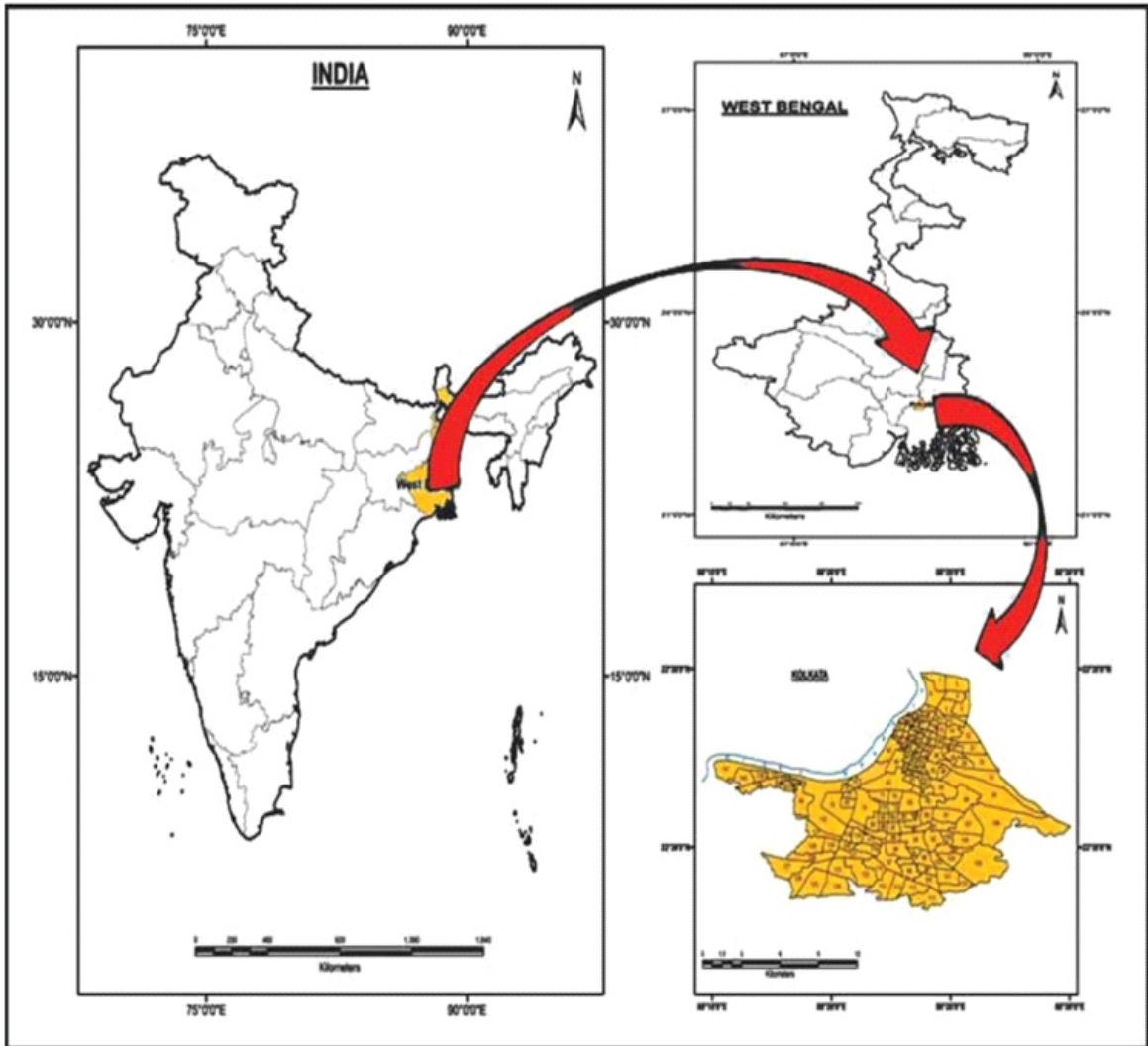


Fig 1

We, the students of Shri Shikshayatan College tried to interact with the people of our area (Fig 2) to assess the degree of awareness regarding Ganga pollution. We also tried our best to make people aware by communicating with them in our neighborhood.

A SURVEY BEING CONDUCTED



Fig 2

OBJECTIVES

The main objective is to find out the degree of awareness among the people around us regarding Ganga water pollution. Through this study we tried to convey and make people conscious about the fact that small steps can bring a big change.

We as citizens do have some duties to perform to save a gigantic river like Ganga from pollution.

METHODS ADOPTED

We the students of Shri Shikshayatan College, Kolkata have tried our best to spread awareness among people regarding the Ganga pollution by a short interactive programme. This programme was basically done to spread awareness in our neighborhood and in the local area near the river. We students have made different charts to portray some measures which need to be considered to stop the increasing pollution in Ganga river. We have used recycled materials such as Popsicle sticks, handmade papers, plastic cuttings etc. to make the different charts. We have made charts (Fig 3) in trilingual manner which have been displayed in the college notice board so that it becomes communicative enough for everyone including the students, teachers, non-teaching staffs and so that we are able to spread the awareness among maximum number of people. Outside our college premises we interacted with some people in order to know their views or exposure regarding the devastating condition of river Ganga prevailing in today's world.

We also made those people aware about the current situation of river Ganga and also handed them over some pamphlets which consisted of some information regarding the Ganga pollution and also some measures to protect the river from the damaging habits of the people of the city. After this short interactive session in our college neighborhood, we students accompanied by a teacher of our department visited the Prince ghat, which is a famous ghat on the banks of river Ganga in Kolkata. When we reached our location, we started interacting with the people who were present there. By interacting with those people, we tried to gather knowledge about their exposure regarding Ganga pollution. We handed to over those people couple of pamphlets made us to spread awareness among them regarding the current situation that the river Ganga is facing. This was all about the short initiative taken by us to spread awareness among common people regarding the damage and pollution faced by river Ganga.

SPREAD THE AWARENESS

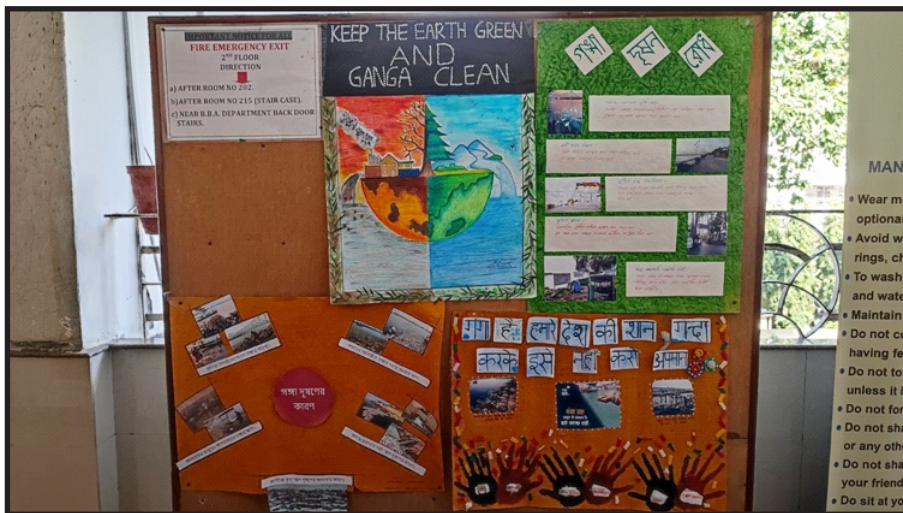


Fig 3

DISCUSSION

Water pollution is the contamination of water bodies, usually as a result of human activities, in such a manner that negatively affects its legitimate uses. Kolkata being a metropolitan city has its own disadvantages when it comes to water pollution. It is estimated that 75 to 80 per cent of the water pollution by volume is caused domestic sewage. Other reasons (Fig 4)for the increasing levels of water pollution are industrial wastes released in the water bodies without treatment, social and religious practices like dumping of dead bodies in water, bathing, throwing waste in water, global warming, eutrophication etc. The survey result shows that about 85% of people are aware that river Ganga is getting polluted (Fig 5).

The city Kolkata situated on the banks of the mighty river Ganga and has been benefitted to a large extend by the presence of the river. But in exchange to this river Ganga has only seen its devastation. Now is the time to move a step forward in order to protect the life-giving river. Firstly, we should create public awareness. We should communicate with people in order to make them understand the importance of river Ganga and how beneficial the city and its people have always been due to the presence of it. Secondly, we should also try for the proper installation of dustbins nearby the locations where the river is directly exposed. Thirdly, we have to ensure that no industrial waste is extracted in the river. Other than keeping all these things in mind we should also make sure that no non-biodegradable items should be thrown in the river. No religious waste should be dumped in the rivers. We should avoid throwing any waste near the river banks because eventually it flows in the river and contaminates it. We should also avoid washing clothes near the banks of the river because the chemicals present in the detergents and soaps are deleterious to the river water. We should start avoiding the practice of 'idol immersion' as the colours used to make the idols are harmful for the water. These are some of the points we should always consider to protect river Ganga from being further damaged.

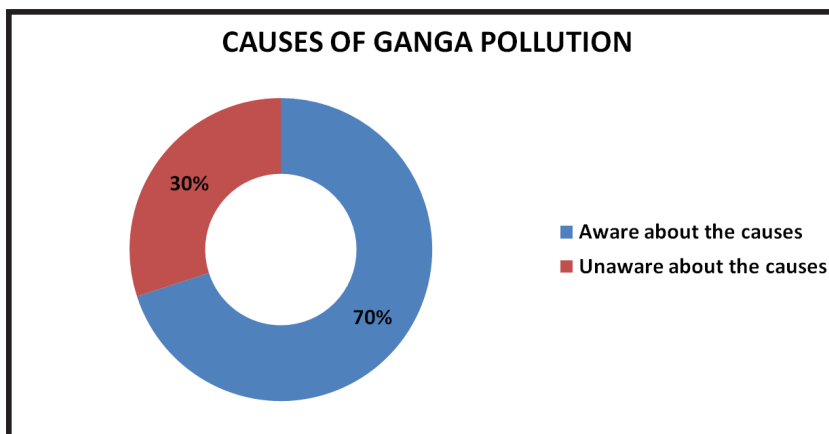


Fig 4

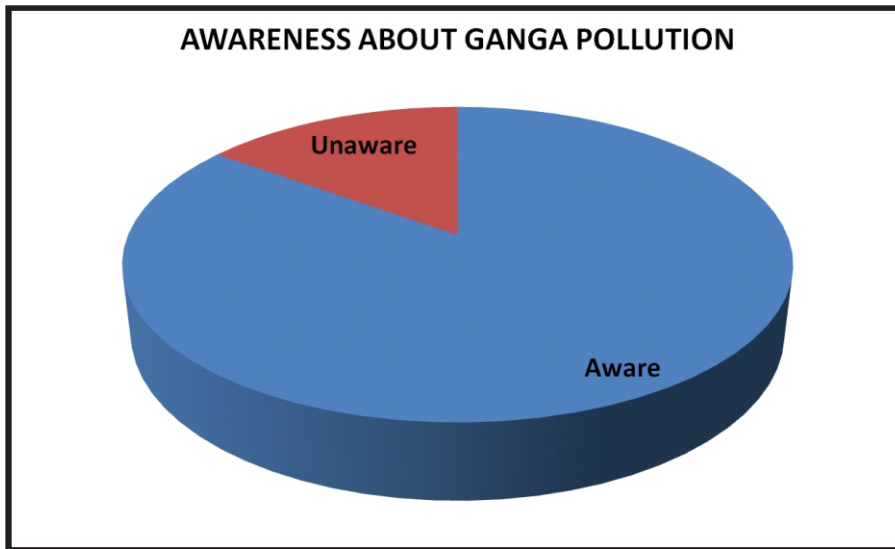


Fig 5

CONCLUSION

The problem is exacerbated by the fact that many poor people depend on the waters of Ganga on a daily basis for bathing, washing, and cooking. The World Bank estimates that the health costs of water pollution in India equal three percent of the India's GDP. It has also been suggested that eighty percent of all illnesses in India and one-third of deaths can be attributed to water-borne diseases. The danger Ganga's polluted water poses is not only to the humans but also to the animals. Some of the important threatened species include, more than 140 fish species, 90 amphibian species, reptiles such as the Gharials, and mammals such as the South Asian River Dolphin. Incidentally, Dolphins and Gharials are also included in the International Union for Conservation of Nature's (IUCN) critically endangered list and a threat to their survival is of grave consequences.

It goes without saying that if efforts of government are to succeed to rejuvenate River Ganga, a well planned initiative run by a highly committed team, whose members are professionally competent and emotionally attached to the idea of rejuvenation of the River, is a pre-condition for the assured success. It may further be considered that such projects succeed only if they become a mass movement. So far the Clean Ganga initiatives have, at best, been only partial success as they were run as Government projects in which people considered themselves only as beneficiaries and not the stake holders. The Government should go ahead with the infrastructure development, afforestation of the catchment area, removal of encroachment from the river plains, enforcement of rules and regulation and implementation of the plans in a time bound manner. The Government also needs to ensure that the laws, rules and regulations to ensure cleaning and environment sustainability are River Water Pollution - A New Threat to India: A Case Study of River Ganga 13 tweaked from time to time to respond to the emerging new ground realities and also their strict compliance. However, this endeavour would be successful only if it becomes a people's movement; that currently is far from

satisfactory. It can become a mass movement only if people start thinking in terms of being stakeholders. Lots of mythical and traditional practices will have to be shunned for people to become part of this movement. Also, migratory tendencies of people need to be reversed. It can happen only if people become conscious of the danger which polluted Ganga and the ever depleting fresh water that is likely to pose to them in near future. Simultaneously, green laws will have to become more stringent to initially put a fear of law in the minds of people in case they continue to pollute the river.

It is now high time to take care and think about this very essential part of our life. National Mission for Clean Ganga has come up to clean the Ganges and its tributaries. Under National Mission for Clean Ganga, NamamiGange Programme was launched in 2014 with the twin objective of effective abatement of pollution, conservation and rejuvenation of National River Ganga.

Therefore, as citizens of India and being settled by the Ganges, we need to think of the Ganges as we do for our neighbor.

Acknowledgement

This research was undertaken and was presented in International River Congress in Kolkata from 27th to 29th December 2022.

The completion of this undertaking research paper has been possible with the participation and assistance of our esteemed professor Dr Jayati Das. Her contribution is sincerely appreciated and great fully acknowledged. However, the group would like to express their deep appreciation and indebtedness particularly to our professor for their endless support, kind and understand during our case presentation.



Award Ceremony

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FIRST WAVE OF COVID-19 IN THE DISTRICTS WEST BENGAL

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INTRODUCTION

A sudden outbreak of the coronavirus in 2020 caused massive havoc in the entire world. In the first week of January, 2020, China declared its first case and thereafter the spread of the disease in the Wuhan Province and eventually everywhere in China. The country went for a complete lockdown following the events. Connection was cut with the outside world, however, innumerable people had already travelled to and from the country, unknowingly acting as carriers of the disease. The SARS-CoV-2 strain of the coronavirus is what caused the disaster. Soon several countries started reporting cases and started closing down. India reported its first case in Thrissur, Kerala at the end of January. West Bengal reported its first case on 15th March, when a student returned from UK, tested positive. The World Health Organization soon declared the bio-hazard as a Pandemic and suggested the countries to take necessary measures. West Bengal slowly started reporting more and more cases, however, the death rate was low. The State Government tried its best to stop the spread of the disease by incorporating various necessary measures.

LITERATURE REVIEW

The psychological impact of COVID-19 on the general population of West Bengal was studied by Chakraborty K., Chatterjee M., (2020). Biswas et. al, (2021) studied the geographical appraisal of the pandemic in West Bengal. The possible duration of the pandemic was estimated in a study by Khatua D., (2020). The impact of COVID-19 on education was by Rashid S., and Yadav Singh S., (2020). Chattopadhyay S., (2020) studied the impact of COVID-19 on agriculture. Zonation of areas based on symptoms, preparedness measures and other things were also discussed (Nayar M., Sinha R., Saha A., (2020).

STUDY AREA

The study area has been confined to West Bengal since it is not only our place of residence, but also is densely populated with a population of 19.3 crore and also has Kolkata, the seventh biggest city in the country with a density of 24 persons per square kilometres (Kolkata Municipal Corporation, 2021). The State has been chosen for the study to get a good perception of the situation. West Bengal reported its first case on 15th March when a student returned from UK tested positive. Continuous movement of travellers to the state resulted in the large number of cases.

OBJECTIVES

- ★ To analyse the total affected and mortality in the state
- ★ To highlight the preparedness of the state government to tackle the disaster

RESEARCH METHODOLOGY

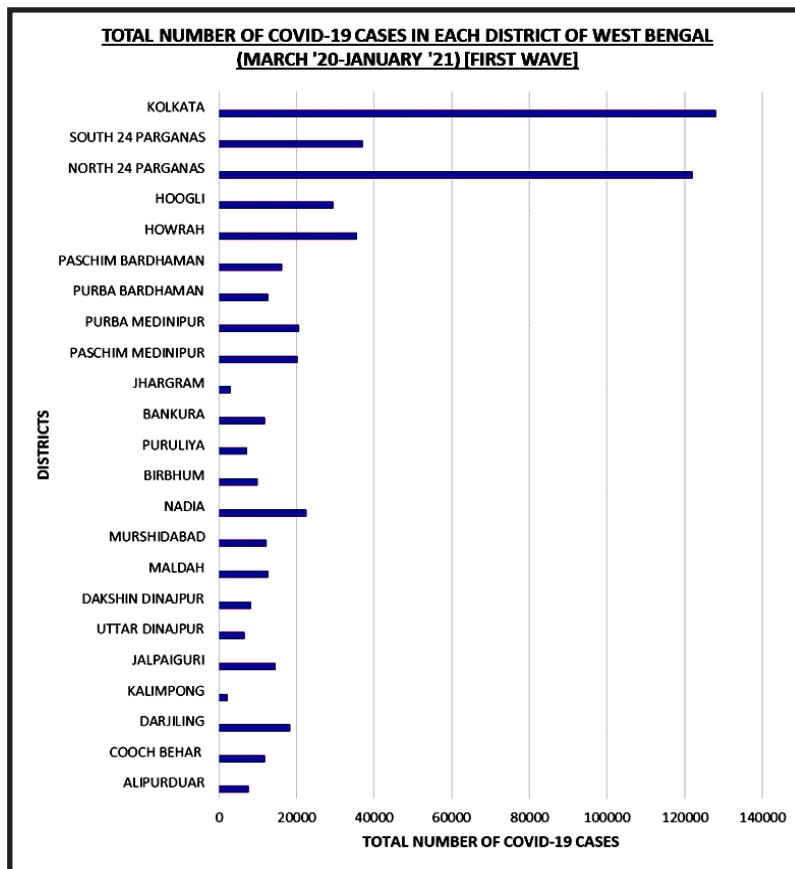
Secondary data has been used to satisfy the objectives from various international, national and state-based websites and other institutions of learning. Qualitative and quantitative data on the emergence and spread of the disease along with its impact has been analysed. The data has been represented by various cartograms to infer conclusions.

RESULTS AND DISCUSSION

1. Emergence and spread of Covid-19 in West Bengal

In December 2019, World Health Organization first took note of the SARS-CoV-2 strain of the coronavirus, that originated in the Wuhan Province of China. This sudden breakout caused havoc in the world causing major challenges to the public health, food storages, livelihood of people along with social and economic disruption with loss of human lives.

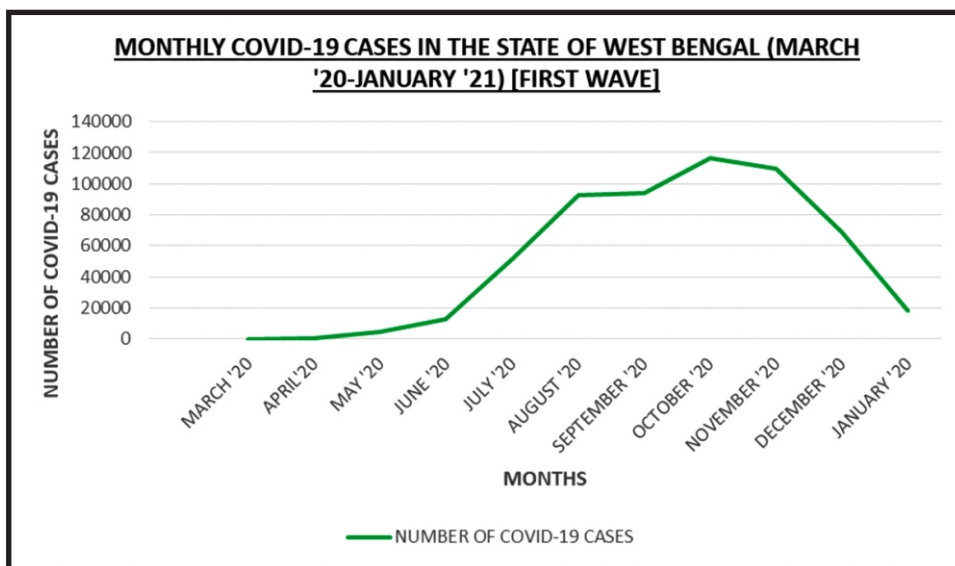
The first wave of Covid-19 has been extremely devastating since every country was caught off guard without any preparation or knowledge about the unknown disease. The total number of



SOURCE : DoH&FW, 2021

affected persons in the state of West Bengal in the first wave has been found to be 5,70,515, out of which, 5, 55, 127 people has recovered while 10,192 persons died. Not all districts were affected at the same rate. Districts of Kolkata (1,27,982 cases) and North 24 Parganas (1,21,930 cases) recorded very high number of cases while Kalimpong (2,226 cases) and Jhargram (3040 cases) recorded very few number of cases compared to the other states. (DoH&FW, GoWBa, 2021)

West Bengal reported it's first case on 17th March, 2020, after which the spread was at its peak. The high number of cases were mainly due to the in-migration of workers from other states and also due to the return of people from abroad. The State went into a lockdown along with the country on 23rd March. After almost one and a half months of lockdown, the cases somewhat started decreasing, aided by the quick response of the state government. But, the number of cases started increasing once more, as lockdown was being withdrawn from the country step by step. Thus, more people were affected as they came in contact with each other due to opening of workplaces. July 2021 and August 2021 reported very high number of cases. However, thus highest number of cases was recorded in the month of October, which is the festive season in West Bengal and hardly safety measures were followed. But, once again, the situation was well controlled by the State government and gradually, the number of cases dropped, marking the subsidence of the first wave. (Covid19india.n.d)



SOURCE : www.covid19india.org

It is found that the district-wise highest recovery rate percentage was in the district of Koch Bihar (98.87%) (Fig No., Table No.) Very high recovery rates, i.e. above 98% were also found in the districts of Dakshin Dinajpur (98.57%), PurbaBardhaman (98.46%), Alipurduar (98.45%),

Malda (98.40%), Jalpaiguri (98.13%), Jhargram (98.06%), and Darjiling (98.01%). In the rest of the districts the rates were fairly high, between 96-98% (DoH&FW, 2021).

2. Preparedness of the government to tackle the disaster

India reported its first case on January 27, 2020 in Kerala after which the virus had spread rapidly across all states. Both the Central Government and the state governments tried implementing several strict policies to prevent the spread. Even before West Bengal reported its first case, the state government had already instructed the medical institutions and other healthcare centres to follow covid appropriate protocols. On March 16, the government formed the Epidemic Disease Covid-19 Regulations, 2020 (DoH&FW, GoWBb, 2020) including the treatment procedure of an affected person, screening test regimen and gave authority to the district administrative bodies to demarcate containment zones and take appropriate actions.

On March 17, the first confirmed case was reported in West Bengal (Hindu, 2020). 66 covid hospitals and 582 institutional quarantine centres were declared by the state government to keep the affected persons separate from other patients. Following the measures given by WHO, the state started making people aware about the safety protocols, travelling restrictions and other tests. (DoH&FW, GoWBc, 2020). RT-PCR tests were also carried out after the increased cases in October.

The State government tried their best to keep all the affected persons separate and safe and give them all kinds of facilities to recover faster.

Some measures adopted by the state government include limited number of people in gatherings, complete shutdown of educational institutions, restaurants, cinema hall and other places of public gathering. Factories, offices and workshops were also totally closed initially. However, emergency services like banks, and other health related services were available. Then, as a part of the step by step withdrawal of the lockdown, the government started resuming operations in these areas. Special trains were given to bring back the migrant workers stuck in other cities. However, among all these, the government focused the most on maintaining proactive measures like wearing masks, maintaining social distance, washing and sanitizing hands, home isolation for patients, supplying essential items to the affected, making PPE kits available, carrying out thermal screening tests and increasing the number of beds and treatment centres and testing every person entering the state from outside.

COVID-RESPONSE



SOURCE: www.tribuneindia.com

RT-PCR TESTS FOR DETECTION OF THE DISEASE



SOURCE: www.newindiaexpress.com

Lastly, the government created three categories of containment zones namely Red Zone (places with highest number of cases; no activities were allowed), Orange Zone (there were limited number of cases in the past but recently cases subsided; few activities were allowed) and the Green Zone (areas with no confirmed cases in the last 21 days; just few restrictions were there with no other bindings). The process of vaccination was also initiated since January 2021.

CONCLUSION

Since the first case was reported in West Bengal, the disease spread rapidly infecting innumerable people. However the death rate was thankfully low. Lack of awareness in the society and in-migration, caused quite an increase in the number of cases. The state government, though caught off guard, managed the situation quite efficiently.

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WAS THERE EVEN A DARK AGE ?

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INTRODUCTION :

Imagine reading 'Mahabharata' for the 10th time and reconsidering the whole meaning of the epic. At 10 you read what society taught you and at 25 you go through the whole book from the eyes of Draupadi. It is the quench for exploration and growth through learning that makes one reconsider the orthodox norms and old notions. If this wouldn't be true then on a random day in 1697, Jaques Derida wouldn't have come up with the concept of 'Deconstruction'. It is the nature of a society to define or redefine the myths we are born with and myths we will carry with us till death.

The phrase 'Dark Age' was derived from the Latin word 'saeculum obscurum.' It was first used by Caesar Baronius in 1602 to describe a tumultuous period from 10th to 11th century. The idea of the Dark Age was first coined by Petrarch in the 1330s. The concept of the Dark Age revolves around the time that undergoes decline or the fall of civilization. The word itself has been a very debatable word which has aroused controversies from time to time. Historians have stumbled upon this word to describe the Greek Dark Age and for the fall of Western Roman Empire. Scholars have often synonymed the Dark Age with "Intellectual Darkness" and cultural decline. Edward Gibbon considered the whole epoch as, "triumph of Barbarism and religion". Modern Scholars have however refrained from using the term as they find it inaccurate and inexact. In 1904, William Paton Ker in his work 'The Dark Ages' stated that, "The Dark ages and the Middle Ages used to be the same; two names from the same period. But they have come to be distinguished and the Dark Ages are now no more than the first part of the Middle Age, while the term medieval is often restricted to the later centuries, about 1100 to 1500." Miss Lucy Varga has shown that the term 'Dark Age' was never primarily a scientific term, but rather a battle cry, a 'denunciation of the medieval conception of the world, of the medieval attitude towards life and of the culture of Middle Ages. Italian Humanists had used the word "rebirth" or renaissance to show the double conception in the term 'Dark Age'. They show a hope that the darkness is followed by a period of light and Enlightenment. Petrarch wrote that, "Amidst the errors there shone forth men of genius; no less keen were their eyes, although they were surrounded by darkness and dense gloom". In the article 'Petrarch's conception of the Dark Ages' by Theodre E. Mommsen, he wrote that, "For the whole idea of Italian 'rinascita' is inseparably connected with the preceding era as an era of obscurity. The people living in that 'renascence' thought of it as a time of revolution. They wanted to break away from the medieval past and all its traditions and they were convinced that they had effected such a break." After years of research and infinite amount of debates, we still land on the same question

“Was there even a Dark Age ?”

The discussion on the Dark Age is vast and has vast layers. We have seen the courses of debate on the Dark Age in European History. In Indian History, we talk about two prominent periods and consider them to be the Dark Age. First we take into account the post Mauryan period, roughly beginning from the 1st BCE to the 3rd Century CE. Second, the 18th century period or the period of the downfall of the Mughals. An array of historians have debated on these two Dark Ages and are still debating on the topic. This article will mainly focus on the events and debates that led to the emergence of the title 'Dark Age' in the Indian history.

POST-MAURYAN EMPIRE :

Mauryan Empire was founded by Chandragupta Maurya in 321 BC. This is the first time that the word 'Empire' came to the picture. The period was characterised by central administration, capable leaders, control on economy, trade, strong administration and many more. Romila Thapar in her book “Early India : From the origins to AD 1300” described the period as:

“Inevitably, in an imperial system there were attempts to draw together the ends of the empire, to encourage the movement of people and goods and to explore the possibilities of communication at various levels. These included the use of scripts, of punch-marked coins in exchange transaction and the projection of a new ideology, intended to pursue new percepts”.

But can we say that with the Decline of the Mauryan Empire, there was a period of Darkness ?

According to V.A. Smith “With the foundation of the Maurya dynasty we come from darkness to light. It is from here that Indian history begins in a chronological setting. The history prior to Mauryas is dark.” Some historians oppose his view. The Decline of the Mauryan Empire has been in the midst of confusion and dispute. With the excellent characteristics of the empire, there comes many faults and loopholes in their policies. Ashoka has been blamed for the decline and downfall of the empire. Haraprasad Sastri suggested that Pushyamitra Shunga's coup represented a Brahmanical revolution, instigated by the Ashoka's anti-Brahmana policies. Ashoka's pacifist policy has also been in the review. His military campaigns became weak enough to allow the Greeks to invade and were considered a weak central political system. According to Thapar, the Mauryan empire was unable to restructure the economies of the core and peripheral areas which amounts to directing attention to the absence of strategies and interventions that are the characteristics of a modern state. Upindersingh holds the view that :

“All empires rely on the mechanisms of integration and control over territory, resources and people. These mechanisms include military force, administrative infrastructure and ideology. In the case of Mauryas, given the vast contours of the empire, all three must have been strained to their utmost. It was just a matter of time before the distant provinces broke away from centre”.

We cannot attribute the failure of the Empire to the Post Mauryan era. Post-Mauryan empire was followed by several invasions from the north-west which led to a shift in political power to the west.

Important towns in north India such as Vaishali, Patliputra, Varanasi, Kausambi, Sharavasti, Hastinapur, Mathura, Indraprastha contributed to the social and economic development. The period from 200BCE to 300BCE witnessed the growth of cities and changes in state polity. During this period some powerful kingdoms had emerged like the Satavahanas, Sungas, Indo-Greeks, Shakas, Kushanas, Cholas etc. This period was far away from the booming economy. The period saw the increasing visibility of the merchants and artisans. A stability in the agriculture was noticed and more efforts were made to increase the irrigational facilities. Urban Centres provided a rise in the standard of living. Trade was expanded with the discovery of new routes and sea ports. Indo-Roman trade also emerged during this period. H.P Ray argues that there were a number of changes in international trade patterns in the 3rd and 4th centuries. These included splitting up of long-distance trade networks into regional and local circuits, southward shift in Roman trade interests and expansion of India's trade with West Asia. The period also witnessed an aesthetic growth and appeal towards art and culture. Two important schools of arts emerged during this period-Gandhara school of art and Mathura school of art. Buddhism and Jainism were patronised during this period and their texts throw light on this period. Liu has argued that as monasteries expanded and received more gifts, they were forced to get involved in various kinds of financial activities and this led to a forging of a reciprocal relationship between monks and traders. Vijay Nath has examined the changing relations between property and women in the Brahmanical texts. She argued that from the 2nd century BCE, the law-givers recognized and gave prescriptions regarding women's right to inheritance. Like others, this period too had many loopholes. Emergence of feudatory system, loosely-knit states and varna system marked the back draws of this period.

The term 'Dark Age' does not justify the period. The period was remarkable and was successful in the fields of art, religion, trade, economy etc. Upinder Singh writes that :

“ Political structures and chains of command are more visible now than for the preceding Maurya period. New traditions of governance such as joint rule, a further exaltation of the prestige of the king, and a system of subordinate rulers made their appearance. In this period of political flux, the different bases of royal legitimation included the patronage of Brahmanas and diverse religious establishments, and the performance of Vedic rituals. There was an expansion of cities, specialized crafts, and trade networks. In the religious sphere, doctrinal debates and devotional worship were key features, and the increasing institutionalization of religious sects is clearly reflected in permanent religious structures.”

A balanced opinion should be directed towards the post-Mauryan period. The whole cultural and economic production of this period cannot be discarded single handedly.

MUGHALS :

The Eighteenth Century in India has always been in the courtroom of historians and in trial. The one theme that keeps knocking the door of centuries and centuries of debate is “Dark Age versus Economic Prosperity”. Babur established the Mughal Empire in 1526 with the hope of rising to the

zenith and making Hindustan the land of culture and prosperity. His successors were successful in maintaining his wish until the death of Aurangzeb. Within 40 years the imperial dynasty collapsed and gave uprisings to chaos and anarchy in the state.

The colonial historians and Indian Nationalist historians were the first ones to write about the decline of the Mughal empire. Jadunath Sarkar and William Irvine blamed the downfall of the Mughal Empire on Aurangzeb's religious policy. They considered Aurangzeb as the religious Bigot and characterized the peasant rebellions as a 'Hindu Reaction' to Aurangzeb's Muslim authority. In 1959, Satish Chandra analyzed the Mughal downfall in terms of structural failure. According to him, the centralized system was stabilized due to the efficient working of Mansabs and jagirs. He considered the structural flaws in the working of Mughal Institutions as the primary reason for the collapse of Mughal Empire. In 1963, Irfan Habib in his work, 'The Agrarian System of Mughal India' mentioned that the mechanism of collection of revenues that the Mughals evolved was inherently flawed. M. Athar Ali and Satish Chandra accepted his theory but attributed the part of it to the jagirdari crisis. The political expansion in the Deccan created a deficit in fertile lands. This view was again opposed by John. F Richards. He showed that Deccan was not a deficit area and 'Bejagiri' or absence of jagirs cannot be the sole reason for the decline of Mughal Empire. With the rise of intellectuality and trade, European markets became the principle market in the traditional India. It became difficult for the ruling elites to afford the luxury items in the midst of economic crisis and agricultural exploitation. Seema Alavi in her book 'The Eighteenth Century in India' talks about 'Cultural failure' or aridity in terms of technological, intellectual and economic referents. A bunch of Historians like Hermann Goetz and Bernard S.Cohn have shown that how the collapse of an empire gave birth to survival and continuance of life. Many regional powers like the Marathas, Sikhs and the Satnamis came to the scenario and became the new fulcrums of regional state buildings. According to Athar Ali and Irfan Habib, , the emergent regional polities of the Marathas and Sikhs continued the exploitative tendencies of their predecessors Mughals. The focus remained on revenue extraction but not so much on the other forms of production or trade. Compared with the Malthusian model, J.C Heesterman's view focus on the 'self-explanatory organic' scheme is responsible for rise and fall of the Mughals. Scholars who produced regional studies were not convinced by Heesterman's view. The regional economies like the shift in patterns of trade, movement of mercantile capital from centre to periphery, war and pillage, political upheavals by ruling elites were put forward by historians like Ashin Das Gupta, B.R. Grover, Karen Leonard, Stewart Gordon and Richard B. Barnett. Muzaffar Alam in his study on Awadh showed that economic prosperity resulted in Zamindari unrest in the region. Economic prosperity was a feature in the zenith of Mughal empire. The wealthy Zamindars took advantage of this situation and refused to attend to Mughal commands. The Mughal subedar took the advantage of this unrest and drove the regions to political autonomy. Richards, Rao and Alam say that the evidence of the resistance in Mughal rule can only be available in Oral and vernacular texts. C.A Bayly in his book, 'Rulers, Townsmen and Bazaars' talks about three important developments. First the emergence of new class as intermediaries, second the Mughal service groups that served the new powers locally and third the practice of Military Fiscalism. According to

Seema Alavi, Bayly showed the increased local control exercised on the Indian information order by regional polities which led to the increased bureaucratization of its formal and informal networks.

Often we are plunged to an endless debate on this very topic which is beyond the scope of an undergrad student to comprehend. Revisionist Historians have successfully tried to break the old nationalist idea of calling the Decline of Mughal as Dark Age. Both in the cases of Mughal and Mauryan, we can spot a rise in economic and cultural growth after the decline of the empires. To rather concretely define an end of era, we can somewhat agree to the fact that every society goes through transition. There was an impact of the imperial rule on economic, social and political structure of the Indian society. Thus to conclude, we can say that there was a transition from Mughal political economy to that of regional economy. With this i would like to draw an end line to the debate. But before signing off, i want to quote the creator of unending dialogue between present and past, E.H Carr –

“ The past is intelligible to us only in the light of the present and we can fully understand the present only in the light of past”.

ACKNOWLEDGEMENT :

I would like to express my special thanks of gratitude to Smt. Poulami Das for helping me with the research and understanding of the concepts regarding the journal.

Biography :

- Upinder Singh – A History of Ancient and Early Medieval India – From Stone Age to the 12th century.
- Romila Thapar- Early India: From the Origins to AD 1300.
- Seema Alavi- The Eighteenth century in India: Debates in Indian History and Society.
- Muzaffar Alam- The crisis of Empire in Mughal North India: Awadh and Punjab
- Theodore E. Mommsen- Petrarch's conception of the Dark Ages



ACTIVITIES OF THE CENTRAL RESEARCH COMMITTEE

The Central Research Committee of Shri Shikshayatan College strives to bring about a positive outcome of the research aptitude and efforts of both students and faculties.

The committee brings out IMPACT, a journal devoted to original research carried out by faculty members students (under the guidance of faculty).

The committee also has a long standing collaboration with WILD ROOTS, a Society for Environmental Education, Awareness, Biodiversity and Conservation of international repute. The students of the department of Botany and Geography closely work with them to bring about the present scenario of the world climate and environmental changes and create awareness about biodiversity conservation among the immediate society. They carry out different projects in the locality eg. Chintamani Bird Sanctuary, Rajarhat and Newtown area, East Kolkata Wetlands, Santaragachhi Lake, Howrah etc. Over the years they have done projects in the north eastern part of India, eg. Arunachal Pradesh.

The work ethics and contribution of our students has been so meaningful that 6 students have been included as Executive members of Wild Roots. They are given administrative priviledges, voting rights and opportunity to design Action Plan for the future.

The following is a list of activities that the Central Research Committee has done from 2016 onwards.

SESSION : 2021-22

1. Five students of the department of Geography took part in International River Congress in Kolkata from 27th to 29th December 2021. They had made a small video on Save Ganga and won a prize.
2. Dr. Ratoola Kundu , Assistant Professor, Centre of Urban Policy and Government School of Habitat Studies, TISS, Mumbai gave a lecture on Qualitative Research of Understanding Cities: Approaches to Urban planning on 9th February 2022.
3. 3 days capacity building programme on Advance GIS for students of Geography by SAIARD on 5th, 6th and 10th May 2022

SESSION : 2020-2021

1. One day **National webinar** on "Education and Research" on 12th August 2020. The speakers were Prof. Upendra Choudhury, Dr. ABhandari, Dr, Sumanta Dutta.
2. One day **webinar** for teachers on "Intellectual property Rights" in collaboration with Chemistry department on 5th May 2021, where Scientific Officer of West Bengal Department of Science and Technology Shri Amiya Kumar Kalidaha delivered a lecture.

3. **Webinar** on “Understanding & Managing IPR in Research & Publication in collaboration with Post graduate department of Commerce on 8th May 2021. Speakers: Dr Sangita Laha, Associate Professor and Dean , National University of Study and Research in Law and Dr Sumanta Dutta, Post graduate and Research department of Commerce, St. Xavier's University.

SESSION : 2019-2020

1. A **webinar** was organised for post graduate students of Commerce and English departments on Research Methodology (Basic Concepts). Prof. Tanuka Chakraborty of Department of Commerce, Calcutta University and Dr Jaydeep Sarangi, Principal ,New Alipore College came to deliver lectures ON 30th June,2020
2. Tapas Pal, Associate professor of department of Geography, Raiganj University delivered a **lecture on Amazon Forest Fire** to college students.

SESSION : 2018-19

- A lecture was delivered on Environmental Issues : Crisis to Cure by Mahua Basu of Department of Environmental Science, St Xaviers University, Kolkata in August, 2018

SESSION : 2017-2018

1. An Orientation of the 1st year students of BA/BSc and B.Com on the students' research project on Global Warming in collaboration with NGO “Wild Roots” was arranged. Dr Biswajit Dey ,the founder of the NGO delivered a lecture with all the details regarding the project on 20th September 2017.
2. One day **seminar** for students on “Art of Project Writing” by Prof. Sanjukta Dasgupta President, Executive Council, IPPL on 26th February 2018.
3. Students' presentation on their project work with WILD ROOTS on 27th Feruary,2018.
4. Dr. Krishna Sen, Former professor and head Department of English, Calcutta University delivered a lecture on research Orientation for faculty members on 23rd March,2018





← Students of department of Geography and Botany were inducted in a project in collaboration with WILDROOTS.

IMPACT III, journal of the Central Research Committee unveiled on 7th July, 2017 the College Foundation Day. →



← Orientation of the 1st year students for the students' research project on Global Warming in collaboration with NGO "Wild Roots" by Dr Biswajit Dey, the founder of the NGO on 20th September 2017.



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