Research

Malawi’s Response, Risk Factors, and Preparedness for COVID-19

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Abstract: The coronavirus (COVID-19) outbreak is of great concern worldwide and particularly in developing countries. Emerging in China in December 2019, COVID-19 has spread rapidly to almost all continents causing numerous fatalities and economic damage. By the end of March 2020, more than 3005 cases were reported from over 40 countries across Africa. However, Malawi is amongst ten countries that had not yet recorded a case. The experiences of other countries served as a warning to the emerging country. This paper presents an assessment of Malawi’s response, risk factors, and preparedness for COVID-19 up to 31st March 2020. An evaluation of news articles, journal papers, progress reports, and other published materials was carried out. Findings show that several key initiatives were taken by the government of Malawi including a declaration of disaster, restrictions on gatherings to no more than 100 people, travel restrictions, and the promotion of sanitation and hygiene practices. However, several gaps need to be addressed for better preparation including human resource reallocation, improvement of quarantine facilities, provision of protective gear to healthcare workers, and intensification of sensitization campaigns. Like other emerging countries, Malawi has distinctive and challenging resource constraints. Socio-economic, cultural, technical, and political factors all play a role in determining preparedness and require a comprehensive approach.

Keywords: coronavirus, COVID-19, Malawi, preparedness, risk factors, response

1. Introduction

The initial novel coronavirus (2019-nCoV) cases were communicated on 29th December 2019. The four patients were all associated with the Huanan seafood wholesale market in central China’s Wuhan city (1). Also known as 2019-nCoV, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), or COVID-19 (2), the virus had been isolated from patients in Wuhan by Chinese scientists by 7th January 2020. (1,2). By the end of January 2020, more infections were detected in several Chinese cities and approximately 9976 people contracted the virus in almost 21 countries (1,3). Further investigations showed that the human-to-human spread of COVID-19 was
happening (1,4). In Africa, the first COVID-19 case was confirmed in Egypt on 14th February 2020. The second case emerged in Nigeria on 27th February 2020 (5,6). By the end of March 2020, more than 3005 cases were recorded in about 40 countries across the continent excluding São Tomé and Príncipe, Burundi, South Sudan, Sierra Leone, Comoros, Malawi, Lesotho, the disputed states of the Sahrawi Arab Democratic Republic and Somaliland, and the territory of Saint Helena, Ascension and Tristan da Cunha (7,8). The majority of recorded cases were from the United States and Europe rather than from China [5].

The World Health Organization (WHO) has been supportive of African states since the beginning of the outbreak through the provision of large stocks of COVID-19 testing kits, healthcare professionals’ training, reinforcement of community surveillance, and distribution of guidelines (9). Individual philanthropists such as the Chinese billionaire, Jack Ma, have also shown support to African countries by donating medical supplies to all 54 countries (10). In Malawi, several international organizations and development partners have set aside funds to support the country’s plans to tackle coronavirus even though the country is yet to report cases of the virus (11,12).

Malawi has the advantage of making preparations in advance in the face of possible coronavirus cases. The WHO International Health Regulations (IHR) Monitoring and Evaluation Framework (MEF) comprises four elements that maintain the assessment of a country’s practical capability to identify and react to a health emergency. The IHR-MEF has a compulsory self-reporting system called the State Party Self-Assessment Annual Reporting (SPAR). SPAR produces data and contains 24 categories of indicators for all African countries as follows: legislation and financing, IHR coordination, zoonotic events, food safety, laboratory, surveillance, human resource, national health emergency framework, health service provision, risk communication, points of entry, chemical events, and radiation emergency (6,13).

Much focus of countries’ preparedness concerning COIVD-19 has been on clinical detection of COVID-19 (14), the control of COVID-19 importations (6), field epidemiology and laboratory training (15), and COVID-19 emergency management (16). Important gaps in assessment exist concerning within-country characteristics and unique features in which the implementation of preventative measures may differ. Such features include community-level characteristics, socio-political dynamics, gender dynamics, and even local knowledge and perceptions of the virus. Few studies exist that provide information on within-country preparedness (17). Through an assessment
of communications, news articles, and official communique up to 31st March 2020, this paper briefly presents an assessment of the initiatives that Malawi has taken to prepare for possible coronavirus cases. Furthermore, the paper assesses risk factors for preparedness and provides recommendations for further improvement.

2. What is known about coronavirus

2.1. Coronavirus

Coronaviridae family of viruses possess a sole thread, positive-sense RNA genome which spans 26 to 32 kilobases in dimension. These days, novel mammalian coronaviruses such as the HKU2-associated coronavirus originating from bats are commonly recognized. Coronaviruses are encased RNA viruses that are dispersed largely among humans, other mammals (bats, dogs, camels, cats, masked palm civets, and mice), and birds that cause enteric, hepatic, neurologic and respiratory diseases (5,6). Six coronavirus species are identified as pathogenic to humans (18) and mostly show mild clinical indications. Four of the six viruses including HKU1, OC43, 229E, and NL63, are predominant and normally cause common cold symptoms in people. Two coronaviruses, however, are zoonotic in source and have been associated with deadly diseases. These include SARS-CoV, a novel beta coronavirus that appeared in November 2002 in Guangdong, southern China and infected over 8000 people and caused 774 fatalities across 37 countries. The Middle East respiratory syndrome coronavirus (MERS-CoV) appeared in Saudi Arabia in September 2012 and infected 2494 people and caused 858 deaths (14,15).

2.2. Signs and symptoms

Research has shown that common symptoms at the start of the sickness are fever, cough, and myalgia or fatigue. Uncommon symptoms include sputum production, headache, hemoptysis, and diarrhea. Complications may occur including acute respiratory distress syndrome RNAemia, acute cardiac injury, and secondary infection (1,4,18). Guan et al. (2) found that the median incubation period for coronavirus was 4 days. However, the scientists noted that this could go up to 24 days. They defined the incubation period as the interval between the possible initial date of contact with the infected source and the initial time of onset of symptoms. Li et al. (3) found that the mean incubation period was 5.2 days (95% confidence interval [CI], 4.1–7.0). The 95th percentile of the distribution was 12.5 days (95% CI, 9.2–18).
2.3. **How it spreads**

Local hospitals detected cases that appeared in December 2019 through an investigation mechanism developed during the SARS outbreak of 2002 for well-timed detection of novel pathogens such as 2019-nCoV (3). Although inquiries are in progress around the world to enhance understanding of diffusion dynamics (1), the virus is believed to spread primarily through human-to-human contact. Respiratory droplets produced when an infected person talks, coughs, or sneezes can fall on the noses or mouths of people nearby. The virus is thought to be most transmissible when patients are most symptomatic. Reports have shown that the virus may also be spread when infected people are asymptomatic (20). Scientists projected that a septic person spread the coronavirus to over two people, causing it to diffuse quickly. In the early phases, the outbreak doubled in scope every 7.4 days (3). Consequently, scientists projected that the disease would possibly infect two-fifths of China’s population, representing close to 500 million people (21).

2.4. **Proposed preventative measures**

Several measures have been proposed by scientists in the wake of the pandemic. Firstly, since the major cause of infections is human-to-human contact, social distancing is the paramount measure proposed. This includes recommendations of at least a meter in distance from the next person (22). China took a relentless stand in enforcing social distancing measures implemented country-wide including the shutting down of schools, businesses, exhibitions, sporting events, theatres, and tourist attractions. Moreover, the country implemented one of the most determined, swift, and forceful disease control measures in history by shutting down entire cities in Hubei province such as Wuhan. Close to 50 million people were in compulsory quarantine from 23rd January 2020 (21). Self-quarantine is recommended mostly for those that have traveled (20) and those that have been exposed to a coronavirus patient. This may be for a minimum of 14 days and usually no more than 30 days (20,21,22). Other proposed measures include wearing masks and gloves, disinfecting soft and hard surfaces, cleaning with soap and water, washing hands with soap or using hand sanitizer. Scientists have also advised people to avoid touching their eyes, nose, and mouth with unwashed hands, cover their mouth and nose when coughing and sneezing, and throw used masks, gloves and tissues away (22).

2.5. **Treatment**

The quick progression of real-time point-of-care (RT-PCR) diagnostic tests specifically for COVID-19 was facilitated by the genetic sequence of the COVID-19 (26). However, no vaccines
or particular antiviral treatments are available to prevent or cure COVID-19 (12,20). Antibiotics are not recommended for the prevention or cure of coronavirus since they are only effective against bacterial infections. Though some traditional, home and western medications provide some ease and improve symptoms of COVID-19, no evidence exists concerning any medicines for prevention and cure. Self-medication is also not recommended for COVID-19. However, several clinical trials are in progress that comprise both western and traditional medicines (27).

3. Global spread and response

As of 31st March 2020, there were 719, 800 confirmed cases with 33, 673 confirmed deaths spanning across 203 countries, areas and territories (9). China set the pace by placing stringent measures in response to the virus including mandatory wearing of masks, the closing of multiple businesses, and country-wide quarantines. Two hospitals were built in Wuhan within two weeks and thousands of healthcare workers were deployed to the city to help contain the outbreak. Over 1,800 groups of five people were assigned to trace thousands of people who had possibly come in contact with infected patients. Also, two commonly used mobile phone apps, WeChat and AliPay, were employed to impose the limitations through monitoring of people’s movements (28).

Following the spread of the virus to countries outside of China, several countries across the Americas, Asia, Africa, and Europe enforced travel restrictions in efforts to curb the spread of the virus (21). As a result of these travel restrictions, some airlines scaled down operations while others completely shut down (29). On 18th March 2020, WhatsApp introduced two projects that supported the global fight against the COVID-19 pandemic. The first project was the WhatsApp Coronavirus Information Hub developed in collaboration with the World Health Organization, the United Nations Development Programme (UNDP), and UNICEF. The hub provides simple guidance and information to several stakeholders including community leaders, educators, health workers, nonprofits, local governments, businesses, and citizens that rely on WhatsApp to communicate. The second was a one million US dollar contribution to the Poynter Institute's International Fact-Checking Network (IFCN) (30). Countries around the world continue to make efforts to contain and halt the diffusion of COVID-19 which has made almost a million people ill and claimed thousands of lives (9).

4. Malawi’s response to COVID-19

Malawi is one of the poorest nations in the world based on several measurement criteria including the UNDP’s Human Development Index (HDI), the World Bank’s Gross National
Income (GNI), and Gross National Product (GNP) per capita (31,32). Like most African countries, Malawi is characterized by financial liability, low tax revenues, fragile organizations, and ineffective government control. With the outbreak of COVID-19, countries are at risk of facing diminishing revenues coupled with requirements for more expenditures for tests and treatment, medicine and kits, and other measures of support (33). This section assesses initiatives by the government of Malawi and development partners so far.

4.1. International support

Several international bodies have stepped in to assist Malawi with preparations for possible coronavirus cases. WHO has provided guidelines that contain actions such as quarantine, procedures for managing returnees from abroad, and workplace preparedness (9). These guidelines are constantly updated to suit the progressing situation. Aside from equipping the country with testing kits, WHO is also collaborating with a network of specialists to synchronize local surveillance, clinical care and treatment, modeling, diagnostics, and epidemiology. For national health authorities to better comprehend COVID-19, WHO is supporting the use of electronic data. Furthermore, the WHO is assisting with crafting radio and TV messages to provide reliable information. Moreover, it is working closely with local authorities to set up a call center for citizens to seek help (34,35).

The UK’s Department for International Development (DFID) has contributed £1.8 million (1.7 billion kwacha) to the United Nations International Children’s Emergency Fund (UNICEF) to reinforce the country’s ability to avert a COVID-19 outbreak. The funding is for facilitating the Ministry of Health’s (MoH) initiatives to enhance airport and border screening capability, train healthcare professionals, and equip emergency treatment centers with medical supplies and sanitation amenities. DFID has also assisted with setting up the testing center in the National Public Health Laboratory in the capital city (12). The governments of Norway and Germany are mutually contributing NOK 26.8 million. Norway has pledged to contribute NOK 13.4 million of the money for purchasing required equipment such as personal protective gear for healthcare professionals (11). UNICEF is also collaborating with other organizations including UN agencies, the Office of the UN Resident Coordinator, and WHO to support various health initiatives including health information management on COVID-19 (36).
4.2. National-level response and preparedness

Reports indicate that the government’s response plan comprises US$20 million/14.8 billion kwacha (0.25 percent of GDP) for expenditures on healthcare and directed social support initiatives. Other reports indicate that 2.4 billion kwacha has been budgeted specifically for a coronavirus preparedness plan to tackle the disease. The particulars of the response plan are still being developed (37). (34). By 7th March, the MoH started screening all travelers on arrival. This includes inbound travelers from China, Europe, the SADC region, and other high-risk countries; travelers from a country with local spread of coronavirus; travelers from countries with more than 700 cases; and travelers from countries with over 100 new cases recorded in 24 hours. Mandatory self-isolation for 14 days is required for these categories of travelers (38,39). On 20th March, the president declared a state of disaster. Three days later all schools, both private and public colleges and universities were closed. Public gatherings such as church sermons, weddings, rallies, funerals, and meetings were restricted to no more than 100 people. Law enforcement agencies were engaged to impose restrictions (40). Through, television or radio interviews, press releases, leaflets, jingles, and social media, the MoH is broadcasting information to the general populace concerning the causes, prevention, and treatment of the disease (34).

The 2019 elections were declared null and void following a ruling by the Constitutional court in February 2020. The two major opposition parties including Malawi Congress Party (MCP) and United Transformation Party (UTM) launched a case over gross irregularities observed during the elections and the courts ruled that the elections would be held in May 2020 (41). The two parties organized a coronavirus sensitization campaign which was canceled by the Malawi government after the initiative was viewed as a political move that lacked proper consultation and planning (42). An emergency hotline number for COVID-19 was established in the MoH (Toll-free number +265 887371288) (43). In 2018, Chipatala Cha Pa Foni (CCPF) or “health center by phone” transitioned management from VillageReach to government, expanded nationwide, and also expanded service variety (44). In March 2020 services expanded to include matters concerning COVID-19 and the toll-free number is 54747.

The MoH established mechanisms for laboratory verification of the coronavirus in suspected cases. In early March, samples drawn from suspected cases were sent to a WHO-sanctioned laboratory in South Africa thus demonstrating the country’s lack of preparation at the time (35). Currently, only the National Health Reference Laboratory (NHRL) in Lilongwe, College of
Medicine (COM) in Blantyre, and Malawi Liverpool Welcome Trust (MLW) in Blantyre can test for the virus. None of the health centers in the northern district can test for coronavirus in case there are suspected ones (45). Mwanza district council distributed soap and handwashing facilities in several public places including churches, health facilities, markets, and public offices to improve sanitation and hygiene practices for the prevention of COVID-19 (46).

Noting a gap in knowledge amongst residents of rural Mzimba North, the District Health Office (DHO) for the area started sensitization campaigns while awaiting government intervention. International organizations such as Plan Malawi also sprang into action to assist the DHOs office with sensitization campaigns (45). UNICEF collaborated with MoH to hold a strategic stakeholder orientation conference on the COVID-19 outbreak. The primary purpose of the conference was to deliberate and approve the best methods of broadcasting information on COVID-19. Participants included paramount chiefs, traditional authorities (T/A), religious leaders and youth leaders such as Inkosi Ya Makhosi Gomani V, Bishop Matonga, Publicity Secretary for the Public Affairs Committee (PAC), and Paramount Chief Kyungu (47). An orientation conference was organized by the Public Health Institute of Malawi (PHIM) on 28th March 2020 training several public and private sector workers from the Mwanza border post (46).

4.3. Malawi’s risk factors for coronavirus

4.3.1. Country border posts

Based on their direct connections and numbers of people traveling to China, WHO recognized 13 countries that were at high risk of importing cases including Algeria, Angola, Cote d’Ivoire, the Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Mauritius, Nigeria, South Africa, Tanzania, Uganda, and Zambia (48). An assessment by Gilbert et al. (6) concerning Africa’s preparedness against imported COVID-19 cases showed that Ethiopia, Algeria, Nigeria, and South Africa had the highest risk while Angola and Morocco had moderate risk. The differences in results between WHO (48) and Gilbert et al. (6) may be due to divergent risk approximation methodologies (6). Though, these studies indicated Malawi as a low risk for imported cases through air traffic, the country is faced with permeable land borders in which people walk in and out at will (49). Reports from the Dedza border post indicated a lack of equipment for healthcare workers posted there (50). Screening is reported to be done at Songwe and Mbirima borders for all travelers into the country with those from high-risk countries. However, no testing is reported to be carried out at these borders (51).
4.3.2. Fragile health system

The country’s healthcare system experiences several financial, infrastructural, and human resource challenges. Healthcare financing is highly dependent on external support from international organizations and foreign governments. During the 2012/13-2014/15 financial year, 61.6% of the total health expenditure was from donor agencies (52). There is a critical shortage of healthcare workers as the doctor-to-patient ratio is well-below WHO recommendations (53). Parallel reporting systems compromise adequate and effective reporting which further weakens the monitoring and evaluation system (52). With a shortage of healthcare workers, managing coronavirus cases may pose a significant challenge with attention split between competing interests. Healthcare facilities may be rapidly over-stretched by the increasing numbers of patients. Numerous countries face resource constraints that limit their capacity to manage patients even in usual conditions (54). Malawi is no exception and the nation grapples with several limitations such as bed space. Though community hospitals are bigger compared to health centers, their bed space is normally only up to 250 beds (52). Hospitals and clinics may be quickly overwhelmed during the pandemic. As of 28th March, Blantyre DHO appealed to development partners to provide beds for the allocated quarantine facility which only had 10 beds (55). The cumulative number of samples received by the laboratories was 37 as of 30th March 2020. 18 of these samples were tested for COVID-19 and all were negative (51). This could be due to a lack of preparation in terms of guidelines and procedures for proper screening.

4.3.3. The burden of diseases and underlying conditions

A study by Guan et al. (2) indicates that among the overall population of patients that they studied, 23.7% had at least one coexisting illness. Hypertension was the most common underlying disease (14.9%), followed by diabetes mellitus (7.4%) (2). Huang et al. (4) and Wang et al. (56) also reported having cases with underlying conditions that posed a huge risk for coronavirus infection. Malawi endures a high burden of diseases with diarrheal diseases, HIV/AIDS, malaria, perinatal conditions, and respiratory infections. While the country carries on struggling with decreasing its infectious disease problem, it is also confronted with increasing non-communicable diseases. Though Malawi recorded progress in the fight against HIV and AIDS, the prevalence amongst adults aged between 15 and 49 years remains relatively high at 8.8%. Malaria is the number one cause of death among pregnant women and under-five children. It is widespread across the country and remains a public health issue recording approximately 6 million cases yearly (52).
The country’s burden of diseases poses a risk for possible coronavirus cases as the country may have the additional burden of managing an outbreak.

4.3.4. Social factors

The 2018 population and housing census revealed that the country’s population density increased by 35% from 2008 jumping from 138 to 186 people per square kilometer. On a regional basis, the southern region had the highest population density at 244 people per square kilometer and the lowest population density in the northern region at 84 people per square kilometer. The central region had 211 people per square kilometer. Between the cities, Blantyre city in the southern region had a population density of 3,328 people per square kilometer, the capital city, Lilongwe, had 2,453 people per square kilometer, and Mzuzu city in the northern region at 1,516 persons per square kilometer (57). Such social factors may have a significant effect on managing social distance. Urban slums may especially pose a challenge. The working characterization of a slum is impoverished or unsettled accommodation delineated by congestion, pitiable sanitation, and hygiene conditions, and has impermanent occupancy (58). For example, the densely populated area of Ndirande is known for the depressing circumstances and evident poverty in which people live. Organized chaos is the best way to describe both the residential area and markets (59). Such conditions increase the risk of quick transmission which may cause problems in management.

4.3.5. Knowledge and awareness

In a country with a relatively low literacy rate at 61% (60), communication is key. A failure to communicate effectively concerning facts and progressions in disease spread may lead to chaos. The Human Rights Watch warned the government of Burundi to communicate fact-based information noting that the government usually employed a denial and deflection approach (61). Malawi government is similarly characterized and people believe that it often hides information. This affects citizens’ trust in the government. Transparency and accountability by officials dispel fears. On 26th March 2020, the Nation Online published a story about 86 years old Chrissy Ntonio who revealed that she had thus far, never heard of COVID-19. This emphasizes the development communication calamity confronting authorities as efforts continue to be made to circumvent the virus (62). Malawi is characterized by strong association and communal living especially in rural and remote areas (63). Recommendations for self-quarantine require a good understanding not only by the person going into quarantine but most importantly family members, neighbors, employees, and community members. The idea of self-quarantine may only be effective with firm
discipline (34). Moreover, myths and misconceptions may easily emerge as a result of a lack of knowledge. This is evident from previous cases of attacks on people due to misunderstandings about blood donations and the emergence of sicknesses ascribed to witchcraft by the elderly (64,65).

4.3.6. Socio-economic and cultural circumstances

“I cannot even afford soap to wash my body and my clothes, how can I have the luxury, assuming I miraculously get the soap, of spending it on washing my hands?”, a statement made by Chrissy Ntonio (62). This is characteristic of a significant number of Malawians who are ultra-poor and live on less than a dollar a day. According to a 2019 World Bank (66) report, 68.7% of Malawians live below the poverty line ($1.90 per day per capita), a slight decrease from 70.3% in 2016. Further reports indicate that 84% of Malawians reside in rural and remote areas where access to information is problematic (57). Rural poverty is mostly high, indicating weak economic development and unpredictable agricultural production (66). Moreover, cultural factors may pose a significant threat to effectively addressing preventative measures. In Chisonga village, T/A Kapeni in Blantyre, funerals continue to have over 100 people huddled together, therefore, not enforcing the social distancing decree. Funeral attendees are observed to move around without protective attire such as gloves and masks, and no hand-washing facilities are available. T/A Lundu mentioned that enforcing social distance will be a challenge because culturally, it is an honor to have many people attend a funeral. Reciprocally, in your time of bereavement, it is expected that many people will attend. Therefore, limiting people’s attendance to social gatherings will be a challenge (62). This reflects one of many cultural and socio-economic challenges that the country may face and must be addressed.

4.3.7. Governance and administration

According to Malawi’s decentralization policy (67), the local government system comprises District Assemblies, Cities, and Municipalities which are districts in their own right. The District Assemblies have powers to create committees at Area, Ward or Village level to facilitate local involvement in the Assembly's resolutions (67). A complementary structure comprises traditional leaders such as T/As, chiefs, and sub-chiefs. In Malawi, chieftaincy signifies an established way of customary regulation with the fundamental features of prearranged succession by lineage, kinship, and noteworthy impact, predominantly in rural areas (68). According to the Nation Online (62), T/A Lundu mentioned that she had not been communicated to by the Ministry of Local
Government and Rural Development concerning restrictions on gathering. Therefore, she could not impose any restrictions (62). The need for systematic and coordinated communication is necessary to facilitate better information dissemination to communities. Lack of coordination poses a serious risk to citizens considering the low literacy rate and high poverty incidence.

5. Recommendations

5.1. Improve the planning process

An assessment of risk factors and the presence of preparedness plans is essential for reducing the impact of impending pandemics. Based on the review of news articles and official publications, the government has taken several steps in the wake of coronavirus by making financial preparations and ensuring that necessary facilities such as test kits and quarantine centers are in place. Nevertheless, the extent of planning still lags in many respects and it is difficult to muster confidence in the country’s capacity to handle coronavirus in the advent of possible coronavirus cases. Oshitani et al. (54) noted that preparedness plans adopted in developing countries are often a reflection of plans developed for high-income countries. As such, the feasibility of those plans may not be suitable for low-income countries owing to the unique facilitating conditions of these countries. Therefore, preparedness plans developed by the country must account for local socio-cultural, economic, and political factors. The WHO IHR-MEF’s list of indicators is useful tools for assisting countries to prepare for potential pandemics. However, there is a need for adaptation to suit the local environment and for the country to be able to prioritize.

5.2. Improve medical care

The provision of good medical care can cushion the devastating consequences of a pandemic. This requires several aspects that may constitute good medical care including: firstly, provision of medical supplies such as protective gear, surgical gloves, masks, and beds. This is linked to efficient supply chain management and forward-planning which ensures an adequate supply of necessities at all times. Secondly, government and development partners have demonstrated pro-activeness by providing training for healthcare personnel. However, with a shortage of healthcare workers and a high vacancy rate, there is a need for planning the management of competing priorities in terms of disease management. Healthcare systems need to be maintained by managing other health problems such as TB, HIV, and malaria. Therefore, the recruitment of volunteers and unemployed but trained healthcare personnel may help cushion the challenges in management that may arise. The current pitiable quarantine facilities are a cause for great concern. The government
may consider using school buildings as temporary quarantine facilities which may be disinfected later when the pandemic is over. There is also a need to scale up testing capacity which is going on at snail’s pace. Although the comparison is of two significantly different nations in economic terms, as of 29th March 2020, the Czech Republic had tested approximately 40,700 people and confirmed 2,829 COVID-19 cases (69). Only 37 tests have been conducted so far in Malawi as of 30th March 2020. Early detection, management, and control are necessary to curb the impact of the virus.

5.3. **Develop Feasible Mitigation Strategies**

In their assessment, Oshitani et al. (54) suggested that suitable strategies must be implemented quickly to lessen the adverse effects of a pandemic in emerging economies. Considering that the accessibility of pharmaceutical solutions in emerging economies is unlikely, other mechanisms that are not pharmaceutically-based may be the most suitable solutions. Such mechanisms include intensifying sanitation and hygiene measures and enforcing social distancing. Therefore, the provision of sanitation facilities in public places is an important step. More importantly, people must have a sense of responsibility and ownership by refilling with water and cleaning the facilities. From the experiences of previous pandemics around the world, closure of public places has been mathematically proven to mitigate the negative effects (70). However, the evidence for the suitability of these public health initiatives is chiefly based on the experiences of developed countries. Moreover, the link between these measures and effective mitigation is not clear. For example, research into the link between handwashing and reducing influenza infections lacked evidence although it was an effective measure against common diseases such as acute respiratory infections (54). Nevertheless, it is a primary initiative towards mitigation that can be implemented at a low cost.

Basic preventative methods by persons and groups continue to be the most effective tools for the prevention of COVID-19 spread (35). The Czech Republic is one of the few countries in Europe that has considerably decelerated the COVID-19 spread following a government decree to wear masks in public to fight the COVID-19 pandemic (69). Malawi could learn from such an initiative by making it compulsory for all, including children, to wear masks in public. Reports have shown, however, that people are afraid to wear masks in public because of other people’s negative opinions. There is a belief that those wearing masks are infected rather than trying to protect themselves and others from getting infected. For instance, in Western countries where
wearing of masks is not the norm, those who do wear masks have been eschewed, criticized, or even attacked (71). In Malawi, the only way to get people to confidently wear masks without fear of ridicule is if it is a mandatory requirement from the government. Therefore, the government is encouraged to, among other initiatives, declare wearing masks in public as a compulsory mechanism for the prevention of the spread of COVID-19.

5.4. Strengthen Central Capabilities

Malawi, like many other low-income countries, depends heavily on donor funding from governments of high-income countries and international organizations. However, numerous countries across the globe are affected by the coronavirus pandemic and grappling with ways of managing the disease. For example, by 29th March 2020, the UK reported 17,096 cases and 1019 deaths while the USA reported 103,321 cases and 1,668 deaths (7). The two countries are among several other major financial and infrastructural supporters in Malawi (52). Having an emergency fund for seasonal diseases is necessary for the long-run. In 2005, the World Health Assembly adopted the revised IHR in which every nation was mandated to possess central capabilities for disease surveillance and response (54). Reinforcing the central capabilities is crucial for preparedness for public health emergencies such as the coronavirus pandemic. Thus, a long-standing vision is requisite to form central capabilities. Cyranoski (21) suggested that from the experience of China, early discovery and quarantine was the central feature for decreasing coronavirus cases. It is estimated that without these proactive and stringent efforts, by the end of February 2020, the country would have experienced five times more infections than it had. In Malawi, only three laboratories are testing for coronavirus in the central and southern regions. This means that the northern region cannot conduct tests. Consideration must be placed to increase testing capacity by setting up at least two laboratories in each region that meet the highest ISO 15189 standards (17).

5.5. Strengthen International Collaboration

Clear gaps exist between low-income and high-income countries in terms of research and development. The production of vaccines hinges more on high-income countries which affect efforts to react to the pandemic. Issues such as uneven resource availability with antiviral stockpiles may be a significant disadvantage for low-income countries (54). With the coronavirus pandemic, one of the major threats is the unavailability of a vaccine entirely (27). This pandemic may pose a significant threat to the evident gaps in capacity in the country. The porous land borders
may lead to people from neighboring countries crossing into the country to receive medical attention, run from conflict, or continue to conduct business (49). Therefore, both Malawi and neighboring countries need to collaborate by implementing screening, isolation, and travel regulations. Since pandemics are a global concern, enforcing limitations within countries and across borders is important. Addo (17) suggests that Ghana, possibly in collaboration with its neighboring countries, should contemplate setting up a P4 laboratory to manage different high-level biosafety emergencies. Malawi and other countries in the SADC region may consider doing the same.

5.6. Intensify publicity
Since the publication of WHO guidelines promoting the provision of information, communication campaigns have intensified in some countries (6). Key authorities such as chiefs, police, teachers, healthcare workers, and religious leaders, may disseminate information much quicker since they are trusted entities in society. Since coronavirus has instigated pervasive outbreak responsiveness not only amongst healthcare authorities but also among the general public, the spread of the virus might be decreased unlike its early phases in Wuhan (35). Sensitizing the public to safeguard social behavioral change is necessary. This includes issues of sanitation and hygiene, social distancing, and dispelling myths on coronavirus. In this way, women, children, the elderly, adolescents, and all may prepare better (47). Providing information that is as accurate as possible before the presence of the virus may lead to better support for stringent public health and safety measures.

5.7. Strengthen monitoring, evaluation, and learning
Vigorous monitoring and evaluating, lessons learned, best practices and approaches are required to feed into the country’s initiatives. Documentation of the experiences from other countries is important for learning and acting accordingly. Dissemination of reliable and appropriate information to stakeholders as well as transparency and accountability measures are crucial for effective management of the pandemic. This will guarantee a quick response to emergent matters, holdups, and mishaps that may occur. For instance, Addo (17) notes that in Ghana, students created a motion-sensor bucket which eliminates the task of manually operating taps. The simplicity, feasibility, and affordability of the technology may enhance uptake. Decision-making needs to be quick as well since experience has shown that COVID-19 spreads rapidly. In the Czech Republic, pharmacies put up signs announcing that they had no surgical masks which
were already in short supply for healthcare professionals. As a result, the government engaged citizens in the production of home-made masks. Fashion students at Umprum Academy of Art, Architecture, and Design in Prague were prompted into action and continue to produce hundreds of masks that are shared for free. Such simple and cost-effective methods may help curb the spread of COVID-19 especially for vulnerable populations in Malawi (69). The government of Malawi must consider the option of using home-made masks for its citizens by providing guidelines on their purpose and how they can be made. Furthermore, it must engage students and promote innovation across the country to come up with possible solutions to the risk factors for preparedness.

6. Conclusion

Emerging and reemerging pathogens is a global challenge for public health (18). SARS-CoV was the causal agent of the severe acute respiratory syndrome outbreaks in 2002 and 2003 in Guangdong Province, China. MERS-CoV was the pathogen responsible for severe respiratory disease outbreaks in 2012 in the Middle East. Given the high prevalence and wide distribution of coronaviruses, the large genetic diversity and frequent recombination of their genomes, and increasing human-animal interface activities, novel coronaviruses are likely to emerge periodically in humans owing to frequent cross-species infections and occasional spillover events (18). Several initiatives have been made in preparation for possible cases of coronavirus including a declaration of disaster by the state president, a ban on social gatherings of more than 100 people, equipping laboratories for coronavirus testing, and setting up quarantine centers. Regardless, the health system in Malawi has limited capability to manage an unexpected (or expected) major catastrophe such as the COVID-19 pandemic. Although the initiatives by the government are a good step towards preparation, there remain several gaps that need to be filled. Improving the planning process, improving medical care, developing feasible mitigation strategies, strengthening central capabilities, intensive publicity, strengthening monitoring and evaluation, and strengthening international collaboration are some of the tasks that need to be addressed in the preparation efforts.

7. Limitations

The assessment was based on the progression of events over four months since the COVID-19 pandemic occurred. News articles, journal papers, and reports were used to gather information for the assessment. However, some data were difficult to access due to inaccessible websites e.g. Malawi Ministry of Health website. Furthermore, future reviews may employ a mixed-methods
approach to grasp a more comprehensive view of risks and preparedness in Malawi. A comparative approach which includes several other countries within the Southern African Development Community (SADC) region could provide useful insights with regards to risk factors and preparedness.

References


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Conflicts of Interest

There are no conflicts of interest associated with the submission of this manuscript.