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CONSUMPTION OF ALCOHOL CAN DESTROY THE OUTBREAK OF COVID-19 VIRUS IN INDIA: A MYTH

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ABSTRACT

A myth is spreading in all over India that alcohol can outbreak the COVID-19 but scientifically it does not give any kind of defense from corona virus disease. It does not reduce the possibility of infection and the expansion of severity of ill health associated to novel corona virus. Several peoples are familiar that extreme consumption of alcohol could injurious to the liver as well as other vital organs of the body, therefore system of body is susceptible to the harmful effect of drinking alcohol on the immunity and people who consume to excess amount of alcohol could increase the risk of infectious disease might have a lot complication can occur as well as often get recover from ill health is to longer as compared with low levels habitual drinkers of alcohol. In fact, interruption in function of immune system additionally contributes to the damaged organs which related with consumption of alcohol.

Keywords: Alcohol, COVID-19, Consumption, Health, Liver.

INTRODUCTION

Worldwide, three million of death per year has been reported due to heavy consumption of alcohol (WHO, 2020), the rate of consumption of alcohol in India has estimated about 6.5 billion liters (Jagmohan. 2020). Novel Corona virus (COVID-19)-induced respiratory infection has started to spread since Wuhan, China to other than 100kingdoms included India (Hsia, 2020). In India the outbreak of Covid-19 infection has an unsafe effect on public life in various districts.Covid-19infection has taken a terrible form in India and is moving towards community transmission. World Health Organization has also characterized this as pandemic and acknowledged as global community health adversity and emergency (Wang *et al.,* 2020).

On, 30th January 2020 student arrive from Wuhan, China was reported the first positive novel covid-19 (SARS-CoV-2) case in Kerala, India (PIB, 2020).Now a day it spreads to utmost cities of the nation. In India, as on 7thAugust 2020 the entire number of accounted cases are2, 027,000with 13, 78,105 discharged, active cases6, 07,384along with41,585 demise(Ministry of Health and Family Welfare, 2020).Worldwide, the infection rate of India is lesser as compare with other countries with their transmission stage of cluster of cases.

In India, the government first time established a 21day urgent lockdown on 24 March 2020. During lockdown the government of Uttar Pradesh has taken action even on the late afternoon of 22 March 2020.

In the meantime, a lot of doubtful facts are spreading among people about the treatment of Covid-19 such as use of antibiotics, cold weather, spraying alcohol or chlorine on body, eating garlic, taking hot bath etc. In India, among these several myths regarding its preventive measure or treatment, consumption of intoxicants like drinking alcohol during COVID-19 infection is one of them. They thought, drinking of alcohol may destroy the virus in human body.

Several studies have been reported regarding relation between consumption of alcohol and SARS-COV-2, which is the corona virus that causes COVID-19.Delirrad and Mohammadi (2020) Studied that the lots of number of cases of alcohol poisoning in Iran associated with the outbreak is extremely high. For the reason that religion based law disallow to consuming alcohol, numerous people purchase alcohol illegally moreover there is huge evidence to proof toxicity of such kind of buys (Brewer *et al.,* 2020; Aghababaeian *et al.,* 2019; Ghadirzadeh *et al.,* 2019).Alternatively, peoples are suffering from substance abuse of drug comes from marginalized society and are consistently more prone to catch infection throughout pandemic of the COVID-19 (Columb *et al.,* 2020; Ornell *et al.,* 2020).

Mungmungpuntipantip and Wiwanitkit (2020) Studied on pandemic of the COVID-19 virus is linked with a farewell party where persons who drank alcoholic beverage by using a common glass were infected. (It is well-established that the virus is shed in oral pharyngeal

State vise Reported Covid-19 cases in India

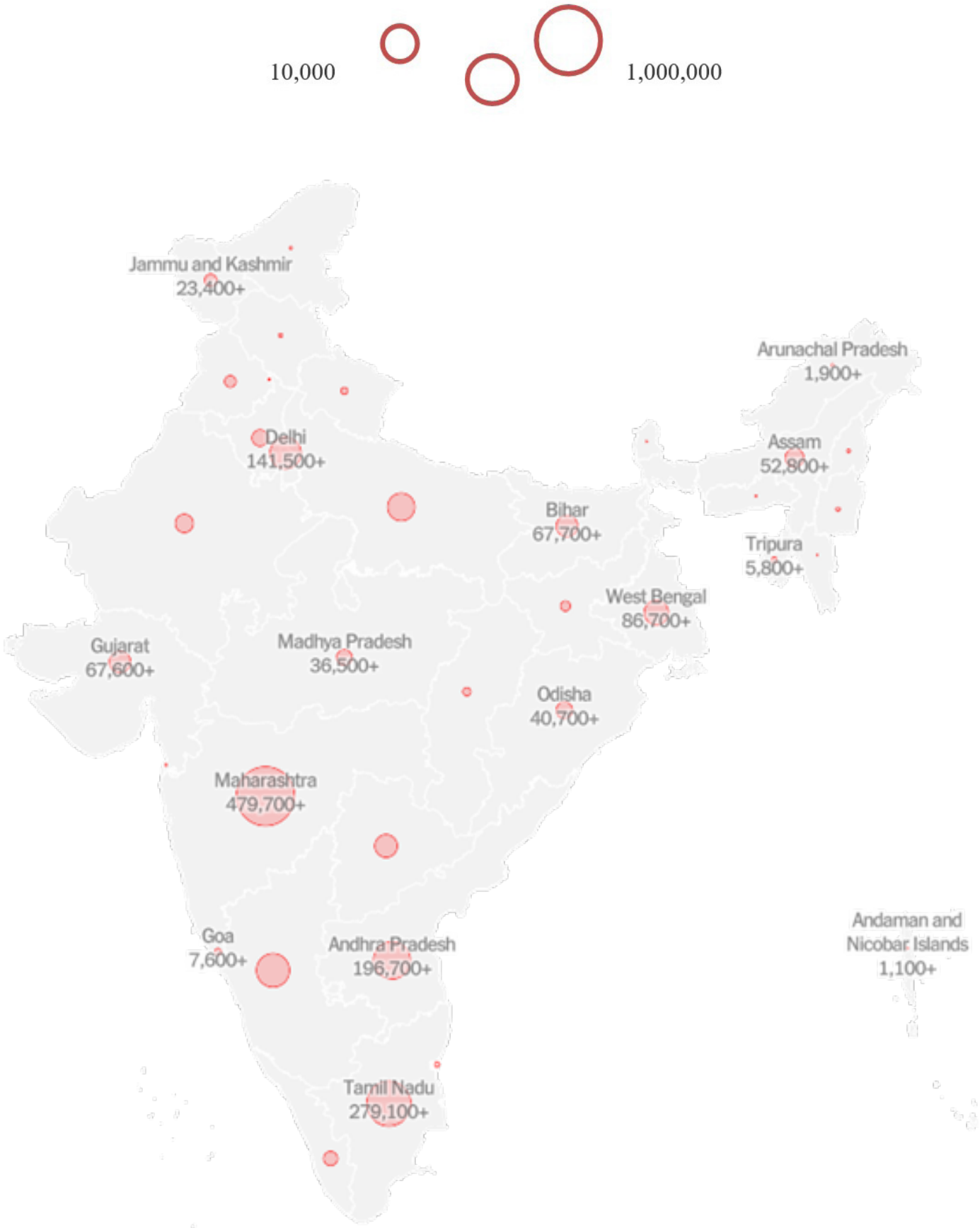

Fig. 1: The image of map gathered from the New York Times statistics basis from Ministry of Health and Welfare of India counted on 7th august 2020. Picture showed Circles are sized as a result of the total number of positive cases in different states of India, might be differ from wherever they taken the disease.

secretion and sputum, so it is no surprise that individuals who shared drinking all got infected) the study is revealed that drinking of alcoholic beverages does not facilitate to prevent covid-19 infection.

Chronic consumption of heavy alcohol can decrease the immunity to viral as well as bacterial diseases (Meyerholz *et al.,* 2008; Szabo and Saha, 2015; Barr *et al.,* 2016), also revealed alcoholic liver disease (ALD) and cause some kind of cancer (Suh *et al.,* 2011; Seo *et al.,* 2016; Chan and Levitsky., 2016; WHO, 2020). Testino (2020) has also reviewed and concluded the literature greater chances to risk of bacterial, viral as well as fungal infections particularly in the urinary in addition to respiratory levels.

World Health Organization given advised to limit or abstain to consuming one drink per day for drinkers, Since, Heavy consumption of alcohol enhances the risk of respiratory problem such as acute respiratory distress syndrome shortly known as (ARDS) one of the severe problems of COVID-19 among population (WHO 2020). During lockdown in India, while health problem in those who consume maximum alcohol have not reached their everyday dose (Narasimha *et al.,* 2020). WHO (2020) Clarifies this fact within myth vs facts division, drinking of alcohol does not destroy and kill the virus present in the respiratory air, nor can alcohol disinfect mouth and throat, and nor does it provide any type of protection against the COVID-19 virus.

Individuals who consume a large amount of alcohol for the over a long time are more likely to be dependent on alcohol. It can be said that if such people stop drinking alcohol, they develop some physical and mental reactions. Some people may experience common symptoms such as headache, shaking hands, nausea and vomiting (Verma RP, 2020).

On the basis of above studied this article reviews the alcohol impact on covid-19 outbreak with its impact on low, moderate to heavy consumption effect on immune system with the risk of health problem and to provide collective information regarding consumption of alcohol and COVID-19 for thoughtful to newest research of this pandemic (SARS CoV-2).

Method of searching of literature

Google Scholar, Pub med and Science direct with some journals are searched by using the input terms- "Myth about COVID-19 and alcohol", "COVID-19 pandemic in India", "Addiction of alcohol during corona in India", "Alcohol and immunity", "Infection of virus by alcohol", "Alcohol can destroy the COVID-19 virus in India", Lockdown and liquor". Little for most news paper information's associated to COVID-19 and alcohol consumption has also been included wherever deemed to suitable.

In India, a myth about alcohol consumption and COVID-19 virus

A misconception has arisen within the public that by using a hand sanitizer containing ethanol (alcohol), it may defend the spread of disease, so consumption of alcohol may have capacity to protect against novel corona virus. The government prohibited the auction of alcohol throughout the lockdown in the covid-19 pandemic in India. Which has been later lifted the ban on sales in various phases to upgrading the fallen economy which led to uncontrolled crowd at various places for the purchase of liquor, which was not fully comply with government regulations and disrupting the social distancing (The Hindu 2020). This might one of the causes of corona outbreak and some people crowded, may be due to the myth about consumption of alcohol can destroy the virus. Therefore, it is not shocking that, during the week when the lockdown was imposed in India, the online searches for 'ways to make alcohol easily at home' nationwide pointed from 22-28, the week of March (Jadhav & Thomas, 2020). Presently, researchers said that the alcohol consumption should not protect anyone from the risk of acquiring of infection nor does it kill the infection, WHO (2020) also referred in his special guideline on myth and facts about alcohol drinking. Also all type of substance abuses or intoxicants should be discouraged in every type of utilization. Drinking alcohol does not reduce trauma and stress, moreover we can try other stress relieving strategies and instead of consuming alcohol, people can also do indoor exercise like doing yoga, listening to music and try another type of physical activity (WHO Press, 2020).

Justification about alcohol as the risk factor for acquiring covid-19 virus

High risk behaviors such as unneeded sharing of alcohol and cigarettes among peer groups raise the chance of covid-19 outbreak (Mungmungpuntipantip and Wiwanitkit 2020). There is be short of clinical research as well as organized data about alcohol drinking with covid-19 impact and risk, although according to some research or cohort studies about alcohol consumption poses a similar health risk of cardiovascular disease, liver infection, dysfunction of immune system, and aspiration pneumonia, associated high risk of thrombosis, respiratory dysfunction, infections, as well as vitamin deficiency to cause harmful health outcome in the body (Testino G, 2020). Further concern should be taken on transmission of misinformation about any defensive effect of alcohol against corona disease (USA Today, 2020).Chronic alcohol consumption has associated with excessive inflammation and it caused division during an elevated oxidative stress and overactive innate immune responses (Khoruts *et al.,* 1991). Drinking of alcohol in heavy amount for longer time can decreased the white blood cells such as lymphocytes frequency, which are

mainly responsible for maintaining the immune system of any individuals and increased the risk of viral as well as bacterial infections (Diaj *et al.,* 2002 and Burr *et al.,* 2026).

Long time heavy drinking of alcohol in an individual already suffered from any disease also increase the risk of infection. It has been basically due to excessive amount of alcohol acts as an immunosuppressant. A special reported study revealed the modest amount of alcohol consumption in individuals who uncovered to rhinoviruses have been linked and lowered the risk of common cold (Cohan *et al.,* 1993).

Addictive behavior of alcoholic beverages during Covid-19

Prolonged consumption of alcoholic beverages in excess resulted, leading to neuronal adaptations to reward pathways of stress and bust up the neuroendocrine and stress responses, which stimulates alcoholic cravings when arises a stressful situation (Hoeflin *et al.,* 2019; Clay *et al.,*2020). The special circumstances created via COVID-19 pandemic, inside conditions of physical distancing, chronic social isolation, and furthermore, across various countries due to the corona have resulted different adverse outcomes with relationship of health and wellbeing due to the continued lockdown (Dubey *et al.,* 2020).

Right now the world population has been suffered with a new state of mind that developed concomitances psychosocial stressors, like long drawn out home confinement, panic, anxiety and depression due to unfamiliar environment of the virus, fear of contracting infection, economic problem, job losing fear, helplessness (Lima *et al.,* 2020). Sometimes, peoples have consumed alcohol amateurishly on various occasions to show enjoyment, culture, importance in society and maintenance of reputation may be these conditions due to psychological impact.

In India, between all substance use disorders and mental health problem, the largest treatment space has intended for the alcohol abuse (Gururaj *et al.,* 2016). In Common Era, about nine out of ten citizens in India among alcohol use disorders have no admittance at all type of concern in support of drinking problems in persons.

Effects of alcohol consumption on gut, liver and respiratory function

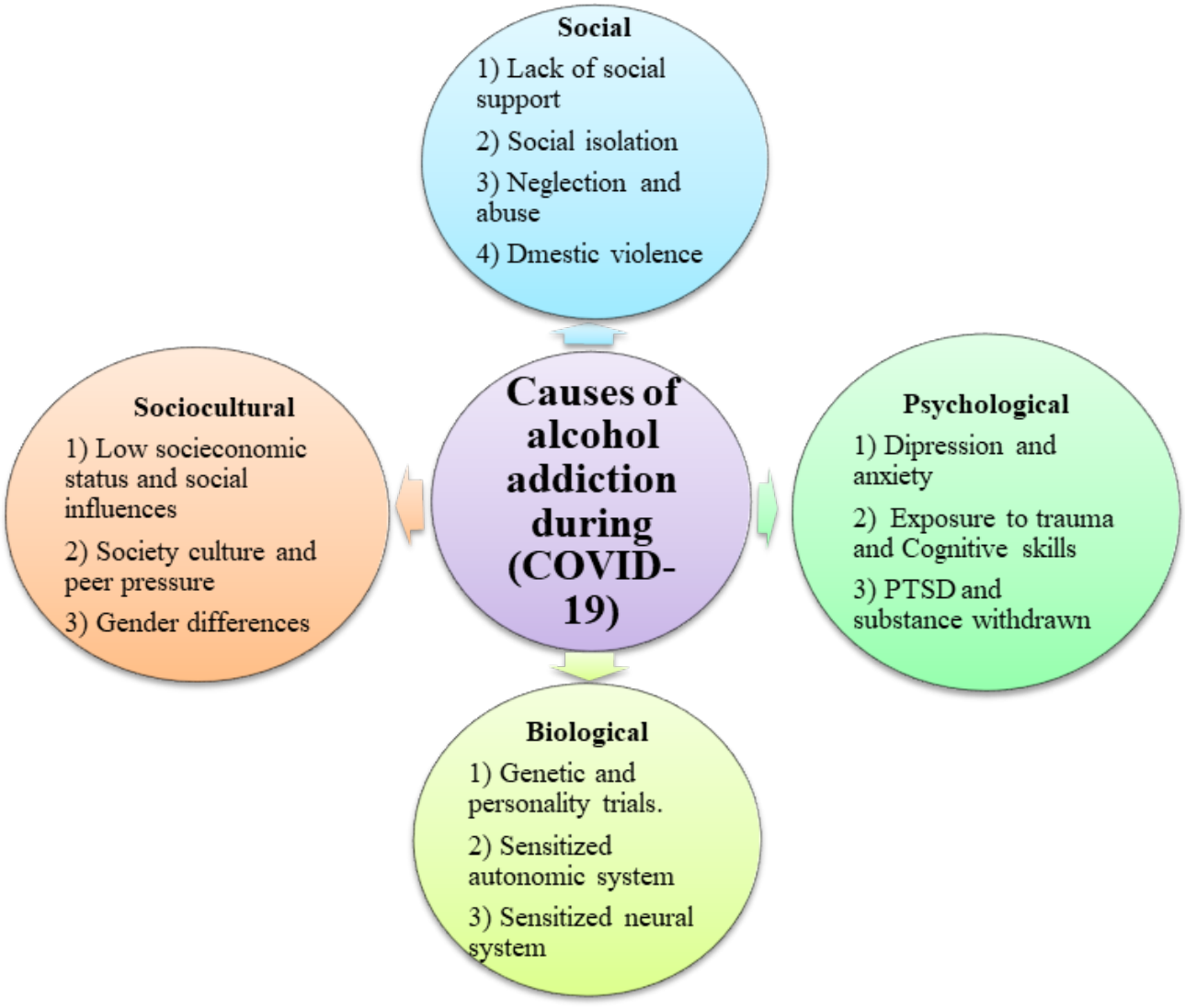

Fig. 2: Causes of alcohol addiction during covid-19 pandemic. Abbreviation: PTSD (Post Traumatic Stress Disorder).

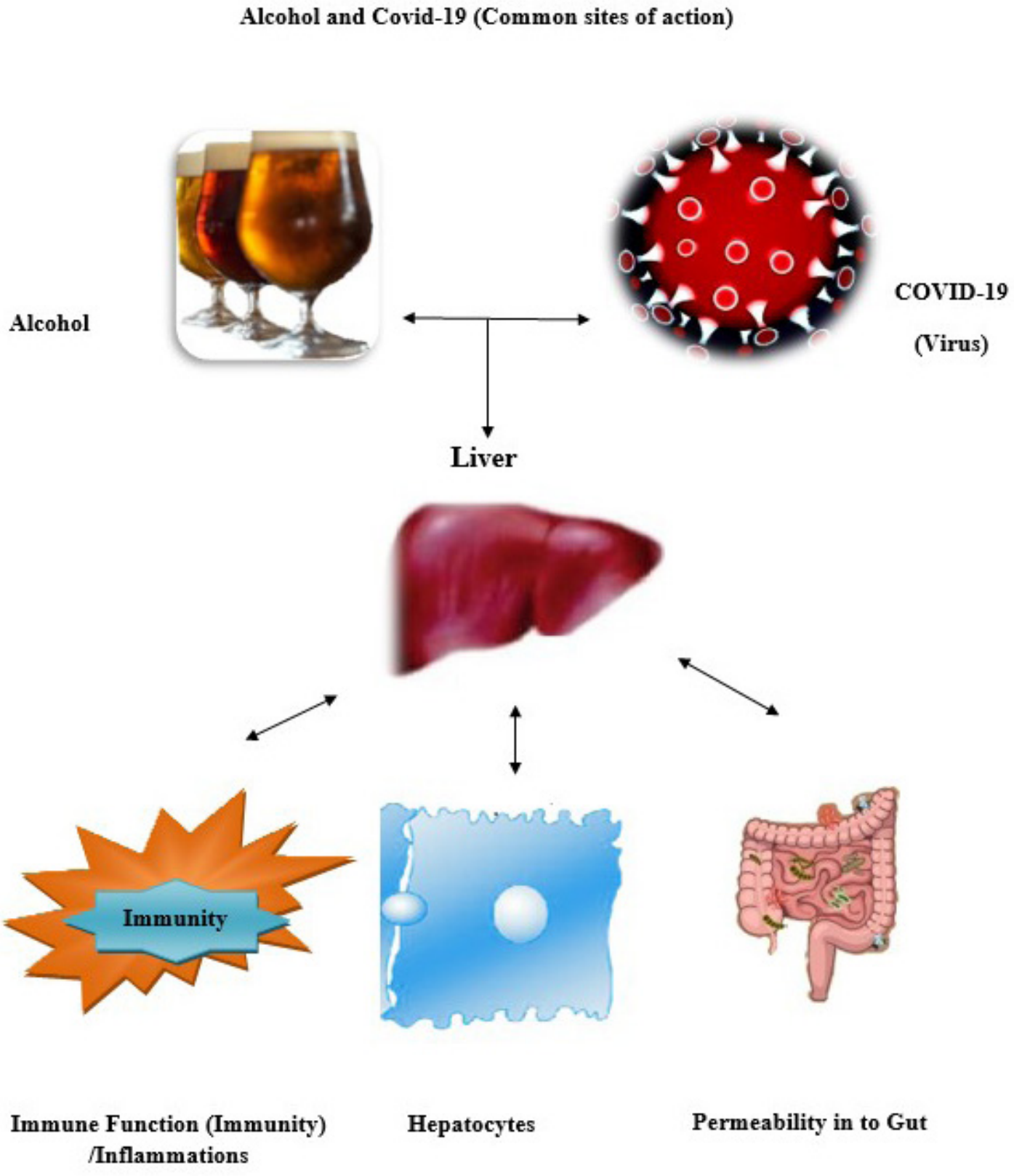

Fig. 3: Alcohol and Covid-19 virus in illness with diseases of liver and immunity: There are many general places of take action of ethanol (alcohol) consumption in the human body causes of the infection of covid-19 virus that contributed toward the expansion of liver diseases. These include permeability into gut, and functions of hypatocytes with modification of inflammatory responses and immune functions due to alcohol consumption risk.

In small intestine the alcohol dehydrogenases and ADH1A are enables metabolism of alcohol, while the extra isoenzymes have an important role in the metabolism of retinol (Vitamin A), so it has necessary for differentiation and intestinal epithelial proliferation (Elamin *et al.,* 2013). Consumed alcohol is absorbed and distributed by way of gastrointestinal tract in the body, wherever proximal small intestine along with the stomach are accountable for 20% to 70% of its assimilation, respectively (Levit *et al.,* 1997).Therefore, drinking alcohol act as gut barrier to permitting extra bacteria to circulate in the body blood, which has been also causes a depletion of cells present in individual immune system these are T cells, C cells, and macrophages (Indian Express News, 2020).Ethanol mediated dysbiosis existing in the gut is raises the intensity of the unconjugated bile acids, which decreases expression of fibroblast growth factor and foresaid X receptor activity in addition to in enterocytes, ahead to increase the concentration of bile acid within the blood by CYP7A1 up regulated expression inside hepatocytes (Tripathi *et al.,* 2013).

Acetaldehyde weakening of the tight junctions of the intestine compromising the gut barrier has been implicated to permitting the translocation of microbes (Rao RK. 2008; Yan AW and Schnabl 2012). This has also eliciting adaptive host immune with inflammatory responses (Park *et al.,* 2016; Mottaran *et al.,* 2002).Consumption of alcohol in excessive amount is linked by fatty liver, additionally if this drinking continues, it have given rise to liver fibrosis, alcoholic steatohepatitis, as well as cirrhosis (Oshea *et al.,* 2010). Therefore, alcohol has decreasing the secretion of gastric acid in the small intestine or stomach as well as also interrupted gastrointestinal motility (Bode and Bode, 1997; Bienia *et al.,* 2002).

There are several clinical research have confirmed that excessive drinking of alcohol in persons with co-morbid conditions for example like HBV infection and chronic HCV have speed up liver damage or evolution in the direction of liver cirrhosis. In a research team of investigators have studies a big group of HIV-negative with positive US veterans, researchers should initiate a tendency to fast increase the fibrosis and inflammation of liver, in patients with dangerous or bender consuming of alcohol (Lee *et al.,* 2008). Chronic consumption of alcohol can lead to the change dysbiosis and overgrowth in the intestinal microbiota of patients and rodents, as well as annihilating the intestinal epithelial obstruction (Shim and Jeong 2020).Moreover, in this respect much increased the probability of infection such as viral, bacterial or fungal mainly in respiratory and urinary levels and also severe consumption of alcohol reported chances to lung infection (Testino *et al.,* 2020; Okuno *et al.,* 1986).

Effect of alcohol on the Immune System

Consumption of alcohol has altered the survival, number and function of several immune system cells (Szabdo and Shah, 2015). Though, the long alcohol exposure can weaken the immune system function as well as increases the severity and risk of bacterial and viral infections, including hepatitis B or C, HIV illustrious as human immune deficiency virus, and respiratory as well as lung infections. It could reduce the efficiency of immunizes, as well as contribute to a diseases host such as alcoholic pancreatitis, alcoholic liver disease, swelling in the brain and gastrointestinal tract also cause cancer (Szabdo and Shah, 2015; Pasala *et al.,* 2015).

Alcohol

This has been well reported by several researchers regarding association between alcohol drinking and viral infection (Ruuskanen *et al.,* 2011; Testino *et al.,* 2016). Leak out of mucosal organ too contributes in the body to respiratory infections, in some measure part through changing the tight junctions among epithelial cells lining where the gas switch over occurs for example alveoliinair sacs of lungs (Simet *et al.,* 2012). Furthermore, this permeable mucus offers the superlative chance for bacteria generally originate within the human body, for example Streptococcus pneumonia, to attack on the tissues and be converted into pathogenic in to body (Bhatty and Pruett 2011).

In fact, a reported history of patients as many as about 50 percent of adults suffers from acquired pneumonia due to the alcohol abuse; this is highly associated with increased pneumonia based incidence in the community (Goss *et al.,* 2003). Moreover, the alcohol consumption degenerate pneumonia problems (Saitz *et al.,* 1997) and mortality increases when dependent on high dose of alcohol (Harboe *et al.,* 2009; Samokhvalov *et al.,* 2010).Also death rates are high who understanding complication about 20% but the rate has been reduced through early detection by less than 1% with treatment properly (Mainerova *et al.,* 2015).

Drinking alcohol in more than moderate amount has cause harmful effect in the immune system as well as upper respiratory system and lungs which is cause negative impact on health status with developing some disease for example tuberculosis, respiratory disease, pneumonia, as well as virus such as COVID-19 (Indian Express News, 2020).

Long-term alcohol drinking alters the cytokine stability into the lungs, and this leads to the causative development of acute respiratory distress disease (Crews *et al.,* 2006; Boe *et al.,* 2009; Moss *et al.,* 1999). Alcohol associated with a range of non-communicable as well as communicable diseases along with mental health outcome, it has significantly negatively impact on the healthy immune system function it could increases the possibility of many communicable diseases generally pneumonia, hepatitis,

Table 1: Representation of relationship between alcohol and susceptibility to infectious disease

Confounding Factors	Associated Infectious Diseases	Study Type	Alcohol Exposure	Reference
Frequently drinking, age, smoking, malnutrition, malignancy, immunosuppressant treatment	Tuberculosis	Cases and controls	moderate to heavy alcohol use	Schluger *et al.,* 1999; Buskin *et al.,* 1994; Moran and Mendoza 2004; Thomas *et al.,* 2005; Schwarzinger *et al.,* 2018
Alcohol drinking	Pneumonia (Respiratory diseases)	Cohort Study	Moderate to heavy	Samokhvalov *et al.,* 2010; Traphagen *et al.,* 2015; Simet and Sisson, 2015;Schwarzinger *et al.,* 2018
alcohol was treated purely as confounde	HIV (Human immunodeficiency virus) / AIDS(Acquired immune deficiency syndrome)	Cases-controls, Cohort	Person reported. "Heavy drinking" describe as > 22 alcohol correspondents/ week	Rosenman *et al.,* 1996; Read *et al.,* 2007; Plankey *et al.,* 2007; USA Williams *et al.,* 2016
Alcohol Consumption	Hepatitis C, HIV, reducing antiviral effect and increasing inflammation	Cohort	Moderate to heavy consumption	Pang *et al.,* 2011

tuberculosis, and make an individual more susceptible to COVID-19 (WHO, 2020).

Prevention of alcohol consumption during COVID-19

The myth about drinking of alcohol can destroy the virus of corona has been cleared by the guiding principle and advices of Centers for Disease Control and Prevention (CDC) as well as World Health Organization should strictly state that the consumption of alcohol have not protect to individual from COVID-19 virus as well as increasing the risk of problems for example pneumonia, acute respiratory distress syndrome with weakens the immunity of body to fight infections (CDC, 2020; WHO, 2020).Hence, at any time habitant should decrease their alcohol drink, at particularly for the duration of the corona virus pandemic (WHO, 2020).

Way forward to controlling alcohol consumption during COID-19

The behavioral habits should be stopped at every opportunity, to prevent and treated the effect of the pandemic and withdrawn symptoms in the habit of drinking and other substance abuse, as well as proper caring and treating (Chick, 2020; Elsenberg and Elsenberg, 2020; Patwadhan, 2020).In order to be defended from the COVID-19 global pandemic, the families, societies, health care providers, and the government must work together to fulfill their due responsibilities on the basis of ethics and duties, thereby building a strong support system. Legislative bodies and Government should take action towards maintaining access and availability of medicine and prescription drugs, social security and health protection of the substance addicts, harm reduction as well as work towards uninterrupted stale services (Dunlop *et al.,* 2020; Jenkins *et al.,* 2020; Hemilton, 2020).It has already been acknowledged a global pandemic by the world health organization (2020), a large number of health care providers are also works in India, and hospitals have

been closed for a long time due to lockdown now are opens but still the services are affected due to pandemic and fear of virus infection, if in time calamities, community of addictives are being manage this health emergency even if they come with symptom of COVID-19 disease and similar diseases then the risk increases (Dunlop *et al.,* 2020; Jiang *et al.,* 2020).

The present situation is different and unique in todays. The myths are increasingly propagated through social media and local channels of news which can be triggered by various means. Drinking alcohol kills the corona virus, this worst myth has spread in the Indian families. Due to this the risk of infection through consumption of alcohol in community is increasing. Therefore, any burden allied with alcohol would not single attach to the common disease (Rehm *et al.,* 2017; Shield *et al.,* 2020). But also include toward COVID-19 burden, predominantly profound consumption of alcohol, might weaken the innate as well as acquired immunity (Molina *et al.,* 2019).

Present Status of COVID-19 vaccine

The prevention of the interpersonal transmission of the corona virus could through vaccination to non- infected population and health care workers (Zhang and Liu. 2020). At present, Russia becomes the first country who claims they developed a COVID-19 vaccine and the government of Russia officially registers COVID-19 vaccine or declares it complete for use (The Hindu, 2020). In India to date, presently no vaccines or specific antiviral treatments for COVID-19, moreover, the medical treatment of SARS-CoV-2 has been restricted to support and sedative care until the present. Therefore, at present, in India an urgent necessitate to developing a stable and safe SARS-CoV-2 vaccine.

CONCLUSION

A unique period illustrated by a new Covid-19 global pandemic, there is a myth among people that the consumption of alcohol can destroy the COVID-19 virus, also alcohol drinking increases the risk of viral lung infections including SARS-CoV-2 and bacterial infection. In today's time, it has become needed to enlighten the population that the harmful drinking of alcoholic beverages greater possibility the viral lung infection, and weaken the immunity which probability to acquiring COVID-19 infection among population. Therefore, the health professionals and doctors should be advising and motivate not to drink alcohol more than one unit/day avoid during COVID-19 pandemic, it increases the risk especially in elderly population struggling with various disease for example heart disease, diabetes and other liver related disease, etc. Although, scientists should emphasize scientific research between alcohol consumption and COVID-19 viral infection at same time while waiting to develop suitable antiviral vaccines.

Knowledge gaps

Today much of the facts, knowledge and research gaps are present which poses to recognized throughout this review well as there is current need for research in future in this way. Till now there is no study and research have been published that observe and examine the relationship among consumption of alcohol and immunity taking into relation with COVID-19.

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Ethical statement

This manuscript is based on a review. Therefore, it does not need such endorsement to be approved.

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