



Review Article

CURRENT SCENARIO OF COVID19 OUTBREAK IN ANDHRAPRADESH & TELANGANA

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Article History:	Abstract
Received on: 15-05-2020 Revised on : 11-07-2020 Accepted on : 18-07-2020 Keywords:	The World Health Organization declared the 2019–2020 COVID Emerging coronaviruses are constant global public health threats to society Governments are under increased pressure to stop the outbreak of a global health emergency. In this situation, preparedness, transparency, and sharing of information are crucial. Multiple ongoing clinical trials are conducted for the development of vaccines and antivirals against CoVs. Up to date, there is no specific treatment proven effective against this COVID19. In addition, no vaccine has been licensed by the WHO to prevent MERS-CoV infection thus far. This spillover event is pandemic and a Public Health Emergency of International Concern. Due to its emerging cases day by day there is a need for everyone to act responsibly by taking preventive measures like wearing the masks and avoiding unnecessary outings as possible. There are certain reasons not to get panic regarding a situation like We to know why at it is - we had been identified the virus; We know how to detect-there had many tests to identify; Most cases are mild -about 81% of cases are mild and high recovery rate is seen; Symptoms are mild in young; The virus can be destroyed on the surface; Vaccines are in progress; Many drugs are effective in treating the COVID19. Voluntary reporting of the symptoms helps to prevent the spread of disease. this review details about the origin of the virus, introduction to the anatomical features and pathology, clinical manifestations, its diagnostics, treatment, preventive measures to health workers, and to public.
Clinical trials, COVID19, Public Health Emergency, WHO, Symptoms, health workers and to public.	

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Doi: <https://doi.org/10.46956/ijihd.vi.94>**INTRODUCTION**

Corona virus is a single stranded, enveloped RNA virus that came from the nidovirales order. This virus has many groups such as alpha, beta, gamma, delta [1]. These viruses are phenotypically and genotypically different [12]. Due to its spike like projections it was given a name corona [11]. These viruses are zoonotic pathogens they originate in wild

animal and spill over from wild life into humans causing disease [2]. The origin of virus is not known but the newly diagnosed cases related to the human seafood whole sale market. Researchers collected 585 environmental samples from human market in wuhan, hubei province on 12 january 2020. These samples found to contain corona strains [14]. The most unwanted characteristic feature of the virus is that its highly contagious spread, of the virus to 164 countries in a span of 3 months [1]. Avian species are deemed as genetic source delta and gamma viruses. The combining work of ICMR and NIV trying to identify the root cause by collecting extensive data from the bats. The corona virus originated in bats and was transmitted to humans through yet

unknown intermediary animals in wuhan , hubei province in December 2019 [2]. The corona virus shares 95% homo-logy with bat virus and 70% with SARS [4]. Four corona virus namely HKU1,NL63,229E, and OC43 have been in circulation in humans and generally cause mild respiratory disease [2]. On February 11, 2020 WHO(World Health Organization) named corona virus as COVID-19.After world war II COVID19 is the biggest public health crises that had been effecting the economy world wide [4]. WHO announced COVID19 as pandemic in 11 march, 2020 [1]. And the genology of virus is order nidovirales, family coronaviridae, sub family coronavirinae,genus HCoV 229E [9].

HISTORY

Corona virus was first identified in mid 1930 and human corona virus in 1960 as cold.About 500 patients are noted in canada in 2001 with flu like symptoms [7]. The first decades of the 21 century witnessed an exponential increase in number of corona viruses, that have been identified along with the increase in sequencing of the genomes. This was evidenced by arousal of SARS in 2003 and spreaded 30 countries leading to approximately 800 deaths [6]. Another virus strain identified in 2012 named as MeRs.

Points of difference	COVID 19	MeRs CoV	SARS CoV
Date of first case origin	December 2019	June 2012	November 2002
Location of first detected case	Wuhan, china	Jeddah ,saudi arabia	Guang dong , china
Range of age in years	40	56(14-94)	39(1-91)
Confirmed cases	12,810,169	2494	8096
Mortality (no of deaths)	566,598 upto July13	858	744

CLINICAL MANIFESTATIONS

Symptomatic transmission means transmission from patients with symptoms to normal person .Many studies like epidemiological and virological studies states transmission by symptomatic people to others

by close contact through respiratory droplets [12]. Studies such as clinical,virological, biochemical suggests that shedding of SARS CoV-2 is more in the upper respiratory tract, which leads to symptoms related to nose and throat [19]. Most of the infected persons experience fever(83-99) ,cough(59-82) and fatigue (44-70) [12]. Anorexia ,shortness of breath is seen at 11-30% approximately. Some other non specific symptoms include sore throat ,nasal congestion ,head ache ,nausea, vomiting . some patients experience sputum production, hemoptysis ,anosmia and ageusia [10]. At severe condition some patients experience head ache ,dizziness, vomiting, shortness of breath, swollen glands ,excess fluid accumulation between pleura of the lungs, leucocytosis, lymphocytosis, abnormal gas filled spaces in the lungs, consolidation and crazy paving patterns [23]. COVID19 patients rarely develop the intestinal symptoms like diarrhoea(20-25) [20]. Men are prone to affected but no evidence are noted.[55] Complications include sepsis and other organ failure include altered mental status, difficult in breathing, low O₂ saturation, reduced urine output, fast heart rate, cold extremities and skin mottling.

DIFFERENT SYMPTOMS VARIOUS STAGES

Mild	Moderate	Severe
Dry cough, mild fever, nasal congestion, sorethroat, head ache, muscle pain, malaise, dyspnea.	Cough, shortness of breath, tachypnea, some individuals show no specific signs.	Acute respiratory syndrome severe pneumonia,sepsis, septic shock,respiratory distress,RNAemi a, multiorgan failure.

MECHANISM OF PATHOGENESIS

ACE -2 (angiotensin converting enzyme) enzyme is found on the surface of organs like heart, lungs ,kidney and arteries. ACE is used to degrade the angiotensin -II peptide which acts as vasodilator. SARS CoV -2 binds to receptor of ACE which mediates the virus entry to the host cells via plasma membrane or endocytosis by releasing protease. By the release of protease the immune cells activate and secrete chemokines, inflammatory cytokines into the endothelial cells of the pulmonary arteries thus leading to the signs and symptoms [12].

TRANSMISSION

Main transmission is by large droplets generated during coughing and sneezing by persons with symptoms. Not only symptomatic people but also asymptomatic person without significant clinical features. Patients are infectious even after clinical recovery. The infected people droplets spread up to 1-2 metres on the surfaces of the utensils and viable to 9 days without sanitation and can lead to further infection. Post natal transmission is noted [13]. Transmission through the ocular surface had been reported. There are some reports regarding transmission by aerosol contact with conjunctiva. There been reports of conjunctivitis as first most symptoms [23]. More transmission occurs in four situations.

1. Individual households
2. Schools, colleges and universities
3. Physical work places and
4. Public places and communities where people gather [17]. Airborne transmission occur when smaller respiratory particles in the air for prolonged period. Viral particles are more absorbed in conjunctiva [22].

DIAGNOSIS

Specified diagnosis by specific molecular test on respiratory samples (throat/naso pharyngeal swab/sputum/endo tracheal aspirate and broncho alveolar lavage). Virus is seen in faeces and in blood with severe infected patient. Other non specific tests on WBC (lymphopenia). The CRP and ESR are mildly high. Other tests include ALT/AST, prothrombin time, creatinine, D-dimer, CPK, LDH are elevated indicating severe disease condition. Chest X-ray show infiltrates. CT scan is accurate and specific by showing ground glass opacities and sub segmental consolidation [34]. The standards for diagnosis is made by the detection of the viral RNA by real time polymerase chain reaction from a nasopharyngeal swab or sputum sample [14].

RT-PCR was chosen as the method to identify HCoV as been shown to more sensitive than either serology or culture techniques.[16] Throat swabs are relatively invasive, induce coughing and cause bleeding. Occasionally may increase the risk for health care workers [34]. Two consecutive negative RT-PCR to be obtained before discharge [15].

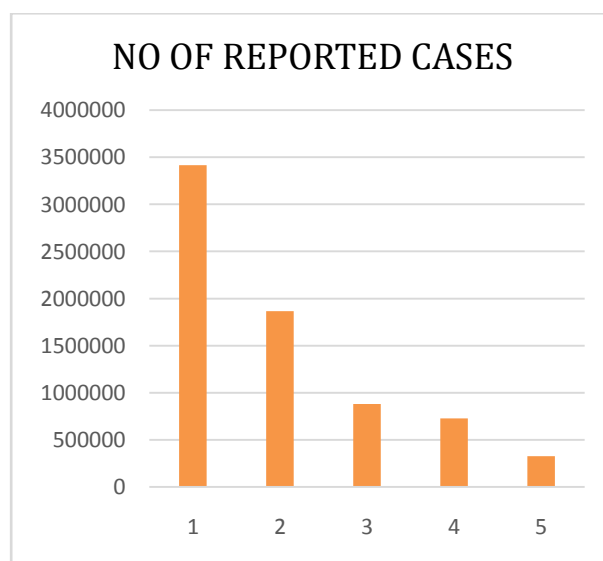
TREATMENT

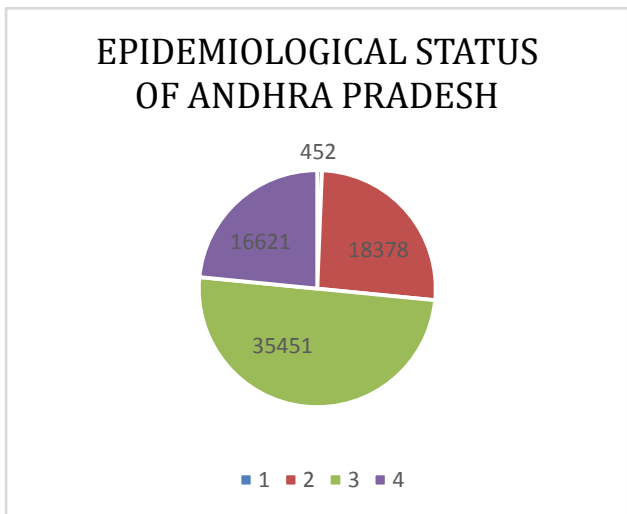
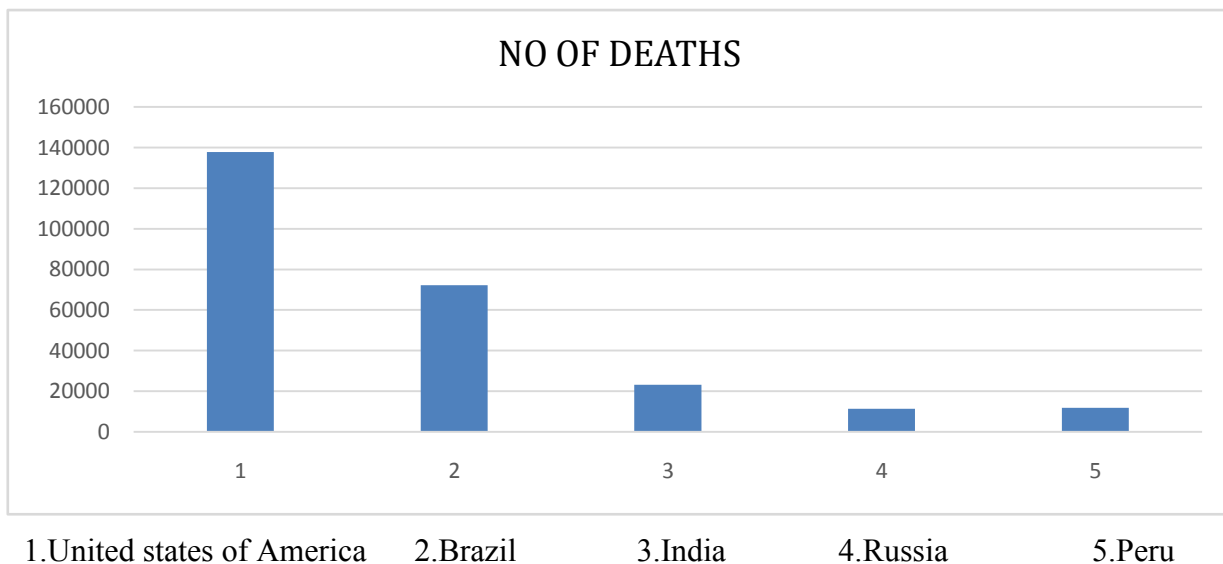
The most first step towards treatment is to ensure adequate isolation by preventing the transmission to others. The main principles are maintaining hydration, nutrition and controlling signs and

symptoms [2]. There are wide range of antivirals that are included in the latest guidelines from National Health Commission including the interferon, lopinavir, ritonavir and antimalarial drugs like chloroquine, angiotensin receptor blockers like losartan have been recommended [1]. Antiviral remdesivir been used for prophylaxis [5]. The drug that is recommended in china and Russia is arbidol of antiviral class. In patients with hypoxia therapy include provision of oxygen through nasal prongs, face masks, high flow nasal cannula or non invasive ventilation are used. Intravenous immunoglobulin therapy is used in the 27% of patients [19]. Oxygen and IV fluids supportive care and antibiotics for secondary infection is recommended by WHO [10] [33]. Add the drugs of lopinavir or ritonavir who met the criteria of hypo tension, organ dysfunction and high risk group age like >60 years of age, diabetes mellitus, renal failure, hepatic failure and immune compromised persons [9]. Corticosteroids is commonly used as an immunomodulators for the inflammatory cytokines to achieve immune homeostasis [21]. Interferon, IV gamma globulin and thymosin are used to boost immunity [6]. Different studies conducted on different regimens of treatment for various groups of population [1].

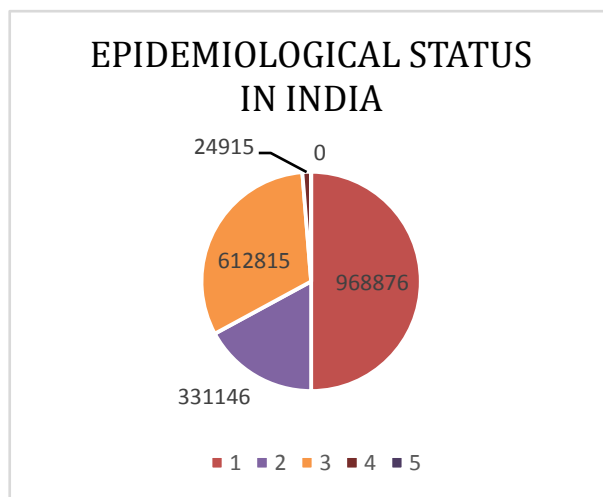
EPIDEMIOLOGY

Different countries are trying to fight against the COVID 19. The exponential increase in the cases day by day. In the six months from the origin of virus cases reported are 12,810,169 and number of deaths are 566,598 and number of recovered cases are 5,820,587 up to July 13, 2020. Mostly affected are United states of America, Brazil, India, Russia and the Peru of south America as the ascending order of cases reported.





- 1.Total number of deaths
- 2.Recovered cases
- 3.Total no of cases
- 4.Total active cases



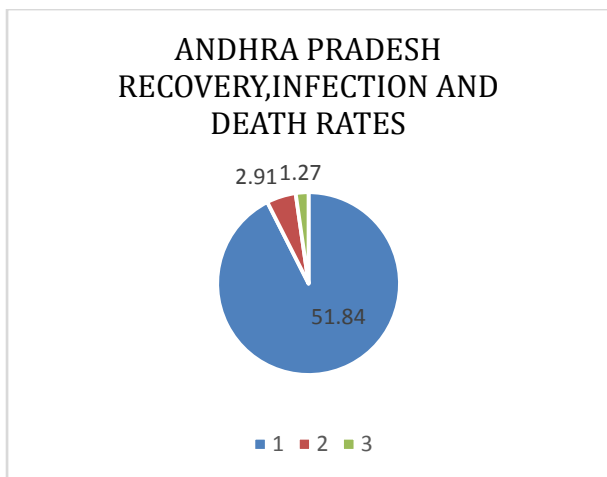
- 1.Total confirmed cases
- 2.Active cases
- 3.Recovered cases
- 4.Total number of deaths

EPIDEMIOLOGY OF COVID 19 IN INDIA

The first case of the corona virus was reported on the January 30 of this year. India is currently the largest number of confirmed cases in Asia, and has the third highest cases in the world. India's case fatality rate is relatively lower at 2.80% against the globe of 4.7% at month of July. A total of 28 states only the six cities account for the half of all reported cases in country like Mumbai, Delhi, Ahmedabad, Chennai, Pune and Kolkata. On June 10, India recovered extended active cases for the first time reducing 49% of total infections. Case fatality rate is calculated by dividing the number of deaths reported and number of confirmed cases and multiplying with 100.

EPIDEMIOLOGICAL STATUS OF ANDHRA PRADESH

The first case of COVID-19 was reported on 12 March 2020 in Nellore district who has a travel history of Italy. It has total cases of 35451 at total of which 2444 belongs to other states and 432 from other countries. Andhra Pradesh ranks the 10th position in more Corona cases in India. Death rate is less compared to total death rate of India. According to the Herald Deccan Andhra Pradesh has highest number of COVID-19 tests conducted per million population. It conducted 12,17,963 tests of total and about the 22808 tests are conducted per million population.



- 1.Recovery rate in %
- 2.infection rate in %
- 3.Death rate in %

STRATEGIES FOLLOWED BY AP GOVERNMENT FOR COVID19

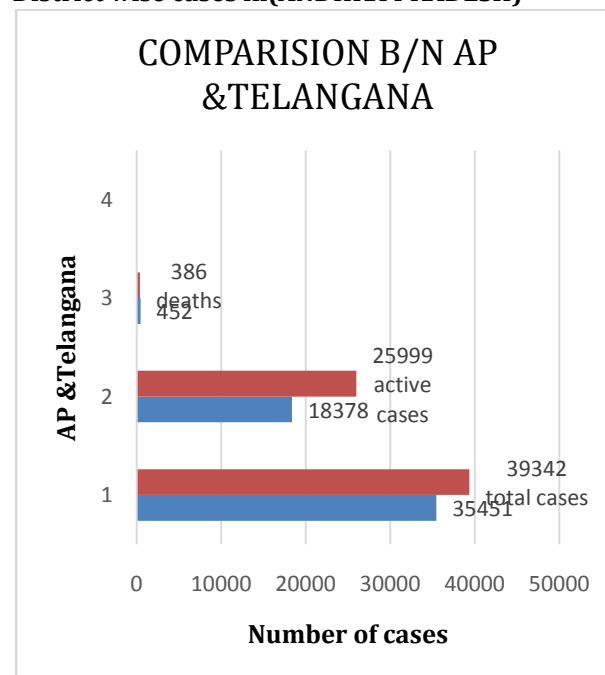
Containment zone recognition: containment zone means 3 kilometer radius from the positive case of corona virus. and above 3Km up to 2 Km is called buffer zone. On march 11 AP government started door to door survey to identify who has travelled to corona virus effected country by the ASHA workers, auxiliary nurse midwives, village and ward volunteers. IMASQ (Intelligent monitoring analysis service quarantine) a mobile testing centres which operate from buses. AP government started to close the public places in 19 march like educational institutions and public places like gyms, cinema halls and malls. Government of AP providing the ration quota twice a month since april till now. This service extended to door to door hand out of Rs 1000/- one term monetary assistance on april 4. Andhra pradesh government provided the 3 pieces of mask sets for every individual in a house hold on april month. Its been assuring the first line warriors on corona virus with the medical insurance.

ANDHRAPRADESH DISTRICT WISE DATA

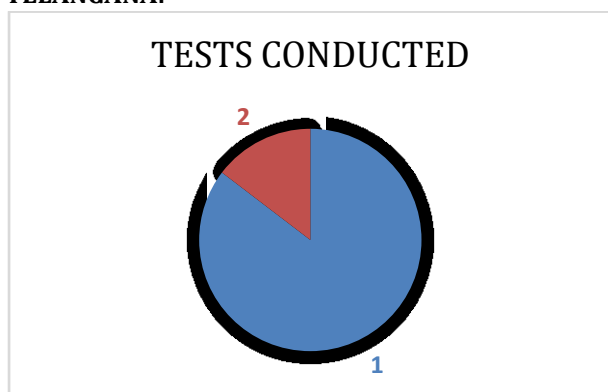
AP consists of 13 districts kurnool district has more number of corona cases and least with vizayanagaram district. Kurnool is followed by the ananthapur and then guntur and krishna districts. total deaths in the Andhrapradesh are 492. kurnool district recorded more deaths and vizianagaram has less deaths.

DISTRICT NAME	CONFIRMED CASES	RECOVERED CASES	ACTIVE CASES	DEATHS
Ananthapur	3987	2404	1583	52
Chittoor	3536	1303	2233	38
East Godavari	3862	1082	2780	29
Guntur	3963	1902	2061	35
Kadapa	2220	1205	1015	18
Krishna	2984	2027	907	85
Kurnool	4816	2285	2531	114
Nellore	1590	762	825	16
Prakasam	1395	1038	357	21
Srikakulam	1703	552	951	16
Visakhapatnam	1693	1081	612	25
Vizianagaram	982	248	734	11
West Godavari	2428	1084	1344	32

District wise cases in(ANDHRA PRADESH)



NUMBER OF TESTS CONDUCTED IN AP AND TELANGANA:



- 1.Andhra pradesh [1217963]
- 2.Telangana[208666]

RISK FACTORS

COMORBIDITIES

The ACE2 enzyme is highly expressed in the small intestine and large intestine of the gastrointestinal tract. The S protein present on the surface of envelope of the SARS-CoV-2 eases higher binding affinity, leading to mediate the entry of the virus into the host cell. The presence of COVID19 in the gastrointestinal tract was confirmed by nucleocapsid staining of the virus. The virus was seen in cytoplasm of epithelia of duodenum and rectum of patients infected with corona virus. Patients with diabetes mellitus exhibit high levels of ACE2, and treatment with the inhibitors of ACE and ARBs leads to the expression of ACE2. Diabetes condition may lead to the suspicion that the excessive expression of ACE2 aids the entry of SARS-CoV-2 into the host cells resulting in COVID-19. patients affected by COVID-19. Developed proteinuria estimated by the elevated levels of albuminurine were diagnosed in the initial stages of infection. The impairment in the functioning of the kidney was observed in 27%.The deterioration of kidney function was seen in 15% of the study population [14] HbA1c has no correlation with the duration of symptoms ,so length of illness is independent on blood sugar levels [15]. Most common organ damage after lungs was heart followed by kidney and liver.[18] There was reports that SARS induced myocardial infarction and acute coronary syndrome [19] The elevated levels of ALT and AST indicates liver damage, which was evident in SARS-CoV positive individuals starting from the initial stages of infection. the bilirubin levels were elevated, and the albumin levels decreased, indicating the liver cell damage. the degree of liver damage depends up on the severity of the disease

condition [21]. The chemotactic attraction is characterized by the presence of a chemokine named monokine induced by gamma interferon found in the brain and the bloodstream leading to CNS damage [24]. list of symptoms associated with different organs [1] heart- Hypotension, transient cardiomegaly, tachycardia, transient paroxysmal atrial fibrillation, myocardial infarction, acute coronary syndrome [2]. Lungs- severe lung consolidation, edema with pleural effusion, mucopurulent material in the tracheo bronchial tree, focal hemorrhage, alveolar and septal fibrosis, edema, alveolar hemorrhage, fibrin exudation in alveolar spaces, hyaline membrane formation, and extreme bronchiolar injury indicate the acute phase [3]. Liver-Hepatitis, liver injury characterized by elevated ALT, and AST levels [4]. Brain-Vision-related issues dizziness [5]. Kidney-acute renal failure [8]. A meta analysis of comorbidities in COVID infected patients as follows hypertension(21%); diabetes milletus (9.7); CVS (8.4) ; and RS (1.5) [18].

AGE GROUP

Increase in the number of cases is directly proportional to the age .as thus child are less susceptible to virus infection. Strong indications for the age dependence in severity and the mortality in COVID19 infected patients.children are often showing the less symptoms but children with sub clinical symptoms tends to transmit the virus. Due to high contact rates in children schools has closed [31]. it is also identified that children those are infected are showing mild symptoms.Afebrility is seen in this population.some child are showing patchy infiltrates on the chest [32]. On other hand children those are moderately malnourished and history of cardiac surgery due to congenital anomaly are at high risk [33]. Whereas geriatric population is more prone to be infected due to less immunity ,multiple organ dysfunctions and comorbidities [34]. The usage of antibiotics is more in the age group of >60 years this is due to bacterial co infection which requires adjuvant therapies. Older patients has less lymphocytes than the younger patients [21].

RISK POPULATION

Health care workers and the physicians are at the higher risk for getting the infection.because of their proximity to the covid infected patients while treating them [14]. Orthodontics require the proximity to patients while performing operating procedures. it keeps the surgeons in risk [18]. Sanitation workers are also are at risky situations

while disinfecting the surfaces where patients are getting the treatment and their surroundings [24].

PREVENTIVE MEASURES

MASKS AND SOCIAL DISTANCING

As COVID19 was spread by through droplets ,wearing the mask to face become a essential need to prevent the transmission.mask should contain the three layers like outer-repelling layer,middle-barrier layer;and inner -moisture absorbing layer [37]. Masks to be tight and should cover the nose and mouth.Points to be considered while wearing the mask like (a) correct size mask (b) hand sanitation before wearing the mask (c) should fit the face snugly ..types of masks like N95 mask gives 99% protection ,surgical mask gives 75% protection where as cloth mask gives 67% protection Sterilizing the masks by air drying,heating in oven ,dry heat in rice cooker, chemical sterilization by alcohol or bleach [38]. Protective eye wear is helpful [39] Many studies revealed benefits of social distancing in curtailing epidemic avoidance of the public contact are ways to reduce the transmission [40]. Community impact of social distancing depends on the evidence based interventions of the health authorities and policy makers.lack of strict implementation due to public carelessness leads to easy transmission [41].

VACCINE DEVELOPMENT

WHO estimated that it takes 18 months to develop a vaccine [42]. vaccine development is a lengthy ,expensive process. Attrition is high and typically takes multiple candidates and many years to produce appropriate licensed vaccine [43]. Proposed guiding principles and implications for COVID19 clinical trails a.Decreasing infectious inoculum b.Increasing the incubation period c.Increasing latent period d.Increase vaccine efficacy and durability e.To asses the benefit and risk for different cases f.Comparing different vaccines [44]. The major challenge for vaccine development is elusive nature of the emerging virus and high heterogeneous nature of virus strains in animal reservoirs [45]. Other challenge of this virus is it doesn't grow in the wild type mice ,only induced mild disease in transgenic animals expressing human ACE-2 [20]. Humanized monoclonal antibodies are being safe ,effective and high specificity in the process of invading pathogen.Approximately 70 vaccines are approved by US FDA for various conditions.Recombinant neutralising antibodies isolated from those infected

with SARS are most effective and easily manufacturable immune intervention for passive administration that can be used to prevent or treat COVID19 [35]. Inactivated SARS virus (β -propiolactone,formalin) has been effective with few side effects at pre clinical stage. Live attenuated recombinant virus which targets the S-glycoprotein nucleocapsid .It acts on the lungs of mice by stopping viral replication ,this is also at pre clinical status. Recombinant modified vaccine ankara which acts on spike ,glycoprotein or nucleocapsid protein induction of neutralizing antibodies , induction of protein shedding in ferrets,its ADRS include increased levels of the ALT and hepatic lesions at pre clinical stage [36]. A university of sechenov medical university(Russia) had sucessfully completed all phases of clinical trails.Oxford university of the london had completed phase 3 clinical trails.

SANITATION AND DISINFECTION

The virus is viable on surfaces of utensils and surfaces for a prolonged period leading to transmission to healthy individuals who got contacted to it viability of virus on different surfaces like plastic 72 hours ,on steel 48 hours ,on card boards 24 hours and on copper 4 hours [70]. Surfaces to be cleaned with the bleach ,the active ingredient is sodium hypochlorite which denature the protein of the microbes and kills bacteria,fungi and virus.Dilute 1:99 for general house hold; 1:49 for contaminated surfaces ;and 1:4 for the surfaces contaminated with blood [17]. Cleaning may be done with hydrogen peroxide 0.5% and ethanol 62-71%. [21] regularly wiping hands with sanitizer helpful, even if hand hygiene is not helpful if small particle aerosol is main route of transmission [52].

NUTRITION

Healthy diet and good life style has an positive impact on the immune function thus leading to the resistant to fight infection. At this pandemic situation the healthy diet came into an importance . People with low immunity are more prone to the pandemic COVID19. Drinking warm water keeps hydration to the body and had a role in body temperature regulation. Hydration of body had role to fight infection. Consumption of foods rich in vitamin and minerals helps to fight against the virus.Vitamin C restricts viral replication in the lower respiratory tract.Foods rich in vitamin C are citrus fruits ,papaya,guava etc. . vitamin A also has impact on the corona virus, it helps in immune function . example the derivative of the vitamin A isotretinoin mediates down regulation of

angiotensin converting enzyme 2 .Vitamin E rich foods like nuts and flax seeds helps in strengthening immunity. Water soluble vitamins have benefits in condition like sepsis and septic shock. Some immune boosting herbs like garlic and black cumin can be used. Vitamin D stops pulmonary inflammatory response and had stimulating and maturing effects on the immune cells. There are studies stating that relation between the acute respiratory tract infection and vitamin D.supplementation with vitamin D of 40IU/day is recommended for the general musculo skeletal health ;vitamin D rich foods like oily fish ,eggyolk and milk. Daily exposure of Sunlight of 10 minutes for white skin tone people and 25 minutes for the brown skin toned people with 40% exposed skin helps in getting vitamin D.

PREVENTIVE MEASURES FOR PUBLIC

- a. clean hands often by soap or using alcohol hand sanitizer.
- b. Wash hands after using toilet,after handling pets and before and after cooking.
- c. Avoid touching your mouth ,eyes,nose with hands.
- d. Try to maintain six feet distance between individuals.
- e. Avoid spitting on the public places.
- f. Wipe the surfaces you commonly touched like laptop ,mobile screen with sanitizer.
- g. Avoid going outside unnecessarily.
- h. Wear the mask while going outside.
- i. Coughing or sneezing on elbow
- j. Consulting physician if any symptoms occur like fever,cough and sore throat etc.

DISCUSSION

Unfortunately, no medicine or anti-virus vaccine has yet been officially approved to treat COVID-19. At present clinical management includes infection prevention, control measures and supportive care including supplementary oxygen and mechanical ventilation were indicated.different studies conducted on the different regimens like in chen et.al clinical study of open labelled clinical trail using oseltamivir and peramivir and found there is no significant use of these drugs.Another study of cut et.al a inhaled interferon α 1b ,antibiotics like amoxicillin is given.Lieut et.al study atomization inhaler is given. Chloroquine and hydroxy chloroquine are found to be effective in treating the virus strain.corticosteroids also found to be effective.

CONCLUSION

Many studies have been exploring the epidemiological status, etiology clinical manifestation and diagnosis. This study exploring prevention and control measures.In this study deals with current scenario of covid19 outbreak in nation as well as in Andhra Pradesh.The government of Andhra Pradesh tested one million samples,which was the highest number in South states.When compared to Telangana we are far better in testing samples and recovery rate too.The only way to survive is to follow the precautions guidelines issued as per WHO and state , Central government of India.As the disease progressed the concern for health, economy, livelihood has been increased. COVID19 had made lots of uncertainty in the public.What we need to do is aware of the challenge and concerns brought by COVID19 to our society. Every effort to be taken to control the virus.The only weapon to kill the virus is our Immunity. Taking proper hygienic foods like Vitamin c containing fruits, prefer warm food ready to serve. Our awareness, preventive measures and social distancing prevent from transmission of Virus spread and growth in the Community.

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