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Review Article

Review on *Covid-19* Distribution, Socio-Economic Impact and Its Preventive Measures in Ethiopia

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SUMMARY

Covid-19 started in Wuhan province of china and spread in a faster rate covering all continents in the world and cause death and crisis in all around the world. The pandemic causes problems on life, food security, socio –economic crisis, transport, industry, truism etc. The number of cases in Ethiopia has been increasing alarmingly since the first case was reported. People who are unvaccinated are at risk of getting seriously sick from the delta variant (which is very contagious) and *Covid 19*. However, the number of cases in Ethiopia is still very low due to limited testing capacity and delays in reporting confirmed cases. Since then the Ethiopian government quickly responded to minimize the impact of *Covid-19* by using different strategies up to the lockdown. Since the news of Ethiopia's first case of Coronavirus on March 13, various multi sectorial measures have been taken to counter its spread, including the declaration of a national state of emergency on April 8, 2020. However, the situation is becoming unstoppable and individuals must take care; people should have taken action to prevent the disease through simple day to day preventive measures for themselves and for the others since several cases have been reported daily. Virus has medical and veterinary importance that infects mammals and birds (zoonotic). Therefore integration and interdisciplinary collaborations will help in controlling of this recent pandemic disease in addition to prevention methods recommended by organizations of MOH, OIE and WHO since the virus is zoonotic.

Key Words: *COVID -19, Ethiopia, Case, Zoonotic,Delta variant*

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1.INTRODUCTION

Novel Coronaviruses are a family of viruses that cause illness of Severe Acute Respiratory Syndrome. The virus was identified and reported for the first time in December 2019 in the city of Wuhan, China (Srivastava *et al.,* 2019).The current *Covid-19* pandemic is caused by a coronavirus named SARS-*Cov-2*. Coronaviruses (CoVs) are a large family of viruses, several of which cause respiratory diseases in humans, from the common cold to more rare and serious diseases such as the Severe Acute Respiratory Syndrome (SARS) and the Middle East respiratory syndrome (MERS), both of which have

high mortality rates and were detected for the first time in 2003 and 2012, respectively. It was named *Covid-19* disease by the World Health Organization. The disease has affected more than 213 countries as March 2020. The number of infected people and death toll are increasing every day. It is a deadlier than 2002-SARS. When a virus passes from animals to humans for the first time it is called a spillover event. When a new virus is discovered, it is important to understand where it comes from (Srivastava *et al.*, 2019).

This is critical to be able to identify and isolate the source and prevent further introductions of the virus into the human population (WHO, 2020).In January 2020, the WHO announced, the 2019 *Novel Coronavirus* occurrence as a Public Health Emergency and international concern. The WHO also recommended countries should take standard measures and responses to tackle the effects of the viruses. Following the fast transmission and risk of the virus, the Director of WHO announced the virus as a global pandemic on the 11th of March. Henceforth, the number of cases reported increased to above 22 million as of Aug 2020. As the virus is new, many things are not clear. However, Russia started a production of the vaccine. Russia has produced the first batch of its Coronavirus vaccine as of 19 Aug 2020. It follows that many countries are looking to Russia for getting the vaccine. *Covid-19*, since it has appeared in Wuhan, China, has been spread in different countries (213 countries). Ethiopia is one of the 213 countries that registered *Covid-19* cases since 13th of March 202(WHO, 2020).

In Ethiopia several cases and deaths are identified. Currently, more than 32 thousand cases are reported as of 19 Aug 2020. It is expected to rise since the case is reported from all parts of the country. The knowledge, attitudes and perceptions (KAP's) are not motivating the response to *Covid-19* (Geda *et al*., 2020). *Covid-19* has become one of the most serious global public health crises in modern times (yang and Wang, 2020). The disease was declared a pandemic on 11 March 2020 and has currently affected more than 216 countries and territories (Cucinotta and Vanelli, 2020). As of 3 August 2020, there were more than 17.6million confirmed *Covid-19* cases and over 680000 associated deaths around the globe (WHO ,2020).The highest numbers of cases and deaths have been reported from the USA, Brazil, India and some European countries, such as Russia, the UK, Italy and Spain(WHO,2020).African countries, including Ethiopia, have reported a low number of *Covid-19*, although the number of cases and deaths are currently on the rise (Gilbert *et al.*,2020). In Ethiopia, the first case of *Covid-19* was reported on 13 March 2020 in Addis Ababa, but at the time of this study almost all regions of the country were affected by *Covid-19* at different magnitudes (Baye, 2020). The number of cases in Ethiopia has been increasing alarmingly since the first case was reported. However, the number of cases in Ethiopia is still very low due to limited testing capacity and delays in reporting confirmed cases. Multiple factors, such as socio demographic, connectivity, behavioral, climatic and comorbidity factors, are strong predictors of the differences in transmission, hospitalization and mortality rates among and within countries (Jiy and Peppelenbosch., 2020; Mehra *et al.*, 2020).

Given Ethiopia's large population size, variation in resources and vast geographic size, the risk of *Covid-19* infection, case severity and likelihood of death are likely to differ across regions, zones and districts, suggesting

that local and context-specific interventions be implemented. The number case is increasing every day and month due to pandemic: As of June 29, 2021 taking the total number of confirmed cases to 276,037 and the death toll rose to 4,320 in Ethiopia (*https://covid19*.who.int.afro.country,2021). As of Nov 9, 2021 there have been total of 367156 confirmed cases of *Covid 19* with 6560 total deaths reported in Ethiopia to WHO (https://www.worldometers.info ›coronavirus, 2021).The Minister of health said that the virus is spreading at an alarming rate and the new delta variant is a variant that will affect people of all ages, leading to serious illness and possible death To halt the surge in transmissions, Ethiopia has announced stricter measures effective on 29 March, 2020 focusing on monitoring implementation of preventive measures such as wearing masks and maintaining physical distances, including limiting the number of participants in face-to-face meetings to 50. By April 2021, 45 African countries had received shipments of Covax vaccines (Jerving, 2021) and administered 18 million doses; progress is being monitored by Africa CDC. Globally as reported by WHO more than 250.33 million corona cases and more than 5.064 million corona related deaths as of Nov 9, 2021 (https://www.worldometers.info ›coronavirus, 2021) .Ethiopia is currently one of four countries in Africa registering the highest numbers of *Covid-19* cases**,** according to WHO number of cases, next to South Africa, Morocco, and Tunisia (WHO, 2020).

Therefore, the objective of this review is:

- ✓ To discuss its distribution and epidemiolocal situation of *covid 19* in Ethiopia from the time of outbreak to until today.
- ✓ To assess socio economic impact of *covid 19*, zoonotic importance and its preventive measures.
- ✓ To remind one health concept (Virus has medical and veterinary importance that infects mammals and birds, and is zoonotic).

2. THE *COVID 19* DISTRIBUTION IN ETHIOPIA

As of 3 August 2020, there were more than 17.6million confirmed *Covid-19* cases and over 680000 associated deaths around the globe (WHO ,2020).The highest numbers of cases and deaths have been reported from the USA, Brazil, India and some European countries, such as Russia, the UK, Italy and Spain(WHO,2020).African countries, including Ethiopia, have reported a low number of *Covid-19*, although the number of cases and deaths are currently on the rise (Gilbert *et al*.,2020). The distribution of *Covid-19* is expected to be concentrated in urban areas which account for 21% of the population of Ethiopia. Urban areas are more vulnerable to *Covid-19* due to exposure to travellers and foreign visitors as well as congested settlement patterns. Ethiopia is the second-most populous country in Africa, with an estimated population size of more than 115million (UN, 2019).Ethiopia has a total area of approximately 1.1million square kilometers, making it the 10th largest country in Africa and the 27th largest in the world. The country has a tiered administrative system consisting of regional states (first level), zones (second level), woreda or districts (third level), and kebeles or neighb1ourhoods (fourth level). Now days there are ten administrative regional states in Ethiopia, including Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, Harari, Gambella, and the Southern Nations, Nationalities, and

Peoples' Region (SNNPR), sidamo,and two administrative cities (Addis Ababa and Diredawa). Four of these regional states (namely, Afar, Somali, Benishangul Gumuz and Gambella) are relatively less developed, and categorized as developing regional states. They lag behind the rest of the country in all indicators related to human development and disease prevention and control programmes. The administrative units of Ethiopia (shape files) were obtained from the Database for Global Administrative Areas, 2012 (Workie and Ramana, 2013).

2.1 .PREPAREDNESS AND RESPONSE EFFORTS TO COMBAT COVID-19

The Government has strengthened its preparedness and response efforts to combat *Covid-19* and has set up a well-organized national preparedness and response coordination mechanism through an Emergency Operation Center. Besides, the Ethiopian government has set up four different levels of coordination: (a) National Disaster Risk Management Council led by the deputy prime minister's office; (b) Public Health Emergency Management (PHEM) incorporated a multi-sectorial national task force led by the Minister of Health; (c) The PHEM technical taskforce that has been managed by the Director-General of Ethiopian Public Health Institute (EPHI); and (d) PHEM Technical Working Group led by the national incident manager. As of 31st March 2020, a synergistic approach *Covid 19* humanitarian action has been coordinated by the established Emergency Coordination Center and national and regional the task forces were established in all regions (MOH and EPHI, 2020).

TABLE 1. Regional *Covd-19* Coordination Arrangements

Region	Motivated	Stakeholders	Leaders
Amhara National Regional State	Emergency Committee	Regional office	Regional head of EPHI
Afar National Regional State	Task Force	Regional office	Regional President
Benishangul Gumuz National Regional State	Steering Committee	Cabinet members	Regional President
Gambela National Regional State	No formal Forum	Health cluster members	Regional Health office/ WHO co-chairs
Oromia National Regional State	Steering Committee	Regional office heads and partners	Office of the President & ODRMC
SNNP	Task Force	Regional office heads	Regional President
Somali National Regional State	Regional State EOC	Regional office heads and partners	Regional HB
Tigray National Regional State	Regional State EOC	Regional office heads and partners	Regional Health office
Harari	Task Force	Regional office heads and partners	Regional President
Dire Dawa	Steering Committee	City office heads	City Mayor

Notes: Data from: NDRMC. ETHIOPIA: COVID-19. Humanitarian impact Situation Update No. 01 National Emergency Coordination Center. 2020.[10]

2.2. SITUATIONS SINCE REPORTED TO DATE IN ETHIOPIA

The first case of *Covid-19* was reported on 13 March 2020 in Ethiopia. Since then the Ethiopian government swiftly responded to minimize the impact of *Covid-19* by using different strategies up to the lockdown. However, the situation is becoming unstoppable. Several cases have been reported daily. The cases have reported since escalated to 94,820 *Covid-19* cases, with 1451 *Covid-19*deaths (1.5% of total cases) and 49,886 *Covid-19* recoveries (52.6% of total cases) as of 30 Oct 2020. Currently, Ethiopia has been passing through remittances declining, householdconsumption significantly affected, impededeconomic growth**,** increased debt risks, high inflation and high unemployment rate, and lowered business and tourism. Research indicate that the *Covid-19* response in Ethiopia is hardly impaired due to contextual factors such as a weak health system, poor nutritional status, lack of access to proper hygiene and sanitation and densely populated urban areas (Shigute *et al*.,2020). Currently, since October 2020 to date the country has faced additional challenges of civil war that started northern Ethiopia. In Ethiopia from 3January2020 to 5:29pm,8 September 2021, there have been 316,174 confirmed cases of *Covid 19* with 4,785 deaths, reported to WHO (http://www.newscn › english › 2021-09).

Addis Ababa, September 07/2021 – The number of positive cases, deaths and serious cases in Ethiopia has risen sharply in recent weeks," Health Minister Dr. Lia Tadesse said in the ministry of health (MoH) weekly press briefing (MOH, 2020). The minister also disclosed that cases with the Delta variant have been detected in the country. State run Ethiopian News Agency (ENA) quoted Dr. Lia as saying, "The new variant is a variant that will affect people of all ages, leading to serious illness and possible death, especially those who remain unvaccinated. MoH reported that the surge of *Covid-19* resulted in an increase of infection rate from 1% to 20% and last week only 128 people died as a result of the Covid. The *Delta variant* was first detected in the United States in March 2021 and on June 15, 2021, the Delta variant was classified by the CDC as a "variant of concern" because it spreads from person to person more easily than other variants and may cause more severe Covid disease. The Delta variant is now the most common variant across the U.S. and it is very contagious. People who are unvaccinated are at risk of getting seriously sick from the Delta variant**.** For the most protection against the Delta variant, make sure you and your family members (12 years and older) are fully vaccinated (https://addisstandard.com › news-amid rising.Sep, 2021). Globally as reported by WHO more than 250.33 million corona cases and more than 5.064 million corona related deaths as of Nov 9, 2021.As of Nov 4, 2021, Africa reported total of 8,587,928 cases and with more than 219,316 corona related deaths. As of Nov -9, 2021 there have been total of 367156 confirmed cases of *Covid 19* with 6560 total deaths, reported to WHO in Ethiopia (https://www.worldometers.info › coronavirus, 2021). Therefore Ethiopia now days has challenges like: civil war ,and economic crisis which has influence on corona spreading due to less attention to preventive measures and less day to day awareness creation specially media by MOH and GOE. Keeping federal institutions and government may not be expected; because they are busy by civil war and many other related issues; People themselves take care for themselves and others are the best options (ENA, 2021).

2.3. FIRST COVID-19 OCCURRENCE AND TRANSMISSIONS IN ETHIOPIA

Federal Democratic Republic of Ethiopia's Minister of Heath, Dr. LiaTadesse, reported the first imported case of *Covid-19* on 13 March, 2020 .The first victim of this pandemic disease in Ethiopia is a Japanese citizen came to Ethiopia for humanitarian aid (MOH, 2020).Then three (3) confirmed cases was reported (1 Ethiopian and 2 Japanese citizens) on March 15, 2020 (MOH, 2020).These infected individuals had contact histor6/30/2022y with the first reported Japanese citizen. The first case of the *Covid-19* occurrence in Ethiopia was reported in Addis Ababa, the capital city of Ethiopia. There are more than 4.8 million people found in Addis Ababa. The rapid transmission of the diseases in Ethiopia is ascribed to the center of the test and quarantine for its international destinations. Besides, partial lockdown in Addis Ababa also aggravated the situations. It was first appeared in Addis Ababa. This in turn led to an expansion of the outbreak to all parts of the city since Addis Ababa remains the epicenter. The number of cases to the capital city is attributed to over 75% of all confirmed *Covid-19* cases within Ethiopia as of August 19, 2020. Following this, efforts such as testing, contact tracing, quarantine, and isolation were not able to effectively to control the outbreaks across the country. It is evident that inadequate knowledge about

Covid-19 and a lack of awareness of prevention measures exacerbate community transmission of the disease (Zhong *et al.*, 2020).

According to the WHO, maintaining good hand hygiene through regular washing with soap and water is one of the most effective preventative measures for reducing the transmission of *Covid-19* (Anderson *et a*l.,2020: Xiao and Torok ,2020). Using the same data as above, we also assessed hand hygiene practices, access to water and the availability of hand washing stations in a household. Besides, the risk communication and community engagements are the most important aspects of the country's efforts contributed to minimize the impact and transmission of *Covid-19*. The specific information is tailored to vulnerable groups (women, children and disabilities). Despite the efforts of all parts of the stakeholders, the new cases are alarmingly increasing. Still, some measures have been declining due to the hectic nature of the stakeholders day to day activities. Currently, Ethiopia confirmed that *Covid-19* cases are reported in all parts of the country (MOH and EPHI, 2020).

3. SOCIO-ECONOMIC IMPACT OF *COVID 19* IN ETHIOPIA

3.1. ECONOMIC IMPACT OF *COVID19*

As a result, the most vulnerable areas could face a longer and more acute hunger season. Productivity in high potential areas may be compromised. The output of high agricultural production areas in western Ethiopia which depends on inputs and labor could be negatively affected by *Covid-19* in several ways: i) travel and movement restrictions will suppress the supply market, thus, negatively impacting access to required agricultural inputs like seeds, agrochemicals and fertilizers; and ii) the spreading/fear of *Covid-19* infection among the population will decrease the supply/availability of the labor force for traditionally labor-intensive farming systems(WHO,2020).

Exchange Rate**:***Covid-19* will reduce Ethiopia's main sources of foreign exchange earning such as exports of goods (e.g. flower, textiles), services (e.g. tourism receipts), remittances and FDI. The reduction in forex flows will put pressure on the managed float of the Birr. *Covid-19* will have a two-fold fiscal impact, pulling in opposite directions. First, there will be pressure to spend more to deal with the health and socioeconomic impacts of the pandemic – and this is happening already with an initial Birr 5 billion in additional expenditure authorized by Parliament. Second, revenue collection is likely to be hit hard as a result of a contraction in economic growth as well as a fall in trade taxes due to decreased exports and imports. The *Covid-19* outbreak is expected to lead to a sharp fall in FDI inflows to Ethiopia as key FDI sectors such as oil refining, textiles and garments and hospitality are expected to be hit the hardest due to plunging prices and global demand. Furthermore, precarious economic conditions in major investor countries or regions such as the China, the US and Europe suggests that any recovery will be slow. Cepheus Capital estimates that FDI inflows to Ethiopia will fall to approximately USD 2.4 billion per annum in 2019/20 and 2020/21(https://www.undp.org › dam › undp › library › UN-, .2021). *The poverty reduction*: scenario prior to the impact of *Covid-19* on the Ethiopian economy was on the right trajectory. The emergence of *Covid-19* in Ethiopia and the likely drop in economic performance is likely to increase poverty levels by 2 million people and lead to a further marginalization of rural communities.

This estimate, however, could turn out to be conservative, depending on how the pandemic and associated social and economic impacts evolve over the next 2-3 months and beyond. The *Covid-19* pandemic as a systemic shock to the Ethiopian economy will result in income and employment losses and a likely rise in poverty, especially those that are now positioned just above the income poverty line Vulnerability exposed by *Covid-19* is also visible in non-monetary features of poverty. The Ethiopian Multidimensional Poverty Index (MPI) study of 2019 (https://www.undp.org › dam › undp › library › UN-, .2021) indicated that over half of the population is multi dimensionally poor and has a malnourished person in the household, half live in a household where no one has completed six years of schooling and a third live in a household with a child not attending school; most also lack access to electricity and adequate sanitation facilities. Fruits and vegetable production will suffer: A survey undertaken in April , 2020 by the International Food Policy Research Institute (IFPRI) showed that labor intensive horticulture value chains, based on highly perishable products, have already been impacted by decreased domestic trade and consumption of vegetables despite the Orthodox fasting season, shortage of and increased input prices, increased farm losses, travel bans that impacted the volume and frequency of truck movements, decreased purchases by restaurants and eateries, and misconceptions related to fresh food contamination (https://www.undp.org › dam › undp › library › UN-, .2021).

The Ethiopian manufacturing sector: is already showing serious signs of suffering from *Covid-19* even at this initial stage, with the strongest effects felt in sub-sectors exposed to disruptions in global value chains and shrinking demand in export markets. One third of imports come from China and approximately two-thirds of exports go to Asia and Europe both heavily affected by *Covid-19*. *Services (tourism, hospitality aviation, retail*)**:** The travel industry has been the most impacted sector across the globe. Cross-border travel has been largely shut down in more than 200 countries with full or partial travel bans in place. The air travel industry is the most heavily impacted with an estimated USD 355 billion decline in travel spending in the US alone this year which will translate into a loss of USD 809 billion in economic output. As there is significant uncertainty around how *Covid-19* will evolve, the long-term impact on the industry and associated ones in tourism and hospitality – are hard to predict except to note that they will be very large and, in many cases, catastrophic for smaller businesses and their employees. The Addis Ababa Hotel Owners Trade Sectorial Association (AHA) reported in April that 88% of its members hotels had either partially or fully closed their operations Loss of revenues was estimated at USD 35 million per month (Addis Ababa Hotel Owners Trade Sectorial Association) (McKinsey and Company, 2020).

3.2. SOCIAL IMPACT OF COVID-19

*Health sector***:** *Covid-19* is a new virus and not enough is known yet about how it affects children, youth, or pregnant women. The possibility, however, for people of any age to be infected and transmit the virus, although older people and/or those with pre-existing medical conditions seem more likely to develop serious illnesses. Early detection and containment is essential to prevent and/or delay an overwhelming demand for health care services from an already fragile health system. The Ethiopian Service Availability and Readiness Assessment Survey (SARA) indicated that the national

readiness for routine health services provision in a normal situation is only 55%, pointing to already significant shortfalls in the availability of trained human resources, medicines, equipment, and infrastructure (EPHI, 2018).

*Education***:** The *Covid-19* pandemic has resulted in school closures across the world. It is estimated that learning for 89% of the world's student population has been disrupted reported by United Nations Children's Fund (UNICEF, 2020) .In Ethiopia, schools have been closed since 16 March 2020 and this is likely to remain the case until the end of the academic calendar. This means that over 26 million children were not in school of which approximately 77% are primary school pupils. But from Sep 2020 schools were opened. These children are neither learning nor benefitting from other school-based support mechanisms such as protection, health, and school feeding. In short, children's well-being is at risk with the spread of *Covid-19* pandemic in Ethiopia, the operations of many institutions – both public and private - have been affected adversely (UNICEF, 2020).

4. THE ZOONOTIC IMPORTANCE OF CORONA VIRUSES AND ITS ORIGIN

4.1. ZOONOTIC IMPORTANCE OF CORONA VIRUS

Coronaviruses (Covs) are a family of enveloped single-stranded RNA viruses of medical and veterinary importance that infect mammals and birds, causing respiratory or enteric diseases. Tracing the zoonotic origins of HCoVs provides a framework to understand the natural history, driving force, and restrictive factors of cross species transmission (YeZ*et al*., 2020). Coronaviruses are a family of RNA (ribonucleic acid) viruses. They are called coronaviruses because under an electron microscope the virus particle exhibits a characteristic 'corona' (crown) of spike proteins around its lipid envelope. Coronavirus infections are common in animals and humans, and there is a history of coronaviruses crossing species and adapting to new hosts. There are many species and strains of coronavirus which have different characteristics, causing a range of clinical signs– from very mild to severe disease in humans and in different animal species like: bats, civet cats, pigs, pangolin etc. To identify the source or origin of a virus, it is helpful to look at the genetic makeup of the virus and see whether it resembles other known viruses. This may provide some clues as to its origin. Viruses that are genetically closely linked tend to come from a similar source or similar geographic area. *SARS-Cov-2*, the virus responsible for *Covid-19*, belongs to a group of genetically related viruses that includes *SARS-Covs* and a number of other CoVs isolated from bat populations. *MERS-Covs* also belongs to this group but is less closely related (WHO, 2020).

It is also necessary to investigate and interview in depth the first known human cases of the disease for indications as to where they may have become infected. This may help identify earlier possible cases and narrow the geographical areas and timeframes so that more specific investigations could be performed to identify the source. Currently, the zoonotic source of *SARS-Cov-2* is unknown**.** All *SARS-Cov-2* isolated from humans to date are closely related genetically to coronaviruses isolated from bat populations, specifically, bats from the genus Rhinolophus. *SARS-Cov*, the cause of the *SARS* outbreak in 2003, is also closely related to coronaviruses isolated from bats. These close genetic relations suggest that they all have their ecological origin in bat populations. Bats in the Rhinolophus genus are found across Asia, Africa, the

Middle East, and Europe. *SARS-Cov-2* is not genetically related to other known coronaviruses found in farmed or domestic animals. The analysis of the virus genome sequences also indicates that *SARS-Cov-2* is very well adapted to human cell receptors, which enables it to invade human cells and easily infect people (WHO, 2020).

4.2. ORIGIN OF *COVID-19* CASES OF DECEMBER 2019

It is strongly believed that HCoVs have a zoonotic origin from bats, mice, or domestic animals (Su *et al*., 2016; Yez *et al*., 2020). Indeed, more specifically, ample evidence suggests that the evolutionary origin of all HCoVs lies in bats, which are well-adapted and nonpathogenic but show great genetic diversity. As soon as the first cases of *Covid-19* were reported in late December 2019, investigations were conducted to understand the epidemiology of *Covid-19* and the original source of the outbreak. A large proportion of the initial cases in late December 2019 and early January 2020 had a direct link to the Huanan Wholesale Seafood Market in Wuhan City, where seafood, wild, and farmed animal species were sold. Many of the initial patients were either stall owners, market employees, or regular visitors to this market. Environmental samples taken from this market in December 2019 tested positive for *SARS-Cov-2*, further suggesting that the market in Wuhan City was the source of this outbreak or played a role in the initial amplification of the outbreak. The market was closed on 1 January 2020 and was cleaned and disinfected. The virus could have been introduced into the human population from an animal source in the market or an infected human could have introduced the virus to the market and the virus may have then been amplified in the market environment. Subsequent investigations into the first human cases have determined that they had onset of symptoms around 1 December 2019. However, these cases had no direct link to the Huanan Wholesale Seafood Market and they may therefore have been infected in November through contact with earlier undetected cases (incubation time between date of exposure and date of symptom onset can be up to 14 days). Additional studies are ongoing to as whether unrecognized infections in humans may have happened as early as mid-November 2019 (WHO, 2020).

A number of investigations in the area believed to be the source of the outbreak in China are currently underway or planned. These include investigations of human cases with symptom onset in and around Wuhan in late 2019, environmental sampling from markets and farms in areas where the first human cases were identified, and detailed records on the source and type of wildlife species and farmed animals sold in these markets. Until the source of this virus is identified and controlled, there is a risk of reintroduction of the virus into the human population and the risk of new outbreaks like the ones we are currently experiencing (WHO, 2020).

5. THE LEVEL OF PEOPLE'S AWARENESS ABOUT THE *COVID-19* AND ITS PREVENTIVE MEASURES

The level of people's awareness about the covid-19 is less. It is understandable that you may feel anxious about the outbreak. Get the facts from reliable sources to help you accurately determine your risks so that you can take reasonable precautions. Seek guidance from WHO, your healthcare provider, your national public health authority or your employer for accurate information on *Covid-19* and whether *Covid-19* is circulating where you live. It is important to be informed of the situation and take

appropriate measures to protect yourself and your family.If you are in an area where there are cases of *Covid-19* you need to take the risk of infection seriously. Follow the advice of WHO and OIE guidance issued by national and local health authorities. Containing the rapidly spreading virus relies on the public having accurate perceptions of personal and societal risk factors. This becomes vital as people's behavior can fundamentally influence and alter the spread of a pandemic (Funk *et al*., 2009; Bavel *et al.,* 2020).

Observation results showed that most people in Ethiopia had demonstrated the readiness to apply the recommended *Covid-19* prevention measures during the early stages of the pandemic. Most of them practiced regular hand washing with soap and water, wore face masks, utilized sanitizers, and stayed at home due to closures to schools and government offices. However, there were limited practices in physical distancing, notably in churches and mosques, market places, coffee houses and restaurants where a large number of people congregate. Based on this, it can be argued that the majority of the public has continued to neglect government advice about physical distancing and other prevention measures. Some of the factors leading to negligence to prevention measures include cultural and religious misunderstandings and misinformation about the virus. Majority of the public in Ethiopia still believe that the *Covid-19* is a "punishment from God" or "Allah" due to people's immoral acts and still there is another belief that the pandemic is an illness of the old and does not affect the young. Therefore, despite diverse *Covid-19* education programs through different media, most people, particularly the young generation, ignore these messages. The reason to overlook them can be the lack of preparedness from the public to cooperate and implement the recommended prevention measures. In Ethiopia it seems business as usual for most people despite the mounting numbers of the *Covid-19* cases. Hence, it requires identifying the factors preventing these individuals from applying the *Covid-19* prevention measures (Bavel *et al.,* 2020).

5.1. PREVENTIVE MEASURES (ESPECIALLY VACCINE)

The vaccines were produced within a year of the WHO Director-General's declaration of the novel coronavirus outbreak (*Covid-19*) a public health emergency of international concern (PHEIC).This is the first time in history that vaccines were produced in such a short time, a result of the tremendous efforts in vaccine research, development and manufacture. By April 2021 in Africa more than 4.2 million confirmed cases and nearly 113,000 *Covid-19* deaths had been reported on the continent by the Africa CDC dashboard, although it is widely acknowledged that the true scale of *Covid-19* in most countries is much greater than these reported figures. Launched in 2020 by Africa CDC, the *Covid-19* Vaccine Development and Access Strategy aims to immunize at least 60% of the African population (or 780 million people) by 2022 with vaccines that are proven safe and efficacious and are quality-assured to international standards to develop "herd immunity (CDC Africa, 2021). By April 2021, 45 African countries had received shipments of Covax vaccines (Jerving, 2021) and administered 18 million doses, progress is being monitored by Africa CDC. The arrival of the vaccines in Ethiopia was made possible through the Covax Facility with the generous support of partners that spared no efforts or resources to ensure the timely and equitable distribution of vaccines across the globe.

(https://reliefweb.int › report › Ethiopia, 31 March 2021).

As of 7 March, 2021 Ethiopia has received its first 2.2 million doses of vaccine against the coronavirus, and officials in Africa's second most populous country say the first jabs will be administered to health workers. The doses of the AstraZeneca vaccine, manufactured by the Serum Institute of India, were allocated under the UN-led Covax initiative which is working to facilitate vaccine access for poorer countries. An Africa CDC survey (data shown here from 13 out 15 counties, n=13,699, Sept-Dec 2020) found the highest overall acceptance: 79% of respondents would agree to take a *Covid-19* vaccine if it was deemed safe and effective. Ethiopia (94%) reporting the highest acceptance rate and the DRC (59%) the lowest (CDC Africa, 2021). As of 6 September 2021, a total of 2,575,687 vaccine doses have been administered in Ethiopia (https://reliefweb.int › report › Ethiopia, 2021).The condition seems non stoppable if preventive measures does not put restrictedly in application and as of November-9, 2021 a total of 5.04 million of vaccine doses have been administered and 1.37 million of total population is vaccinated (1.2 % of total population is vaccinated) in Ethiopia. Now day's different types of vaccines available in the world like, Sinopharm vaccine, oxford AstraZeneca and Johnson and Johnson. As of November-9, 2021 a total of 7.54 billion of vaccine doses have been administered and 3.91 billion of total population have been vaccinated (40.2% of total population is vaccinate d) globally (https://www.worldometers.info›coronavirus , 2021).

Influence of safety on acceptance	60% of those not to be willing to accept a COVID-19 vaccine cited concerns about safety 16% of those willing to accept a COVID-19 vaccine cited concerns about safety	Africa CDC (n=13,99 September-December 2020)[4]
	59% reporting that vaccines are not safe would still accept vaccination 13% reporting vaccines are safe would refuse vaccination	
Range in perceptions that a COVID-19 vaccine is safe	Lowest: Senegal and DRC (49%) to highest: Ethiopia (85%) and Niger (78%)	
COVID-19 vaccine is as safe as general vaccinations	Ethiopia was one of the very few countries reporting this: 85% safety for both variables	

TABLE 2. Concerns about vaccine safety

(***Source: Africa CDC, 2020***)

6. CONCLUSION AND RECOMMENDATIONS

As a result of *Covid 19*, world views worried about the influence of the disease in the low income countries including Ethiopia. Although developed countries are incapable to control the disease and still many peoples are losing their lives. The first case in Ethiopia has confirmed a coronavirus disease (*Covid-19*) case in Addis Ababa, Ethiopia. The case is a 48- year old Japanese man reported to have traveled from Japan to Burkina Faso and who then arrived in Ethiopia. The case, which was announced on the 13th of March 2020, is the first one to be reported in Ethiopia since the beginning of the outbreak in China in December 2019. The delta variant is now the most common variant started from U.SA distributed across the world and it is very contagious. A number of investigations in the area believed to be the source of the outbreak in China are currently underway or planned. These include investigations of human cases with symptom onset in and around Wuhan in late 2019, environmental sampling from markets and farms in areas where the first human cases were identified, and detailed records on the source and type of wildlife species and farmed animals sold in these markets. Until the source of this virus is identified and controlled, there is a risk of reintroduction of the virus into the human population and the risk of new outbreaks like the ones we are currently experiencing .Therefore the local and global health organizations should have coordinated to strength the one health concept in the area since the virus has medical and veterinary importance that infect mammals and birds, is zoonotic or may reemerge again and again near in the future.

Based on above conclusion the following recommendations and additional advices are forwarded:

- The Federal government of Ethiopia should support both medical and veterinary health centers and laboratories found in the ten regional states and two town administrations rather depending on only Ethiopian public health institute (EPHI) and other health centers found in the capital city Addis Ababa. In addition to these since the positive cases are rising and accumulating, some of the existing malls, halls (Including millennium halls) , schools, stadiums, hotels, and exhibition centers should be arranged as temporary hospitals to receive *Covid-19* patients. Establishing another safe rooms which contain important equipment's (Example: Ventilators) for severely affected patients
- If you are not in an area where *Covid-19* is spreading or have not travelled from an area where *Covid-19* is spreading or have not been in contact with an infected patient, your risk of infection is low. It is understandable that you may feel anxious about the outbreak.
- Get the facts from reliable sources to help you accurately determine your risks so that you can take reasonable precautions. Seek guidance from WHO, your health care provider, your national public health authority or your employer for accurate information on *Covid-19* and whether *Covid-19* is circulating where you live. It is important to be informed of the situation and take appropriate measures to protect yourself and your family.If you are in an area where there are cases of *Covid-19* you need to take the risk of infection seriously.

- The government should prepare important facilities including diagnostic kits, other personal protective equipment's (PPE), and resources needed for quarantine and isolation. Since the above mentioned strategies helped china to reduce *Covid-19* new cases appearing each day from 1600 to none
- The Federal government of Ethiopia should formulate strong networking and partnership with other developed countries such as Chinese doctors and health practitioners to share their experience and information on timely diagnosis, testing efficiency, supportive therapy including Chinese traditional medicine to control this disease. Though Integration and interdisciplinary synergies will help in controlling of this recent pandemic disease.

Wash hands frequently using soap; use face masks; Maintain social distancing; Stay informed and follow advice given by your healthcare provider; get vaccination if it is available in your local health centers and Stay at home if you begin to feel sick.

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