EPHI, National Data Management Center for health (NDMC)
Quick update on COVID-19, 025

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Ethiopia's COVID-19 situation update

As of October 01, 2020 there were a total of 75,368 COVID-19 cases and 1,198 deaths across the country. Compared to the cases and deaths reported a week ago, the cumulative cases and deaths have increased by 4%. So far 31,204 cases have recovered from COVID-19 (Fig 1). Of the 43,233 active cases, 269 are critical. The total number of tests stands at 1,272,350 showing a 2% increase compared to last week.

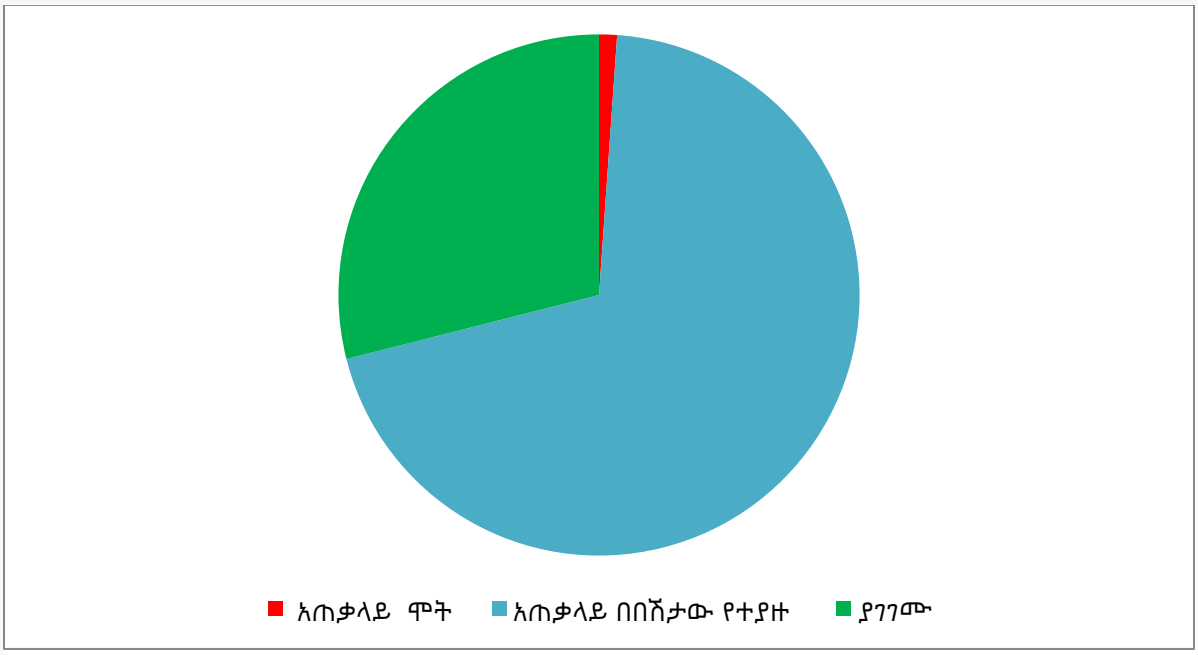

Fig. 1. Showing cumulative cases, recoveries and death as of October 01, 2020.

EPHI and FMOH COVID 19 response highlights of the week

- Since Home Based Isolation and Care (HBIC) have started in Ethiopia, a total 18,513 COVID-19 confirmed cases have been followed as of October 01, 2020. Of which, 12,510 recovered and 6036 cases are currently on follow up. Five COVID-19 related deaths have been reported 153 cases have been transferred to treatment centers while, 170 cases have been transferred from treatment centers to HBIC.
- Four days Home-Based Isolation and Care (HBIC) TOT started on September 24, 2020 in Bahirdar town for 20 health professionals from Amhara Regional state.
- Four days Home-Based Isolation and Care (HBIC) TOT started on Sept 30, 2020 in Mekele city for 21 health professionals from Tigray region.
- Two days training on HBIC started on Sept 24, 2020 for 19 health professionals to be assigned on HBIC toll free hotline to provide Mental Health and Psychosocial Support (MHPSS) for home isolated cases in Addis Ababa.
- On Sep 28, 2020, training was provided on risk communication for Addis Ababa regional health bureau and for 12 sub-city risk communication and community engagement (RCCE) coordinators.

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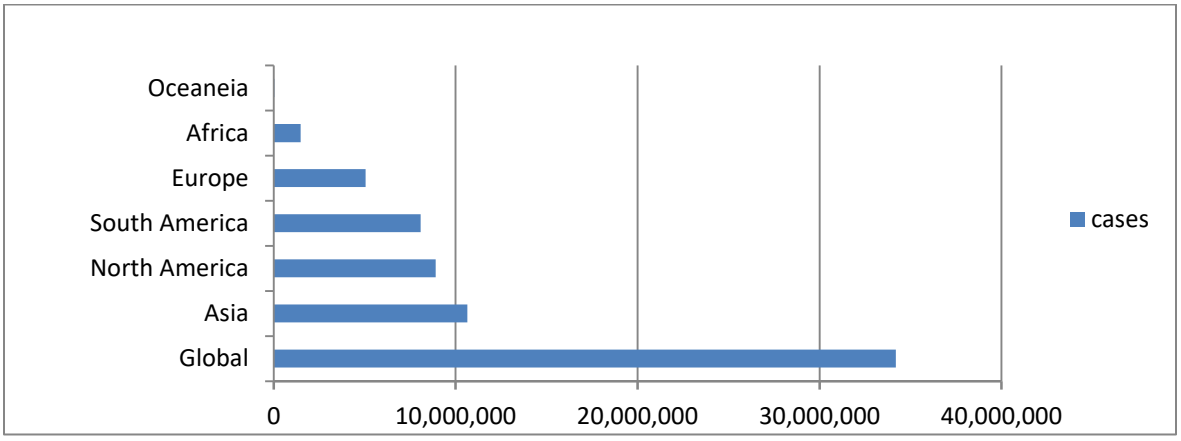
Global and regional burden of COVID-19

- Globally the total number of cases is extended to 34,193,892 as of October 01, 2020. A total of 25,451,033 cases recovered and 1,019,251 people died since the beginning of the outbreak. Globally, in a week time, from September 24 to October 01, 2020, COVID-19 cases increased by 6.36% and deaths by 3.72%. Asia is the leading in terms of cases followed by North and South America. North America leads the number of deaths followed by South America and Europe (Fig 2).



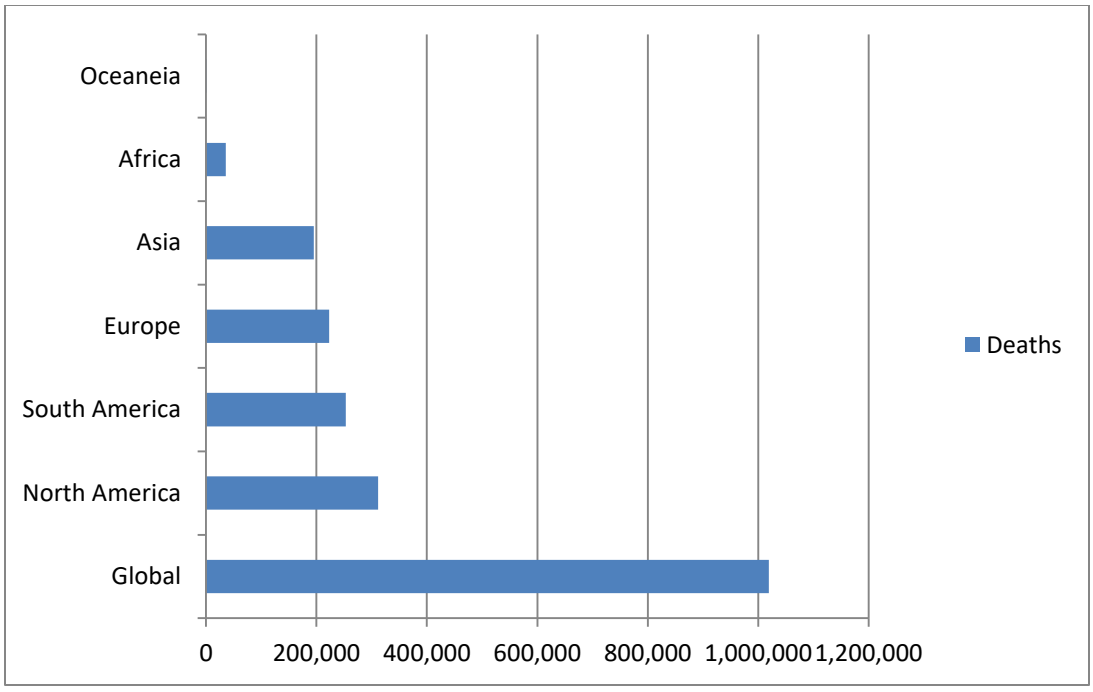
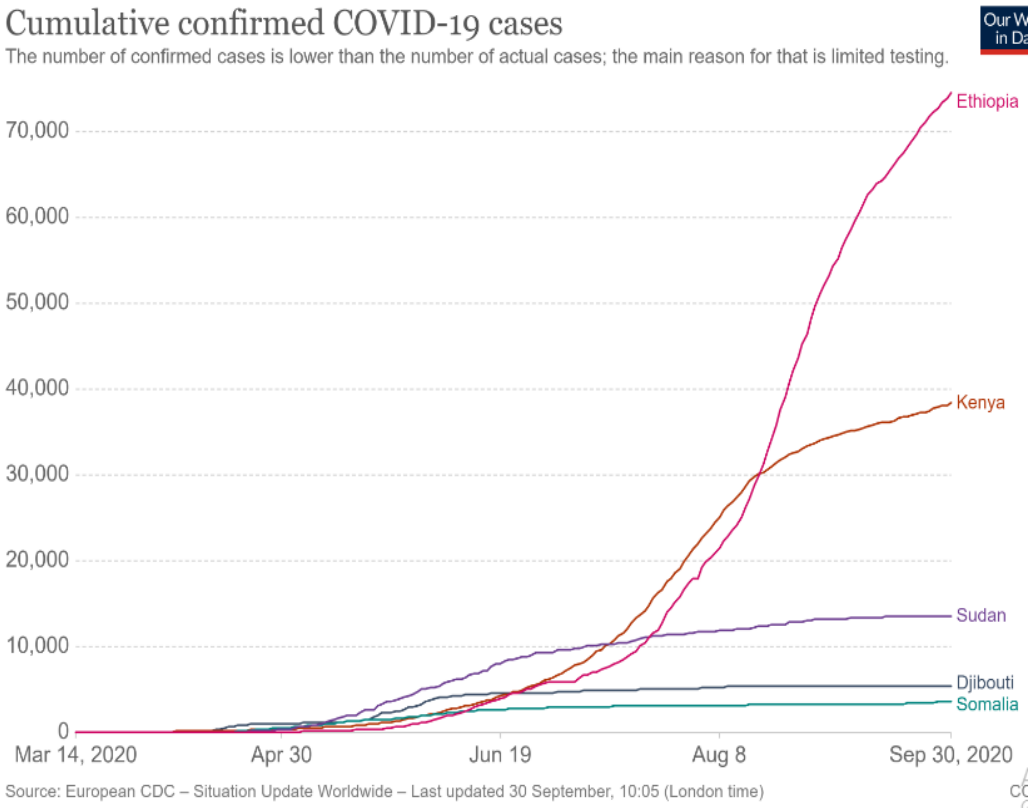


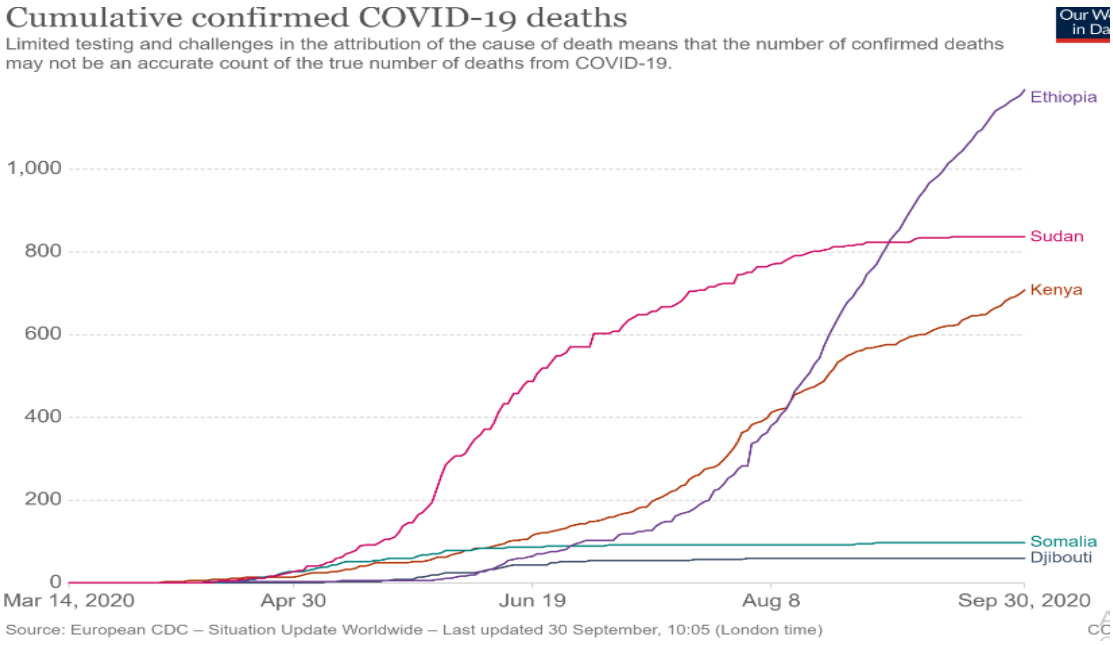
Fig 2. Global cases (top) and deaths (bottom) reported as of October 01, 2020.

- USA has recorded the highest number of cases (7,450,637 cases, 211,778 deaths) that accounts 21.8% of the total global cases and carried 20.8% of global deaths as of October 01, 2020.
- India became the 2nd in terms of cases following USA. The number of cases in India has increase in a week time by 10.02% (5,737,197 to 6,312,584) and deaths by 8% (91,204 to 98,708).
- The number of cases in Brazil has increased by 4.01% (4,627,780 to 4,813,586) and deaths by 3.52% (139,065 to 143,962) in a week time.
- Russia has continued reporting the highest number of cases in Europe, with 1,185,231cases.
- Colombia ranked 5th in the world with 829,679cases in a week time.
- The line share of Africa to the global COVID-19 pandemic has still been low (only 4.36% of the global cases and 3.52% of deaths as of October 01, 2020). However, within the continent the number of cases has increased by 3.7% in a week time (1,436,464 to 1,489,711cases). Similarly, the total number of deaths in Africa has increased from 34,584 to 35,922 showing a 3.87% increase in a week time.
- South Africa ranked 10th worldwide in terms of cases and leading in the continent with 674,339 cases and 16,734 deaths. Morocco (123,653 cases, 2,194 deaths), Egypt (103,198 cases, 5,930deaths), Ethiopia (75,368cases, 1,198 deaths), and (Nigeria (58,848 cases, 1,112 deaths) are the most four leading countries next to South Africa in reporting COVID-19 cases in the continent as of October 01, 2020. (See table below).

Africa	September 24		October 01	
	Cases	Death	Cases	Deaths
South Africa	665,188	16,206	674,339	16,734
Morocco	107,743	1918	123,653	2,194
Egypt	102,375	5822	103,198	5,930
Ethiopia	71,083	1141	75,368	1,198
Nigeria	57,724	1102	58,848	1112

- In East African, COVID-19 cases and deaths have shown fast progress. In a week time, COVID-19 cases and deaths increased by 4% in Ethiopia and by 3.2% and 7.1% in Kenya. As of October, Ethiopia and Kenya are the major drivers of the COVID 19 burden in east African countries. The epidemic appears plateauing in Sudan showing only 0.5% cases and zero deaths and in Djibouti 0.2% cases and zero deaths. Similarly, 3.5% cases and 1% deaths reported in Somalia in a week time.





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Is silent hypoxia in COVID-19 a missed diagnosis?

- Patients with coronavirus disease (COVID-19) are described as exhibiting oxygen levels incompatible with life without dyspnea. This is called silent or happy hypoxemia. COVID-19 is considered culpable for many lower respiratory tract infections, leading to severe respiratory failure in several cases. Though, the cause of respiratory failure is not clear, patients develop what is referred to as silent hypoxemia, and impaired pulmonary diffusion leads to a gradual fall in oxygen saturation.
- Disconnect between the severity of hypoxemia and the relatively mild respiratory discomfort reported by the COVID-19 patients contrast with the experience of physicians usually treating critically ill patients in respiratory failure.
- The underlying mechanism responsible for severe hypoxemia in the absence of dyspnea is not well explained. It has been postulated that this clinical picture may be consistent with a phenotype of COVID-19 pneumonia (L-phenotype) characterized by low elastance, low ventilation-perfusion ratio, near normal compliance, ventilation-perfusion mismatch caused by impaired lung perfusion regulation and pulmonary vaso-occlusive disease.
- The other speculated reason for hypocapnic hypoxia without dyspnea is that SARS-CoV-2 is known to induce vascular proliferation in the lungs, which can cause a right-to-left shunt. In

the face of a shunt, hyperventilation will not increase PaO2 but will certainly decrease PaCO2, CO2 being more diffusible than O2. Thus, hypocapnia would develop, abolishing any further increase in ventilation.

- The normal pulse oximetry reading of SPO2 in humans is 95-100%. A patient with an SPO2 value under 90% (PaO2 <60 mmHg) usually indicates the need for supplemental oxygen. In normal circumstances, there should be a compensatory ventilatory response to hypoxaemia to increase minute ventilation by hyperventilation or air hunger to overcome such a decrease in oxygen. However, this is not happening in some patients with COVID-19. There are many case reports that the patient SPO2 reading was very low, but patients are very 'comfortable' (talking, siting in chairs, telephone for family…). This may also explain a number of out-of-hospital deaths in Ethiopia
- Discrepancies between respiratory rate and SpO2 in COVID-19 patients with acute respiratory failure have been highlighted previously, suggesting that a normal respiratory rate may belie profound hypoxemia in this setting. It is not exclusively seen in COVID-19 as well.
- Of great concern is the risk of false reassurance if patients develop hypoxemia without subjective sensation of dyspnea. "Silent hypoxemia", or low SpO2 in the absence of dyspnea, has been reported in the setting of COVID-19, and clinicians have speculated that it may be associated with increased out-of-hospital mortality case reports describing patients presenting to hospitals with rapid deterioration and respiratory failure without signs of respiratory distress.
- If sick patients were given oxygen-monitoring devices called pulse oximeters to monitor their symptoms at home, they might be able to seek medical treatment sooner, ultimately avoiding the most invasive treatments and decreasing out-of-hospital deaths.

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SARS-COV-2 Vaccines Development

- Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) emerged in late 2019 in China and caused a coronavirus disease 2019 (COVID-19) pandemic. To mitigate the public health, economic and societal impacts of the virus, a vaccine is urgently needed.
- A successful vaccine would be able to protect the population from COVID-19. Developers from around the world are using different platforms, from tested ways to induce immunity in a vaccinated person (e.g., live attenuated virus vaccines), to innovative platforms never used before (e.g., DNA-based vaccines), to build vaccines to protect people against COVID-19 disease. Each type offers unique benefits and challenges and we will likely need more than one approved vaccine to vaccinate every person around the globe.
- The development of COVID-19 vaccines was initiated in early January 2020 when the sequence of the virus became available and moved at record speed with one Phase I trial already starting in March 2020 and currently more than 213 vaccines in various stages of development. This vaccines fall into 9 different product categories/platforms. As of September 29, 35 vaccines are in one of four phase of clinical test and mentioned according to their categories as follow:
- DNA-Based vaccines work by inserting a genetically engineered blueprint of viral gene(s) into small DNA molecules (called plasmids) for injection into vaccinated people. Cells take in the DNA plasmids and follow their instructions to build viral proteins, which the immune system recognizes as foreign, triggering the immune response that protects against the disease. Four different DNA vaccines developed by Inovio Pharmaceuticals/ International Vaccine Institute, Osaka University/ AnGes/ Takara Bio, Cadila Healthcare Limited and Genexine Consortium are currently in Phase II clinical trials.
- Inactivated Virus: This type of vaccine consists of the disease-causing virus that has been killed (with heat or chemicals), so it won't make you sick, and can be used in people that may not be able to use a live attenuated virus vaccine (e.g., those who are immune-compromised). In general, inactivated virus vaccines do not provide as strong of an immune response as live attenuated virus vaccines, so additional doses of the vaccine may be needed to get a strong enough immune response. Still, they may be safer for some people. Under this category six vaccines with different clinical phase are currently in clinical trials. Among them, Vaccines produced by China's Sinovac Biotech Ltd and Sinopharm Group (Wuhan Institute of Biological Products and Bejing Institute of biological Products) are in Phase III trials.
- Non-Replicating Viral Vector (NRVV): This approach is similar to replicating viral vector vaccines in that a viral gene is added to a different, non-replicating, virus and delivered to the vaccine recipient. No approved product of this kind has resulted to date. Under this category five vaccines with different clinical phase are currently in clinical trials. Vaccine developed by University of Oxford/AstraZeneca, CanSino Biological Inc. /Beijing Institute of

Biotechnology, Gamaleya Research Institute, and Janssen Pharmaceutical Company are the first non-replicating viral vaccines in Phase III trials.

- Protein Subunit: Rather than introducing whole viruses to an immune system, a fragment of the virus is used to trigger an immune response and stimulate immunity. Examples include the subunit vaccines against hepatitis B and shingles. Under this category six recombinant protein vaccines with different clinical phase are currently in clinical trials. Of those, Novavax and Anhui Zhifei Longcom Biopharmaceutical/Institute of Microbiology, Chinese Academy of Sciences are in Phase III and Phase II respectively.
- Replicating Viral Vector: This involves putting a gene for a viral protein into a different virus (one that will not cause illness but can replicate). Replication of the viral vector also produces copies of the viral protein, which triggers an immune response to that protein. Examples include ebola and dengue vaccines. Under this platform only one Replicating Viral Vector vaccines produced by Institute Pasteur/Themis/Univ. of Pittsburg CVR/Merck Sharp & Dohme, has entered clinical trials.
- RNA-Based Vaccine: Similar to DNA vaccines, these experimental vaccines provide immunity through introduction of genetic material (RNA). RNA vaccines can also be potentially developed more quickly and easily than other vaccines. No RNA vaccines have been approved for human use. Under this category six RNA-Based Vaccines with different clinical phase are currently in clinical trials and only one vaccine created by the Moderna/NIAID has entered Phase III trials.
- Virus-like particle (VLP) vaccines closely resemble viruses but are non-infectious because they contain no viral genetic material. Since VLPs cannot replicate, they provide a safer alternative to attenuated viruses. Examples include the HPV vaccine. Under this platform Virus-Like Particle vaccines manufactured SpyBiotech/ Serum Institute of India and Medicago Inc. are in Phase I/II trials respectively.

Leading Candidate Vaccines in Clinical Evaluation

COVID-19 Vaccine developer/manufacturer	Vaccine platform	Type of candidate vaccine	Number of doses	Timing of doses	Route of Administration	Clinical Stage
Sinovac	Inactivated	Inactivated	2	0, 14 days	IM	III
Wuhan Institute of Biological Products/Sinopharm	Inactivated	Inactivated	2	0,21 days	IM	III
Beijing Institute of Biological Products/Sinopharm	Inactivated	Inactivated	2	0,21 days	IM	III
University of Oxford/AstraZeneca	NRVV	ChAdOx1-S	1		IM	III
CanSino Biological Inc./Beijing Institute of Biotechnology	NRVV	Adenovirus Type 5 Vector	1		IM	III
Gamaleya Research Institute	NRVV	Adeno-based (rAd26-S+rAd5-S)	2	0,21 days	IM	III

Janssen Pharmaceutical Companies	NRVV	Ad26COVS1	2	0, 56 days	IM	III
Novavax	Protein Subunit	Recombinant glycoprotein nanoparticle vaccine	2	0, 21 days	IM	III
Moderna/NIAID	RNA	LNP-encapsulated mRNA	2	0, 28 days	IM	III
BioNTech/Fosun Pharma/Pfizer	RNA	3 LNP-mRNAs	2	0, 28 days	IM	III

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Addiction in the COVID-19 era: Current evidence, future perspectives a comprehensive review

- In the context of the COVID-19 worldwide pandemic, an up-to-date review of current challenges in addictions is necessary.
- While large scale disasters may have an impact on substance use and addictions, the use of some substances is also likely to modify the risk of COVID-19 infection or course.
- Many countries have imposed lockdowns. Whether this quarantine or the end of lockdown measures will have an impact on substance use is discussed.
- Overall, pathophysiological data showed an increased risk of infections for individuals with Substance Use Disorders (SUD) and a possible protective role of nicotine.
- During lockdown, there is a substantial risk of increasing SUDs. Individuals with opioid use disorder are particularly at risk of relapse or of involuntary withdrawal. After lockdown, increase of use may be observed as far as years after.
- Individuals with addictions are at higher risk of multi-morbidity and mortality during COVID outbreak.
- People with SUD are at greater risk of worse COVID-19 outcome. There is surge of addictive behaviors (both new and relapse) including behavioral addiction in this period.
- Withdrawal emergencies and death are also being increasingly reported. Addicted people are especially facing difficulties in accessing the healthcare services which are making them prone to procure drugs by illegal means.

- COVID-19 and addiction are the two pandemics which are on the verge of collision causing major public health threat.
- While every effort must be taken to make the public aware of deleterious effects of SUD on COVID-19 prognosis, the resumption of deaddiction services and easier accessibility of prescription drugs are needs of the hour.

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Rapid Response Survey to Reopen Schools during COVID-19

School Closure and Re-opening Models:

- Children aged less than 10 years can transmit COVID-19 in school settings, but less is known about COVID-19 incidence, characteristics, and health outcomes among school-aged children aged 5–17 years with COVID-19.
- There is a lack of scientific consensus about the impact of school closures and re-openings on community transmission of COVID-19. On the other hand, there is considerable concern about the indirect effect of school closures on students and parents.
- Most models of school re-opening involve reductions of class size, increasing physical distance between students, and keeping students in defined groups with limited interaction between groups to reduce the potential for wide-scale transmission within schools.
- Most countries that have re-opened schools have instituted some degree of staggering the start, stop, and break times within the school. A number of countries are using alternate shifts (morning, afternoon) or alternate days, while a smaller number of countries have maintained relatively normal school schedules.
- A number of countries have re-opened schools only for younger or older students in order to accommodate the increase in resources (classroom space, teachers, etc.) required for smaller class sizes. More countries have re-opened only for younger students.
- In a number of countries, face masks are required for students and/or staff in schools, with variability of the lower age limit for face mask requirements. However, some countries are not using facemasks as a part of their re-opening model.
- Systematic school-based testing for COVID-19 virus or antibodies is being done on a small scale in a limited number of settings, but this approach is not widely implemented at this time.

Rapid Response Surveys:

- Decisions on reopening will require countries to quickly gather critical information on how schools, teachers, students and communities are coping with closures and the pandemic. Rapid response surveys of school and local leaders, teachers, students and parents can help provide this information.
- Decision makers must then assess how learning and wellbeing can best be supported in each context, with special consideration of the benefits of classroom-based instruction vis-à-vis remote learning, against risk factors related to reopening of schools, noting the inconclusive evidence around the infection risks related to school attendance.

Some of the assessment questions are:

- How essential is classroom instruction to achieve the respective learning outcomes (foundational, transferable, digital, job-specific), recognizing issues such as the importance of direct interaction with teachers for play-based learning with younger children and developing foundational skills?
- How available and accessible is high-quality remote learning (for respective learning outcomes, age groups and for marginalized groups)?
- How long can the current remote learning approach be sustained, including learning achievements, and social-emotional wellbeing, given domestic pressure on caregivers and other context-specific factors?
- Do caregivers have the necessary tools to protect children from online harassment and online gender-based violence, while they are learning through online platforms?
- How are the 'high stakes' key transition points on the learning journey (readiness for school; primary completion and transition; secondary completion and transition to tertiary) affected by the pandemic and responses to it?
- How ready and able are teachers and educational authorities to adapt to different administrative and learning approaches? Are they able and ready to implement infection prevention and control measures?
- Are there protection-related risks related to children not attending school, such as increased risk of domes-tic violence, child labour, or sexual exploitation against girls and boys?
- Do school closures compromise other support services provided by schools, such as school health and nutrition activities?
- What are the social, economic and well-being related implications of children not attending school?
- What is the capacity of the school to maintain safe school operations to mitigate risks, such as social distancing (i.e. size of classroom compared to number of students); and water, sanitation and hygiene facilities and practices?
- What is the level of exposure between the school population and higher-risk groups, such as the elderly and those with underlying medical conditions? If exposure is high, can sufficient mitigation efforts be taken?

- How does the school population travel to and from school?
- What are the community-related risk factors considering epidemiological factors, public health and health-care capacities, population density and adherence to social distancing and good hygiene practices?

  ✓ Analyzing the context-specific benefits and risks enables prioritization of schools (or components of schools) for reopening; prioritization of risk mitigation measures within schools and communities; and areas of focus for remote learning.

  ✓ It is important for schools and communities to monitor multiple indicators of COVID-19 among school-aged children and layer prevention strategies to reduce COVID-19 disease risk for students, teachers, school staff, and families. These results can provide a baseline for monitoring trends and evaluating mitigation strategies.

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