

# Govt. College of Pharmacy, Amravati. Maharashtra



## E-Magazine Year-2021



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### **Vision:**

Journey towards the development of technical excellence among the students to make them globally competent pharmacists.

### **Mission:**

To prepare graduates globally competent pharmacist With skills and attitude for creation of professional and social environment and to engage in life-long learning processes

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Academic and  
Technical Excellence*

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### From the Principal's desk

Dear Students!! The Coronavirus (COVID-19) pandemic continues to evolve at a second wave in India. The most suffered state Maharashtra took immediate and visionary steps to continue long lockdown as well as closing colleges temporarily. In about one and half year virtual world, all of we are deprived of social interaction but our health and wellness is the top priority.

To ensure that the college remains for the students, online teaching opened many doors. As it is forced, unplanned and rapid move to online learning, I am aware that some students without reliable internet access and/or technology struggle to participate in digital learning efficiently. Malpractices in online exams are going to cause a ripple at the national level. Hence GCOPA students should refrain from malpractices in online exams.

Year 2020-21 is filled many proud moments for GCOPA from students as well as teachers. College has received two research grants worth Rs. 47 Lakh from AICTE and DST, Delhi as well as 4 Lakh from NMPB-AYUSH for development of medicinal garden. Throughout year, we have successfully implemented Giloy/गुळवेल camapaign through various activities.

**Rushikesh Aswar** from Pharm.D fourth year selected for INSA Summer reaserch fellowship. **Rahul Patil** from B.Pharm fourth year secured All India Rank 3 in national level **GPAT examination**. Total **32** students of B.Pharm final year qualified **GPAT** and **26** students qualified **NIPER examination**. Our Alumni Dipali Sonawane, B.Pharm Batch 2019, feteched **Gold medal** in MS Pharmaceutical analysis, NIPER-Ahmedabad. Sagar Hade, Alumni 2020 secured 98 rank in NIPER 2021 examination. All of these students are motivation for teachers as well as junior students.

GCOPA E-magazine is right platform to inspire creativity of budding writers and artists, to appreciate intellectuals, to showcase college activities and connect with students, parents as well society. As *Roberto Bolaño* said, "Reading is like thinking, like praying, like talking to a friend, like expressing your ideas, like listening to other people's ideas, like listening to music, like looking at the view, like taking a walk on the beach." With this note, I wish you all happy reading experience of this **E-magazine-2021**.

**Dr. S. S. Khadabadi**

# SCIENTIFIC ARTICLES

## Cytokine Storm and COVID 19

The pandemic has taught us lot of lessons that we should change ourselves for growth and well being of mankind. The reason behind increase in mortality rate of COVID 19 patients is cytokine storm (Cytokine storm syndrome CSS ).Cytokine storm is pathological condition in which body kills its own cells in order to save the cell. Primary intention of body is to protect the body but in several conditions Immune system is confused between self and foreign.

### 1. What is Cytokine storm

“cytokine storm syndrome” (CSS)[cytokine storm is a systemic inflammatory response to infections and drugs and leads to excessive activation of immune cells and the generation of pro-inflammatory cytokines.Definition according to National Cancer Institute ”A severe immune reaction in which the body releases too many cytokines into the blood too quickly.” Cytokines play an important role in normal immune responses, but having a large amount of them released in the body all at once can be harmful. A cytokine storm can occur as a result of an infection, autoimmune condition, or other disease. It may also occur after treatment with some types of immunotherapy. Signs and symptoms include high fever, inflammation (redness and swelling), and severe fatigue and nausea. Sometimes, a cytokine storm may be severe or life threatening and lead to multiple organ failure. Also called hypercytokinemia.

### Cytokines and COVID 19 patients

The doctors reported that the patients in ICU ( Intensive care unit ) studies showed that severely ill patients tended to have a higher concentration of pro-inflammatory cytokines, especially interleukin (IL) 6, than moderately ill patients in COVID-19. In postmortem examination of patient died with COVID 19 demonstrated the existence of acute respiratory distress syndrome (ARDS) and T-cell overactivation. This phenomenon is due to an increase in the number of T-helper (Th) 17 cells and the high cytotoxicity of the CD8<sup>+</sup> T cells. The uncontrolled inflammatory responses were activated by SARS-CoV- 2. These uncontrolled immune responses can lead to apoptosis of epithelial cells and endothelial cells, and vascular leakage and, finally, result in ARDS, other severe syndromes, and even death. The increased levels of cytokines may lead to the poor prognosis of disease and sometimes also death of an patients .

### 3.Diagnosis and Recognition of CSS in COVID 19 Patients

There is no specified method to diagnose the CSS. Some clinical and laboratory examinations to be conducted. Basic principle for consideration of CSS

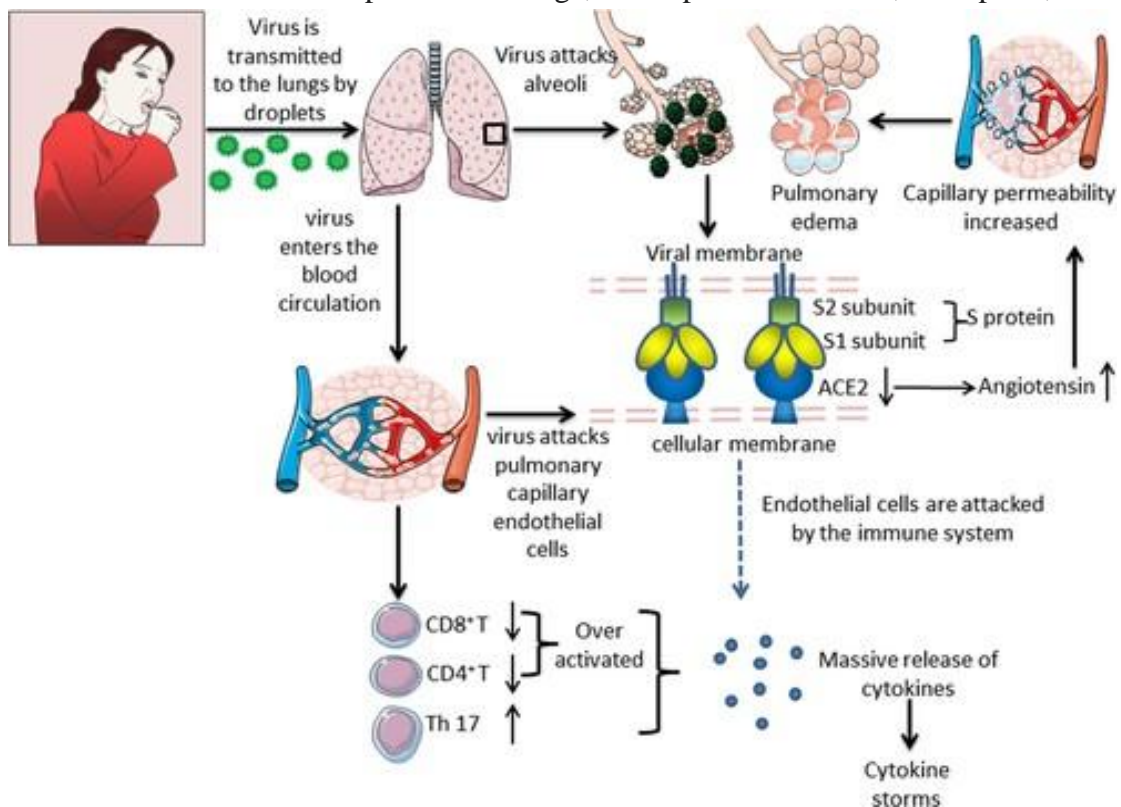
- sudden or rapid progression with multiple organ involvement (such as liver, cardiac or renal injury);
- (ii) the significant decline of peripheral blood lymphocyte counts;
- (iii) the significant elevation of systematic inflammatory indicators (such as CRP, serum ferritin, erythrocyte sedimentation rate); and (iv
- the elevation of multiple cytokines, such as IL-1 $\beta$ , IL-2R, IL-6, IFN- $\gamma$ , IP-10, MCP-1, TNF- $\alpha$  and MIP1a

#### 4. Prognosis of CSS in COVID 19 Patients

If CSS not treated properly it may cause multiple organ dysfunction (MOD). Due to excessive infiltration of inflammatory cells like monocytes and neutrophils into lung tissue leads to lung injury. Cytokine induced apoptosis of lung epithelial cells also lead to ARDS. ARDS may further lead in life-threatening hypoxia, hypercapnia, acidosis and pulmonary hypertension, and require a fast and goal-oriented therapy without further lung damage.

#### 5. Potential Treatment in Cytokine Storm Syndrome associated with COVID 19

- **Glucocorticoid :** Glucocorticoids are powerful anti-inflammatory agents and are effective choice for treatment. Corticosteroids often leads to improvement of radiographic outcome and oxygenation in SARS as a consequence of more effective control of immunopathological lung damage glucocorticoids should not be used in the early phases of disease unless there is a clear indication for their use. Methylprednisolone, Prednisone, Hydrocortisone and Dexamethasone are used.
- **Blood purification Therapy :** The application of blood purification technology is helpful to the removal of cytokines and may be beneficial to improve the clinical outcome of critically ill patients. Commonly used extracorporeal blood purification treatments in CSS include plasma exchange, blood/plasma filtration, adsorption,



- **perfusion and continuous renal replacement therapy (CRRT)**
  - **IL-1 Inhibiting agents :** Dysfunction of the innate immune system involving IL-1 is important to CSS pathogenesis. Anakinra is a recombinant, nonglycosylated form of human IL-1Ra, which can block the biologic activity of both IL-1 $\alpha$  and IL-1 $\beta$  by competitively inhibiting their binding to IL-1R.

- IL-6 inhibiting agents : Tocilizumab, a recombinant human IL-6 monoclonal antibody, specifically binds to soluble and membrane-bound IL-6 receptors (IL-6R), thus blocking IL-6 signalling and its mediated inflammatory response, which has been demonstrated to show outstanding efficacy in the rescue of CSS accompanied by T-cell engaged therapy.
- Janus Kinase (JAK) Inhibitor :Several cytokines signal through the JAK/STAT pathway, which is now recognized as a major target to inhibit the effect of a wide array of cytokines. baricitinib is proposed to have the ability to reduce both the viral entry and the inflammation, which is suggested as a possible candidate for the treatment of COVID-19. ,ruxolitinib (a JAK1/2 inhibitor) contributed to a numerically faster clinical improvement in patients with severe COVID-19..

**Vikee Dhakulkar**  
**B.Pharm Fourth Semester**

### **Mucormycosis: Black and white**

Mucormycosis, previously termed zygomycosis, is a rare fungal infection, instigated by the mucormycete mould, that occurs extensively in soil, leaves, decayed wood and putrefied manure. Besides darkening of skin, inflammation, redness, ulcers, fevers, this dangerous sickness can also invade the lungs, eyes and even the brain, proving to be fatal if left unattended. Therefore, it is crucial to understand the causative factors and prominent symptoms associated with Mucormycosis, to quickly identify any possible warning signs arising in both, COVID-19 patients and other individuals. These must be promptly conveyed to the healthcare professional so that timely medical treatment can be provided and the affected individual recovers completely.

#### ***Fungal Eye infection causes and treatment***

The official guidelines outlined by the Indian Council Of Medical Research (ICMR) and the Ministry Of Health And Family Welfare, for identifying symptoms and ensuring timely diagnosis, efficient management of patients developing mucormycosis while recuperating from COVID-19 are as follows:

#### **Risk Factors:**

Not all people who have contracted coronavirus infection and are on treatment for COVID-19 obtain mucormycosis. Certain individuals are more prone to getting affected by the fungal infection, such as:

- 1) People with diabetes mellitus who are unable to keep blood sugar levels within the normal range
- 2) Persons with comorbid conditions taking immunosuppressant steroid medications to manage pre-existing illnesses as well as COVID-19, over an extended length of time
- 3) Being treated in the Intensive Care Unit i.e. ICU wing of hospitals for a prolonged interval of time
- 4) Having a vulnerable immune system that is weakened owing to comorbidities such as previous organ transplant surgeries or cancer therapy procedures
- 5) Already taking prescription antifungal drugs to combat infections

#### **Symptoms of Black Fungus:**

In addition to constantly monitoring COVID-19 patients with the above-mentioned ailing conditions who are on treatment, doctors must also keep an eye out for these indications of mucormycosis:

- 1) Sinusitis, along with clogging of the nasal tract and bloody or blackish mucus emission from the nose
- 2) Pain on only one side of the face, cheekbones, with lack of sensation and bulging
- 3) Distinct blackish discolouration on the bridge of the nose
- 4) Prominent aching in teeth, jawbone, degrading of tooth structures
- 5) Hazy vision, with objects appearing blurred or in double, with eye pain

- 6) Abnormal blood clotting or thrombosis of tissues, along with skin injury and damage or necrosis of dermal cells
- 7) Further deterioration of respiratory functions, with chest pain, excess fluid build-up in lungs i.e. pleural effusion and coughing up blood or haemoptysis.

### **How Is Mucormycosis Treated?**

Treatment principles include antifungal agents, surgical debridement, reversal of underlying predisposing factors and adjuvant therapy. Amphotericin B has been the standard of treatment for invasive mucormycosis. COVID-19 patients may have developed acute on chronic renal failure which may be mitigated by switching to a less- or non-nephrotoxic alternative. Therefore Posaconazole or Isavuconazole may have to be used. Azithromycin which many patients still continue to receive. Surgical debridement, the earlier the better, is pivotal in the management of mucormycosis. The optimal time of surgery to reduce the operative risk to the patient with COVID-19 and the risk of transmission to the operating team is a contentious issue

Adjuvant therapy with caspofungin, deferasirox, statins, aspirin, and hyperbaric oxygen may have to be considered. Mucormycosis needs to be actively managed by a team which includes members from almost all departments in the hospital. Therapy is toxic and very resource intensive. In a recent Indian study, 24.3% patients left the hospital against medical advice due to the anticipated cost, morbidity of surgery and prognosis.

### **How to Prevent Mucormycosis/Black Fungus?**

Additionally, simple preventive measures go a long way in lowering the chances of acquiring mucormycosis post COVID-19 recovery, such as:

- Ensuring personal hygiene by bathing and scrubbing the body thoroughly, particularly after returning home from work, working out or visiting neighbours, relatives, friends
- Wearing face mask and face shields when going to dirty polluted environments such as construction sites
- Making sure to don fully covered clothing of concealed shoes, long pants, long-sleeved shirts and gloves while coming in contact with soil, moss, manure, like in gardening activities.

### **What is white fungal infection?**

As different states continue to notify black fungus or Mucormycosis as an epidemic, an infection called white fungus has also been found to affect some COVID-19 patients. These new cases have been reported in Patna, Bihar, and according to reports by health officials, this infection appears to be more dangerous than black fungus.

White fungus, also known as candidiasis, is a serious fungal infection. According to the Centre for Diseases Control and Prevention (CDC), white fungus or invasive candidiasis can affect the blood, heart, brain, eyes, bones, or other parts of the body. Bihar health department has given latest update about 4 cases of white fungal infection but all information about that disease not yet cleared by Indian health department. It is considered as more dangerous than black fungal infection

### **What causes white fungus?**

It is caused when people with low immunity come in contact with objects that contain these fungal mould spores. For instance, COVID-19 patients on oxygen support can come in contact with these fungal spores if their ventilators and oxygen support equipment is not sanitised properly. Further, overuse of steroids and usage of tap water in the humidifier attached to an oxygen cylinder can also heighten the risk of contracting white fungus.

### **Who can get infected by white fungus?**

Invasive candidiasis is caused by a yeast (a type of fungus) called Candida. Candida can normally live inside the body, in areas like the mouth, throat, gut, and vagina, without causing any problems.

However, individuals with low immunity, like patients recovering from a serious COVID-19 infection, are particularly at risk of contracting this fungal infection. In their bodies, the fungus can enter the bloodstream or internal organs to cause an infection.

According to CDC, people who are at high risk for developing this infection include those who:

- Have spent a lot of time in the intensive care unit (ICU)
- Have a weakened immune system (for example, people on cancer chemotherapy, people who have had an organ transplant, and people with low white blood cell counts)
- Have recently had surgery, especially multiple abdominal surgeries
- Have recently received lots of antibiotics or steroids in the hospital
- Receive total parenteral nutrition (food through a vein)
- Have kidney failure or are on haemodialysis
- Have diabetes
- Have a central venous catheter.

### **Is white fungus contagious?**

White fungus is not contagious in most cases, as it cannot spread directly from person to person. However, there exist some species of the fungus that cause this infection on the skin. In such instances of external infection, the fungus can possibly be transferred from the patient to another individual who is at risk.

### **What are the symptoms of white fungus?**

Only CT scans or X-Rays can reveal and completely confirm the white fungus infection.

Health experts report that white fungus is more dangerous than black fungus, as it affects the lungs as well as other parts of the body like the nails, skin, stomach, kidney, brain, private areas, and mouth. Moreover, white fungus can also infect the lungs the same way COVID-19 does. In fact, patients who get infected with white fungus displayed COVID-19-like symptoms despite having tested negative for the virus.

According to some reports, the oxygen saturation level of one of the four patients infected with white fungus dropped from normal levels. However, the oxygen levels became normal after the antifungal medication was administered.

### **How can white fungus be treated?**

According to health department officials, all patients who are infected with white fungus should be examined carefully, perhaps with a fungus culture test of their phlegm or mucus, to detect the extent of fungal infection in their body.

After detection of the white fungus infection, antifungal medications have been used to treat the patients, and they have led to an improvement in their condition.

The type and dose of antifungal medication used to treat white fungus will depend on the patient's age, immune status, location, and severity of the infection.

### **How to Prevent Mucormycosis/white Fungus?**

Prevention measures are same like black fungus for white fungal infection,

Additionally, simple preventive measures go a long way in lowering the chances of acquiring mucormycosis post COVID-19 recovery, such as:

Ensuring personal hygiene by bathing and scrubbing the body thoroughly, particularly after returning home from work, working out or visiting neighbours, relatives, friends

Wearing face mask and face shields when going to dirty polluted environments such as construction sites

Making sure to don fully covered clothing of concealed shoes, long pants, long-sleeved shirts and gloves while coming in contact with soil, moss, manure, like in gardening activities.

### **Cost of Mucormycosis treatment in both cases.**

The treatment protocol notified by the government on Wednesday, based on a report by an expert committee, puts patients on antifungal therapy with either Liposomal Amphotericin-B or Amphotericin-B injections administered for a 14- 21-day period in a hospital. One injection dose of Amphotericin-B costs anywhere in the range of ₹6,000-₹9,000, which is driving the cost of treatment for the infection northwards, sources said. The SOP includes strict control of diabetes, reducing steroids, stopping immunomodulating drugs and surgical debridement of all necrotic material.

The daily cost of treating a mucormycosis patient can be in the range of Rs 60,000 to Rs 80,000. Many simply walk away when we tell them about the cost. If left untreated, mucormycosis is fatal,” said Jalgaon ENT surgeon Dr Sanjeev Zambare, who has been seeing at least two cases in a day.

In private hospital 5-6 Lacks cost required for treatment of fungal infection and at the time of surgery or treatment of this fungal infection requires a multidisciplinary approach consisting of eye surgeons, ENT specialists, general surgeon, neurosurgeon and dental maxilla facial surgeon, among others, and due to that the cost of surgery is high for the fungal infection it is nearly 6-8 lacks.

**Kirti Nandkumar Deshmukh**  
**M.Pharm Final Semester**

## Repurposing of Drugs

**Drug repurposing** is the process of application of an existing therapeutic drug to a new disease indication. Or It is the application of already approved drugs and compounds to treat a different disease. In short “*old drugs for new uses*”. It is an effective strategy to find new indication for existing drugs and is highly efficient, low cost and riskless. In addition to reducing the time cost and investment, drug repositioning is a low-risk strategy. The discovery and development is a costly, complex, time consuming and high risk process, often taking about 14 years and \$1 billion plus R & D costs, with no guarantee of success. Drug repositioning accounts for approximately 30% of drugs and vaccines recently approved by the US Food and Drug Administration.

### **Synonym term for drug repurposing**

- **Drug repositioning:** Finding new uses outside the scope of the original medical indication for existing drugs or developing new indications for existing drugs.
- **Drug repurposing:** Identifying, developing, and commercializing new use for existing or abandoned drugs.
- **Drug re-profiling:** Reducing the risk and costs associated with drugs development with the advantage that the drug has already undergone preclinical and clinical testing.
- **Drug reformulating:** Finding ways to modify a formulation to allow a drug to enter a new market.

### **Need of drug repurposing:**

- ✓ Drug development can be time-consuming and expensive.
- ✓ Drug development also has complex process and taking high risk.
- ✓ The repurposing hub is designed to rapidly identify drugs for evaluation in disease models.
- ✓ The repurposing is attractive and programmatic given the substantial cost and time requirements on averages.

### **Advantages of drug repurposing over traditional drug discovery**

<b>Traditional drug development strategies usually include five stages-</b>	<b>Drug repurposing consist only four stages-</b>
<ol style="list-style-type: none"><li>1. Discovery and preclinical studies</li><li>2. Safety review</li><li>3. Clinical research</li><li>4. FDA reviews and</li><li>5. FDA post market safety monitoring</li></ol>	<ol style="list-style-type: none"><li>1. Compound identification</li><li>2. Compound acquisition</li><li>3. Development</li><li>4. FDA post-market safety monitoring</li></ol>

### **Approaches of drug repurposing**

The main issue in drug repurposing is the detection of novel drug disease relationship. Mostly done by serendipity over the years now it's more systematic with computational analysis are being used. It's based on the gene expression response of cell lines after treatment or merging several types of information about disease-drug relationship.

<b>Network-based approaches:</b>	<p>This is widely used in drug repositioning due to the associated ability to integrate multiple data sources.</p> <ol style="list-style-type: none"> <li>Network- based cluster approaches: These approaches aim to find several modules using cluster according to the topology structures of network. These modules include various relationship such as drug-disease, drug-drug or drug-target relationship. (Cluster approaches-DBSCAN, CLIQUE, STING and OPTICS)</li> <li>Network-based propagation approaches: This work as prior information propagates from the source node to all network nodes and some sub network nodes. These approaches can be divided into two types. <ol style="list-style-type: none"> <li>Local approaches (Limited information)</li> <li>Global approaches (Information of entire network)</li> </ol> </li> </ol>
<b>Test mining-based approaches</b>	It is defined as discovery by computer of new or previously unknown information by automatically extracting information from different written resources.
<b>Semantics-based approaches</b>	These approaches were widely used in information retrieval, image retrieval and other fields. These methods have been applied to drug repositioning.

#### Some examples of drug repurposing

<b>Drug</b>	<b>Original indication</b>	<b>New indication</b>
Mifepristone	Pregnancy termination	Psychotic major depression
Thalidomide	Sedation	Leprosy and multiple myeloma
Despoxetine	Analgesia, depression	Premature ejaculation
Chlorpromazine	Antiemetic, antihistaminic	Non sedative tranquilizer
Zidovudine	Cancer	HIV/AIDS
Minoxidil	Hypertension	Hair loss
Phentolamine	Hypertension	Impaired night vision
Sildenafil	Angina	Male erectile dysfunction
Tadalafil	Inflammation & CVS disease	Male erectile dysfunction
Sibutramin	Depression	Obesity

**Conclusion-** The traditional method of developing a new drug is costly and time consuming and drug repurposing comes forth as an excellent alternative.

**Vikas n. Ghait**  
**M Pharm Final Semester**

### Social Responsibility in Covid-19 Pandemic

WHO declared covid-19 as pandemic On 11 February 2020. Covid-19 is a zoonotic disease- it is transmitted to human through bats. The first patient of Covid-19 was found in wet market of Wuhan, China. Covid-19 is spread through respiratory droplets. A person is also infected by coming in direct contact with infected person or indirect contact with the surface previously touched by infected one. Covid-19 incubation period is 10-15 days. The coronavirus invades ACE-2 inhibitors to infect human. People of all age group are prone to covid-19 but elderly People above 60 years and children of age less than 7 Years are more susceptible to covid-19.

To prevent the spread of covid-19, We have to break the chain of covid-19, each and every Individuals of society have to take part in fight against Covid-19 and has to perform his social responsibility Honestly. For this, every citizen must update their Knowledge about covid-19 regularly and also keep aware others about it. The corona virus information Phone number in India is 1075- or 011-239798046.

Every citizen should follow government Instruction and co-ordinate with the government as well as with frontline warriors i.e medical staff, doctors and pharmacist. The people should also co-ordinate with police. The lockdown or JANTA CURFEW imposed by government must be strictly follow by each and every citizen. A person should avoid for going outside from home until it is emergency. Elderly people who are suffering from life threatening disease like coronary artery disease, angina pectoris, liver disease, kidney diseases, upper respiratory tract infection, lower respiratory tract infection and any other life threatening disease must avoid for going outside in any case even for morning walk also as they are more prone to be infected by covid-19. Children below the age group of 7 years are also prone or susceptible to covid-19 as their immune system is not strong means developing. In most of the case only one member from the family should go outside for any work in covid-19 pandemic situation.

The social distancing should be maintained in market, square where chances of gathering is increased like wine shop. Maintenance of social distancing is important to reduce risk of coming in contact with infected once. Instead of paying bills by going to their respective office like electricity bill, RD, water supply bill, LIC Premium, loan repayment, Municipal tax, the payment should be paid online for the sake of avoiding gathering of mass at one place. People must compulsorily wear mask at market or any social place. Instruct the person who are breaking or violating the rules about their social responsibility and if further He/she does not follow then punish them so that from next time he/she commit the same mistake and it will become lesson to others. Further every citizen should avoid handshake and hugging with others. Instead everyone should promote our Indian Culture- NAMASTE.

A citizen must care of avoiding mass gathering in marriage or party or a funeral. The group of people must analyse the situation and depending upon that they should either postponed the marriage or party or not more than 50 people should assemble for marriage. In case of funeral, not more than 20 people should assemble for last ritual rites.

A citizen must care of avoiding mass gathering in marriage or party or a funeral. The group of people must analyse the situation and depending upon that they should either postponed the marriage or party Or not more than 50 people should assemble for marriage. In case of funeral, not more than 20 people should assemble for last ritual rites.

People should not panic in covid-19 situation and purchase excess amount of vegetables, fruits and also daily require material from grocery stores and general stores like mask and sanitizer. This will lead to scarcity and shortage of material in the market which if continues leads to recession in trade as well as in market. Recession in market leads to increase in price of essential items which may lead to plaque or pandemic which recession is for longer period of time. Hence it is a responsibility of each and every citizen to buy items in a quantity that are needed at that time. The labourer or a group of people who are travelling from one city to another city or village, they should make themselves self-quarantine for two to three weeks as they may be infected or the carrier of covid-19 disease. They should also take necessary measures or precaution during their travelling and in quarantine to prevent covid-19. They should also do regular check-ups and test related to covid-19 for two to three weeks after arriving to their destination. People should travel in covid-19 situation only if it is important or emergency. Otherwise travelling should be avoided.

If any person feeling unwell or shows the symptoms like fever, difficulty in breathing, headache and dry cough then he/she should immediately visit to a doctor in a nearest hospital and diagnose from them. He/she must co-ordinate with the doctors during their treatment if he found covid-19 positive and take care of himself/herself after cure from covid-19. If a person found covid-19 positive then he should tell the doctors about where he visited in last week so that test of his family member and the person he meets so as to avoid the spread of covid-19. If there is increase in cases of covid-19 in one of the community rapidly than other then people of other communities should not spread the hatred against the other community. This is important as it may disturb the balance of society. Instead people show their faith and they are stand with them in covid-19 pandemic. Fight against covid-19 is successful only when each and every community people show unity and are stand for each other.

Every citizen must download **Aarogya Setu** App from play store and fill the correct information in it. This app helps to detect covid-19 patient and can be treated; also helps alert us if a covid-19 patient or a person showing symptoms of covid-19. Thus, this app is a link between citizen and government as well as between doctor and patient as in a country of 130 crore it is quite difficult for doctor and government to reach each and every citizen. This app I like a elixir for everyone. The only condition for these app is that for the working of these App Bluetooth must be ON compulsory. When each and every citizen will understand their social responsibility and follow their responsibility honestly and sincerely, then the chain of covid-19 will be break soon by flattening the curve of covid-19 and get rid of from covid-19 and the life comes to normalcy again. It also helps to prevent too much damage to economy as well and less loss to small business.

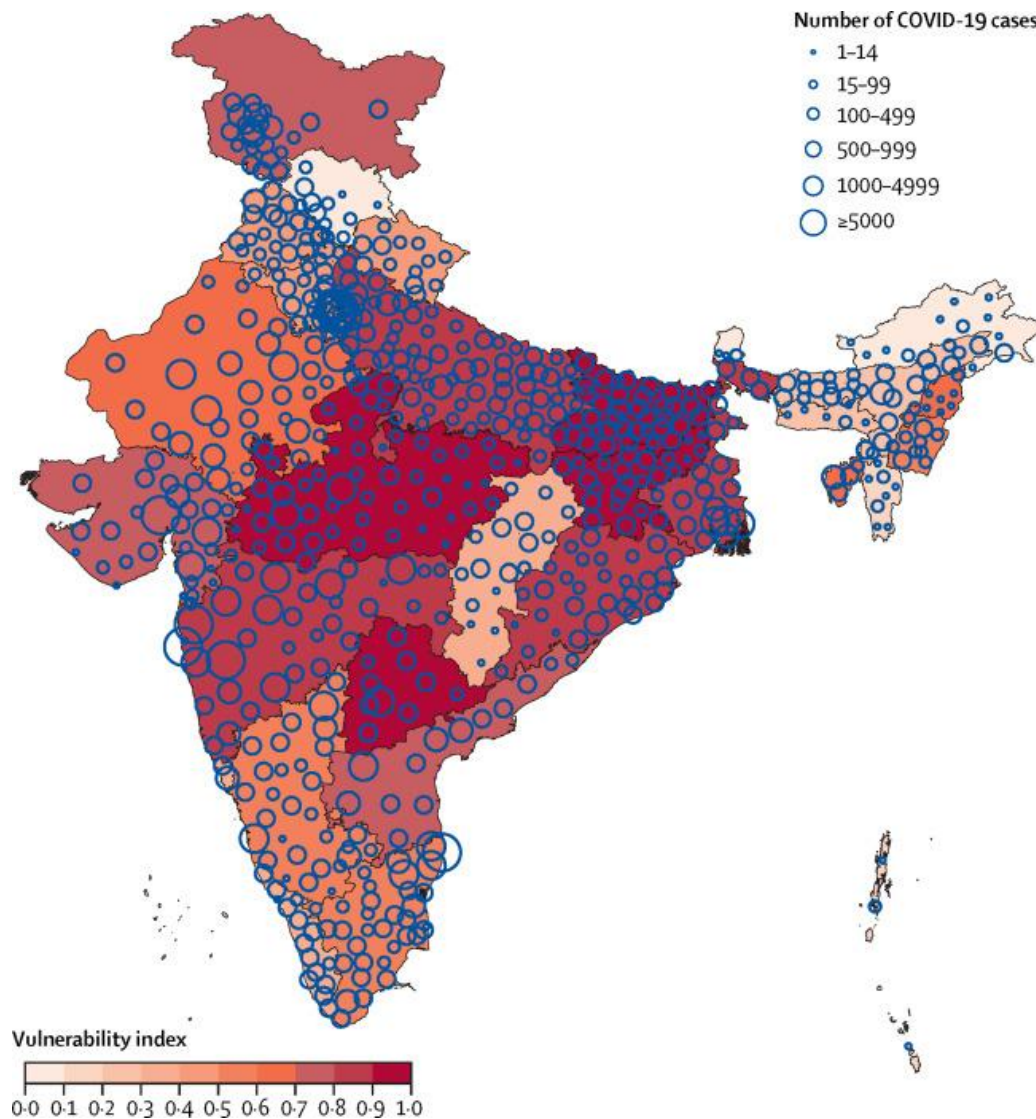
**Abhay Rajesh Rathi,**

**B.Pharm Final Semester**

### Covid-19 and Role of India

The coronavirus COVID-19 pandemic is the defining global health crisis of our time and the greatest challenge we have faced since world war two. Since its emergence in Asia in 2019, the virus has spread to every continent except Antarctica the climbing death toll is staggering and we must work together to slow the spread of this virus.

Coronavirus are envelope RNA viruses, ranging from 60nm to 140nm in diameter with crown like appearance found in mammals particularly are known to have mutated and recombined behavior causing respiratory, enteric, hepatic and neurologic diseases. coronavirus has a total of seven strains which include HKU1, NL63, 229E and OC43, SARS COVID, MERS COVID and SARS COVID-19 (COVID-19 being the latest) out of which first four had mild impact on infested human with mild respiratory disease, whereas the other three caused a fatal impact on humankind. Previously in 2002 to 2003 more than 8000 people suffered and 774 died due to SARS. In 2012, attributable to MERS COV, 2494 percent were infected and over 858 people lost their lives worldwide and currently COVID-19 triggered 5,56,335 deaths infecting 216 countries worldwide (as of 11 July 2020).



The first outbreak of COVID-19 occurred in Wuhan Hubei province in early December 2019 where several patients with viral pneumonia were found to be epidemiological associated with the human seafood marketed in Wuhan. This market is famous for sell of wildlife animals and several non-aquatic animals such as birds and rabbits were also on sale before the outbreak on 30th January 2020, the World Health Organization declared an outbreak, a public health emergency of international concern and on Feb 2020 WHO officially named this outbreak of a disease associated with the coronavirus as COVID-19 where Cocorona, VI-Virus,D-Disease and 19-2019 is the year it primarily occurred.

India has played and still playing 'Pharmacy of the World' role during COVID-19 crisis. India has so far supplied medicines to 133 countries in the fight against COVID-19, which shows India's generosity India has also played an active role in proving assistance to many countries including the SCO(Shanghai Cooperation Organisatio) member states, in the supply of medicines and essential drugs with Indian acision in the SCO as a full member, new opportunities for further development and deepening of full scale cooperation have opened up. India contributes 60% of the vaccine production to the world.

As the pandemic hit the world in 2020 Indian pharma industry rose to the occasion and was able to manufacture and maintain supply chains even during lock down period and exported medicine such as a HCQ and paracetamol to more than 150 countries keeping its image of 'Reliable pharmacy of the World'. India has become the world's largest producer of generic medicines, accounting for 20% of the total global production and meeting 62% of the total global demand for vaccine. while Indian companies such as zydus, Bharat Biotech, Gennova are developing indigenous vaccines, other domestic company are collaborating with global companies such as serum institute

India today sets the tone in many regional and global initiatives. It has a good reason for this: it relies on its vast experience and deep knowledge in the field of medicine and health management, including the production of high quality affordable medicines, equipment and vaccines. India has over 30 anti-COVID vaccine in various stages of development and a national vaccination drive was started on 16 January 2021. India begin the world's largest covid vaccination on January 16 2021 and in 18 days the country has successfully vaccinated over 4.1 million healthcare workers. Though the vaccine has pros and cons we got some relief over the corona virus due to the availability of vaccine and I hope we will get rid of COVID-19 soon.

Prajakta Bondarkar

B.Pharm Fourth Semester

### Awareness of self-care

The novel coronavirus (COVID-19) pandemic has affected all of us in varieties of ways. The pandemic has brought many changes in how we work, learn and interact with ourself as well with society. It has affected economy, education system, transportation, health, etc directly or indirectly and significantly our mental health. Thus, this is how it has created the need of self care to settle with pandemic and bring peace of mind. Caring for others is important, but Covid 19 taught us that sometimes by caring for yourself, you are caring for others, too.

Well being defined as the overall experience of health, happiness and prosperity. The term well being is synonymous with positive mental health. The World Health Organization (WHO) defines positive mental health as “ a state of well being in which individual realised his or her own abilities, can cope the stress, can work productively and fruitfully and able to make contribution to his or her community”. Simple changes and mindfulness can make a significant changes towards positive mental health. Self care means any activity that we do deliberately, to take care of our mental, emotional and physical health. Self care is not just taking care of ourselves. Self care is holistic which is to say, when we practice self care, we nurture the better version of ourselves, which in turn impact our ability to be productive in healthy way, to care towards others.



Self care is so much more than a beauty regimen or an external thing you do. It has to start within your heart to know what you need to navigate your life.

Self care allows us to reconnect, reduce and reassess. When we are emotionally, mentally and physically healthy, not only we are able to reconnect ourselves but we can also to better reconnect with others. When we take time for ourselves we also better able to reassess what's working and not working in our life. We might even find that, there are thing we can remove from our life that put us into stress, anxiety and affect our mental peace of mind. When we are aware of our selfcare, we're able to reduce that factor which affects us.

To implement this habit in our life, we certainly have to be intentional. We have to make a conscious effort to do something relaxing or joyful everyday that might something as simple as going for a walk outside, doing meditation, yoga, exercise or reading a great book. Meditation can help us embrace our worries, our fear, our anger, and that is very healing. We let our own natural capacity of healing do the work. We also need to make a conscious effort to reduce negative input which means to remove anything that make us anxious through those negativity. For example spending to much time on social media.

We know the healthier we are, the better we're able to care for other in our life and the better we're able to manage stress and do our job.

The rhythm of the body, the melody of the mind and the harmony of the soul create the symphony of life.

Kanak Surjuse

Pharm.D Second Year

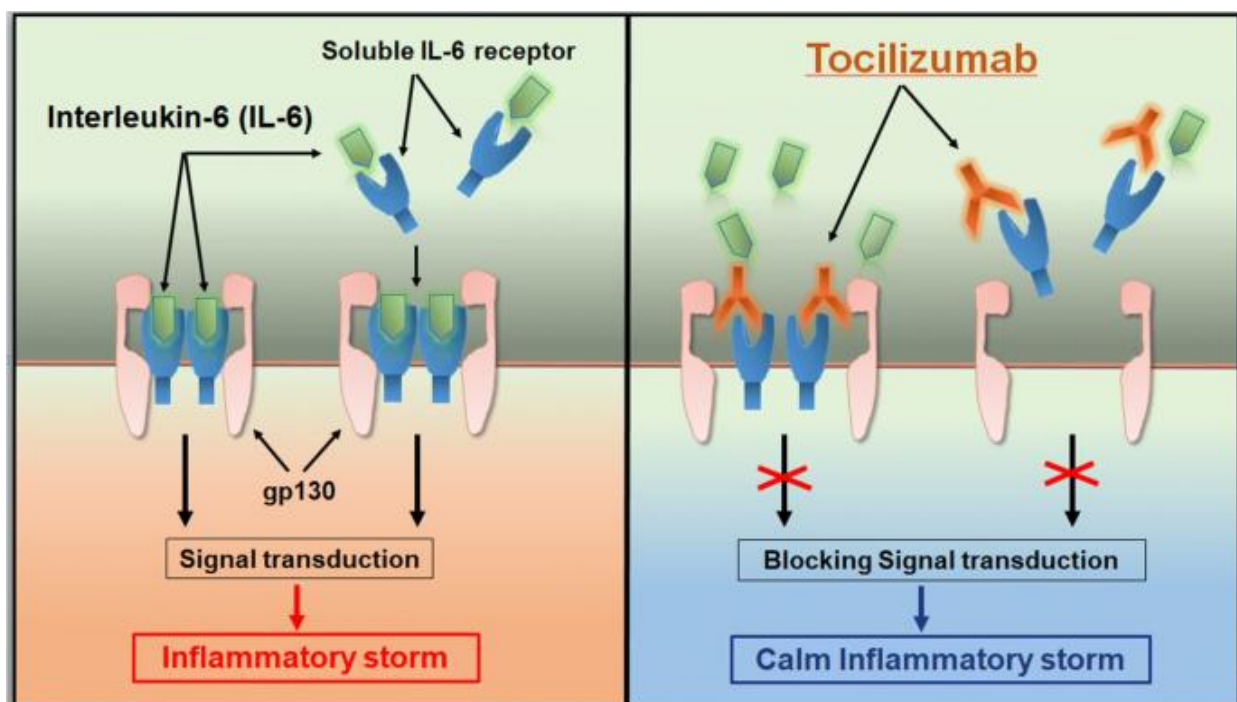
### Tocilizumab in patients admitted to hospital with severe or critical COVID-19

**Description** -Tocilizumab is a recombinant humanized anti-human interleukin-6 (IL-6) receptor monoclonal antibody of the immunoglobulin (Ig) IgG1 subclass.

**Active ingredient:** tocilizumab

Excipients: Sucrose, Polysorbate 80, Disodium phosphate dodecahydrate, Sodium dihydrogen phosphate dihydrate and Water for injections Tocilizumab solution for intravenous (IV) infusion is a clear to opalescent, colourless to pale yellow liquid, supplied in preservative-free, non-pyrogenic single-use vials, supplied in 10 mL and 20 mL vials containing 4 mL, 10 mL or 20 mL of Tocilizumab (20 mg/mL).

**Summary** Elevated proinflammatory cytokines are associated with greater COVID-19 severity. We aimed to assess safety and efficacy of tocilizumab, an interleukin-6 receptor inhibitor, in patients with severe (requiring supplemental oxygen by nasal cannula or face mask) or critical (requiring greater supplemental oxygen, mechanical ventilation, or extracorporeal support) COVID-19



**Intravenous Dosing Regimen** -The recommended dose of Tocilizumab for adult patients is 8 mg/kg body weight, given once every four weeks as an IV infusion. Tocilizumab can be used alone or in combination with MTX and/or other DMARDs. For individuals whose body weight is more than 100 kilograms (kg), doses exceeding 800 mg per infusion are not recommended (see Section 3.2 Pharmacokinetic Properties) Tocilizumab IV formulation is not intended for subcutaneous administration.

**Methods** . We included adults ( $\geq 18$  years) admitted to hospital with laboratory-confirmed COVID-19 infection who required oxygen supplementation or intensive care. Patients were randomly assigned to receive intravenous tocilizumab 400 mg. Patients, care providers,

outcome assessors, and investigators remained masked to assigned intervention throughout the course of the study. The primary endpoint was time to clinical improvement of two or more points (seven point scale ranging from 1 [death] to 7 [discharged from hospital]) in the modified intention-to-treat population. The key secondary endpoint was proportion of patients alive at day 29.

**Findings** Between March 2 and March 26, 2021, of 15 patients who were screened, 5 patients were randomly assigned and tocilizumab 8mg/kg body weight. We found that only 1 patient who is taken a dose were alive and Discharge after 7 days all 4 Patients were die due to severe IL -6 count .

**Interpretation** The study shows that patient tocilizumab in patients admitted to hospital with COVID-19 and receiving supplemental oxygen. Adequate dose of tocilizumab targeted immunomodulatory therapies assessing survival as a primary endpoint are suggested in patients with critical COVID-19. All 5 patients receiving Inj Tocilizumab was on BIPAP machine and Oxygen therapy with above 10-12 lit. Inj Tocilizumab was given due to there increasing Diagnostic finding such as IL -6 above 250 pg/ml more and C- reactive protein above 150mg/ L more and some Patients having Secondary diseases such as ARDS , ASTHMA , DM ,HTN etc.

**Result-** As we gave Inj Tocilizumab to all 5 Patients with proper dilution and in 100 ml NS Still it shows positive result in only 1 patient with decrease in IL -6 count and cure and discharge Healthy. In other patient Inj Tocilizumab Results was not so good and some Patients get severe and die.

Yogesh Pawar  
Pharm.D Fourth Year

### The Journey- Disease spreader to the vaccinator

Ya , you read it right ! In this current era of the AI (Artificial Intelligence), GE (Genetic Engineering) and Clinical perspective we have come a long way. In this world different research heading every day, and it proves the curiosity of the human instinct, to find different things and the scientific reason behind it.

In this ongoing scenario, human species affected with innumerable number of diseases and disorders. As the number of diseases we've also found their different antidotes and medicines via Clinical research followed by their trials. In the same time researcher thinking about how to use the disease spreading agent as a vaccinator? Can we do this...? Let's have a look here.

We know mosquito is one of the disease spreading agents. Most mosquito bites are harmless; but some mosquitoes carry pathogens, like bacteria and viruses, that can be deadly. Mosquito-related illnesses kill hundreds of - thousands of people worldwide each year. When a mosquito bites us, the compounds in its saliva interact with our body's initial immune response to help pathogens evade our body's disease defences. Studies have shown that animals that have antibodies to mosquito saliva proteins have some protection against mosquito-borne diseases.

We well-known about the "Malaria" - a disease caused by a plasmodium parasite, transmitted by the bite of infected female Anopheles mosquitoes. The severity of malaria varies based on the species of plasmodium it has.



Regarding the same, a group of Japanese researchers has developed a mosquito that spreads vaccine instead of disease. They also told about the major ethical and regulatory problems they are facing. Scientists have dreamed to use insects' DNA to fight disease. One option is to create strains of mosquitoes that are resistant to infections with parasites or viruses, or that are unable to pass the pathogens on to humans. These would somehow have to replace the natural, disease-bearing mosquitoes. Another strategy closer to becoming reality is to release transgenic mosquitoes (processed with Genetic Engineering) ; but when they mate with wild-type counterparts, don't produce viable offspring. That would shrink the population over time and this could be the major problem we'll face to Use mosquitoes to become "flying vaccinators." Normally, when mosquitoes bite, they inject a tiny drop of saliva that prevents the host's blood from clotting. The scientists decided to add an antigen-a compound that triggers an immune response-to the mix of proteins in the insect's saliva. A group led by molecular geneticist Shigeto Yoshida of Jichi Medical University in Tochigi, Japan, identified a region in the genome of Anopheles stephensi-a malaria mosquito -called as promoter that turns on genes only in the insects' saliva. To this promoter they attached SP15, a candidate vaccine against leishmaniasis, a parasitic disease spread by sand flies that can cause skin sores and organ damage. Sure enough, the mosquitoes produced SP15 in their saliva, the team reports in the current issue of Insect Molecular Biology. And when the insects were allowed to feast

on mice, the mice developed antibodies against SP15. Antibody levels weren't very high, and the team has yet to test whether they protect the rodents against the disease. In the experiment, mice were bitten some 1500 times on average; that may seem very high, but studies show that in places where malaria is rampant, people get bitten more than 100 times a night. In the meantime, the group has also made mosquitoes produce a candidate malaria vaccine.

Also the main issue there is a huge variation in the number of mosquito bites one person received compared with another, so people exposed to the transgenic mosquitoes would get vastly different doses of the vaccine; it would be a bit like giving some people one measles jab and others 500 of them. Also No regulatory agency would sign off on that, as per the opinion of the molecular biologist Robert Sinden of Imperial College London. Releasing the mosquitoes would also mean vaccinating people without their informed consent, an ethical no-no comes here. So scientist Yoshida concedes that the mosquito would be "unacceptable" as a human vaccine-delivery mechanism. However, flying vaccinators-or "flying syringes" as some have dubbed them -may have potential in fighting animal disease. Animals don't need to give their consent, and the variable dosage would be less of a concern. On the other hand this technology makes possible the generation of transgenic mosquitoes that match the original concept of a 'flying vaccinator'. However, medical safety issues and concerns about informed consent mitigate the use of the 'flying vaccinator' as a method to deliver vaccines. We propose that this expression system could be applied to elucidate saliva-malaria sporozoite interactions. So this genetically modified mosquitoes can be used as a vaccinator in many cases although there are restrictions for its use.



In the upcoming years we'll definitely modify it to eliminate the problems we're facing. While 'flying vaccinator' theory may now be scientifically possible the question of ethics hangs over the application of the research. A natural and uncontrolled method of delivering vaccines, without dealing with dosage and consent, alongside public acceptance to the release of 'vaccinating' mosquitoes, provide barriers to this method of disease control. For the past decade it has been postulated that the salivary gland could be the way to gain biological control over this important infectious disease". In this study we have shown, for the first time, the achievement of the original concept of the 'flying vaccinator.'

Now many scientists and researchers are working on the same idea so do not be amazed if we succeed in the upcoming years. So the disease spreader is not a disease spreader any more it may be the flying vaccinator!

- Kaivalya Kamlakar Rudre.

Pharm. D Second Year

### Most Vulnerable First

One year after the first case of coronavirus infection was detected in the country, India is staring at the possible early exit from the pandemic that has already claimed more than 1.5 lakh lives, caused massive economic disruption and resulted in loss of livelihoods for millions of families. In the era of 21<sup>st</sup> century, speed is a distinguished term. The monster of coronavirus had put the social animals in the pits of wall. It left all of us vulnerable where option of bridging the gaps between us was “**technologism**”. As of today, no drug has the power to fight the infection; hence the only choice left was effective and safe vaccine.

Now the question arises, who gets the first shot of vaccine, of course the first priority is the frontline workers doctors, nurses etc. But where is the place of most vulnerable among them, “**manual scavengers**”. The lowest denominators in the work of sanitation are the manual scavengers who are by far the most unprotected. While, the sanitation workers who work in the hospital and school may have limited safeguard, the manual scavengers are left to clean the dry latrines and enter septic tanks without any equipments. The manual scavengers are one of the most neglected sections of people in India. Without proper equipment, they left to clean the septic tank resulting in death of sanitation worker in every 5 day. Even waste recovery sanitation workers perform the work of manual scavenging as they come in regular contact with unprotected bio-medical waste, animal's carcasses and faeces. Law implementation always proves weak. Caste and economy are the other factor for further deprivation of this section. In the initial days of pandemic, the absences of policy take hundreds of lives. Policy makers need to focus from the bottom up approach. Merely, cleaning the feet of sanitation workers, doesn't help to improve their position! Toilet infrastructure is given much more value than toilet cleaner in India.

The policy makers must include manual scavengers in vaccination drive as they are the one who worked full time to ensure safety to people of land. It does not matter to the sanitation worker if people to first get vaccinated in India is the sanitation worker or not. What matter is how many of them have actually been vaccinated without the arguments that they have already developed “**HERD IMMUNITY**”. Government must urgently priorities vaccination for manual scavengers.

Mayuri Chawan  
Pharm..D Sixth Year

### Pharmacogenomics: An approach to new drug development

Pharmacogenomics is use of genetic information to guide the choice of drug and dose on an individual basis. It provides a relationship between how a patient responds to a drug with his genetic makeup. Pharmacogenomics is a combination of pharmacology and genomics to develop specific, effective, selective as well as safe medication tailored to a person's genetic makeup. In this advent of personalized medicine, drugs can be optimized according to each individual's genetic makeup by whole genome application & single gene interaction with drugs viz. TPMT(Thiopurine methyltransferase) plays an important role in childhood leukaemia by breaking down thiopurines , a small percentage of Caucasians have genetic variation preventing them from breaking of thiopurines elevating it to toxic levels leading to leukaemia.

In view of the importance associated with pharmacogenomics, therefore it was thought worthwhile to provide a firsthand knowledge that if we use genetic test to screen patients for genetic variation in TPMT, thiopurine action & dosage can be monitored to determine appropriately. There are several other examples such as over expression of P-gp results in tumour resistance to many cancer chemotherapeutic drugs which pumps out drug from tumour cells. So eventually pharmacogenomics can impact on drug design by interaction of drug with its receptor, absorption, distribution, metabolism & excretion of drug from our body.

Ultimately we can be benefited from pharmacogenomics and it will help to discover potential therapies more easily using genome targets leading to improvements in drug discovery & also if we analyze patients genetic profile to prescribe best available drug therapy. However, the main drawback associated with pharmacogenomics is SNPs (single nucleotide polymorphism) as they occur every 300 bases along the 3 billion base human genome increasing complexity. Presently doctor prescribe drugs to patients on trial & error basis only and advices about side effects/drug-drug interaction but as and when doctors will take gene and blood reports & interpret panels of genetic results to advice patient which drug would be best for particular gene defect.

**Case Study :** Pharmacogenetics of morphine poisoning in breastfeed neonate of codeine in prescribed mother. When drugs enter in our body, they are metabolized & structurally modified by enzymes which either they activate or deactivate the medication. Let's consider

CYP2D6 enzyme whose gene sequence varies among population. We inherit copy of each gene from each parent & each person will have two CYP2D6 alleles can be classified as rapid(normal),intermediate& poor metabolizers based on allele combination. In rare cases person can be classified as ultra-rapid metabolizer having three normal alleles of CYP2D6 due to gene duplication. Codeine itself is weak painkiller because CYP2D6 metabolize around 10% of codeine to morphine, a potent opioid analgesic. So if all metabolizer type is given same dose of codeine, ultra rapid metabolizer will convert way too much codeine to morphine causing toxicity. Same happened in this neonate case where mother had been prescribed combination of codeine 30mg & paracetamol 500mg after birth for episiotomy pain. On 7<sup>th</sup> day healthy male infant showed difficulty in breastfeeding & lethargy, on 11<sup>th</sup> day paediatrician noted baby regained his birth weight, he had grey skin & milk intake fallen, on day13th found dead. Blood concentration of morphine was 70ng/ml by GC-MS because neonate breastfeed mother receiving codeine typically had morphine serum concentration of 2.2ng/ml.

In fact codeine is not a bad drug; it's quite an effective painkiller if used for right peoples. Unfortunately we just don't know who the right people, unless we do genetic testing but surely the tragedy could have been avoided if the doctors knew that mother was ultra-rapid metabolizer so she would not be prescribed codeine.

Genetic variation are a major cause of adverse drug reaction which are a huge burden on healthcare system (~5% of hospitalizations,>1,00,000 deaths & >\$100 billion in healthcare costs in US each year. The solution? Imagine if we can use Pharmacogenomic information to prescribe each individual patient most effective & least harmful medication based on their genetic makeup in other words, **Precision medicine**. Not only it will prevent a baby dying from toxic breast milk (codeine), it could prevent bone marrow damage in patient with autoimmune disease (azathioprine), reduce risk of bleeding for people with bad hearts (Warfarin), and increase the chance a person protected from future strokes (Clopidogrel).

R.A.Aswar  
Pharm.D Fourth Year

## Identifying and treating refractory ITP: difficulty in diagnosis and role of combination treatment

### **Introduction**

Immune thrombocytopenia (ITP) is a common hematologic disorder. Its pathogenesis involves both accelerated platelet destruction and impaired platelet production. But in case of road traffic accident, situation is very frightening because People Who has ITP; they have more prone to death because of uncontrolled bleeding it is the most common acquired thrombocytopenia. Existing guidelines describe the management and treatment of most patients who, overall, do well, even if they present with chronic disease, they are usually not at a high risk for bleeding; however, a small percentage of patients like In case of Road Traffic Accident, They are difficult to manage. ITP is a diagnosis of exclusion; no specific tests exist to confirm the diagnosis. Response to treatment is the only affirmative confirmation of diagnosis. However, patients of RTA do not respond to front-line or other treatments; thus, no confirmation of diagnosis exists.

### **Outline based on Literature Review**

Various studies found temporary thrombocytopenia occur in 35% to 45% of RTA patients in ICU with a somewhat greater variability of 5% to 20% for severe thrombocytopenia which is more critical or Lethal Surgical ICU patients seem to have a higher incidence of severe thrombocytopenia, compared with medical ICU patients. However, most studies have been performed in mixed surgical/medical ICUs, making definitive conclusions difficult. The prevalence of thrombocytopenia at admission to ICU is around 20% to 30% of patients, and a similar percentage of patients develops thrombocytopenia (from a normal platelet count) while being treated in the ICU, not in Just Accident, Thrombocytopenia is common in the ICU. It is a sensitive marker for the severity of the disease and associated with increased mortality. Identifying the underlying cause is essential for successful treatment. Platelet transfusions can be helpful in situations of platelet loss or consumption, but they might be deleterious in patients with increased intravascular platelet activation. A detailed history and careful physical examination are keys to achieving the right diagnosis, supported by a few laboratory test results and interpreting these data within the clinical context.

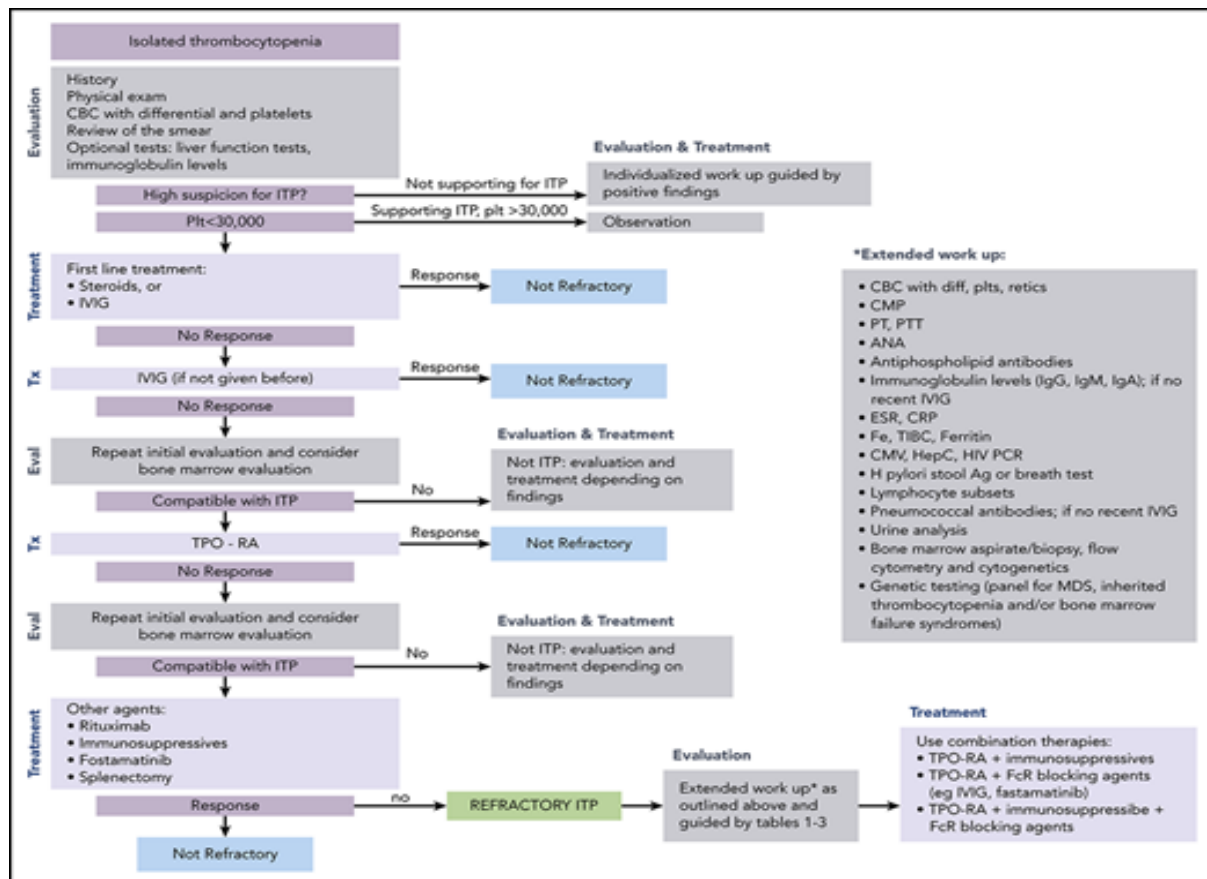
### **Management**

Accidental victim's platelet level becomes too low; doctor can replace lost blood with transfusions of packed red blood cells or platelets. But in case of ITP, transfused platelet can auto destruct by Autoimmunity. This is an immune system problem; your doctor might prescribe drugs to boost your platelet count. The first-choice drug might be a corticosteroid like

- **Corticosteroids:** Dexamethasone, Methylprednisolone, Prednis(ol)one, IVIg
- **Subsequent treatment**
- **Robust evidence:** Eltrombopag, Avatrombopag, Romiplostim, Fostamatinib, Rituximab
- **Less robust evidence:** Azathioprine, CyclosporinA, Cyclophosphamide, Danazol, Dapsone, Mycophenolatemofetil, Vinca alkaloids
- **Surgical:** Splenectomy (terminal Option)it can done only on Physical opinion

## Recommendations for treatment goals

1. Treatment goals should be individualized to the patient and the phase of the disease.
2. Treatment should prevent severe bleeding episodes.
3. Treatment should maintain a target platelet level 20-30 M/L at least for symptomatic patients because risk for major bleeding increases below this level.
4. Treatment should be with minimal toxicity.
5. Treatment should optimize health-related quality of life (HRQoL).



## Case Presentations

A 10-year-old male developed easy bruising in June-July 2008 and in November of that year was found to be thrombocytopenic. He was hospitalized in December 2008 with a platelet count of  $67,000/\text{mm}^3$  because of failure to maintain an adequate platelet count while off prednisone. Total white blood cell count was  $13,300/\text{mm}^3$  and the differential count was normal. A bone marrow aspirate revealed megakaryocytic Thrombocytopenia, confirming the diagnosis of ITP.

The patient was treated with just prednisone, and prednisone was continued. The thrombocytopenia resolved over three month Other Observations were not done till 2020. In Desember2020, he had a road accident with blunt trauma, chest with Hemothorax & lower lobe Atelectosis contusion from a bicycle accident. At ICU admission, the platelet count was  $27 \times 10^9/\text{L}$ , and the general surgeons required  $50 \times 10^9/\text{L}$  platelets in order to control bleeding.

The outpatient file of this patient documented previous good platelet count responses to corticosteroids (prednisone) and IVIG. On 4<sup>th</sup> Day of admission, we transfused 4 therapeutic units of platelet concentrates targeting a platelet count of  $> 50 \times 10^9/L$ . We conducted treatment regime of romiplostim along with Steroid for 4 weeks, despite delay or dose reduction of Steroid. Patients received weekly titrated romiplostim with a target platelet count of 100,000/ $\mu L$  or more, or were monitored with usual care. The primary end point was correction of platelet count within 3 weeks. We continue this regime with Initial dose: 1 mcg/kg subcutaneous injection once a week based on actual body weight. We adjust the weekly dose by increments of 1 mcg/kg until the patients achieves a platelet count of  $50 \times 10^9/L$  or greater.

<b>Maintenance dose</b>	Use the lowest dose to achieve and maintain a platelet count of $50 \times 10^9/L$ or greater as needed to reduce bleeding risk.(Tapering of Dose)
<b>Maximum dose</b>	10 mcg/kg/week
<b>Duration of therapy</b>	Discontinue this drug if platelets remain insufficient to avoid clinically important bleeding after 4 weeks at the maximum dose.
<b>Comments</b>	In clinical studies, most patients who responded to this drug achieved and maintained platelet counts of $50 \times 10^9/L$ or greater with a median dose of 2 mcg/kg
<b>Side effects</b>	Body aches or pain, cough, diarrhea, difficulty breathing, loss of appetite, rapid weight gain sneezing, sore throat, stuffy, unusual tiredness or weakness unusual weight gain or loss are some more common side effects seen in these case. It must require immediate medical attention
<b>Dose adjustments based on platelet counts:</b>	<p>-Platelet count less than <math>50 \times 10^9/L</math>: Increase dose by 1 mcg/kg</p> <p>-Platelet count greater than <math>200 \times 10^9/L</math> and less than or equal to <math>400 \times 10^9/L</math> for 2 consecutive weeks: Reduce dose by 1 mcg/kg</p> <p>-Platelet count greater than <math>400 \times 10^9/L</math>: Interrupt treatment and assess platelet count weekly; may resume treatment at a dose reduced by 1 mcg/kg after the platelet count is less than <math>200 \times 10^9/L</math>.</p>
<b>Discussion/ Counselling</b>	
<b>General</b>	This drug is not indicated for the treatment of thrombocytopenia due to myelodysplastic syndrome (MDS) or any cause of thrombocytopenia other than chronic immune thrombocytopenia (ITP). This drug should not be used in an attempt to normalize platelet counts.
<b>Monitoring</b>	Hematologic: Complete blood counts (CBCs), including platelet counts, weekly until a stable platelet count ( $50 \times 10^9/L$ or greater for at least 4 weeks without dose adjustment) has been achieved, monthly thereafter, and weekly for at least 2 weeks following discontinuation of this drug.

<b>Patient Advice</b>	<p>Inform patients that the risks associated with long-term use of this drug are unknown.</p> <p>-Advise patients to avoid situations that may increase the risk of bleeding.</p> <p>-Advise women not to breastfeed during treatment with this regime. Feeling better is often the result of the combination of many small lifestyle changes that make a large impact. Here's a list of suggestions that are easy and affordable—and just might unlock your healing response</p> <ul style="list-style-type: none"> <li>• <b>Just pick a few of your favorite ideas and try them—you can always add more. And, if you get your family and friends to join you, everyone can benefit.</b></li> <li>• Leafy greens, including kale, collard greens (collards) and spinach are a great source of vitamin K, calcium and minerals, which promote clotting and can also help fight fatigue.</li> <li>• Sea vegetables like seaweed are also beneficial. Choose unsprayed foods grown using natural fertilizers to help avoid chemical pesticides and herbicides that have been shown to exacerbate autoimmune diseases and lower platelets.</li> <li>• Additives and preservatives can increase the disease-causing free radicals in your body</li> </ul>
<b>Avoid Toxins</b>	<p>Take the natural approach with products including natural cleaning products, natural pesticides, low volatile paints and organic fertilizers. Avoid perfumes and scented products. Chemicals and pesticides have been shown to interfere with the immune system and create unhealthy free radicals in the body.</p>
<b>Think Positive</b>	<p>Replace any negative thoughts with positive ones—especially the positive things you want to happen in the future. According to many studies, positive thinking can enhance your chances of feeling better.</p>
<b>Exercise</b>	<p>Find an exercise program you like and that fits your health situation. It could be walking, yoga or dancing—use your imagination and do what you like best!</p>
<b>Breathe Clean Air</b>	<p>Avoid smoky (and smoking), musty, dank, dusty environments. Particulates and mold have been shown to exacerbate autoimmune diseases.</p>
<b>Avoid Mercury</b>	<p>If you need a tooth filled, avoid mercury fillings. Avoid eating fish that is high in mercury, including swordfish, tuna and grouper. Dispose of mercury thermometers. Mercury has been shown to exacerbate autoimmune disease.</p>
<b>Listen to your body</b>	<p>Stay in touch with your inner self and follow your body's suggestions for what your health needs. Sleep when you need rest. Eat when you're hungry. Stay in the sun when your body wants the warmth.</p>

<b>Take Time for your Favorite Things</b>	Bring as much joy into your life as possible. Listen to music. Grow flowers. Watch the birds and rabbits. Sing. Make your own list—the options are limitless.
<b>Live in a Positive Space</b>	Remove clutter from your environment. Clean and organize your things. Fix anything that's broken. Surround yourself with items that help you smile and feel good.
<b>Avoid Drugs That Can Interfere with Platelets</b>	

### **Conclusions:**

By reporting this case, we describe our experience management Road Accident in the treatment of a patient with Immune thrombocytopenia who failed conventional Steroid based regimen. Hope This conceptual model will help to inform the evaluation of therapeutic strategies for ITP in accidental case.

Kushkumar Thakre  
Pharm. D Third Year

### Non Biologic DMARDs

Non – Biologic DMARDs	Biologics DMARD		Adjuvant Drug
	TNF Alpha Inhibitor	IL -1 Antagonist	
Methotrexate	Infliximab	Anakinra	Corticosteroid Prednisolone
Leflunomide	Etanercept		
Sulfasalazine	Adalimumab		
Hydroxychloroquine	Golimumab		
Minocycline	Certolizumab		

<b>Methotrexate (MTX)</b>	
<b>Introduction</b>	Methotrexate is commonly used agent as an initial therapy and is a backbone of Rheumatoid arthritis (RA) therapy, mostly combined with other non biologics or biologics. It works by reducing inflammation and reduce joint damage.
<b>MOA</b>	Inhibits cytokine production, Purine biosynthesis may stimulate release of adenosine, all of which may lead to its anti-inflammatory properties.
<b>Contraindications</b>	Pregnancy, Leukopenia, Chronic liver disease, Thrombocytopenia, Pre-existing blood disorders, Creatinine clearance less than 40ml/min, Immunodeficiency
<b>Route</b>	Intramuscularly (IM), subcutaneously (SC) or orally
<b>Side -Effects</b>	Mainly gastro intestinal (Diarrhoea, nausea, vomiting), mouth sores (common), hematologic toxicity-thrombocytopenia (1--3%), leukopenia, Pulmonary-pulmonary fibrosis, pneumonitis (Severe and Rare)
<b>Monitoring Test</b>	Liver Function Test (elevation of liver enzymes occur in up to 15% of patients). Liver biopsy during MTX therapy is recommended only for patients who developed abnormal liver function tests. CBC Test-at least for 3 months.
<b>Note</b>	1.Methotrexate is a folic acid antagonist hence can induce folic acid deficiency. 2. Therefore supplementation with folic acid does alleviate some adverse effects. 3.Dose reduction in liver injury and use cautiously in renal dysfunction.
<b>Advice</b>	Limit alcohol use due to increase risk of liver injury.
<b>LEFLUNOMIDE (LEF)</b>	
<b>Introduction</b>	Leflunomide is synthetic DMARD. It shows both anti-inflammatory and anti- modulatory properties. It has similar efficacy as that of methotrexate.
<b>MOA</b>	Pyrimidine synthesis inhibitor, leading to decrease in lymphocyte proliferation and modulation of inflammation. It suppresses immune system thus reduce inflammation that causes pain and swelling in joints.
<b>Contraindication</b>	Pre-existing liver disease such as cirrhosis, hepatitis

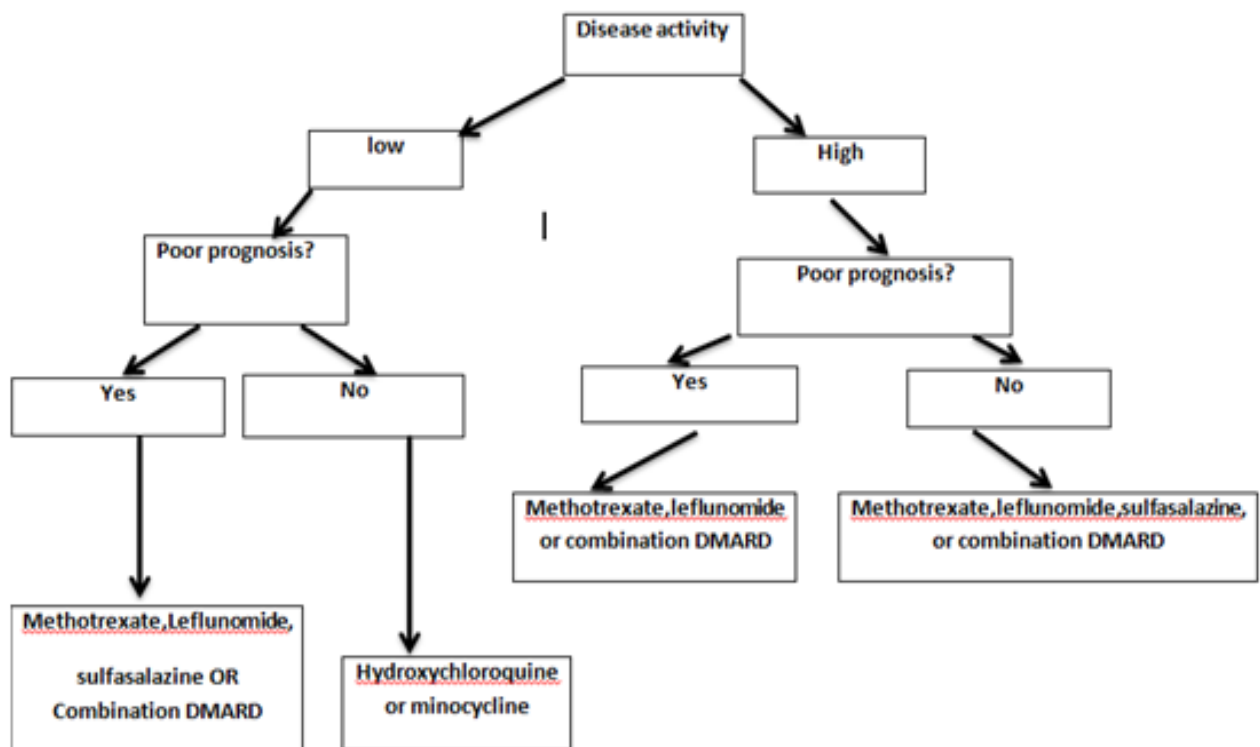
<b>Side Effects</b>	Alopecia, Hepatitis, GI distress, Diarrhoea
<b>Monitoring Test</b>	1. Alanine amino transferase monitored monthly initially and periodically. 2. Complete blood count is recommended (may cause bone marrow toxicity)
<b>NOTE:</b>	1. Alcohol Should Be Avoided. 2. Side effects can be managed by reducing dose or by giving concomitant symptomatic therapy.
<b>Hydroxychloroquine (HCQ)</b>	
<b>Advantage</b>	High safety profile compare to other conventional DMARD. Lack of myelosuppressive, no hepatic and renal toxicities.
<b>Adverse Effect</b>	Rash, Gastro intestinal (Diarrhoea, nausea, vomiting), Retinopathy (rare but significant), Maculopathy (rare but significant), Accommodation defects, Corneal deposits, Dermatological toxicities
<b>Sulfasalazine (SSZ)</b>	
<b>Introduction</b>	It is a prodrug cleaved into sulfapyridine and 5-aminosalicylic acid. Sulfapyridine moiety is responsible for antirheumatic properties. Sulfasalazine is a milder DMARD in regards to its benefit, but it can be useful in mild or early cases of RA. Commonly, used as combination with other DMARDs
<b>MOA</b>	Exact mechanism is unknown, but may be due to anti-inflammatory and immunomodulatory properties.
<b>Adverse -Effects</b>	GIT-Nausea, vomiting, diarrhea, anorexia (minimized by enteric coated preparations) Dermatological -rash, urticaria, serum sickness, Hypersensitivity reaction (another DMARD substitute) Leukopenia, alopecia, stomatitis.
<b>Monitoring Test</b>	G6PD Deficiency test (which may predispose to haemolysis and anemia), -Blood monitoring
<b>Minocycline</b>	
<b>Introduction</b>	Minocycline can reduce inflammation. It is used in early stages of RA.

### Non –biologics to treat RA

<b>DRUGS</b>	<b>DOSE</b>	<b>COMMENTS</b>
Methotrexate	7-15 mg per week (oral or IM)	Choice of drug but Teratogenic
Leflunomide	Oral: 100 mg daily for 3 days then 10-20 mg daily	-Clinical efficacy is equivalent to Mtx -Alternative to MTX (if unable to tolerate MTX )
Hydroxychloroquine	Oral: 200-300mg bid	Ophthalmoscopy q 9-12 mo
Sulfasalazine	Oral: 500 mg bid	
Minocycline	Oral: 100-200 mg daily	Hepatic impairment use cautiously

## DRUG Therapy

DMARD Monotherapy	Double DMARD Therapy
MTX (OFTEN)	MTX + SSZ
HCQ	MTX + HCQ
SSZ	SSZ + HCQ
LEF	SSZ + LEF



**Algorithm for treatment of rheumatoid arthritis using non-biologic DMARDS**

Prachi Khandelwal  
Pharm.D Fifth Year

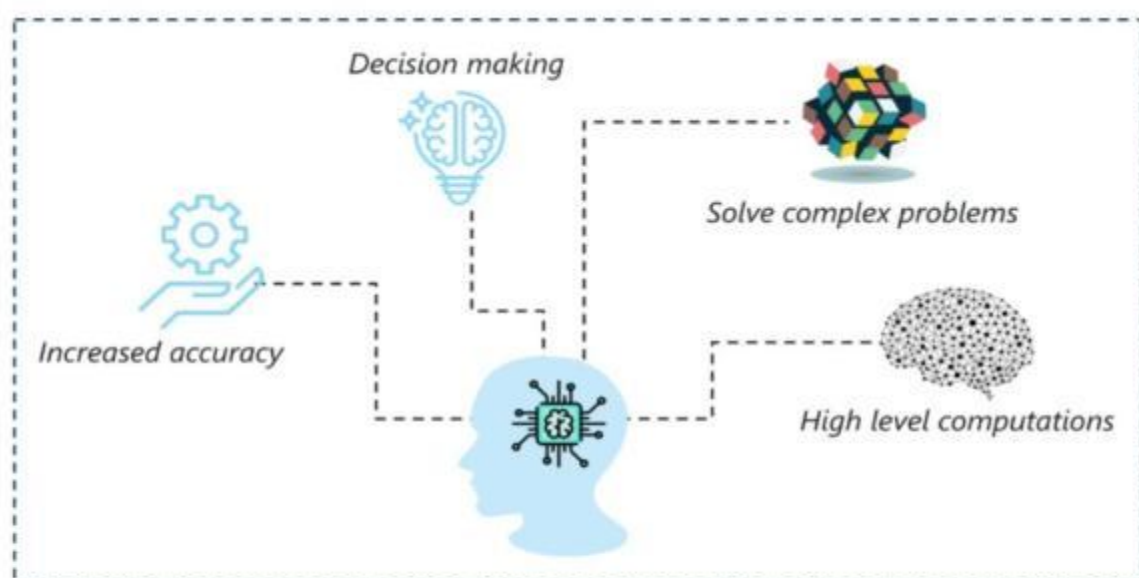
### Artificial Intelligence: A boon for future healthcare

Previously technology was only used to ease and automate routine and monotonous task. It was also used to decrease paper work by digitalizing health records and aiding the easy flow of information through insurance companies, hospitals and patients. The potential of AI in healthcare to make it better is un-debatable. The question remains is how to integrate it into healthcare. To do so, we have to overcome technical medical limitations, as well as regulatory obstacles, soothe ethical concerns and mitigate the tendency to oversell the technology.

#### **What is Artificial Intelligence (AI)?**

Artificial Intelligence (AI) is a process of using machine learning, deep learning, natural language processing, and many other techniques to build artificially intelligent models that can perform high-level computations and solve complex problems. The core program of AI includes programming computer for certain traits as:

- Knowledge
- Reasoning
- Problem solving
- Perception
- Learning
- Planning
- Ability to manipulate and move objects.



*What Is Artificial Intelligence – Artificial Intelligence  
In Healthcare – Edureka*

### **Need of AI in healthcare:**

- a. It makes analysis of complicated and vast quantity of medical data simple, fast and precise.
- b. It will allow medical professionals analyze relationship between prevention or treatment techniques and patient outcome.
- c. In cost saving and improve patient satisfaction.
- d. To reduce operational costs of clinics and hospital up to 40% per annum.

**Types of AI:** 1.Weak AI, 2.StrongAI/Artificial general intelligence. 3. Super intelligence

### **Applications of AI in healthcare system:**

1. **Clinical decision** - Artificial Intelligence holds the ability to store and process large sets of data, which can provide knowledge databases and facilitate examination and recommendation individually for each patient, thus helping to enhance clinical decision support. *Natural language processing NLP* helps the doctors to narrow down all relevant information from patients reports.
2. **Enhance primary healthcare** - *Medical chatbots* which is an AI powered service helps to avoid unnecessary trips to the doctor, it also helps to give instant answer to all the questions of patients, guides them to deal with future health related problems & available 24/7 and can deal with multiple patients at a same time.
3. **Robots in surgery** -AI and robots have enhanced the accuracy, precision of critical



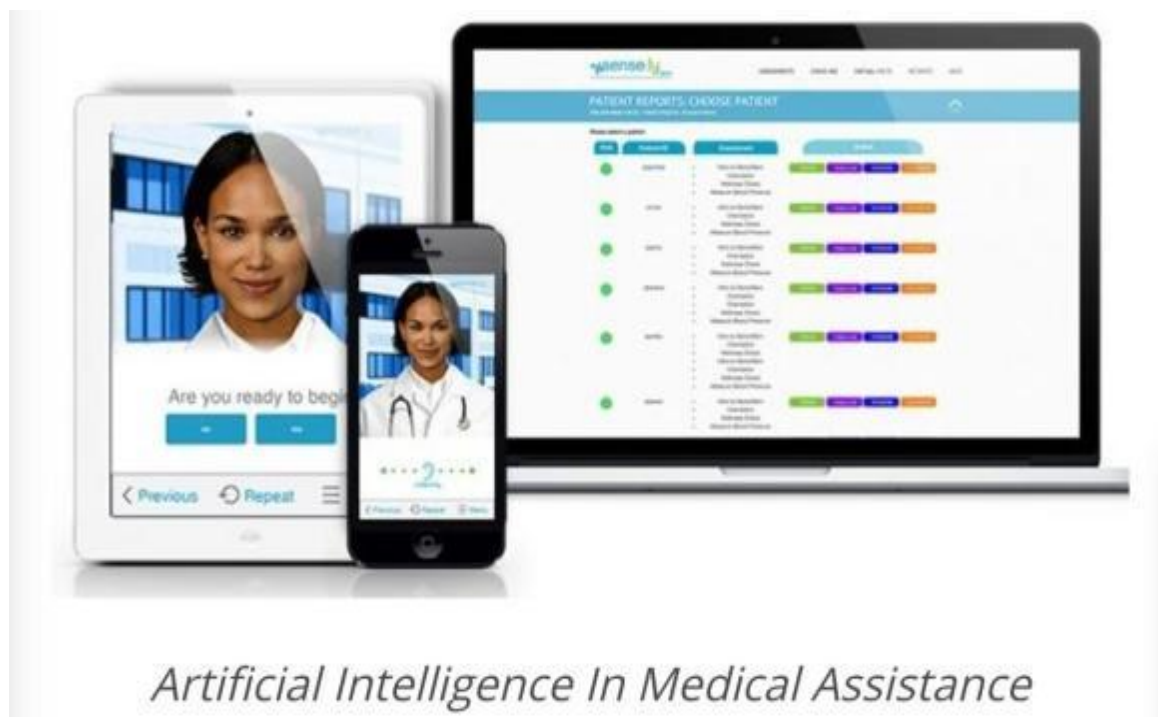
surgeries that require deep incisions; they also speed up the process compared to manual surgery. Robots are very helpful in lengthy surgeries where physicians get tired, the risk of mistakes is eliminated. Rather than robotics, AI in healthcare refers to doctors and

hospital accessing lifesaving information (including treatment method, diagnosis, survival rate, patient monitoring). **For ex.** *Vicarious Surgical, Heartlander, Da vinci*

#### 4. Virtual nursing assistant -

These can help to decrease the hospital staff workload, perform various tasks from communicating with the patient to directing them to the best care unit. Available 24/7 and answers to all queries of patients instantly.

Here's a list of key features that the virtual nurse do: Self-care, Clinical advice, Scheduling an appointment **For ex.** The world's first virtual nurse assistant *Care Angel*



5. **Accurate diagnosis** -AI has the capacity to be greater than human doctors and help them to detect disease, predict risk and diagnose patients disease by predicting symptoms. It also helps to personalise treatment & detect abnormal results with more accuracy.

Current goals of AI in diagnosis include reducing error in cancer diagnosis and developing methods for individualized medical treatment. Cloud based platform for interaction with the help of AI: pathologist can send data and images to different specialist around globe without the need to physically move the specimen from one location to another accurately identifying rare objects in the body fluids Abnormalities in body fluids and tissue can be automatically detected using AI in medical diagnosis solutions. **For ex.:** *Buoy Health, VoxelMorph,*

*Google DeepMind Health* is working with university college London hospital (UCLH) to develop machine learning algorithm capable of detecting differences in healthy and cancerous tissue. AI imaging tools scan x-ray for signs of TB providing accuracy

comparable to human. *PCR.AI* standardizes q-PCR test analysis and increases interpretation accuracy to 99%.

6. **Analyzing symptoms, suggesting personalized treatments and predicting risk** – *Symptom checker* is a machine that asks patients a list of questions, based on their answers it helps them to take the next appropriate step. *For ex. Buoy health, Aarogyasetu* in covid 19 Symptoms
7. **Personalized medicine or precision medicine** -AI is revolutionizing the way pharmaceutical companies develop medicines. AI searches biological systems to understand how a drug can affect a patient's tissues/cells. Precision medicine is used to develop a personalized data driven treatment. Treatment for patient rather than investigating bigger group of patients *improves patient outcomes*. It takes into account a genetic makeup of patient, environment and lifestyle.
8. **Smartphone as diagnostic tools** -Smartphone and other portable devices can be useful in the field of dermatology and ophthalmology. There are apps available in Google play store in which images are sent to specialists and accurate detection is made. For eg. The dermaco & *Remidio*
9. **Advanced treatment** -AI can help in treating patients who have lost their ability to speak and move, to improve quality of life of patients with stroke and spinal cord injury. *AI based brain-computer interface* helps to restore these abilities.
10. **Improving patient adherence** -Devices such as smart watches, other wearable such as clothes and shoes and personalize medical devices can help individual and clinicians to monitor their health status. AI tools can be used to send patients alerts or content intended to provoke action. *For ex. Smart watch, Fitbit, Apple watch, and many others.*
11. **AI in mental health** -We live in a world where 1 in 4 people suffer from mental disorders, making it one of the leading causes of disability and ill-health. Certain factors such as a person's tone, word choice, and the duration of a phrase are considered when studying an individual. *For ex. Wysa*, an AI-based emotionally intelligent penguin, developed by Touchkin, can listen, chat and help users build mental resilience.
12. **Drug discovery and manufacturing** –AI plays its role from initial screening of drug compound to predict success rate based on biological factor along with Research & Development discovery to air for next generation sequencing. Previous experiment of drug discovery and manufacturing are used to train new model by making use of optimized software's like *Form Rules*.
13. **Clinical trial research** –Machine learning is used to shape, direct clinical trial and advance predictive analysis is used to identify candidates for clinical trial. Remote monitoring and real time data access is used to increase safety and to prevent harm or death to participants. Finding best sample sizes for increased efficiency, to address and adapt differences in sites for patient recruitment using electronic medical records to reduce data errors.
14. **Epidemic outbreak prediction** –*ProMed-mail*, is an internet based reporting program for monitoring emerging disease and providing outbreak reports.

**15. Regulating use of AI in digital health product** –Medical devices provision of federal food and drug and cosmetics act 1970s regulates the use of AI in healthcare.

FDA created digital health program tasked with developing and implementing a new regulatory model for digital health technology. Over the last five years, it regulates different mobile medical application guidelines.

**16. AI in clinical research** –AI in clinical research has the following advantages: Cuts cost by virtualizing the methodology of research, improves trial quality and minimizes trial time by almost half. (Reading of volumes to text a data in seconds).

It also plays its role to *find biomarkers and gene signature* that causes disease, recruit trial patient in minutes.

Shruti A. Iyengar,

Prajakta K. Nidhankar

Vedanti V. Kale

# GENERAL ARTICLES

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## Online education: Pros and Cons.

The idiom of a coin that it always has two sides, never goes out of meaning. Every matter always has two sides. Though the balance not necessarily remain in center but the fact can't be denied. The COVID-19 pandemic has severely affected the concept of a 'normal human life'. It has resulted in schools/colleges/universities to shut all across the world. As a result, education has dramatically changed with the distinctive rise of e-learning. No arguments can be made on how the helpfulness of the online platform has made education accessible to everyone despite of the lockdown.



Online Education provides a myriad of advantages not only in educational purposes but also in companies for official works considering its flexibility. The location, time, and quality therefore provide no hindrance in seeking degree courses, schooling or higher secondary education. Online education facilitates on-time learning, degree, and timely completion, of course, without any delay or gap. It's a matter of our good fortune that we are born in the digital age where you are rich in resources and means to derive the benefit of online education.

Online education provides you the 'flexibility' where the tutor as well as the learner is safe at their homes and learn according to their convenience. It provides high quality learning opportunities, improves student outcomes and skills and expands educational choices. It has also been useful considering the fact that it does not require any kind of paperwork. The textbooks, notes, assignments and other materials are provided and supplied as soft copies. This has proven to be an indirect way of protecting the trees and our mother Earth. The updates are immediate as long as you have a good access to the internet.

Today, our education system has gone through a paradigm shift not just in terms of resources and content, but also in terms of mode. E-books replaced the hardcover, Google Classrooms replaced project files, tablet screens replaced whiteboards, and classroom interaction replaced by virtual meetings. The COVID-19 has made us to adapt purely to technology which also has its own blessings as well as curses.

Online education was never meant to be the fundamental method of learning or teaching. The sudden dramatic change in this method has made everyone to adapt their selves to it, although it was not an easy task. The internet is abstrusely lacking in terms of human growth. It has become a curse in several other ways too. The reluctance to the change doesn't allow adapting to the e-learning environment as both teacher and the learner were totally unfamiliar to this concept. It is realized and is crystal clear that it cannot match the traditional classrooms. The aura of a classroom has lost in this method.



As the era of online classes has begun, children are feeling the impact on their health due to increased screen time. Many parents were already bothered with the mobile screen time children used to spend on smart phones and video games. In addition to this online classes have added to the strain on the eyes. Sometimes the classes go on for longer and physical problems like headaches and fever show up for some students. Other physical effects can be due to continuous sitting positions which can lead to the back pain and sleep cycles being affected. Red and strained eyes, Muscle and joint pains have become common.

The online education era has also brought lack of motivation and anxiousness among the children along with it. It has lead to the feeling of isolation and minimum socialization among the people of their age. They spend most of their time in the e-classrooms and other works on the mobiles/laptops /computers and hence the normal growth can also be hindered. And due to this 'anti social phase' there is lack of communication and uneasiness. Apart from all of the above mentioned, the e-learning have also affected the consecrated bond of teacher and a student. Students are struggling to concentrate and retain information and many feel and claim that they are learning less than the past. It is totally obvious because no matter about it's advantages it still could not match the traditional classrooms. Everything and every place have its own significance so does the classrooms and the home. Those students who were already lagging academically before the pandemic are now even supplementary behind with time running out to meet the key academic benchmarks.

The impact of this is not just narrowed to students but the teachers and tutors also are facing many issues which shouldn't be neglected. The learners are learning but adapting to this new thing was not an easy task for the teachers as well.

Many teachers are struggling with technical issues that are unavoidable and cause stress. They become helpless if some technical strikes in between of the live session while communicating with students. However, this problem is faced by the learner as well. Through the online teaching, the teacher is now accountable for the win percentage of the class, the lines of the student growth indicators, and even the disciplinary factors of the class they handle.



The problems of female teachers also cannot remain unnoticed. The female staff is expected to look after the household chores and the teaching which also have been a burden on them. As a result extra efforts have to be made by the female staff making them feel reckless on concentrating on a single task in hand.

Being accountable for a number of roles other than quality teaching is sure to put on a lot of performance pressure on teachers. Time management is also an issue which had put the teacher's unavoidable stress. Other than the technological issues various other hurdles faced during online classes were figuring out online class etiquette, parents hovering during online classes are an issue, maintaining discipline online is tough, etc.

One thing that we have learned that humanity is such race that amidst the lockdown and the disastrous pandemic we've learned to adapt ourselves to every situation and nothing can become an obstacle as long as we wish for a better future. The whole world is suffering but still the fight has not stopped and will continue against the COVID-19 virus.



We are all thankful for every teacher, to have our back even in this situation.

Rashmi Deshpande  
B.Pharm Fourth Semester

## Soilless agriculture

Agriculture without soil, in fact, historically dates back to several hundred years BC since the civilization of ancient Egyptian, the Chinese and other cultures. The Aztecs started a method of suspended gardens based on hydroponics at Lake Tenochtitlan during the 10th and 11th centuries. There are various techniques of soilless agricultures have being recently used.

We know that plant grow well in soil, but do we know what is soil, its importance in agriculture? If we are successful in knowing the contents responsible for plant growth in soil it will become easier to grow plants without soil. And from the last 20 years the processing of soilless agriculture had been come into process. For that let's get acquainted with the formation and cultivation of crops in soil and then the main topic – SOILLESS AGRICULTURE...

### ➤ **Formation of soil:**

Soil minerals form the basis of soil. They are produced from rocks (parent material) through the processes of weathering and natural erosion. Water, wind, temperature change, gravity, chemical interaction, living organisms and pressure differences all help break down parent material. It takes more than 500 years to form an inch of topsoil. "Soil contain typical macro and micronutrients needed for plant growth so it is essential for agriculture.

### ➤ **Present day issue in traditional farming with soil:**

Farming soil – the top layer that allows plants to grow – is already disappearing fast because of climate change and intensive farming. The planet is losing the equivalent of 30 soccer fields of the stuff every minute. And it is not easy to replace, either. According to the UN's Food and Agriculture Organization (FAO), it takes 1,000 years to generate just three centimeters of topsoil.

Also increasing urbanization and demand for more food due to growth in population scientists need to think of solution for the problem.

And here's the solution for a problem come into appearance i.e. Soilless Agriculture Techniques.

## **Introduction**

The all the threatening challenges to soil based agriculture in the near future it has become intricate to feed the entire population from soil field system and so in the present scenario soilless culture is becoming relevant one in facing these challenges.

**Soilless Culture** is the growing of plants that imitate soil-base gardening by using many kinds of growing media as for example inorganic substance, organic substance and synthetic substrates. Soilless culture is the fastest growing sector of agriculture, and it could be impetus to food production in the future. The industry is expected to grow exponentially also in future, as conditions of soil growing becoming difficult.

### **Types of soilless agriculture:**

Soilless farming systems, classified as **a) Hydroponics b) Aquaponics and c) Aeroponics.**

These systems can be used to grow plants at home, as well as on a more commercial scale, and are suitable for various vegetables (leafy vegetables, tomatoes, etc.), fruit (mainly strawberries), aromatic herbs and ornamental plants.

#### **a) Hydroponics**

In hydroponics, the plants grow on a neutral, solid and inert substrate. This can include materials such as clay balls, sand or even Rockwool. A nutrient-enriched aqueous solution provides the plants with the water, oxygen and minerals they need to grow.

The science of hydroponics is characterized by the fact that soil is not needed for plant growth but the elements, minerals and nutrients that soil contains are definitely required. Soil is simply the holder of the nutrients, a place where the plant roots traditionally live and a base support for the plant structure. By eliminating the soil, it also eliminates soil borne diseases and weeds and gains precise control over the plant's nutritional requirements. In a hydroponic solution, one provides the exact nutrients the plant needs in precisely the correct ratios so that they can develop stress-free, mature faster and, at harvest, are the best in quality acceptable both to customer and consumers liking.

#### **b) Aeroponics**

**Aeroponics** is different from hydroponics in that it uses no substrate. The nutrient solution is permanently and directly sprayed onto the plants' roots.

You don't need a large space for these techniques and the infrastructure is relatively light (geotextile pots, bags, gutters etc.). That is why these methods work so well in urban spaces, including in gardens, on roofs, on balconies and facades.

#### **c) Aquaponics**

**Aquaponics**, finally, refers to the combination of hydroponics and aquaculture (fish farming). When combined, these two techniques become complementary, allowing farmers to establish a loop that is almost closed, producing fish and plants.

#### **Benefits of Soilless Systems:**

- ❖ Soilless systems are especially interesting when the arable land is polluted, as is often the case with urban and peri-urban soil. These systems can also be useful in geographical areas where the soil is not fertile or there is no access to soil.
- ❖ Moreover, these systems require less water than soil-based cultivation, which helps preserve this valuable resource. The installation of such systems is also an option in areas with limited access to water resources.
- ❖ A third important advantage is that these systems generate a higher yield compared with traditional agriculture. According to the FAO, the vegetable yield of soilless systems is 20 to 25% higher than in traditional systems, because the former confine the roots in smaller spaces, which means the number of plants per square meter is higher.

The application of a soilless culture system using artificial substrates would result in efficient and effective use of water and fertilizers and minimize the use of chemicals for pest and disease control. Plants grown in soil less culture has consistently superior quality, high yield, rapid harvest, and high nutrient content.

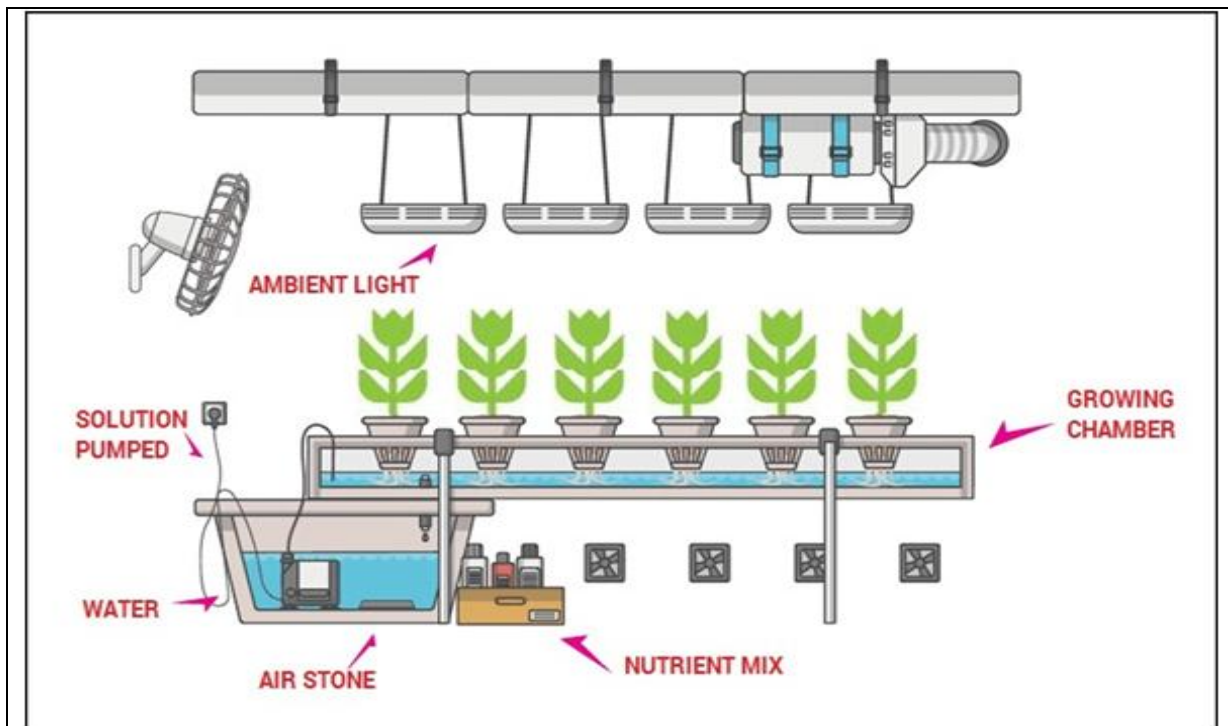


Fig 1: **Hydroponic** techniques

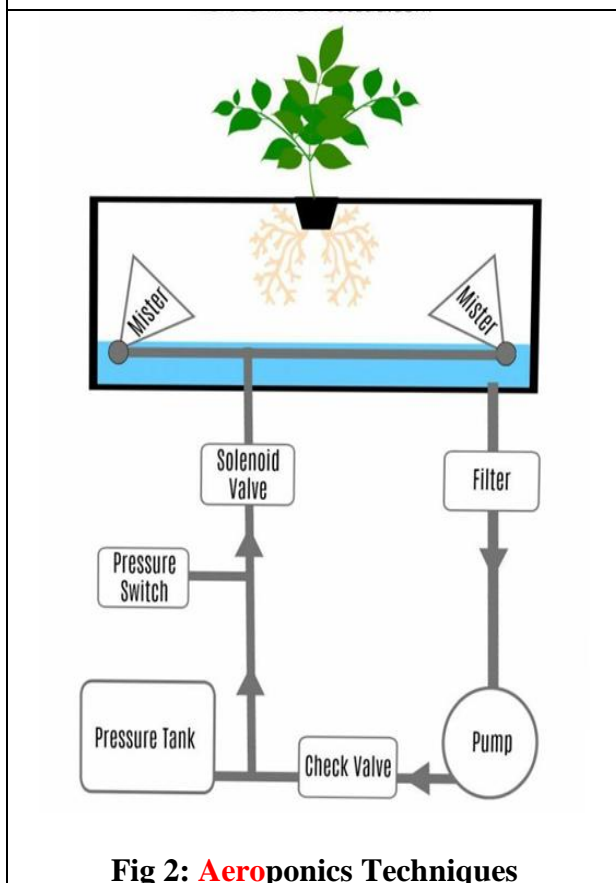


Fig 2: **Aeroponics** Techniques

## How aquaponics works

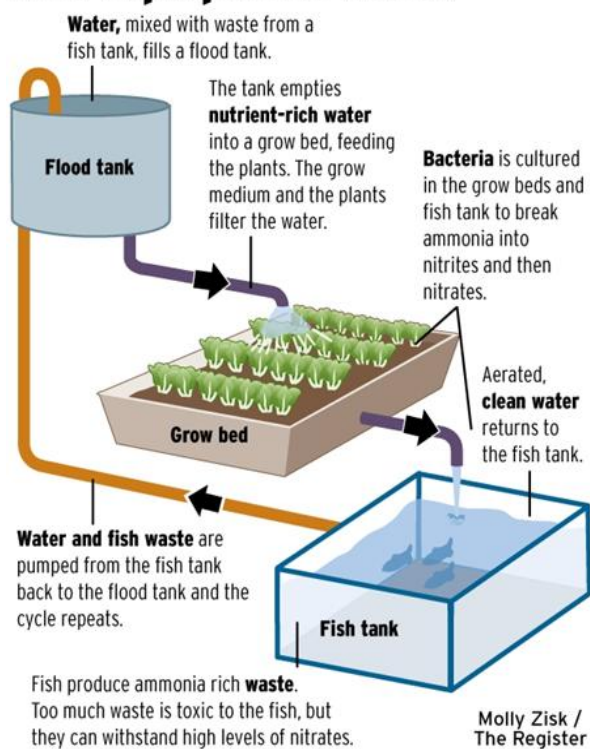


Fig 3: **Aquaponics** Techniques

## Development of soilless agriculture in India

Here's a list of five start-ups in India that are innovating agriculture methods and leading the way in indoor farming:

**Barton Breeze:** Gurgaon based Barton Breeze is a commercial hydroponic farm specialist, using controlled sustainable technology and modern farming techniques, to create highly productive agri-models for the new-age farmer. Barton Breeze is not just a hydroponic farm developer, but also a farmer, growth consultant and a retailer.

Barton Breeze combines sustainable technology and modern farming techniques, to create highly productive models for the new-age farmer.

**Future Farms:** Chennai based Future Farms now grows 16 crop varieties, classified under English Exotic, Asian Exotic and Indian Exotic, across 15 acres of land spread over 10 states. It recorded a \$1 million turnover last year. Their primary focus is on leafy vegetables with farms spread across the country from Delhi to Maharashtra, Tamil Nadu, and Gujarat.

**Aqua Farms:** Chennai based Aqua Farms grows everything from Italian basil to carom (ajwain), mint, spinach, lettuce and a host of leafy greens and herbs. They also have a subscription-based service to those who have no knowledge of hydroponics, where, against a monthly amount, they assign the user an agronomist who takes care of their plants and monitors it once a week.

**Letcetra Agritech:** Goa-based Letcetra Agritech in the Mapusa area of Goa is the first such indoor hydroponic farm, which grows good quality, pesticide-free vegetables. Their farm, measuring 150 sq meters, produces tons of leafy vegetables like lettuce and salad greens, besides cherry tomatoes, bell peppers, and basil.

**BitMantis Innovations:** Based out of Bengaluru, this IoT and data analytics start-up have developed its IoT solution Green SAGE, which allows individuals and commercial growers to grow fresh herbs throughout the year with the minimum of fuss. Under Green Sage, you have the Micro Edition and Greens Edition kits that use hydroponics methods for efficient use of water and nutrients.

### Advantages of soilless cultures

1. **Water control:** In most kinds of soilless culture the uses of irrigation water are accurately controlled with extremely less amount as compared with normal irrigation in the case of traditional soil cultures.
2. **Production augmentation:** The application of soilless culture approximately increases the yields as the result of the precise control of the growth elements to the plants such as nutrition, pH, oxygen, carbon dioxide, light and temperatures.
3. **Monitor of plant nutrition:** The nutrition elements are used as solution forms in accurate amounts as the plant needs and not in high amounts as in the normal plantation.
4. **Purge practices:** Soilless culture is occurred under controlled conditions and that led to avoid spreading of weeds, diseases and insects.
5. **Monitor root surroundings:** In soilless culture, it is easily to control the surrounding environmental and root temperature and supplying roots by oxygen.
6. **Agriculture of land inappropriate:** Agriculture without soil provides an idealistic process for plant cultivation when there is no appropriate land empty of pathogens and salinity is available.

7. Alleviation of labor requirements: In soilless culture, all cultural practices of soil cultivation such as soil sterilization, weed control and others can be excluded in soilless culture and that save the labor input and the needed time of work.

#### **Disadvantages of soilless cultures**

1. High capital investment: The initial cost of building the system of soilless culture is high, but the fast and big yield production offset such costs rapidly in the firstly 3-4 years from the beginning of the system if all things running ok.
2. The shortage of technicians and skilled labor: Agriculture without soil suffers from a shortage of workers and trained professionals.
3. The risk of Pathological Injuries: Morbidity in open systems of soilless culture is few whereas in closed systems be great and that need a big care and strong sanitation.

Purva Manekar

B. Pharm Fourth Semester

### Should women pay for domestic chores?

The long journey of Indian women towards achieving equality in Indian society is too significant to be limited to a day in the year. Indian women struggle a lot for achieving freedom, for her independent status in Indian patriarchal society. Women in large numbers participated in freedom struggle and also sacrificed their lives, but her role only seen as a supportive or secondary. India is going to celebrate 75yr of its independence. Now, it is important to look at the status of the Indian women, her centralized role in Indian democracy. Recently, there was news that political parties made promise to pay to women for domestic chores. Although, it is very welcoming step that the policy maker agrees that domestic chores need to be considered as work, a fact while it is not added in the GDP! But I think in the long term, it is not going to be benefitted to Indian women. Various statistics reveals that unemployment rate is higher in women than men; COVID-19 impact has been seen more on women from social and economic perspective. Thus, offering of wages for domestic work could end up reinforcing the stereotype of women as “**natural homemaker**” and encourage and serve as an incentive for her to stay within the confines of home. The structural constraint of Indian society is forcing women to stay in home whether she is educated or uneducated. When the country celebrates its 75yr of freedom and development, it cannot do so without looking at socio-political and economic condition of women, almost half of its population. Merely, giving her wage cannot solve the problem. Diverting the attention from the core issues of women like increased domestic violence, sexual crimes against women with unprecedented cruelty which become a daily affair, lack of access to primary health service, gender based discrimination, visible and invisible violence, girls child dropout from school etc would not go to serve.

I measure the progress of community by the degree of progress which women have achieved. –**Dr. B.R.Ambedkar**

Thus, progressing women not by merely giving wage for domestic homework but give her freedom to perceive her education, give her freedom to choose what she wanted to do, give her safety to walk alone on streets, give her violence free environment in office, give her equal opportunity to fly in the sky and then see the progress of Indian society.

Mayuri Chawan

Pharm.D Sixth Year

## Sleep Is More Important Than You Think

Recently, I met an old friend of mine and he had a same problem that billions of people have been facing not knowingly. Yes that is Sleep Deprivation. And the question is how he was cured? All of you must have read an Irish proverb that "**A good laugh and long sleep are the two best cures for anything**" just like that he got rid of it.



I don't know if you have heard of sleep deprivation before but I would glad to share some facts about it. Sleep Deprivation is the condition that occurs if you don't get enough sleep. According to Philips Global Sleep Survey 2019, 62% of adults from worldwide get less than 7 hours of sleep and for India it is 31% of adults' complaints less sleep than needed.

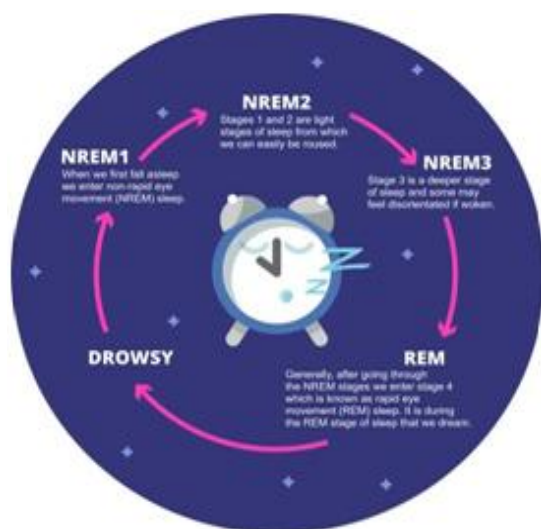
To know the reason behind sleep deprivation, one should know sleep and sleep cycle first... so, in simple language **sleep is a natural condition of rest when your eyes are closed and your mind and body are not active or conscious.**

While according to WHO, "Sleep is a naturally occurring state of mind and body characterized by altered consciousness relatively inhibited sensory activity, reduced muscle activity and inhibition of nearly all voluntary muscles during rapid eye movement sleep and reduced interaction with surroundings".

### **Sleep cycle or science behind sleep**

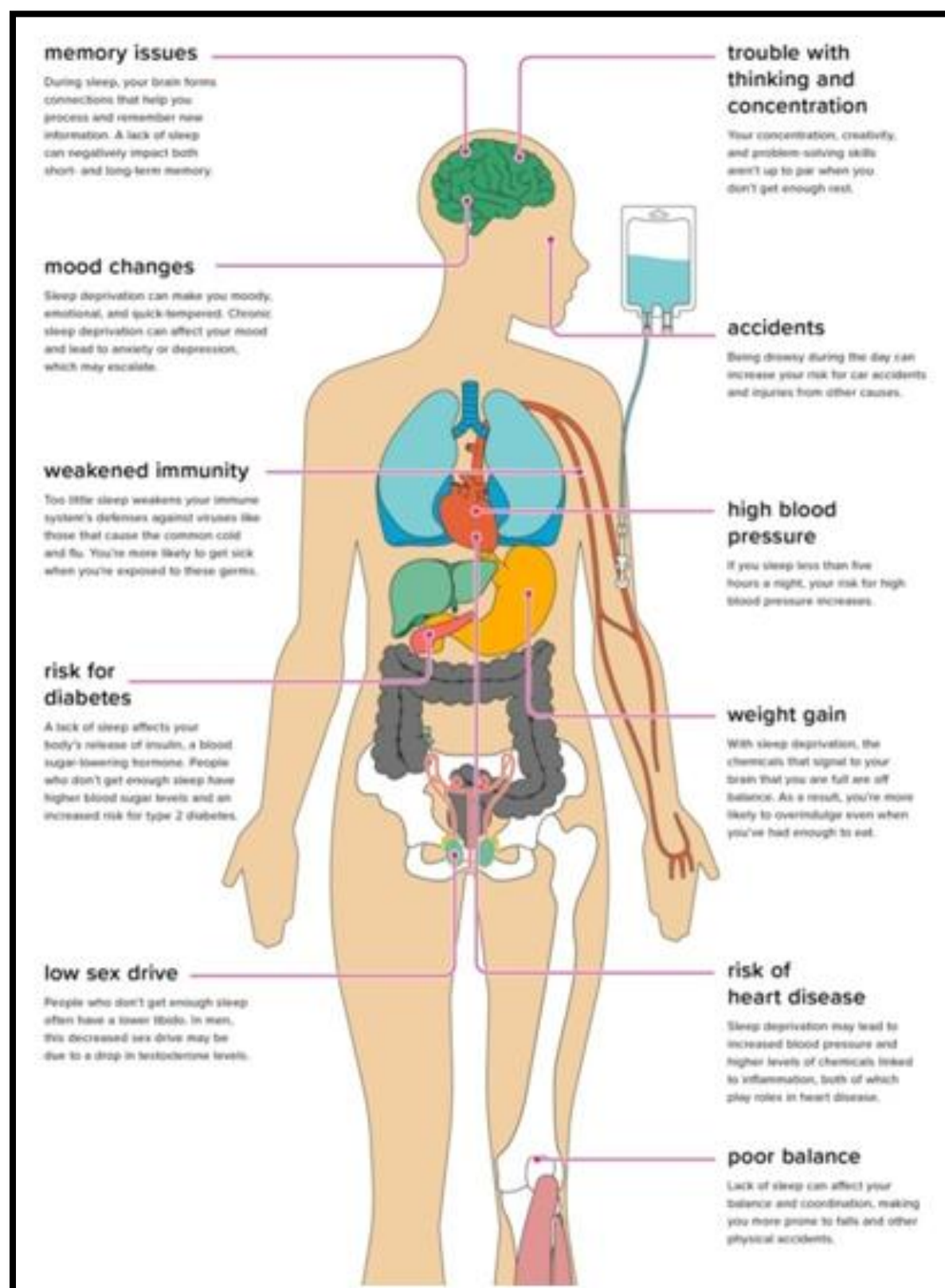
The human body follows circadian rhythm i.e. 24 hour repeating pattern that operates as an internal clock. That clock is controlled by two things;

1. External cues like light and darkness
2. Internal components like some chemicals - **adenosine**: slowly builds desire for sleep  
**Melatonin**: produce drowsy feeling that you are ready to sleep  
**Cortisol**: naturally triggers your body to wake up



Above figure showing the sleep cycle and one sleep cycle is of 90-120 minutes and it repeats all night. Have you ever thought, what prevents the better sleep? You may not believe but those are very common things like;

1. Worry and stress
2. Environment
3. Work and school schedules
4. Entertainment: in such a way that our day and night rhythm have been skewed.
5. Disruptors
6. Health conditions: 3 quarter adults experience at least one health problem that impacts sleep like insomnia, sleep apnea, etc.



Avoid those all disruptions and **"Discover the great ideas that lie inside you by discovering the power of sleep" - Arianna Huffington**

### **Effects of Sleep Deprivation**

Your body needs sleep as it needs food and water to function as its best. If you are getting less sleep than needed then it's obvious that your body going to show the consequences that affects entire system.

As above figure shows; sleep deprivation affects your central nervous system, immune system, cardiovascular system, endocrine system, respiratory system as well as digestive system.

**Central nervous system:** As its name suggests it is the information center of your body and sleep is essential to keep it functioning properly. Sleep deprivation leads to problems like difficulty in remembering, concentration and learning. It also negatively affects your mental abilities and emotional state.

**Immune system:** Sleep deprivation prevents your immune system from developing its forces like cytokines and antibodies which works against the infection.

**Cardiovascular system:** Sleep plays vital role in your body's ability to heal and repair the blood vessels and heart. But sleep deprivation affects the processes that keep your blood vessels and heart healthy, including those that affects blood sugar, blood pressure and inflammation levels. The study found a link between insomnia and increase risk of heart attack and stroke.

**Endocrine system:** Hormone production is dependent on your sleep. For testosterone production, you need at least 3 hours of uninterrupted sleep, which is about the time of your first R.E.M. episode. The interruption in sleep can also affect growth hormone production, especially in children and adolescents. These hormones help the body build muscle mass and repair cells and tissues, in addition to other growth functions.

**Respiratory system:** The relationship between sleep and respiratory system goes both ways; the disease obstructive sleep apnea can interrupt your sleep and lower sleep quality. And sleep deprivation may leave you more vulnerable to respiratory infections like common cold and flu.

**Digestive system:** Along with eating too much and not exercising, sleep deprivation is another risk factor for becoming overweight and obese. Sleep affects the levels of two hormones, leptin and ghrelin, which control feelings of hunger and fullness. Leptin tells your brain that you've had enough to eat. Without enough sleep, your brain reduces leptin and raises ghrelin, which is an appetite stimulant.

Sleep deprivation also causes your body to release less insulin after you eat. Insulin helps to reduce your blood sugar (glucose) level. Sleep deprivation also lowers the body's tolerance for glucose and is associated with insulin resistance. These disruptions can lead to diabetes mellitus and obesity.

**Prevention:** The best way to prevent sleep deprivation is to get the adequate sleep. **Sleep is one of most important aspect of health; it is also one of the easiest to neglect. So, don't put yourself into sleep dept get enough shut eye to enjoy those sweet dreams.**

According to guidelines it is 7-9 hours of sleep for adults ages 18 to 64. Other ways you can back on track by good sleep habits like,

1. **Routine:** going to bed at same time each night and waking up at the same time every morning. As well limit your day time naps.
2. **Exercise:** it helps you in balancing melatonin and cortisol.
3. **Food and drink:** avoid food at few hours before bedtime. Avoid alcohol and caffeine intake prior to bedtime.
4. Spending an hour before bed doing relaxing activities, such as reading, meditating, or taking a bath, etc.

Sleep is indeed a cure for all problems as well as a food for peace of mind. If you or any person in your contact are suffering from sleep deprivation then make sure to get enough sleep because it's the key to your happiness. And lastly to explain my sentences I would like to quote William Shakespeare

**"Sleep that knits up the ravelled sleeve of care, The death of each day's life, sore labor's bath, balm of hurt minds, great nature's second course, chief nourisher in life's feast".**

- Surabhi S. Dhupad

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## Decision Taking Made Easy

**What makes a good decision?** When I ask people that question, I often get answers like: “When the outcome is successful.”

Why is it that we, as a society, romanticize outcomes? Only things and people that succeed are celebrated. Just look at all the articles and books that idolize successful people. And to a degree, that’s obvious.

But it’s also misleading. We tend to overlook cases that did not come with a successful outcome. And when we do look at failure, we are often quick to explain why things failed.



In hindsight, *we can all look at mistakes and say that it was imminent*. But if preventing mistakes is that easy, why are we still make decisions that we regret?

### **Bad Decisions and Good Decisions**

It’s easy to look at success and attribute it to good decision making. But here’s the thing—that statement is also true the other way around. Failure is not always explained by bad decision making. However, that’s what most historians do. But like Dostoevsky said, in hindsight failure is always obvious. But good or bad decisions have anything to do with the outcome. Peter Bevelin, the author of *Seeking Wisdom*, said that **“Good decisions can lead to bad outcomes and vice versa.”** The truth is: You can’t predict the future. Sometimes **even bad decisions can lead to good outcomes**. So that’s why it’s pointless when people pretend they can teach you how to make “good” decisions. There’s no such thing. Any person who’s failed a lot in life will tell you that.

### **Mental Models: Focus on the Process, Not the Outcome**

*The way you look at how something works in the real world is called a mental model.* It’s your thinking framework about something. But when we make decisions, we often don’t think about our framework and immediately jump to a discussion about potential outcomes. We ask, “What will happen if we make this decision?” That’s an incomprehensive method because you’re not questioning your decision-making process. You’re only looking at the outcome.

But have you considered what specific thinking frameworks (mental models) you can use for your decision? Too often, we skip the process and jump right to deciding. Maybe that’s due to a lack of time, resources, or knowledge— it doesn’t matter. Whatever your reason is, it’s never an excuse to skip the decision-making process altogether. Because that’s the only way to become a bad decision maker— regardless of the outcome. So instead of focusing on how successful your choices are, focus on how comprehensive your decision-making process is.

## “What’s the right thing?”

It’s clear we should never regret making mistakes. **Every mistake is a lesson after all.** However, there’s another type of regret that literally kills people. It’s the regret of inaction.

So, no matter what you do, we all suffer in life. But there’s a difference in suffering,

As Jim Rohn once said: **“We must all suffer one of two things: the pain of discipline or the pain of regret or disappointment.”**

**“You can’t control the future”.** So stop thinking about it.



## Earlier Decisions Lead to Better Decisions

The earlier and more you decide, the more chance that you make better decisions. I often say that there are no right or wrong decisions — only decisions. That’s not entirely accurate. Of course, there’s a difference in the quality of our choices. But here’s the thing: **NOT making a decision is also a decision.** If that’s a conscious move, that’s okay. You think about something, and you decide that doing nothing is the best option. No matter what, you’re making decisions all the time. Instead of making fewer conscious decisions, we need to make them earlier. Because all you need are a few good choices in your lifetime anyway.

## Don’t Over think

Smart people are way too preoccupied with doing the right things. They want to have a perfect life, career, house, business, car, holiday, etc. doing. They identify mistakes and do their best to avoid those mistakes. But as Charlie Munger says: **“Smart people do dumb things.”** When you put too much pressure on yourself to make the right decisions, you get analysis paralysis. The only way you can stop over thinking is by making yourself aware of your thinking process.

## Conclusion

Decision making is a skill, and skills can be improved. The more experienced you are in making decisions, the more you are familiar with the tools and process that lead to an effective decision making and this will improve your confidence. Improving your decision making skills will benefit you and your organization at large. Most achievers have been found to make a great decision in their lives and this had led them to success and in the course of making such decision, some risks were compromised. Risk takers tend to make better decision with good analysis. The fear of risk could lead to not taking decision at all which is the worst decision. However, if a strong foundation is established for decision making, good alternatives are generated, evaluation of these alternatives is done rigorously, and there is a good check on decision making process, then the quality of decision tend to be good.

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Pharm.D Fourth Year

## **देहदान हाच खरा मोक्ष!**

सध्या प्रत्येक जण स्वकेंद्रित जीवन जगत आहे .साहजिकच कित्येकांच्या जीवनातून ' दान 'ही संकल्पना हद्दपार झालेली आहे . अशा पार्श्वभूमीवर नागरिकांच्या मनात दानाचे महत्त्व रुजवून त्यांना देहदान, रक्तदान आणि नेत्रदानाला प्रवृत्त करणे म्हणजे शिवधनुष्य उचलण्यासारखेच आहे .खरेतर हा देहमुळात 20 प्रकारच्या अमिनो आम्लांच्या रासायनिक अभिक्रियांतून तयार झाला आहे .मृत्यूनंतरही ह्या देहाचे विविध रासायनिक घटकांत विघटन होते .ते होण्यापूर्वीच जर देहदान,अवयवदान केले तर अनेकांना नविन आनंदी आयुष्याचा लाभ होऊ शकतो .आणि मेल्यावरही आपण अमर होऊ शकतो. पण आजही भारतीयांच्या मनात पूर्व परंपरेनुसार चालत आलेल्या रूढींचा पगडा आहे .देहदान केले, तर मोक्ष मिळतो का? रक्तदान करणे शरीरास लाभदायक आहे का? नेत्रदानाची खरंच गरज आहे का? म्हणून या विविध विषयांवरील ही डॉक्टरांशी केलेली बातचीत...

**1) भारतीय संस्कृतीत ' दान 'या संकल्पनेचे काय महत्त्व आहे?** - ' दान ' या संकल्पनेला आपल्याकडे अत्यंत महत्त्वाचे स्थान आहे .परंतु दान करताना डाव्या हाताचे उजव्याहाताला कळता कामा नये, असा संकेत आहे .या मागे दान करणाऱ्या व्यक्तीच्या मनात अहंकार निर्माण होऊ नये, हा विचार आहे .कालानुरूप दानाच्या परिभाषेत बदल होत गेला .विज्ञानयुगात देहदान, नेत्रदान आणि रक्तदान यांना महत्त्व आले आहे .विविध सामाजिक संघटनांच्या जागृतीमुळे दानाच्या या तीनही प्रकारात नागरिकांचा सहभाग वाढत आहे.

**2) एकवीसाव्या शतकात देखील देहदानाबाबत नागरिकांच्या मनात गैरसमज आहेत का?** - दुर्दैवाने गैरसमज आहेत . आजही कित्येक शिक्षित लोक देखील मोक्ष, मुक्ती, आत्मा या मूर्खपणाच्या परिघात फिरत आहेत .कोणाला देहदानाविषयी माहिती सांगायला गेले की, त्यांचा पहिला प्रश्न असतो, अंत्यविधी नाही केला तर संबंधित व्यक्तीचा आत्मा इतरत्र भटकत राहील .त्यामुळे त्याला मोक्ष प्राप्त होणार नाही .वास्तविक आपण विज्ञानयुगात वावरत आहोत .त्यामुळे हे निरर्थक विचार फेकून दिले पाहिजेत .यासाठी विविध सामाजिक संघटनांनी समाज-जाणीव जागृत करण्याची आवश्यकता आहे .आज परदेशात देहदानाकडे कल वाढत चालला आहे .व्यक्ती गेल्यानंतर तिच्या शरीराचा उपयोग जर इतरांना होत असेल, तर देहदान करायला काय हरकत आहे? हा विचार आपल्याकडे रुजायला हवा.

**3) देहदानाची खरंच गरज आहे का आणि कोणत्या व्यक्तीचे देहदान स्वीकारले जाते?** - शरीरशास्त्राचा अभ्यास करणाऱ्या विद्यार्थ्यांसाठी व्यक्तीच्या शरीराचे ज्ञान प्राप्त करणे आवश्यक असते .साहजिकच कोणी देहदान केले, तर त्याचा विद्यार्थ्यांना लाभ होतो .कोणताही आजार नसलेल्या व्यक्तीचा मृत्यू झाल्यास त्याचे देहदान स्वीकारले जाते .परंतु त्या देहाचा उपयोग प्रत्यारोपणासाठी होत नाही .या उलट वैद्यकीय अधिकाऱ्यांनी 'ब्रेनडेथ 'घोषित केलेल्या व्यक्तीच्या नातेवाईकांनी भावनेच्या मायाजालात नगुरफटता वैद्यकीय सल्ल्यानुसार संबंधित व्यक्तीला लावलेला कृत्रिमआर्क्सिजनचा पुरवठा काढून देहदानासाठी पुढाकार घेतला पाहिजे .असे केले तर त्यांचे सर्व अवयव दुसऱ्यांच्या उपयोगी येऊ शकतात.

**4) नेत्रदानाची चळवळ उभी राहावी यासाठी काय करता येईल?** - सामाजिक संघटना त्यांच्या परीने प्रयत्न करीत आहेत .परंतु शहर स्तरावर विचार केला तर, महापालिकेने यासाठी पुढाकार घेतला पाहिजे. जेनेत्रदान करतील, त्यांना अंत्यविधी खर्चात ५० टक्के सवलत आणि मृतव्यक्तीच्या नातेवाईकांनी रक्षा विसर्जन नदीत न करता झाडाच्या बुंध्यात केल्यास अशा व्यक्तींच्या अंत्यविधीचा खर्च मनपाने करणे योग्य आहे .यामुळे नेत्रदानामध्येही वाढ होईल आणि रक्षाविसर्जनामुळे होणारे नदीप्रदूषण देखील कमी होईल.

**5) सध्या नेत्रदानाची काय स्थिती आहे?** - गैरसमजुतीमुळे नेत्रदानाचे प्रमाण कमी आहे .महत्त्वाचे म्हणजे शहरी भागापेक्षा ग्रामीण भागात नेत्रदानाचे प्रमाण वाढत आहे .एखाद्या व्यक्तीने नेत्रदानाचा संकल्प केलेला असतो, परंतु त्या व्यक्तीचे निधन झाल्यास ' नेत्र 'काढण्यास कुटुंबीय विरोध करतात .यामुळे वादाचे प्रसंगही उद्भवतात .हा प्रश्न भावनिक असल्याने आम्ही ही फार आग्रह करीत नाही .मुळात भारतातच प्रतिवर्षी केवळ १५ ते १७ हजार नेत्रदान होते .सव्वाशे कोटी लोकसंख्या असूनही आपण श्रीलंकेकडून नेत्र 'आयात करतो.

**6) रक्तदान केल्यास त्याचा आपल्या शरीराला काही लाभ होतो का?** - रक्तदानामुळे दुसऱ्या व्यक्तीचे प्राण वाचतातच, परंतु तीन महिन्यांनी एकदा रक्तदान केल्यास आपले शरीर सुदृढ राहण्यास मदतच होते. किडनी आणि हृदय विकाराचे आजार देखील कमी होण्यास मदत होते. साहजिकच स्वतःच्या स्वार्था करिता तरी प्रत्येकाने रक्तदान करणे गरजेचे आहे.

**7) त्वचादान म्हणजे नेमके काय?** - मृत्यू पश्चात 'डोळे' आणि 'त्वचा' हे दोनच अवयव दान करता येतात. त्यामुळे 'देहदाना' द्वारे 'नेत्रदाना' 'सोबतच आता' त्वचादान 'करण्याबाबतही लोकांमध्ये थोड्याफार प्रमाणात जागृती निर्माण होत आहे. त्वचादानामध्ये दान करण्यात आलेली त्वचा ही त्या तारखे पासून पुढील पाच वर्षे सुरक्षितपणे साठवून ठेवता येते. रक्तपेढ्या, नेत्रपेढ्या प्रमाणेच त्वचा पेढ्या) स्कीनबँक (मध्ये त्वचासुरक्षितपणे साठवण्याची सुविधा असते. देहदान वा अवयवदान हा मुद्दा अत्यंत संवेदनशील आणि भावनिक असल्याने काही अवयवांच्या दाना बाबत बरेच गैरसमज पसरलेले आहेत. उदा. त्वचादाना बाबत डॉक्टर्स आपल्या नातेवाइकाच्या पार्थिवाची संपूर्ण कातडी सोलून काढून ती विद्रुप करतील की काय, असा मोठा गैरसमज लोकांना असतो. परंतु, खरं पाहता त्वचादान करू इच्छिणा-या व्यक्तीच्या शरीराच्या केवळ गाल, मांडी आणि पार्श्वभाग यावरील त्वचाच काढून घेतली जाते व तिचा पुढे त्वचारोपणासाठी उपयोग केला जातो. त्वचादान केलेल्या व्यक्तीच्या नातेवाइकांना त्या व्यक्तीचं पार्थिव अंत्यविधीसाठी परत हवं असल्यास, त्या पार्थिवाला व्यवस्थितपणे ट्रेसिंग करूनच ते नातेवाइकांच्या सुपूर्द केलं जातं. ब्रेनडेड अवस्थेत गेलेल्या (डॉक्टरांनी) ब्रेनडेड 'घोषित केल्यावरच' व्यक्तीचं आणि ते ही अशाव्यक्तीच्या नातेवाइकांनी त्या व्यक्तीचं अवयवदान करण्याचा निर्णय घेतल्यावरच अवयवदान करता येतं. अशावेळी आपल्या माणसाचं अवयवदान करताना, त्याच्या शरीराची चिरफाड करून ते विद्रुप होईल, असा विचार ब्रेनडेड व्यक्तीच्या नातेवाइकांनी केल्यास अवयवदान होऊच शकणार नाही. ब्रेनडेड व्यक्तीचं अवयवदान झाल्यानंतर त्याचं पार्थिवही टाक्यांनी शिवून मगच ते नातेवाइकांच्या इच्छेनुसार त्यांना सुपूर्द केलं जातं वा त्याचं देहदान केलं जातं. देहदान करू इच्छिणा-यांच्या नातेवाइकांनी त्या व्यक्तीच्या पार्थिवासह ती व्यक्ती मृत झाल्यापासून पुढील दोन तासांच्या आत स्वतःहून सरकारी इस्पितळांपर्यंत पोहोचणं हे इस्पितळातल्या कार्यपद्धती आणि पुढील प्रक्रियेसाठी उपयुक्त असतं. या साठी जास्तीत जास्त लोकांनी पुढाकार घ्यायला हवा. 'देहदाना'बाबत अनेकदा विविध माध्यमांतून जागृती केली जाते किंवा कोणत्याही सरकारी इस्पितळात या बाबत माहिती उपलब्ध होऊ शकते. परंतु, 'अवयवदाना' बाबत मात्र आवश्यक तितकी जागरूकता अजून निर्माण झालेली नाही.

**8) देहदान व अवयवदान यात काही फरक आहे का?** - देहदान आणि अवयवदान या दोन्ही गोष्टी पूर्णतः वेगळ्या आहेत. मुळात याचीच कित्येक लोकांना पूर्णतः माहिती नाही. देहदान हे संशोधक किंवा अंतर्नाटोमीचा अभ्यास करणा-यांसाठी केलं जातं. कारण एकदा का हृदय बंद पडलं की कोणत्याही अवयवाचा काहीही उपयोग होत नाही. पण अवयवदानाचं तसं नसतं. मृत्यू हा केवळ हृदय बंद पडल्यानेच होतो, असं नव्हे तर मेंदू बंद पडल्याने देखील होऊ शकतो, हे १९९४ मध्ये सिद्ध झालं. त्या नुसार मेंदू मृत्यू झाल्यानंतर चार तासांत हृदय, यकृत, किडनी, डोळे, हर्निया, त्वचा या पैकी शरीरातला कुठलाही अवयवदान करता येऊ शकतो. मात्र हेच मुळात कमी लोकांना माहिती आहे. त्यामुळे देहदान आणि अवयवदान या दोन गोष्टींमध्ये गफलत होते आणि ज्यागोष्टीची गरज आहे, त्या अवयवदानाकडे कोणीच वळत नाही. अवयवदानामुळे कित्येक लोकांना फायदा होऊ शकतो. म्हणूनच या गोष्टींची लोकांमध्ये जनजागृती होणं गरजेचं आहे. त्यासाठी शाळा, कॉलेज, कार्यालयांमध्ये जाऊन या विषयाची माहिती लोकांना पुरवणं आवश्यक आहे, ही जबाबदारी कोणा एकाची नाही तर मीडियानेही लोकांमध्ये जागृती करण्यासाठी पावलं उचलली पाहिजेत, अवयवदानाविषयीच्या बातम्या अधिकाधिक लोकांपर्यंत पोहोचवणं आवश्यक आहे, तसं झालं तर कित्येक लोकांचं आयुष्य सुधारेल.

**9) अवयवदान करायला लोक का घाबरतात?** - आपल्याकडे अवयवदानाची चळवळ खूप धीम्यागतीने पुढे सरकतेय हे खरं आहे. त्याचं कारण म्हणजे याबाबतीत समाजात मोठ्या प्रमाणात असलेल्या अंधश्रद्धा. अवयवदान केल्यानंतर पुनर्जन्म मिळत नाही, मिळाला तरी जो अवयव दिला त्याच्याशिवाय मिळतो किंवा अवयवदान केला तर स्वर्गात प्रवेश मिळत नाही. या प्रकारच्या समजूती जशा हिंदू समाजात आहेत, तशाच इतर समाजातही आहेत. उदा. मुस्लीम समाजातही अशी समजूत आहे की, एखादी व्यक्ती मृत झाल्यावर ज्यास्थितीत तिचं दफन होतं, त्याच स्थितीत ती पुन्हा पृथ्वीवर जन्म घेते होते. त्यामुळे तिचा एखादा अवयव नसेल तर ती तशीच जिवंत होणार. हे सोशलटॅब्यू हीच याबाबतीतली सगळ्यात मोठी अडचण आहे. शिवाय आपल्याकडे लोकांची विज्ञानापेक्षा देवावर अधिक श्रद्धा असते. त्यामुळेच ब्रेनडेड म्हणजे माणसाचा मेंदू निकामी

झाल्यावरही त्याचे अवयवदान करायला नातेवाईक तयार होत नाहीत .कारण त्यांना अशी आशा असते की, विज्ञान नाही तरी देव तरी त्या माणसाला बरा करेल .त्या मुळे आज अशी परिस्थिती आहे की, सुशिक्षित लोकांनी यासाठी प्रयत्न केला तर ही चळवळ नक्कीच पुढे जाईल.

**10)अवयवदानाचे महत्व काय आहे?-** अवयवदानासारखं दान नाही असं मला वाटत, कारण एक जरी अवयवदान केला तर एखाद्या गरजू रुग्णाचं आयुष्यसुखी होऊ शकतं .देहदानाविषयी लोकांच्या मनात अनेक गैरसमजुती आणि अंधश्रद्धा आहेत .तसंच लोकांना असं वाटतं की आधीच आमचा माणूस आमच्या पासून दुरावला गेला आहे .त्यात तुम्ही त्याच्या शरीराचा भाग काढून त्याची आणखीच दुर्दशा का करावी? आपण कोणत्या गोष्टीचा कितपत भावनिकदृष्ट्या विचार करायचा, हे आपल्यावर आहे .भावनिक गोष्टींना बळी न पडता जर अवयवदान केलं, तर एखाद्याचे प्राण वाचू शकतात आणि त्यांचा पुनर्जन्म होऊ शकतो .कित्येक जणांच्या या विषयावर वायफळ चर्चा असतात की, दान खरंच करायला हवं, पण कोणी ही देहदानकरण्यासाठी पुढे येत नाही .एकमेकांना बिनबुडाचे उपदेश देण्यापेक्षा प्रत्येकानं आपलं राष्ट्रीय कर्तव्य आणि माणुसकीचं दर्शन घडवायला हवं यासाठी प्रबोधनाची नितांत गरज आहे.

**विकास घाईट**

**एम. फार्म. अंतिम वर्ष**

# Poem/कविता



## Organ Donation

When I die,I'mgonna make a donation.  
I'll make a donation so others can survive.  
I'll make a donation and save so many lives.

Now,take it all. Use every part.  
Liver,Kidney,Lungs,and Heart.  
I'll die but leave a legacy.  
There will be a piece of me that lives on in others.

My body is useless to me now.  
My spirit has left it.  
My body is useless to me now.  
But others need my gift.

Why do so many have to wait .  
Leave it to chance.Leave it to fate.  
Because there's an organ shortage  
PEOPLE ARE DYING! PEOPLE ARE DYING!

Ankushwanna give YOU a message!!!!  
So,when YOU die I hope you make a donation  
Make a donation so others can survive.  
Make a donation,you'll save so many lives!!

Ankush Anil Racherlawar  
Pharm.D Second Year

## Diseases and Medicines

Bacteria - Bacteria - Bacteria !  
Causing various infections ,  
Penicillin by Sir Alexander  
Causes it's restriction.



Alzheimer is a disease  
Affecting the memory of brain ;  
Acetylcholinesterase inhibitors is a class  
Reduces its chronic pain

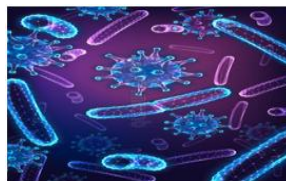


Diabetes mellitus is metabolic disorder  
Having blood sugar defect ;  
Metformin is the 1st line drug  
Came into its effect.



Medicine is not only science  
It's also an art ;  
It take lot of efforts and dedication  
Where researchers works very hard

It does not consist of only -  
Compounding pills and plasters;  
It is need to be full of knowledge  
And become master ,  
And become master .....



Heart is the pumping organ  
Whenever get's fail ;  
ACE inhibitors or Beta - blocker  
Increases its sale



Angina pectoris is a case  
Causing pain in the chest ;  
We use Anti-anginal agents  
Where Nitro - glycerin is best



Human is Homo sapien  
Affected by many disease ;  
Although pharma world is so strong  
Always ready to find its keys



- Kaivalya K. Rudre  
Pharm.D Second Year

### That Girl From School

There's this girl in school.  
I can't tell you  
much about her  
because she sits  
away from the rest of us  
and is quiet too.

You know what I'm  
talking about, don't you?  
A kind of girl,  
always combing her hair,  
and living in her own world.

The others avoid her  
as though they don't see her.  
And I do the same,  
that is..until one day.  
I return to class  
after hours.

I left my geometry box  
and my expensive compass.  
I see her sitting on the last bench.  
Her skin is very dark,  
and hair, cut like a boy.  
She looks at me  
and smiles.

All I say back is 'Hi'  
'I'm searching for my geometry box.'  
she laughs.  
'I'll help you find it.'  
She talks from under the bench.  
'Is that it?'  
'Yes' I smile,  
'Thank you so much.'

And as she gives me the box,  
for a moment our hands touch  
Her skin is warm.  
And her nails are dark too.  
'Thank you for finding this.'

My mum would've got so mad  
had I lost this one too.'  
She laughs again,

'What does your mum do when she's angry?'  
'She yells. Sometimes, she'll  
threaten to hit me with a belt.'  
'What does your  
mum do when she's angry?' I ask  
'She keeps me in the oven.'  
I freeze.  
'What?'

She laughs louder and repeats.  
'She keeps me in an oven,  
and turns up the heat.'  
I run back home.  
And tell my parents.  
They say,  
'Don't worry, we'll call the police.'  
I wait in my room.

And realise why her nails were so dark too  
A few moments later,  
my parents enter.  
'The police just spoke  
to the girl's mother.'  
'And?' I ask,  
'What did she say?'

My parents take a deep breath.  
'That girls from your school  
died last May.'  
I shiver.  
'She died in a fire accident.'

Something to do with voltage from an oven.'  
I run out of my house,  
my parents chase me.  
I run back to the school.  
And enter my class.

She sits in the last row.  
And laughs just as hard.  
'You better run' she says.  
'You've made mother angry.'  
And if she catches you,  
and burns you,  
it's okay.  
I'll save you a spot beside me.'

Aarya Mankudale  
B Pharm Firsr year

## मराठी कविता

### स्त्री

आदिशक्तीचं रूप घेऊन  
अवघा स्त्रीपणाचा जागर तू  
पृथ्वी प्रदक्षिणा घालत  
तू असुरांचा विनाशकरत गेली  
धरणी पारिजाता परि दरवळत राहिली.

मर्यादा उंबऱ्याच्या होत्या  
तरीही न संपणारी कादंबरी तू  
लेखणी अक्षरे शिंपीत गेली  
पाने आखत गेली  
इतिहास रचत आला.

विभिन्न देशसंस्कृती अनेक ,  
स्त्रीपणासारखं मांगल्य एक  
ज्ञान – विज्ञान वाढत होतं  
तू पाऊले टाकत गेलीस  
मोरपीसा परि ठसा उमटत आला.

- आदित्य मुळे  
एम.फार्म अंतिम वर्ष

### जीवनशैली

ताळमेळ हि जीवांची  
यशस्वी करण्यात आव्हानं  
आयुष्यात हरवली जातात  
दोन सुखांची क्षणं

नावापुरतच उरलेलं  
दोघांमधील बंध  
दिसता दुरून दिसे  
जवळता नसेल्यात गंध

सत्य हे ब्रीद" ,वागावं  
चालत्या काळासह"  
पण दोघांनाही न जाणावा  
इतका नसावा विरह

वागावं जे वागायचं  
ते काळा पुरतं  
नातं हे नसावं  
नुसतं नावा पुरतं

हव्यासाची साधनं मोठी  
श्रीमंतीत उतरली  
दोन सुखीक्षणांची  
राहून गेलेली " जीवनशैली"

- आदित्य मुळे  
एम.फार्म अंतिम वर्ष

“

### विठुराया ऐकशील कारे”?

विठुराया आम्हा लेकरांचे एक मागणे ऐकशील का रे?  
चुकलो आम्ही वसुंधरेशी माफी आम्हा देशील कारे?

हातजोडीतो आम्ही तुजला घे कुशीत या वसुंधरेला,  
विश्वातील या काळोखाला प्रकाशाकडे नेशील का रे?  
चुकलो आम्ही वसुंधरेशी माफी आम्हा देशील कारे?

हीच आशा हेच मागणे तूच जाणि तो लेकराचे गर्हाणे,  
या महामारीला तोंड देण्याची ताकद आम्हा देशील का रे?  
चुकलो आम्ही वसुंधरेशी माफी आम्हा देशील कारे?

गरीबाच्या त्या लेकराला जीवनदान देशील का रे?  
भ्रष्टाचारी वैद्यराजाला योग्य दिशा दावशील का रे?  
कोरोना नावी महामारीला पळवून तू येशील का रे?  
चुकलो आम्ही वसुंधरेशी माफी आम्हा देशील कारे?

पैशांवरती खेळसारा दया भावना देशील का रे?  
गर्दीतील असंख्य माणसांना माणूसपण तू देशील का रे?

हे विठुराया माफी आम्हा देशील का रे?  
एवढेच मागणे ऐकशील का रे?  
विठू ,ऐवढेच मागणे तु ऐकशील का रे?

**ईश्वरी संतोष राव डाबरे**  
**बी. फार्म पहिले वर्ष**

**मैं हूं!**

कभी मैं हूं रंगीन कहानियोंसी  
कभी तन्हा मैं तन्हाईसी,  
कभी मैं खुली किताब  
कभी खोये खाबसी,

कभी मैं बारिशकी बरसात  
कभी सर्द की गर्माहटसी,  
कभी मैं आसमान की उचाई  
कभी धरती की गहराईसी,

कभी मैं उड़ते परिदेसी  
कभी किसी ठहरे नग्मेसी,  
कभी मैं खुशी के आँसू  
कभी सताती यादोंसी,

कभी मैं खुला आसमान  
कभी बंद दरवाज़ेसी,  
कभी मैं बुलंद इरादा  
कभी बदलते वादोंसी,

कभी मैं एक प्यारा अहसास  
कभी टुटते विश्वाससी,  
कभी मैं गेहेरा समंदर  
कभी उड़ती रेत सी,  
हूं मैं खुदसे अंजान,  
जिंदगी के हर मोड़ पर बदल ती ये मेरी दास्तां!

**- श्रुति अयंगार.**  
**फार्म. डी चतुर्थ वर्ष**

### वेध जीवनाचा

हसून पाहावं रडून पहावं,  
जीवनाकडे नेहमी डोळे भरून पहावं !  
आयुष्याचा आनंद घेताना .....  
नेहमीच अस रहावं की  
आपण हजर नसतांना देखील,  
कोणी तरी आपल नाव काढावं.

हरवलेले हे दिवस येतील का पुन्हा?  
जगलो काल आणि आज;  
उद्याही जगणार पुन्हा,  
अनुभवू तो एक दिवस ...  
नवा आणि जुना;

नशिबानेच पुन्हा एकदा कुठेतरी भेटू,  
आठवणींना आपल्या एकदा एकत्र मिळून वेचू,  
पण तेव्हा सर्व काही बदलेल असेल ....

कोणीतरी बोलवतय म्हणून भेट लवकरच सुटेल.  
दूरवर चालणाऱ्या गप्पागोष्टी राहणार नाहीत ,  
आठवणींचा हा झरा मग त्या दिशेने वाहणार ही नाही...

आज सोबत आहोत,  
वाटेल तसे जगू नघेऊ;  
जीवनभर पुरतील अश्या,  
आठवणी जपून घेऊ.

**पूर्वा मनोज मानेकर**  
**बी. फार्म दुसरे वर्ष**

### विरंगुळा

दूर वरून दिसत होता आनंदाचा खेळ जो  
प्रत्यक्षात चालला होता भासाचा मेळ तो

पोट धरून हसू तिथे वाहत सुटले होते  
दुःखाने एका दिवसासाठी पांघरून घेतले होते

निपचित पडलेल्या सुखाला भरून तेव्हा आले  
गगनभरारी घ्यायला उत्सुकतेने उभे ते झाले

सैरावैरा डोलत-डुलत दारोदारी तो गेला  
दिवस माझा आज, असा सर्वांना सांगत सुटला

दिवस काही पुरलानाही त्याला भटकंती करायला  
परतीच्या वेळेने लागला होता तग धरायला

सांज ही सुखाची पाठराखीण मग झाली होती  
पांघरुणातून निघायची आता दुःखाची वेळ आली होती

म्हणाला पुरे झाला तुझा विरंगुळा आता, परतीची वाट धर  
आमिषात मी फसणारा नाही, माझी जागा तू रिती कर

सुखाचे चार क्षण असतात त्याला समजले होते क्षणात  
ताठ मानेने परतला कारण जागा केली होती त्याने मनात

क्षणीक असो की अगणित, सुख-दुःख कायमचे नाही  
जे येतं ते जातं, हे च प्रत्येक दिवस शिकवून जाई

**खुशी पाटील**  
**बी. फार्म अंतिम वर्ष**

### बाप ओळखता येत नसतो

कधी बाप वळण लावत असल्याने वाईट असतो  
कधी बाप पैसा नसल्याने वाईट असतो  
कधी बाप रागामुळे वाईट असतो  
धाकामुळे तर प्रत्येकच बाप वाईट असतो...

अज्ञातलाच बाप सर्वांना माहित असतो  
पण थोडाजरी कुठेकमी पडला तर बाप बोलणे ही ऐकून  
घेतो...

आतल्या आत हा बाप तसाच रोज रडत असतो  
प्रत्येकाच्या गरजांसाठी ऐकटा बापच वाहत असतो

सर्वांच्या आवडीची किंमत तो बापच चुकवत असतो  
मुला – मुलींना पाया वर उभ करणार औषध म्हणजे बापाचा  
राग असतो...  
रागा मागे मुला – मुलीचं सुख पाहणारा हतबल बापच  
असतो

आई सारखा बाप ओळखता येत नसतो  
घडवण्याच काम हा बापच करत असतो  
बापाला कमी पडण्याची परवानगी नसते  
बापाला अडचणी सांगण्याची परवानगी नसते

बापाला थकण्याची ही परवानगी नसते आणि बापाला  
थांबण्याची पण परवानगी नसते  
पण एक दिवस म्हातारा झाला की हाच बाप घरातल्या  
कोपऱ्यात पडून असतो

नाही तर अंगणातल्या झाडा खाली ऐकटाच बसून असतो  
हा बाप सहजच ओळखता येत नसतो  
अश्रू दिसू देत नसतो, तो मनातलही बोलत नसतो  
म्हणूनच बाप सहसा ओळखता येत नसतो

### संकलित

पियुष आबासाहेब मडके  
बी. फार्म पहिले वर्ष

### सोचा ना था

सोचा ना था एकदीन ऐसा आएका।  
जहांसे निकलना चाहते थे कभी, वहां जानेके लिए दिल तरस  
जाएगा।

सोचा ना था एकदीन ऐसा आएका।  
जिस के लिए लड़े हैं इतना, वह आसानी से मिल जाएगा।

सोचा ना था एकदीन ऐसा आएका।  
जिन 'Projects' को पूरा करने के लिए मेहनत की थीं कभी,  
कोई उसे 'Submit' भी ना कर पाएगा।

सोचा ना था एकदीन ऐसा आएका।  
जिन शिक्षकों से डरते थे कभी, उनसे मिलने दील यु तरस  
जाएगा।

सोचा ना था एकदीन ऐसा आएका।  
जिन दोस्तोंसे होती थीं सुबह-शाम, उनके साथ अब ना  
रहपाएगा।

सोचा ना था एकदीन ऐसा आएका।  
बच्चों के भविष्यसे खेलवाड़ कर, कहा तूं भी खुश रहपाएगा।

सोचा ना था एक दीन ऐसा आएका।  
भविष्यकी चिंता किए जा रहे हैं सभी, क्या कोई अपने अरमां  
पूरे कर पाएगा?

सोचा ना था एकदीन ऐसा आएका।  
कई सवाल हैं मन में अभी, क्या कोई हल ढूंढ पाएगा?  
सोचा ना था एक दीन ऐसा आएका।

शिवानी वाडीचार  
एम. फार्म पहिले वर्ष

### आई माझी आई

आई म्हणजे काय असतं?  
चालतं फिरतं घर असतं, नित्य खुलंदार असतं  
आनंदान नाचणाऱ्या मयुराचं पर असतं  
उदात्त विचारांनी भरलेले ते मन असतं

दुःखाच्या सागरात जणू आई हे नाव असतं  
जरी वादळ आले सागरात परंतू आई  
एकल्यात आशेचा किनारा असतं  
आई याच दोन अक्षरांत अवघं  
ब्रह्मांडतील तेज सामावलेले असून  
त्यातूनच त्रिभुवनाचे खरे मोल असतं

कारण मित्रांनो  
ज्यास आई नाही तोच जाणत असतो की,  
आईची भूमिका एवढी महान,  
कदाचित म्हणूनच त्यामूळेच येत असेल  
भरती आहोटीची समुद्रास उधाण  
कळेल जेव्हा त्यामायेचे मोल राखाल

सांगेल मित्रांनो,  
या तळपत्या जिवनात आईची  
असावी शितल छाया,  
तिचा दिलासा म्हणजे  
संपूर्ण आभाळ माया,

आई आई करतच तर जीवन  
माझे तुमचे सुखात गेले,  
माझे तुमचे लाड तिनेच तर पूरविले,  
आईनेच तर पूरविले

आई गं, तुला शतशत नमन  
या लाडकीचे,  
दुःख नको गं देवू मजला तू विरहाचे  
प्रेमस्वरूप आहे तू  
वात्सल्याची सिंधुताई तू  
बोलवू तुजला मी आता कोणत्या उपायी

घेऊन जन्म घेईल जन्म तुझ्या पोटी  
ह्याच गं आई,  
खोटी न ठरो ही माझी आस तुझ्यापायी  
गे आई, तूच माझी अवघी विठू रखुमाई

**अनामिका कवितकर**  
**बी.फार्म पहिले वर्ष**

### थोडंसं वर्तमानात जगू या ना!!!

तुमच्या सगळ्या अस्मिता, श्रद्धा, भावना इथे गळून  
पडतात...!  
तुमचा उन्माद, द्वेष, पापपुण्याचा हिशोब, तो सगळा  
बाहेरच... इथे त्याची किंमत शून्य!

एवढंच काय तर निसर्गाने निर्माण केलेला स्त्री- पुरुष हा  
भेदसुद्धा इथल्या व्हॅटिलेटरच्या आवाजात विरून जातो!  
आयसीयुच्या बेडवर जेव्हा क्षणाक्षणाला बधीर होत जातात

भावना आणि सुत्र पडत जातात हातापायांचे तळवे तेव्हा  
विस्मृतीत जाऊ लागतात आपलीच माणसे... आणि देव  
सुद्धा!

जे हात उचललेले असतात कधी तरी... कोणाला  
मारण्यासाठी, कोणाला पुजण्यासाठी, कधी आशीर्वादासाठी  
तर कधी काही मागण्यासाठी, तेच हात साधे थरथरत सुद्धा  
नाहीत... जिवंत असल्याची एकही खूण दाखविण्यासाठी!

हृदयाची धडधड जसजशी कमी होऊ लागते आणि बुबुळ  
स्थिर होऊन हळूहळू नजर अंधूक होऊ लागते, सरळ होऊ  
लागते मॉनिटरवरील रेषा आणि मशिनमधून धोक्याचा  
सायरन वाजू लागतो... तेव्हा बधीर होत चाललेल्या मनाला

एक क्षणभर तरी वाटतेच, जिवंत राहण्याच्या नादात जगणं  
मात्र राहिलंच... म्हणून जास्त सिरीयस होण्यात काय अर्थ  
आहे! ...

**सुजय बोबडे**  
**(फार्म डी अंतिम वर्ष)**

### कल्पना!!!

कोरोना असाच एक विषाणू यावा!  
नि समाजाचा दृष्टिकोन बदलावा..  
लोभ, मत्सर, तिरस्कार सोडून  
आपुलकीचा भाव यावा..  
असाच एक विषाणू यावा!  
निशत्रूशी 'Social Distancing' राखून जावा..  
आपल्याशी संवाद साधून  
कुटुंबांना जवळ करून जावा..  
असाच एक विषाणू यावा!  
नि समानतेचा विचार आणावा..  
माय, बहिणीचे अंगरखे तसेच मात्र  
नजरा समाजाच्या परिवर्तीत करावा..

**ईश्वरी संतोष रावडाबरे (बी. फार्म पहिले वर्ष)**

# Student Achievements

Govt. College of Pharmacy, Amravati-444604 Maharashtra India

NMPB, Ministry of AYUSH, India

Sponsored

National Level Online Giloy Awareness "Poster Competition"

20 Nov. to 15 Dec. 2020



Khushi Patil-B.Pharm Sixth Semester Secured **Consolation Prize**

# "*Tinospora cordifolia* (Giloy) for Socioeconomic Empowerment"

## Scientific name

*Tinospora cordifolia*

## Local names

- ❖ Giloy, Gulneha (Hindi)
- ❖ Guduchi, Amrita (Marathi)
- ❖ Chitamrith, Amrithu (Malayalam)
- ❖ Heart leaved moonseed (English)
- ❖ Gulvel, Amrutvel (Konkani)
- ❖ Gulancha, Giloe (Bengali)
- ❖ Jivantika, Vatsahani (Sanskrit)

## Description

- It is a large, deciduous, extensively-spreading, climbing shrub with several elongated twining branches.
- Leaves are simple, alternate, and exstipulate with long petioles up to 15 cm (6 in) long which are roundish and pulvinate. It is called heart-leaved moonseed because of its heart-shaped leaves and its reddish fruit.
- Flowers are unisexual, small on separate plants and appearing when the plant is leafless, greenish-yellow on axillary and terminal racemes. Male flowers are clustered, but female flowers are usually solitary. It has six sepals in two series of three each. It has six petals which are smaller than sepals, membranous.
- Flowering season of this herb is in the month of June, while fruits occurs in the month of November. The fruits are drupe shaped that turn red after ripening.
- It is an herbaceous vine of the family Menispermaceae indigenous to tropical regions of the Indian subcontinent.



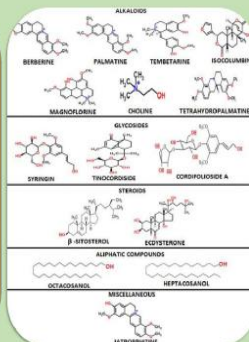
## Traditional Importance

- ❑ The plant exhibits medicinal properties like anti-diabetic, anti-spasmodic, anti-inflammatory, anti-arthritis, anti-oxidant, anti-allergic, anti-stress, anti-leprotic, anti-malarial, hepatoprotective, immunomodulatory and anti-neoplastic activities.
- ❑ It has an importance in traditional ayurvedic medicine used for ages in the treatment of fever, jaundice, chronic diarrhoea, cancer, dysentery, bone fracture, pain, asthma, skin disease, poisonous insect, snake bite, eye disorders.
- ❑ This plant has immunomodulatory and physiological roles of different types, thereby demonstrating the diverse versatility of the plant.



## Pharmacology

- Immunomodulatory - Giloy exhibits immunomodulatory activity as it consists of phytoactive compounds like 11-hydroxymustakone, N-methyl-2-pyrrolidone, cordifolioside A, tinocordoside and syringin. It is used for curing diseases and syndromes like severe infections, neurological disorders, AIDS etc.
- Osteoporotic - Giloy is considered to be a naturally occurring medicine for the treatment of osteoporosis. Due to the presence of calcium in higher amounts, Giloy is often used for the treatment of bone related diseases and disorders.
- Hepatotoxic - Giloy plant is considered as hepatoprotective in nature due to synergistic effect of its phytoconstituents like alkaloids and terpenoids. Phytoconstituents like Magnoflorin, Palmatine, Tetrahydropalmatine etc. are found to possess hepatoprotective activity.
- Anti-Diabetic - *Tinospora cordifolia* helps in curing diabetes patients. The treatment through oral administration of methanolic stem extract of Giloy predominantly helps in treating diabetes and brings back to near normal level.
- Anti-oxidant - *Tinospora cordifolia* shows an effective anti-oxidant potential by reducing the generation of free radicals in the body due to various types of conditions.
- Anti-cancer - *Tinospora cordifolia* shows anti-cancer activity. About 50% ethanolic extract of Giloy is known to exhibit anti-proliferative and pro-apoptotic activity also with differentiation and senescence.
- Anti-pyretic - In Ayurveda, Giloy juice and paste is prepared from the stem of Giloy. It is further utilised for further processing which is later on used for the treatment of fever.



## Pharmacognosy

- A large number of chemicals have been isolated from *T. cordifolia*, belonging to different classes such as alkaloids, diterpenoid lactones, phenolics, glycosides, steroids, sesquiterpenoid, phenolics, aliphatic compounds and polysaccharides.
- Leaves of this plant are rich in protein (11.2%), calcium and phosphorus.
- i. Terminal-glucose, 4-xylose, 4-glucose, 4, 6-glucose and 2, 3, 4, 6-glucose linkages were found when partially methylated alditol acetate (PMAA) were subjected to Gas Chromatography-Mass Spectrometry (GC-MS) studies.



## Market Formulations

- Following formulations made from *Tinospora cordifolia* are available in the market :
- a. Churna - Rasayan churna, Sudarsana churna
  - b. Kwatha - Guduchyadi kwatha, Punarnavastaka Kwatha
  - c. Arista - Amritarista
  - d. Ghrita - Guduchi ghrita, Panchtikta ghrita
  - e. Taila - Guduchyadi taila
  - f. Vati - Samsamni vati, Chandraprabha vati
  - g. Lauha - Guduchyadi lauha
  - h. Rasa-ausadhi - Gandhak rasayan, Chandrakal rasa



## Cultivation & Conservation

- I. Propagation Medium - The plant is easily grown by sowing seeds in manure. It grows well in any type of soil and under different climatic conditions. It can also be propagated by stem cuttings but the growth of seedlings is very slow as compared to plants grown by cuttings.
- II. Climate and Soil - The plant grows in sub-tropical and tropical climates. Soil rich in organic matter with proper drainage, is most suitable for cultivation. It cannot tolerate high rainfalls.
- III. Growing Techniques -
  1. Plantation in Nursery :
    - i. Cuttings are obtained from the older stems with nodes.
    - ii. The cuttings should be sown before 24 hrs of its removal.
    - iii. The stem cuttings are directly sown in the field.
    - iv. Around 2000 cuttings are planted per hectare of land.
  2. Plantation in Fields :
    - i. Land is prepared for planting the cuttings, and fertilizers are applied.
    - ii. The stem cuttings are sown directly in the field, the plant requires support to grow, that can be done by raising wooden sticks or bamboos.
    - iii. The plant is usually sown in the monsoon season, and irrigation is usually provided in extreme conditions.
    - iv. Usually, the plant do not require any pest control.



## Adulteration

- *Tinospora cordifolia* is usually adulterated with *T. sinensis* and *T. crispa*.
- The extract of *Guduchi* is adulterated with powder, flour of arrowroot or banana.
- *Guduchi satva* is mostly adulterated by flour of potato or sweet potato.

Prathamesh Devidas Kawadkar [B.Pharm Sixth Semester] Secured **Consolation Prize**

# Value Added Products Of Giloy

## Introduction:-

Giloy: Giloy has gained a large attention in recent period but from early age it has been a great important herb, which serves the people's health. Giloy has a large amount of active pharmaceutical ingredients in it so that it help to fight a bulk of diseases. In this recent pandemic of covid-19 giloy has gain a large attention by the people. Giloy contain large amount of health benefits. But the main problem faced by the people was the palatability of the medicine. A large amount of marketed products are present in the field but each and every age group person fails to consume it because of taste of kadias and churna available in the market. So in order to increase the consumption of giloy herb by every person we tried to make giloy more interesting. Without altering it's functionality we made various value added products by making use of giloy as main ingredient. The results were found interesting as we prepared it we found it more tastier and more healthier than any other marketed product.



**Giloy Mixed Fruit Jam:-**

Giloy mixed fruit jam is A giloy containing jam which can be eaten with our regular breakfast. regular uptake of giloy via jam every morning increases our appetite and keeps us free from various diseases.



**Giloy Wafers:-**

Giloy Wafers is one of our favourite creation. These are rich in Giloy stem and leaves powder. Also it has goodness of Giloy satwa which rejuvenate our life. Giloy wafers can be made by using baking process which is a more healthier aspect.

**Giloy Multigrain Cookies:-**

Giloy multigrain cookies are the best deserts ever made by us. It is really a refreshing snack which stimulates our metabolism and provide strength for our day to day activities. Giloy cookies contain various grains which provides vital nutrients to the body. As it is a sweet and crunchy snack it would gain a lot of attention by the childrens. Our upcoming generation would be fit.

**Giloy Multigrain Sticks:-**

Giloy Multigrain stick is made from various grains and most importantly Giloy stem and leaves satwa. Giloy sticks is a very tasty food cum health conscious product which has a taste of crunchy snack and power of healthy herb. Giloy stick is made such that it can be consumed by all age groups.

## Why Giloy should be a part of a healthy lifestyle?

- Boosts immunity.
- Giloy is an aphrodisiac.
- Reduces anxiety and increases mental strength.
- Contains anti-ageing properties.
- Rich in anti-oxidants.
- Fights Respiratory problems.
- It can reduce the symptoms of some deadly diseases like dengue, malaria, swine flu.
- In the pandemic of covid-19 it had proven as a great ultimate immunity booster.

## Conclusion:-

We had tried to prepare some essential value added products using giloy. Our main objective for these formulation was to help people live a healthy disease free life. Finally we had arrived at a conclusion that health can be made delicious.

Reference-Variou Articles on Guduchi.

Parth Takey and Aditya Kohekar B Pharm Sixth Semester Secured **Consolation Prize**

**Govt. College of Pharmacy, Amravati-444604 Maharashtra India**

**NMPB, Ministry of AYUSH, India**

**Sponsored**

**National Level Online Giloy Awareness "Quiz Competition"**

**11 Dec. 2020**

**Second Prize**

**Divit Shetty  
Guarav Damre  
Pharm.D Fifth Year**

## Social Media Awareness



Pharm.D Fourth Year



B.Pharm Fourth Semester



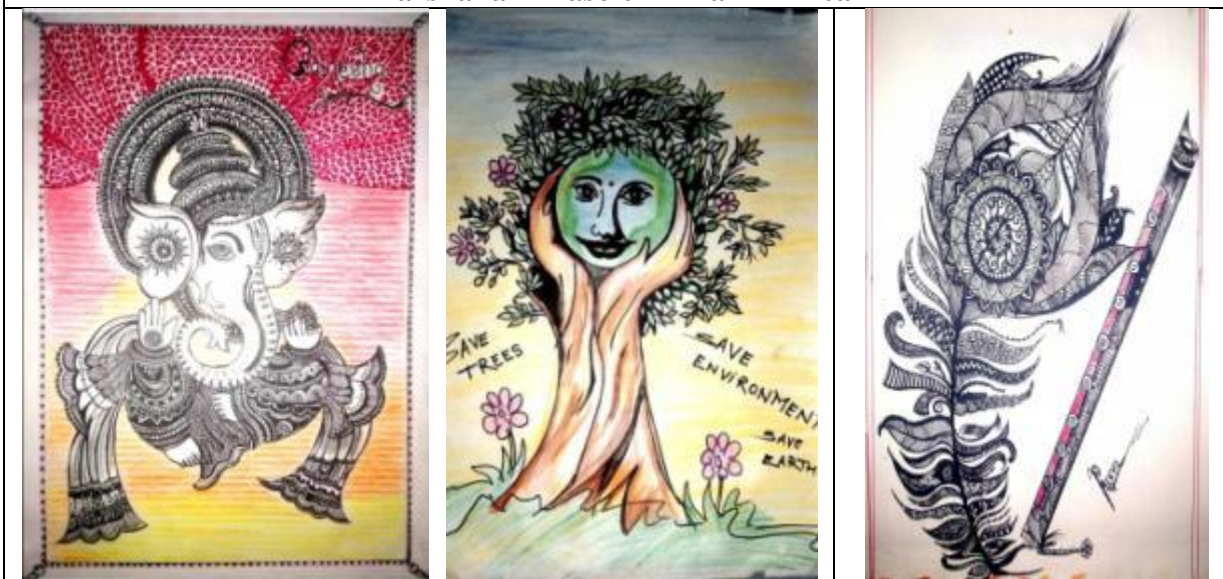
M Pharm Final Semester

# Fine Art





**Darshana R Basole B Pharm 1 Year**

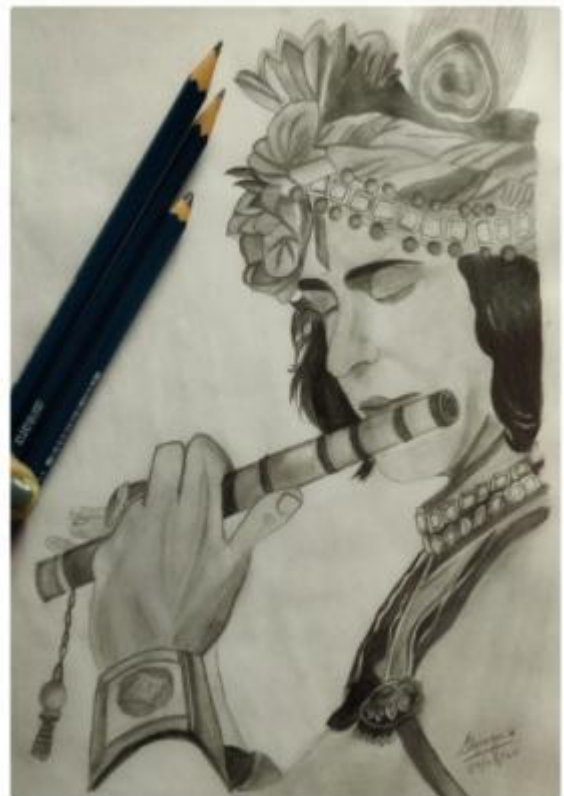


**Purva Manekar B Pharm Fourth Sem**



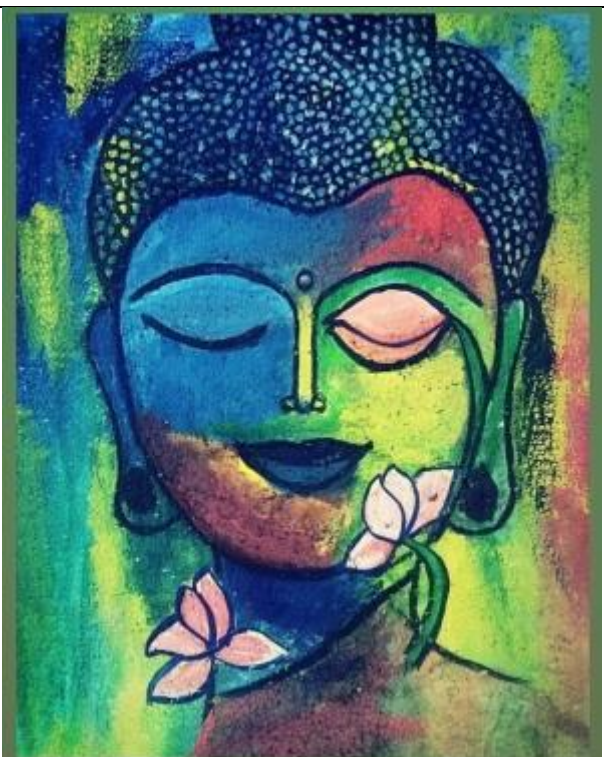


**Khushi Patil B Pharm Sixth Sem**

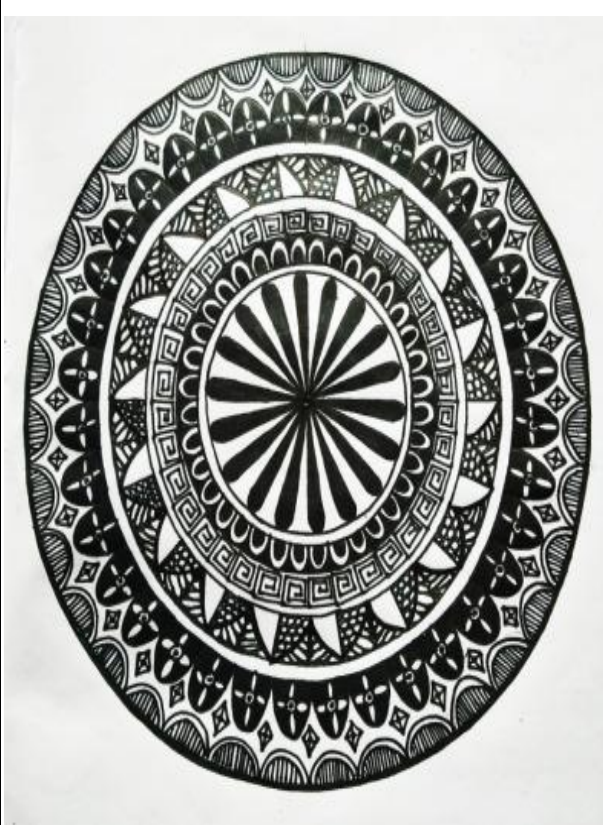




Shruti Iyengar Pharm D 4th yr



Jyoti Harle Pharm D 5<sup>th</sup> year





Kalyani Haramkar B Pharm Sixth Sem





Madhuri Shelke B Pharm Sixth Sem



Vaishnavi Ambadkar B - Pharm 1 Year



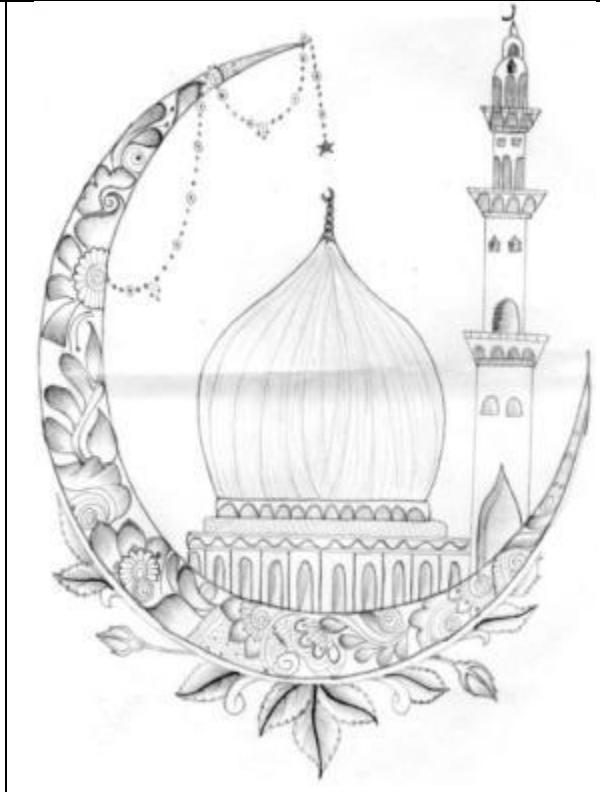


**Prachi Khandewal Pharm D 5<sup>th</sup> Year**

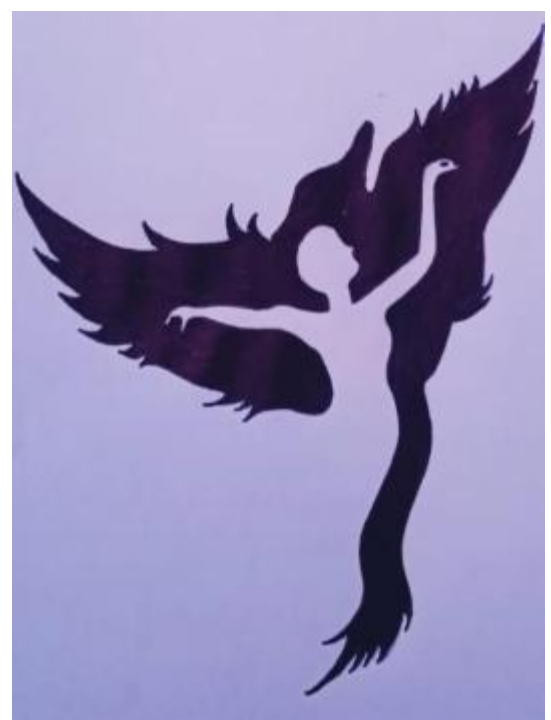


**Gargi Dagwar Pharm.D 1st yr**

**Amna Siddhiki Pharm D 1<sup>st</sup>Year**



**Amna Siddhiki Pharm D 1<sup>st</sup> Year**



**Kallyani Solanke Pharm.D second year**



Shretali Sawarkar M Pharm 1<sup>st</sup> Year



**Shretali Sawarkar M Pharm 1<sup>st</sup>Year**



**Rutuja Raut Pharm.D 4th yr**



**Rutuja Raut Pharm.D 4th yr**



**Yogesh Pawar**

**Pharm D 4th year**

# Webinars/ Competitions



## GCOPA National Campaign On “*Tinospora cordifolia* -Amrita for Life”



Govt. College of Pharmacy, Amravati - 444604 Maharashtra India



NMPB, Ministry of AYUSH, India  
Sponsored  
Online “Poster and Quiz Competition”  
Under National Campaign On “*Tinospora cordifolia* -Amrita for Life”  
Theme: *Tinospora cordifolia* (Giloy) for  
Socioeconomic Empowerment  
On the occasion of “59th National  
Pharmacy Week (NPW)”-2020



Govt. College of Pharmacy, Amravati, Maharashtra India is organizing NMPB, Ministry of AYUSH, India Sponsored awareness program Under National Campaign On “*Tinospora cordifolia* -Amrita for Life” under Theme: “*Tinospora cordifolia* (Giloy) for Socioeconomic Empowerment” will run A Healthy Campaign For “Every Home Giloy”. Giloy is most popular plant from Ayurveda having many health benefits. Under this campaign Giloy Plants will be distributed among students, teachers, government institutes and society along with informative brochure about scientific information of Amrita to create awareness regarding appropriate use and benefits of plant Amrita. Giloy poster and Quiz competition is also be arranged to create excitement about plant Amrita among students. Giloy awareness will be extended to every home though Giloy awareness programs in collaboration with Women organizations, NGOs and Pharmacy Professional bodies. Plantlets will be distributed freely to only those who will send selfie with plant on WhatsApp and will take responsibility to grow and care the plant at their home and ready to spread awareness about its benefits in society through social media.

Posters were invited under five categories as follows:

1. Review article- Pharmacognosy and Pharmacology, Adulteration, Market Potential, Market formulations, Traditional importance, Cultivation and or conservation of *Tinospora cordifolia*
2. Research article on Well evaluated value added product/s of different part/s of *Tinospora cordifolia*

3. Poem (English/Hindi)
4. Creative Photographs/images of different parts of *Tinospora cordifolia* or Cultivation and or conservation activities
5. Handmade Drawing/Painting/Rangoli/Computerized Art

In **Giloy Poster Competition**, organized from 20 Nov. to 15 Dec. 2020 by Govt. College of Pharmacy, Amravati On the occasion of “59th National Pharmacy Week (NPW)”-2020, **total 98** poster entries all together in five categories received from **Maharashtra, West Bengal, Gujarat, Uttar Pradesh and Tamilnadu**. **83** entries found eligible and evaluated by Jury Members. Winners selected based on creativity, plagiarism and authenticity of presented information in poster. Winners received certificate and cash awards of **Rs. 5000, Rs. 3000, and Rs. 2000** for first, second, and third positions, respectively from each categories. In addition, Rs. 1000 given as consolation prize for few posters.

In **Giloy Quiz Competition**, organized on **11 Dec. 2020**, total **77** teams applied. 44 Teams found eligible. **37** Teams able to submit quiz within given period of time. Participants were from Maharashtra, West Bengal, Gujrat and Tamilnadu. The result of winning teams is declared based on score and time taken to submit online Google form quiz. All the participants awarded participation E-certificate and E-Brochure on Giloy awareness. Single E-Certificate awarded to team members and Mentor. Winning team leaders and their college mentor awarded Prize Amount through Bank account transfer. Winning teams received certificate and cash awards of **Rs. 5000, Rs. 3000, and Rs. 2000** for first, second, and third positions, respectively. In addition, Rs. 1000 given as consolation prize for one more winning team.



***Tinospora cordifolia* (Giloy) sapling (1000) Raising at GCOPA Campus**



*Tinospora cordifolia* (Giloy) Free sampling (1000) Distribution







## Selfie while Giloy Plantation







## Online Webinars

GCOPA *Institution Innovation Council (IIC)* (an Initiative of MHRD Innovation Unit), *Institute Entrepreneurship Development Cell (IEDC)* and *Career Guidance Cell (CGC)* arranged following webinars under National Innovation week. More than 200 participants from different pharmacy and life sciences colleges all over Maharashtra participated in each webinar.

<https://youtu.be/pESXULCHuRU>



Dr. Mugdha Potnis-Lele is Sr. Manager - Social Innovations at Venture Center. She is PhD in Health Sciences from University of Pune. At Venture Center, she is responsible for driving the Social Innovations and related activities and is responsible for providing technical mentoring for incubatees at Venture Center. Mugdha has been a Fellow of the Chevening Rolls Royce Science, Innovation, Policy and Leadership Programme (CRISP) at the Said Business School, University of Oxford, UK in 2016. In 2018 she has also been part of the Aritra Accelerator Program for Leadership in the Social Sector at IIM Bangalore with Phicus Solutions and Dr. Reddy's Foundation.

<https://youtu.be/Dkl2EIPr1eU>

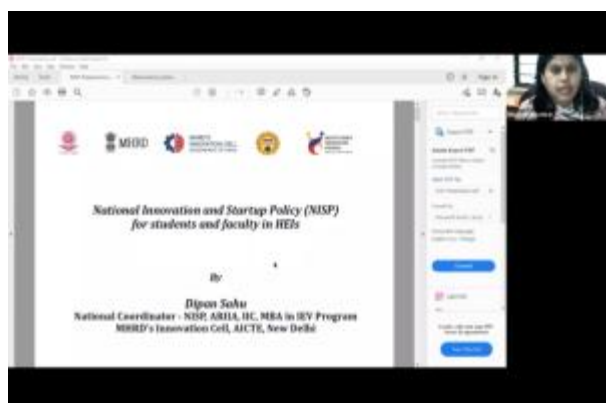


Dr. Hangarge Rajkumar Post-Doc from Katholieke University Leuven, Belgium (Europe), Former Research Scientist of Wockhardt Ltd. Manager: Lupin where Accomplished research on Molecule which is in Phase-III for Cancer treatment. Current working as Assistant Professor, Rayat Shikshan Sansthas Annasaheb Awate College, Manchar.

[https://youtu.be/T\\_EORbD-wE8](https://youtu.be/T_EORbD-wE8)



Ashutosh Swarnkar is Patent and Trademark Attorney, Directoris at BLI Consultancy Private Limited, Amravati.





**Govt. College of Pharmacy, Amravati**  
**Maharashtra**  
**National Innovation Week**  
**[26 Jan to 31 Jan 2021]**



**Topic**  
**Identifying IP Component**  
**at early stage of Innovation**

**Date and Time**  
**31<sup>st</sup> Jan 2021**  
**2 PM to 3 PM**

**Speaker**  
**Dr. Ashutosh Swarnakar**  
Patent and trade mark  
attorney.  
BLI Consultancy Pvt Ltd



**What will be covered in the talk:**

- Introduction-IPR
- How to identify Innovative idea in one's project/thesis?
- Why to protect idea by IPR?
- How and when to protect idea by IPR?
- How UG/PG Students can file patent?

**Objectives of Webinar**

Intellectual property issues often are among the most important considerations that a technology startup will encounter. A startup will face numerous issues involving developing a product, hiring qualified employees, raising capital, and more. With all of these issues, intellectual property can feel distracting, expensive, or contrary to the goals of just getting a product to market before someone else does. However, intellectual property is often the most valuable asset of a technology startup. Protecting intellectual property can be essential to obtaining venture capital funding or preventing competitors from unfairly competing with you.

**Who should attend:**

- Entrepreneurs and Innovators
- Scientists/ researchers
- Academics/ lecturers
- Students of science, engineering, pharmacy and any science-tech related fields

**Dr. Sharada Deore**  
**Associate Professor &**  
**Co-ordinator**  
Institute Entrepreneurship  
Development Cell (IEDC)  
Institution Innovation Council (IIC)  
Career Guidance Cell



**INSTITUTION'S  
INNOVATION  
COUNCIL**  
(Ministry of HRD Initiative)

**Dr. S. S. Khadabadi**  
**Principal**  
Institute Entrepreneurship  
Development Cell (IEDC)  
Institution Innovation Council (IIC)  
Career Guidance Cell



## Govt. College of Pharmacy, Amravati Maharashtra

National Innovation Week  
[26 Jan to 31 Jan 2021]



### Topic

Entrepreneurship and Innovation as  
Career Opportunity

### Date and Time

31<sup>st</sup> Jan 2021  
4 PM to 5 PM

### Speaker

Dr. Hangarge Rajkumar  
Principal Scientist &  
Director  
Squadron Life Sciences Pvt.  
Ltd.



### What will be covered in the talk:

- Problem identification and Solution development
- Proof of Concept validation and prototype development
- Qualities of Entrepreneur
- Planning, Management and Decision Making Approach
- Employee or Employer?

### Objectives of Webinar

The webinar intends to guide and promote students' and faculty driven innovations & start-ups. It will be instrumental in leveraging the potential of student's problem solving & entrepreneurial mind-set and promoting a strong intra and inter-institutional partnerships. It is to ensure maximum student should participate and go through pre-incubation process of Problem identification, Solution development, Proof of Concept validation and prototype development, business model and proposal development. It will Connect student entrepreneurs with incubate startups for internship, experience sharing and encourage participation of students in innovation and business plan competitions

### Who should attend:

- Entrepreneurs and Innovators
- Scientists/ researchers
- Academics/ lecturers
- Students of science, engineering, pharmacy and any science-tech related fields

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Associate Professor &  
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INSTITUTION'S  
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Dr. S. S. Khadabadi  
Principal

Institute Entrepreneurship  
Development Cell (IEDC)  
Institution Innovation Council (IIC)  
Career Guidance Cell



## Govt. College of Pharmacy, Amravati Maharashtra

National Innovation Week  
[26 Jan to 31 Jan 2021]

**Topic**  
Science-Tech  
Entrepreneurship and  
Funding Opportunities

**Date and Time**  
1<sup>st</sup> Feb 2021  
4 PM to 5 PM

**Speaker**  
Dr. Mugdha Potnis-Lele  
Sr. Manager - Social  
Innovations at Venture  
Center



### What will be covered in the talk:

- What is Science and Technology Entrepreneurship
- What are the funding opportunities for Science and Tech Startups
- Details of current funding calls like Biotech Ignition Grant, Prayas Grant, SPARSH grant, Fellowship calls etc.
- Insights on start-ups which were created with funding support from some such calls
- Tips and pointers for applying and writing a startup funding proposal.

### Objectives of Webinar

The primary aim of this awareness talk is to create & increase awareness about Science and Technology Entrepreneurship and important grant funding opportunities in the Science and Tech domain specific sectors being, biotech, Med-tech, healthcare, energy, environment, waste to value space. The focus of this event is also to guide and provide pointers to entrepreneurs and start-ups about various grants and funding programs, the application process, funding process-flow, guidance on writing winning proposals etc.

### Who should attend:

- Entrepreneurs and Innovators
- Scientists/ researchers
- Academics/ lecturers
- Students of science, engineering, pharmacy and any science-tech related fields

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Institution Innovation  
Council (IIC)  
Career Guidance Cell



# GCOPA-Nss UNIT

## Activities



**NOT ME BUT YOU**



कोवीड-१९ चा प्रादुर्भाव लक्षात घेता संस्थेचे प्राचार्य डॉ. एस. एस. खडबडी यांच्या संकल्पनेतून 'सॅनिटायझर तयार करून गरजूंना वाटप' करण्याचा कार्यक्रम साकार करण्यात आला. यासाठी महाविद्यालयात उपलब्ध असलेल्या सामुग्रीचा वापर करून डॉ. एस. एस. बंगाळे यांनी महाविद्यालयातील प्रयोगशाळेत साधारणतः ५० ली. सॅनिटायझर एप्रिल- डिसेंबर-२०२० या दरम्यान तयार केले व ते विविध बाटल्यांमध्ये भरून महाविद्यालयाच्या रासेयो पथकाद्वारे व शिक्षकेतर कर्मचाऱ्यांमार्फत शासकीय कार्यालये व गरजूंना मोफत वाटण्यात आले.



विद्यापीठाच्या रासेयो विभागाच्या निर्देशानुसार तसेच शासनाच्या जारी केलेल्या मार्गदर्शक तत्वानुसार दि. २१ जून २०२१ रोजी जागतिक योग दिवस साजरा करण्यात आला. सर्व स्वयंसेवकांना जागतिक योग दिनानिमित्त Yoga@Home and Yoga with family या तत्वानुसार साजरा करण्याबाबत निर्देशित करण्यात आले व त्यांना छायाचित्र पाठविण्याबाबत सांगण्यात आले. त्यानुसार स्वयंसेवकांनी दिलेल्या सूचनांचे पालन करून योग दिवस साजरा केला.



वृक्ष लागवड मोहिमेअंतर्गत दि. ०१/०७/२०२० रोजी महाविद्यालयाच्या रासेयो विभागातर्फे वृक्ष लागवड व वृक्ष संवर्धन कार्यक्रम घेण्यात आला. यावेळी महाविद्यालयाचे प्राचार्य डॉ. एस. एस. खडबडी यांच्या हस्ते वृक्ष लागवड करून कार्यक्रमाचे औपचारिक उदघाटन करण्यात आले. कोवीड-१९ चा प्रादुर्भाव लक्षात घेता महाविद्यालयातील शिक्षक व शिक्षकेतर कर्मचारी यांच्या वतीने सुमारे ३० औषधी व विगर औषधी वनस्पती कलमांची लागवड करण्यात आली. यावेळी सर्व अधिकारी व कर्मचारी यांना वर्षभर वृक्षांना पाणी

घालण्याचे व जोपासण्याची जबाबदारी वाटून देण्यात आली. कार्यक्रम यशस्वीतेसाठी रासेयो कार्यक्रम अधिकारी डॉ. कुंदन पाटील, महिला कार्यक्रम अधिकारी डॉ. नाझमा इनामदार, डॉ. एस. एल. देवरे व इतर शिक्षक व शिक्षकेतर कर्मचारी यांनी सहकार्य केले. तसेच रासेयो स्वयंसेवकांना आपापल्या परिसरात प्रत्येकी ५ झाडे लावण्याबाबत सूचित करण्यात आले.



दि. ०२/१०/२०२० रोजी महाविद्यालयात महात्मा गांधी जयंती व लालबहादूर शास्त्री जयंती साजरी करण्यात आली. महाविद्यालयाचे प्राचार्य डॉ. एस. एस. खडबडी यांचे हस्ते म. गांधींच्या प्रतिमेस पुष्पहार अर्पण करून अभिवादन करण्यात आले. त्यानंतर शिक्षक व शिक्षकेतर कर्मचारी यांना कोविड-१९ च्या सूचनांचे पालन करून आपापल्या विभागात तसेच मदविद्यालय परिसरात 'स्वच्छता अभियान' राबविले.

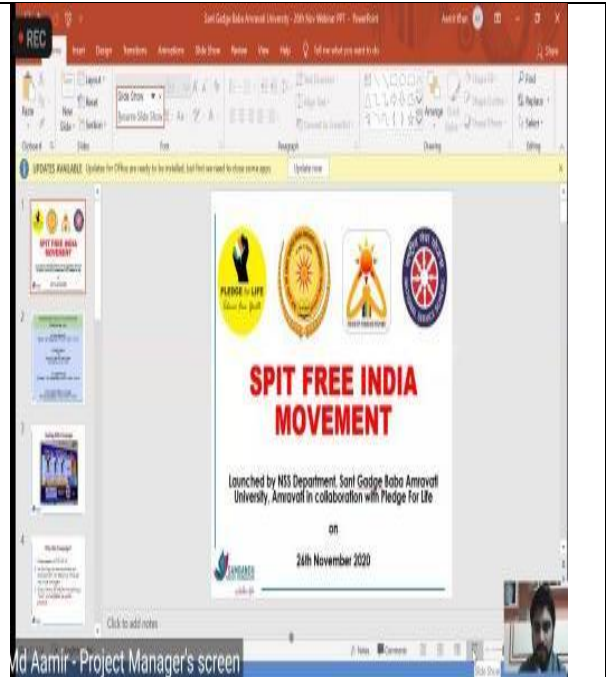


आज दि. १५ ऑक्टोबर २०२० रोजी महाविद्यालयात डॉ. ए. पी. जे. अब्दुल कलाम यांची जयंती साजरी करण्यात आली. महाविद्यालयाचे प्राचार्य डॉ. एस. एस. खडबडी यांचे हस्ते डॉ. ए. पी. जे. अब्दुल कलाम प्रतिमेस पुष्पहार अर्पण करून अभिवादन करण्यात आले. तसेच शासन निर्णयानुसार आजचा दिवस 'वाचन प्रेरणा दिन' म्हणून साजरा करण्यात आला. त्यानंतर रासेयो कार्यक्रम अधिकारी डॉ. कुंदन पाटील यांनी सर्व शिक्षक व शिक्षकेतर कर्मचारी यांच्यासमवेत डॉ. ए. पी. जे. अब्दुल कलाम यांच्या आत्मचरित्राचे सामूहिक वाचन केले. यावेळी कोविड-१९ च्या प्रतिबंधात्मक सूचनांचे काटेकोर पालन करण्यात आले.



आज दि. ३१/१०/२०२० रोजी महाविद्यालयात "राष्ट्रीय एकता दिवस" साजरा करण्यात आला. कार्यक्रमाची सुरुवात कार्यालयात महाविद्यालयाच्या प्राचार्य डॉ. एस. एस. खडबडी यांच्या हस्ते सरदार वल्लभभाई पटेल व श्रीमती इंदिरा गांधी यांच्या प्रतिमेचे हार अर्पण करून पूजन करण्यात आले. यांनंतर उपस्थित सर्व शिक्षक वर्ग व इतर कर्मचारी यांनी प्रतिमेचे पूजन केले. तसेच उपस्थित सर्व शिक्षक वर्ग व इतर कर्मचारी यांनी राष्ट्रीय एकता दिवसानिमित्त कोविड-१९ च्या सूचनांचे पालन करून महाविद्यालयाच्या प्रांगणात सामूहिक एकता शपथ घेतली. याअंतर्गत रासेयो कार्यक्रम अधिकारी डॉ. कुंदन पाटील यांनी रासेयो स्वयंसेवकांना ऑनलाईन प्रणालीद्वारे सामूहिक एकता शपथ दिली व सरदार वल्लभभाई पटेल यांची जयंती यशस्वीरित्या साजरी केली. तसेच दि. २७/१०/२०२० ते ०२/११/२०२० या दरम्यान "दक्षता जनजागृती सप्ताह" साजरा करण्यात आला. याप्रसंगी रासेयो कार्यक्रम अधिकारी डॉ. कुंदन पाटील यांनी महाविद्यालयातील अधिकारी व कर्मचारी यांना महाविद्यालयाचा प्रांगणात भ्रष्टाचार विरोधी शपथ दिली.





दि. २६ नोव्हेंबर २०२० रोजी महाविद्यालयात 'संविधान दिवस' साजरा करण्यात आला. याप्रसंगी डॉ. बाबासाहेब आंबेडकर यांच्या प्रतिमेचे पूजन करून भारत देशाच्या संविधानाच्या प्रस्ताविकेचे सामूहिक वाचन महाविद्यालयाच्या प्रांगणात कोविड-१९ च्या सूचनांचे पालन करून करण्यात आले. याअंतर्गत रासेयो कार्यक्रम अधिकारी डा. कुंदन पाटील यांनी रासेयो पथक स्वयंसेवकांसोबत संविधानाच्या प्रस्ताविकेचे ऑनलाईन प्रणालीद्वारे सामूहिक वाचन केले व संविधानाचे महत्व विशद केले. तसेच महाविद्यालयाच्या रासेयो स्वयंसेवकांनी विद्यापीठाच्या रासेयो विभागाद्वारा आयोजित 'SPIT FREE INDIA MOVEMENT' या विषयावरील वेबिनार मध्ये सहभाग घेतला.





राज्यात रक्ताचा तुटवडा व कोरोना रोगाचा प्रादुर्भाव लक्षात घेता रक्तदान करण्याबाबत जनजागृती करावी असे रासेयो विभागाने निर्देशित केले होते. त्याअनुषंगाने महाविद्यालयाच्या रासेयो पथकाद्वारे रक्तदान जनजागृती व कोरोना प्रतिबंधात्मक सूचनांची जनजागृतीचे फलक छापण्यात आले व ते महाविद्यालय परिसर, कठोरा नाका, रंगोली लॉन परिसर आणि आराधना चौक याठिकाणी लावण्यात आले. अशा प्रकारे संत गाडगे बाबा स्नेहानुबंध अभियान यशस्वीरीत्या राबविण्यात आले.



दि. २३/०१/२०२१ रोजी महाविद्यालयात नेताजी सुभाष चंद्र बोस यांची जयंती मोठ्या उत्साहात साजरी करण्यात आली. कार्यक्रमाची सुरुवात कार्यालयात महाविद्यालयाच्या प्राचार्य डॉ. एस. एस. खडबडी यांच्या हस्ते नेताजी सुभाष चंद्र बोस यांच्या प्रतिमेस हार अर्पण करून पूजन करण्यात आले. यानंतर उपस्थित सर्व शिक्षक वर्ग व इतर कर्मचारी यांनी कोविड-१९ च्या सूचनांचे पालन करून प्रतिमेचे पूजन केले. तसेच महाविद्यालयाच्या रासेयो स्वयंसेवकांनी विद्यापीठाच्या रासेयो विभागाद्वारा आयोजित 'नेताजी सुभाष चंद्र बोस: एक विचारधारा' या विषयावरील वेबिनार मध्ये सहभाग घेतला.



महाराष्ट्र शासनाच्या आदेशानुसार महाविद्यालयात दि. २५/०१/२०२१ रोजी राष्ट्रीय मतदार दिवसाचे औचित्य साधून महाविद्यालयातील सर्व प्राध्यापक वृंद व कर्मचारी वर्ग यांना मतदानाबाबत महाविद्यालयाच्या प्रांगणात कोविड-१९ च्या सूचनांचे पालन करून शपथ दिली.

महाराष्ट्र शासन आरोग्य सेवा अंतर्गत आरोग्य सेवा(कुष्ठरोग), अमरावती यांचे द्वारा दि. ३०/०१/२०२१ रोजी महात्मा गांधी यांच्या पुण्यतिथी तसेच राष्ट्रीय कुष्ठरोग दिनाच्या निमित्ताने कुष्ठरोग जनजागरणाकरिता एक लघुपट(Shortfilm) बनवून प्रदर्शित करण्यात आली व त्यावर आधारित प्रश्नमंजुषा देण्यात आली. तसेच त्याचा सर्वदूर प्रसार करण्याकरिता महाविद्यालयाच्या रासेयो स्वयंसेवकांना प्रेरित करण्यात आले जेणेकरून लोकांमध्ये कुष्ठरोगबाबत जागरूकता निर्माण व्हावी. यात रासेयो स्वयंसेवकांनी महाविद्यालयाच्या जवळपास ३००-३५० विद्यार्थ्यांपर्यंत सादर लघुपट पोहचविण्यात आला व यातील बऱ्याच विद्यार्थ्यांनी प्रश्नमंजुषेचे उत्तरे देखील आयोजकांना पाठविली.



जागतिक महिला दिनानिमित्त महाविद्यालयात एक दिवसीय कार्यशाळेचे आयोजन दि. ०९/०३/२०२१ रोजी करण्यात आले. या एक दिवसीय कार्यशाळेचे उदघाटन महाविद्यालयाचे प्राचार्य डॉ. एस. एस. खडबडी यांचे हस्ते करण्यात आले. या कार्यशाळेचे प्रास्ताविक महिला कार्यक्रम अधिकारी डॉ. नाजमा इनामदार यांनी केले व कार्यशाळेला प्रमुख मार्गदर्शिका म्हणून प्रा. डॉ. शामली दिघडे उपस्थित होत्या. याप्रसंगी डॉ. दिघडे यांनी भारतीय महिला: काल, आज आणि उद्या या विषयावर विस्तृत चर्चा केली. सदर कार्यशाळा ऑनलाईन प्रणालीद्वारे घेण्यात आली. कार्यशाळेचे सूत्रसंचालन रासेयो स्वयंसेविका कु. तेजल उमप हिने तर आभार प्रदर्शन कु. मोनिका फुसे हिने केले. कार्यशाळेत १०० पेक्षा जास्त विद्यार्थ्यांनी सहभाग नोंदविला



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भारतीय स्वातंत्र्याची ७५ वर्ष पूर्ण होत असल्याबाबत 'आझादी का अमृतमहोत्सव' हा उपक्रम दि. १२/०३/२०२१ ते ०५/०४/२०२१ या कालावधीत रासेयोमार्फत राबविण्याबाबत शासनाद्वारे निर्देशित करण्यात आले होते त्यानुसार दि १२/०३/२०२१ रोजी 'भारताचा स्वातंत्र्यलढा' या विषयावर श्री. नितीन पवित्रकार यांचे व्याख्यान ऑनलाईन प्रणालीद्वारे आयोजित करण्यात आले होते. याप्रसंगी श्री. पवित्रकार यांनी. भारतीय स्वातंत्र्यात योगदान असलेल्या स्वातंत्र्यवीरांबद्दल माहिती दिली तसेच स्वातंत्र्योत्तर भारत या विषयावरदेखील प्रकाश टाकला. या कार्यक्रमाचे प्रास्तविक रासेयो कार्यक्रम अधिकारी डॉ. कुंदन पाटील यांनी केले.

आझादी का अमृतमहोत्सव या उपक्रमांतर्गत दि. १६/०३/२०२१ रोजी 'भारताचे सैन्यदल' या विषयावर ऑनलाईन प्रणालीद्वारे चर्चासत्राचे आयोजन करण्यात आले होते. याप्रसंगी कॅप्टन मुकुंद मोहोड व माजी सैनिक श्री सुरेश वानखडे उपस्थित होते. या चर्चासत्राचे उदघाटन डॉ. एस. एस. खडबडी यांचे हस्ते करण्यात आले. याप्रसंगी कॅप्टन मोहोड यांनी भारतीय सैन्यदलाचे बांगलादेश मुक्तिसंग्रामातले योगदान तसेच युद्धसमयी सैन्यदलातील तयारी या विषयावर विद्यार्थ्यांना माहिती दिली. तसेच श्री वानखडे यांनी कारगिल युद्धातील रोमहर्षक आठवणी जागृत केल्या. या चर्चासत्राचे आभार प्रदर्शन रासेयो कार्यक्रम अधिकारी डॉ. कुंदन पाटील यांनी केले.

आझादी का अमृतमहोत्सव' या उपक्रमांतर्गत दि. २४/०३/२०२१ ते २८/०३/२०२१ या कालावधीत रासेयोमार्फत भारताचा स्वातंत्र्यलढा या विषयावर महाविद्यालयीन स्तरीय निबंधस्पर्धा ऑनलाईन प्रणालीद्वारे आयोजित करण्यात आली होती. या स्पर्धेत महाविद्यालयातील २९ स्पर्धकांनी आपले निबंध सादर केले. त्यांतून तीन उत्कृष्ट निबंधांना प्रमाणपत्र देऊन गौरविण्यात आले.

# Academic Achievements



# GCOPA Proud Moments

**Hearty Congratulations for Being Selected for**



**Indian National Science Academy  
Summer Research Fellowship  
(INSA SRFP - 2021)**



**Rushikesh Aswar**  
4<sup>th</sup> Year Pharm D.



**Hearty Congratulations for  
Securing  
All India Rank Three  
in GPAT Examination  
Rahul R. Patil  
GPAT AIR-03**



# GCOPA Alumni Achievement



B.Pharm Alumni  
**Dipali Sonawane**

Batch 2019  
received

"Gold Medal"

in MS program of  
subject

**Pharmaceutical  
Analysis** from  
National Institute of  
Pharmaceutical  
Education and  
Research [**NIPER**],  
Ahmadabad

## *GPAT- Qualifiers (2021)*



**Rahul R Patil—357  
AIR-03**



**Narendra R Kamble—269  
AIR-98**



**Nilesh P Gawande—243  
AIR-269**



**Sneha P Kale—240  
AIR-298**



**Dnyaneshwar K Alhat--232.  
AIR-408**



**Yogesh D Chainani—229  
AIR-449**



**Abhay R Rathi—228  
AIR-468**



**Siddhi S Malani—226  
AIR-505**



**Rohan V Dhomane—221  
AIR-594**



**Rahul T Haramkar—216  
AIR-705**



**Nilam R Bundeale—198  
AIR-1205**



**Prashant G Borkar—198  
AIR-1205**



**Amit A Dahiwal—194  
AIR-1362**



**Anjan A Jaiswal—193  
AIR-1404**



**Dipali A Korde—187  
AIR-1698**



**Sunil S Godwe—186  
AIR-1746**



**PawanAmbalke—184  
AIR-1851**



**Rajesh S Lanke—183  
AIR-1914**



**Pankaj S Joshi—162**  
**AIR-3469**



**Ekta Hole—159**  
**AIR-3797**



**Swarupa M Wanole-157**  
**AIR-3997**



**Prajwal A Amzare--179**  
**AIR-2137**



**Sneha K Gawali—172**  
**AIR-2625**



**IfraNaaz—165**  
**AIR-3182**



**Mukta Rankhamb—153**  
**AIR-4462**



**Rohan B Wadhawe—140**  
**AIR-6084**



**Vinod K Tapre—133**  
**AIR-7351**



**Snehal Dongare-116**  
**AIR-11072**



**Vaibhav R Kakade-114**  
**AIR-11690**



**Gajanan Soyam—100**  
**AIR-15796**



**Rupesh Doifode-75**  
**AIR-25422**



**Monali M Sawarbande-56**  
**AIR-33441**

### **ATMA Feb-2021**



**Roma Samarth—618/800**






**Rajesh Lanke—602/800**

## *NIPER - Qualifiers (2021)*

<b>Name</b>	<b>Rank</b>
Rahul Patil	56
Sagar Hade	98
Naredra Kamble	161
Abhay Rathi	321
Sunil Godwe	456
Dhaneshwar Alhat	490
Sweta kale	514
Prajwal amazare	684
Anjali Jaiswal	770
Prashant Borkar	793
Dipali Korde	875
Siddhi Malani	962
Yogesh Chainani	995
Amit Dahiwal	1209
Nilam Bundeale	1346
Nilesh Gawande	1376
Sneha Gawali	1429
Pankaj Joshi	1658
Snehal Dongare	1761
Rajesh Lanke	1790
Vinod Tapre	2164
Swarupa Wanole	2212
Rohan wadhawe	2317
Mukta Rankhamb	2405
Vaibhav Kakade	2853
Monali Sawarbande	2847

# B.Pharm Toppers




## B.Pharm Sem-I

I	II	III
		
<b>Shubham Ramdham-</b> <b>75.70%</b>	<b>Ashutosh Garad</b> <b>71.56%</b>	<b>Aditi Wadikar</b> <b>71.3 1%</b>




## B.Pharm Sem-II

I	II	III
		
<b>Shubham Ramdham</b> <b>82%</b>	<b>Parag Idhol</b> <b>81.65%</b>	<b>Aditi Wadikar</b> <b>81.38%</b>




## *B.Pharm Sem-III*

I	II	III
		
<b>Vaishali Bhone</b> 75.66%	<b>Samruddhi Chavhan</b> 74.83%	<b>Vaishali Dhuppad</b> 74.33%


## *B.Pharm Sem-IV*

I	II	III
		
<b>Vaishali Dhuppad</b> 80.42%	<b>Sukanya Mozarikar</b> 79.42%	<b>Samruddhi Chavhan</b> 73.85%


## *B.Pharm Sem-V*

I	II	III
		
<b>Nilam Bunde</b> <b>74.76%</b>	<b>Ifra Naaz</b> <b>74.61%</b>	<b>Nilesh Gawande</b> <b>74.46%</b>




## *B.Pharm Sem-VI*

I	II	III
		
<b>Nilesh Gawande</b> <b>82.93%</b>	<b>Nilam Bunde</b> <b>80.4%</b>	<b>Rahul Patil</b> <b>80.26%</b>

## *B.Pharm Sem-VII*

I	II	III
		
<b>Samiksha More</b> 79.20%	<b>Mrudul Harne</b> 73.30%	<b>Nikhil Dandge</b> 72.70%

## *B.Pharm Sem-VIII*

I	II	III
		
<b>Mrudul Harne</b> 87.70%	<b>Arvind Dhole</b> 86.93%	<b>Sopan Sanap</b> 86.59%

# Pharm.D Toppers

## Pharm.D First Year



Kaivalya Rudre  
Rank 1<sup>st</sup> 89%



Dhanashree Nadedkar  
Rank 2<sup>nd</sup> 87.90%



Ankush Racherlwar  
Rank 3<sup>rd</sup> 86.30%

## Pharm.D Second Year



Gauri Uplenchawar  
Rank 1<sup>st</sup> 86.5%



Praduman Pawar  
Rank 2<sup>nd</sup> 82.89%



Pragati Rathi  
Rank 3<sup>rd</sup> 80.4%

## Pharm.D Third Year



Prajakta Nidhankar  
Rank 1<sup>st</sup> 85.54%



Shruti Iyengar  
Rank 2<sup>nd</sup> 84.73%



Tejal Umap  
Rank 3<sup>rd</sup> 82.4%

### Pharm.D Fourth Year



Pooja Panjawani  
Rank 1<sup>st</sup> 79.4%



Prachi Khandelwal  
Rank 2<sup>nd</sup> 77.7%



Puja Saynere  
Rank 3<sup>rd</sup> 77.6%

### Pharm.D Fifth Year



Sanket Kadam  
Rank 1<sup>ST</sup> 90.4%



Surabhi Dhupad  
Rank 2<sup>ND</sup> 90%



Sujay Bobade  
Rank 3<sup>rd</sup> 89.6%

# M Pharm Toppers

## M Pharm Final Semester

### Pharmacognosy and Phytochemistry



Amreen Alim Qureshi  
Score-8.12  
First Topper



Sayali Vijay Jadhav  
Score-8.07  
Second Topper



Avantika Ranjit Shirke  
Score-8.00  
Third Topper

### M Pharm Quality Assurance



Priya Devidas Yannawar  
Score-8.13  
First Topper



Sumit Dhanaraj Jaiswal  
Score-7.85  
Second Topper



Anur Digambar Farkode  
Score-7.75  
Third Topper

## M Pharm Second semester

### Pharmacognosy and Phytochemistry



Pranali Devidas Shahare  
Score-8.62  
First Topper



Kirti N. Deshmukh  
Score-8.31  
Second Topper



Shivani S. Sakhare  
Score-8.31  
Second Topper



Aditya R. Muley  
Score-8.15  
Third Topper



Ankita Ashok Mankar  
Score-8.15  
Third Topper



Jyotsana S. Malunekar  
Score-8.68  
First Topper



Ganesh V. Dhakne  
Score-8.31  
Second Topper



Kamlesh R. Kulkarni  
Score-8.15  
Third Topper





#coronavirus  
#combatcovid19  
#otherdiseases

**AVOID  
EXPOSURE**



● Stay at home.  
Keep at least 1 metre  
apart from others.