

ASSESSMENT OF COVID-19 PANDEMIC ON INTERNATIONAL TRANSPORT AND OCCUPATIONAL SAFETY AND HEALTH OF MIGRANT WORKERS

BY

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ABSTRACT

The paper examines the relationship between Novel Coronavirus-19 otherwise known as Covid-19 and the development of international transport with occupational safety of migrant workers during global health induced economic and mobility crisis. The study covered the historical background of coronavirus types and the transmission modes based on data obtained from World Health Organization (WHO), Centre for Diseases Control (CDC), International Transport Federation as well as findings from some past research and some selected migrant workers. The results obtained revealed that Covid-19 and other critical global epidemic outbreaks negatively influence both local and international transport with record of loss of huge financial and human resources to the epidemic. Available evidence also indicated an increase in occupational safety and health risks of migrant workers due to importation of covid-19 via international travels. The research established an increase in risk level of migrant workers to infectious diseases, job losses, loss of income, productive hour wastage, psychological instability and stigmatization as negative effects of covid-19. The test approach adopted for the verification of infected people the research discovered was not too impressive and may likely be responsible for the transmission and fatality record of the virus across the globe. Therefore, the work suggested the adoption of better testing techniques for the identification of patients in enhancing prevention of the epidemic via migration from identified sources to other locations. The adoption of Chinese Government complete or total lockdown strategy in Wuhan as means of managing the influence of future epidemic outbreak to other location the work propose as remedy that will safeguard the global transportation sector and the safety of migrant workers across the globe.

Keywords: COVID-19, Health, Migrant, Occupational Safety, Transport, Workers

Introduction

Coronavirus are groups of viruses whose shells look like a crown, They are non-segmented positive

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stranded RNA Viruses with a roughly 30kb genome surrounded by a protein envelope and mostly causes diseases in their particular host species [1]. Coronavirus was also described as enveloped RNA viruses that are distributed broadly among men, mammals and birds in such a manner that it causes respiratory, enteric, hepatic and neurological diseases. [2]; [3]; [4]. Since the outbreak of coronavirus, seven different species causing harmful diseases to human have been identified with four among them, namely 229E, OC43, HL63

and HKU1 these four normally trigger cold symptoms in immunocompetent individuals [4]; [5] and could cause lower respiratory tract disease in immunocompromised and elderly population. The remaining three cause other serious coronavirus diseases within the last two decades, the Middle East Respiratory Syndrome Coronavirus (MERS-Cov) occurred in 2012 [6] while Severe Acute Respiratory Syndrome (SARS-Cov) was discovered in 2003 [7]. Both SARS-CoV and MERS-CoV were linked to highly fatal incidents [5]. The novel one, SARS-CoV-2 is responsible for the current pandemic with variable morbidity and mortality as the disease is still emerging one. It is noteworthy that SARS-CoV and MERS-CoV were responsible for the SARS epidemics of 2003 and 2012 respectively with variable clinical severity featuring respiratory and extra-respiratory manifestation. Concerning SARS-CoV, MERS-CoV, the mortality are up to 10% and 35% respectively. [8]

The recent outbreak of coronavirus that is threatening the entire world's health and safety with respiratory diseases which the WHO nicknamed Novel Coronavirus-19 (COVID-19). The COVID-19 is threatening global public health, medical practices, transportation, entertainment, agriculture, energy, mining, construction, education and migration and employment [9]. The virus was tagged Novel Coronavirus-19 because most of the previously described pathogens were consistently identified [4]. Covid-19 was identified as a new pathogenic agent responsible for the ongoing life threatening adult respiratory distress syndrome (ARDS) and severe systemic inflammatory response syndrome (SIRS) with high morbidity and mortality among the elderly and comorbid population [9], especially people with underlying pulmonary, immunocompromising and cardiovascular conditions. The disease first occurred in Wuhan, China on 8th December, 2019 and spread without adequate knowledge of its epidemiological and clinical features. [10]. Evidence of outbreak of coronavirus-2 (SARS-Cov-2) was identified as factors that resulted in several

incidents of sicknesses embedded with potential damage to vital organs like lungs, hearts, liver, kidney with prevalent risk of pneumonia in Wuhan Hubei Province China in December, 2019 [11]; [12]; [13]; [14];[15]; [16]

SARS-CoV-2 belongs to the betaCoVs category, it has a crown like appearance under the microscope (origin name – corona) and often pleomorphic form, and a diameter of approximately 60-140nm. Like other CoVs, it is sensitive to ultraviolet rays and heat. Furthermore, these viruses can be effectively inactivated by lipid solvents including ether (75%), ethanol, chlorine-containing disinfectant, peroxyacetic acid and chloroform except for chlorhexidine [8]

Symptoms of COVID-19

In the early phase patient may be asymptomatic or paucisymptomatic. Like most other viral illness, fever is a cardinal feature of covid-19 seen in 82-87% of affected individuals. [17], this is closely followed by cough occurring in 44-65.7% of patients. [17], [18], It could be any type of cough, not just dry cough. The third commonest symptom is tiredness or a feeling of unwell. Other early common features include generalize body ache, and pain (myalgia), runny nose, sore throat, nasal congestion, loss of sense of smell and taste with incidence increasing as a common presentation, headache and diarrhea.

As the disease progresses, more and more feature of lower respiratory tract infections supervene such as shortness of breath, (fast breathing tachypnea in peditrics age group). This is closely followed by features of severe pneumonia with high grade fever, dyspnea, tachypnea with respiratory rate >30 cycle/minutes and cyanosis (SpO₂ less than 94% in room air. This is further followed by adult respiratory distress syndrome in late stages requiring ventilator to diagnose and manage. At this stage, other critical life threatening complication could co-occur or following rapid succession such as systemic inflammatory response syndrome, sepsis, septic shock and multi-organ failures

including respiratory, cardiovascular, liver, and kidney failures.

Incubation and Mode of Transmission of COVID-19

Coronavirus can be considered as emerging and re-emerging pathogens threatening global public health management systems based on the record of outbreak, prevention and reoccurrence of coronaviruses on several occasions in the last few decades. [19]. The covid-19 has an incubation period of between two to fourteen days or zero to twenty four days while SARS-CoV has two to seven days or as long as ten days incubation days whereas MERS-CoV incubation period was established to be five days though can range between two days to two weeks. [20]. The knowledge on incubation period aids occupational health and safety practitioners, health administration and government in determining the most effective isolation system for those suspected of any of those viruses and as means of controlling and preventing the spread [20], having identified human-to-human transmission occurrence among close contacts as the primary mode of transmission since its outbreak on December, 2019 at Wuhan, China.[21]; [22] via respiratory droplets from coughing and sneezing. Aerosol transmission is also possible in case of prolonged exposure to high level of aerosol concentrations in closed space as obtainable in cruise ships, airplane, long distance coach, train and poorly ventilated overcrowded apartments

The rate at which Covid-19 spread across the entire globe may be linked with over reliance of the global community on imported goods from China the world factory and key player in dry bulk and containerized trade, with record of controlling almost half of global maritime trade and accounted for twenty five percent 25% of 11billion maritime tonnage in 2018 [23]

Identification of COVID-19 Patient-Sufferers/Suspects

Considering the possibility of existence of insignificant sign of fever and abnormal radiological findings in the early stage of covid-19 infection [15] and the characteristics of initial stage with symptoms such as ARDS, ARF and other symptoms [10]; [14] as well as the incubation period that ranges from two to fourteen days triggering the need for covid-19 specimen test. Eight methods of specimen test were recognised for COVID-19 and their positive reliability rates are as shown below:

Coronavirus Testing Positivity Rate [27]

SN	Type of Specimen	Positive %
1	Bronchoalveolar Lavage Fluid	93
2	Fibrobronchoscopy Brush biopsy	46
3	Sputum	72
4	Nasal Swab	63
5	Pharyngeal Swabs	32
6	Feces	29
7	Blood	1
8	Urine	0

From the above specimen testing table, the nasal swab detected only 63% of infected persons while the pharyngeal swab was able to identify only 32%. The Nasal Swab was established as better for non-admitted patients [27] thus the reason behind the use of the Nasal Swab in testing the ongoing COVID-19 infection. The low sensitivity of the swab testing kits explained the high level of false negative COVID-19 test and reasons for the spreading with consequent exponential morbidity and mortality rate. It is a standard practice to combine naso – and oro - pharyngeal swab for testing in the current pandemic to increase yield. The practicability of bronchoalveolar lavage fluid seems to be cumbersome though, with high yielding positive result but the invasive procedure that require expert services of pulmonologist as well as sedation process subject operation to high risk of

infecting the care givers

COVID-19 and Transportation

Wuhan, the origin point of outbreak of Covid-19 is situated in Hubei Province, China. China is known globally as the world factory with evidence of controlling over twenty five percent of global 11billion maritime cargo tonnage. The challenge of easy identification of covid-19 patients during initial stage, the incubation period as well as mode of transmission of the virus which has been confirmed as human-to-human close contact. [22]. For human to have any form of contact, there must be movement of at least one person from one point to where the other party may be situated, this can be through walking or any other known mode of transportation.

The movement of humans, goods or services from one point to another as at when desired for a defined purpose is known as transportation. [25]. Transportation is the most important requirement that needs to be effectively fulfilled in any society that aims to achieve meaningful economic, social, political and national development [25]. It is also defined as the foundation of global trade and growth in economy [26]. Transportation was also described as “not an end in itself but rather a means allowing people to access what they need such as jobs, markets, goods, social interaction, education, health and full range of other services contributing to healthy and fulfilled lives” [27]. The major modes of moving humans, goods and services across the globe are air, sea, land and rail [25], [28]. The interwoven of the world’s businesses through multi-modal transportation is such that, it is striving to be on regular increase with a whopping record of 62.7Trillion Tons-Miles of cargoes being transported across the world. [26]. The process of moving goods and services across the world through air and sea transportation modes are mostly driven by multi-cultural, multi-ethnic, multi-linguist and multinational workers.

The aviation transport reported origin-destination passengers’ achievement of close to four billion in 2018. Domestic route flight operation within China was 515million with global highest incremental increases in passenger trips by adding 48.8million journeys in year 2018. In the same year 2018, USA topped the domestic air journey with 31.4million and emerged as the country with the highest domestic air passenger trip with an annual record of 586million. India in the same period had an internal air passenger trip of 116million that included 18.1million increment. Indonesia had 103million trips out of which 8.8million was the increase in passenger trips for the year. Mexico trip increase was 4.6million while Spain internal flight incremental increase was 4million and gross internal passenger flight of 34million. Reports also showed that Spain within the same period recorded 42million incremental passenger trips with the United Kingdom in 2018. [29].

In 2019, the reported global maritime fleet was 92,295 ships with deadweight tonnage (DWT) of 1,976,491DWT. Ferries accounted for 7,097DWT and offshore vessels 80,453DWT. The volume of maritime cargo in 2018 was 11billion. In the year, a total of 793million TEU was handled across the global container ports with Asian countries responsible for 64% of container traffic, Europe 16%, North America 8%, Latin America 7%, Africa 4% and Oceania 2%. Crude oil shipment was 1.9billion tons while the gross tanker shipment for the year was 3,194.3billion tons [23]. In the maritime sector, the global estimated growth in 2019 was 2.6% and the industry forecasted annual growth of 3.4% for the period 2020 to 2023. The possibility of achieving the 3.4% forecast in 2020 may be impossible due to COVID-19 that has impacted the global business sectors including multimodal transport industry negatively.

Migrant Workers

In Europe, migrants represent a growing share of the region’s population and increasingly important

group in the labour market, therefore, driving the need for an improvement in attention on their wellbeing. [30]; [31]. Migrant workers according to International Labour Organization (ILO) are sets of people who leave their hometowns to find work outside their home town or country, [32]. The international migrants are people who are working or have moved across the international borders in search of greener pasture. [33]. In the context of this research, international workers are those that are within the age group 20 to 64years which according to the migration report accounted for 74% of the global migrants.

In 2019, the total number of international migrant workers was 272million, about 3.5% of the world population. 52% percent among the international migrant workers were men and 48% females. India, based on the available report, ranked first as the country with the highest number of migrants living abroad with 17.5million migrants. Mexico is second with 11.8million while China has 10.7million. The United State of America is the most preferred destination by most migrants with a whopping record of 50.7million migrants. Available statistics revealed decline of migrant workers in high income countries while increasing elsewhere. High income countries have a record of reduction in migrant workers from 112.3million in 2013 to 11.2million in 2017. The upper middle-income nations observed an increase from 17.5million in 2015 to 30.5million in 2017. In the same year 2017, male workers was established to outnumber female workers by 28million, male 58% and female 42% while United Arab Emirate (UAE) is ranked as the country with highest number of international migrants.

The enormous increase of international migrant workers has several attached economic, social, cultural and health effects on both the country of origin and the destination country with fund sending and receiving benefits. [34]. The global financial report indicated international remittances from migrant workers in 2018 as USD689billion. The

recipient first ten highest ranking migrant workers fund recipient nations are: India USD78.6billion, China USD67.4billion, Mexico USD35.7billion, Philippine USD33.83billion, Egypt USD28.92billion, France USD26.43billion, Nigeria USD24.31billion, Pakistan USD21.01billion, Germany 17.36billion and Vietnam USD 15.93billion. On the other vein, the top ten remittance sending nations are: USA 68billion, UAE 44.4billion, Saudi Arabia USD36.1billion, Switzerland USD26.6billion, Germany USD22.09billion, Russia USD20.61, China USD16.18billion, Kuwait USD13.76billion, France USD13.5billion, and republic of Korea USD12.69billion. [UN-DECA 2019a]; [35].

Despite the economic impact of migrant workers on global economic development as well as the desire of the migrant in contributing more, there are some noted challenges that the migrant are facing that are adversely affecting their wellbeing. Some of these challenges are:

- Occupational health and Safety challenges, unsafe working conditions which sometimes may be dirty, demeaning and dangerous [36]; [37]; [38]
- Social exclusion due to reduction in access to resources that may aid them
- Limited contact with local population due to long hours of work and in most cases remote location as lone worker
- Residency in employer facility
- Increasing rate of kidnapping for ransom in most developing and security stressed counties.
- Confinement and isolation
- Movement restriction for specified period of days due to Covid-19 prevention and management protocol
- Modern slavery
- Contract violation
- Abuse and exploitation
- Discrimination based on travel record with assumption that foreign travelers may be either index or contact [39]

Despite the fact that the minority of migrant workers engaged in high skilled jobs, majority of the international workers are into jobs that are dirty, dangerous and high risk of work related ill-health without reasonable provision for their care through policy formulation and research [32]; [40]; [41].

Occupational Safety and Health of Migrant Workers

Occupational safety and health, the International Labour Organization (ILO) describe as the 'promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations'. It is the prevention among workers of departure from health caused by their employment from risks resulting from adverse to health, the placing and maintenance of the workers in an occupational environment adapted to his physiological and psychological capabilities [42]. The linkage of migrant workers with various psychiatric, physical morbidity, and workplace accidents and injury as relatively common with migrant workers risk [40] give credit to the need for research on migrant workers' occupational safety during critical epidemic outbreak such as covid-19 pandemic.

Report from Italy revealed that 15.8% of migrant workers had complaints of discrimination against them in the workplaces due to their immigrant status. [43]. It was also established that immigrants in Europe are particularly disadvantaged in accessing healthcare and mental health services due to social, linguistic, cultural and organizational barriers. [44]; [45]; as cited by [43].

In 2015, more than 3million deaths were caused by occupational risk of Pneumonia, Bronchitis and Bronchiectasis. [46]. Pneumonia is a feature of progressing symptom in Covid-19 and a critical occupational risk disease. [10]. It is an infection of the lung which can be caused by exposure to a number of infectious agents that may include viruses, bacteria and fungi [47]. The exposure of

migrant workers to dust, gases, fumes, chemical, sudden change in temperature and psychosocial stress in the workplaces were established as risk factors that may enhance respiratory infections that may be misinterpreted as COVID-19 early stage symptom [48]; [49]; [50].

Moreover, loneliness among migrant workers was established as occupational safety and health risk with a higher rate of clinically significant depression, anxiety and suicide. [51]. Loneliness was responsible for 59.5% increase of functional decline and 45% increased risk of death [48]. Loneliness among heart failure patients was linked with nearly four times increased risk of death, 68% increase risk of hospitalization and 57% risk of hospital emergency visits. [53]. The utilization of self-isolation or quarantine methods in managing COVID-19 pandemic the research linked with the risk factor of social isolation and loneliness in health. Relationship between risk factor, social isolation, loneliness and health impact can be reciprocal. This implies that not all socially isolated person have an impact on health. Evidence revealed that an isolated person has connections with major forms of physical, cognitive and psychological morbidity, health related behaviors and health related quality of life. Social isolation may trigger changes in biological and behavioral responses which may in turn influence health risks. [54]. In brevity, quarantine currently used in the management of covid-19 pandemic the research considered as social isolation and loneliness are connected and has impact on health of migrant workers.

Influence of COVID-19 on Migrant Workers

COVID-19 pandemic was established as stress mobiliser and mental health stressor. The isolation technique in managing the pandemic induces stress, mental disorientation and increases health and safety risk via biological, psychological, social risk such as stigmatization from isolation experience with likelihood of resulting in mental health

challenges on migrant workers [55]; [56]. Death of loved ones, separation, loss of jobs, unexpected loss of means of survival and financial resources were established as among ten causes of stress. [57] Long hours of operation with long term health challenges can induce stress and mental health thus lowering productivity [58].

Feedback on the view of migrants' workers and international travelers that were consulted revealed the negative effect of Covid-19 pandemic transmission across the globe on all the workers interviewed with records of being trapped in either their home country or country of employment. Those that travelled in March complained of inability to resume for work or interact freely on arrival at their destination due to mandatory two weeks self-isolation requirement for international travelers from high and medium risk countries. The isolation observance the migrants claimed have subjected them to loneliness, boredom and psychosocial torment. The perception by most people that all international migrants might be infected they claimed had resulted in being avoided by the majority of their colleagues and employers, therefore creating fear of job insecurity, possible loss of income that may negatively affect their wellbeing and safety.

COVID-19, International Transport and Migrants

In analyzing the possible linkage between Covid-19, international transport and migrant, study on the pattern of spread of the COVID-19 from Wuhan China and how it was transmitted to other countries and continents was conducted by critical review of WHO daily situation report from 13th January 2020 to 17th April, 2020. The research established the following findings:

Pattern / record of Covid-19 transmission across the world from China: Jan to April 2020
Source: WHO (Situation Reports 1-85) [59]

Date	Countries/ Regions	RECORDS: REPORTED CASES AND DEATH
13 Jan	Thailand	First COVID-19 record outside Wuhan, China. Victim, age 61years travelled through direct flight from Wuhan Airport to Thailand on 8 th January 2020, COVID-19 discovered on 13 th January International transport as source of transmission confirmed, migrant age within working age group.
15 Jan	Japan	Person, 35years, traveled to Wuhan in December 2019, developed fever on 3 rd January, travelled back to Japan on 6 th January 2020, COVID-19 status confirmed on 15 th January 2020. International transport as source of transmission confirmed, migrant age within working age group.
20 Jan	South Korea	Chinese Citizen, 35 years old, arrived in South Korea from Wuhan on 19 th January with a temperature of 38.3°C. COVID-19 Status confirmed on 20 th January 2020. International transport as source of transmission confirmed, migrant age within working age group.
21 Jan	China, Thailand, Japan, S.Korea	Global record of that day was reported as 314 confirmed cases with 6 confirmed deaths in Wuhan. As at that date, China had 309 cases, Thailand 2, Japan 1 and South Korea 1. International transport as source of transmission confirmed, migrant age within working age group.
28 Jan	14 countries, 4 regions	COVID-19 existence in 14 countries confirmed and involves the USA, Canada,

		France, Germany, Sri Lanka, Nepal, Thailand, Cambodia, Malaysia, Australia, Singapore, Vietnam, Korea and Japan. 4,593 cases reported globally out of which 4,537 were from China and 106 among them confirmed dead while 976 were reported as severe. International transport was observed as a source of transmission outside china.
04 Feb	24 countries in 5 regions	The Middle East reported the first case between 28 January and 4 th February, 2020 via international transport. The global reported cases were 20,630 and 426 deaths. Among this figure, China was responsible for 20,471 cases and 425 deaths.
11 Feb	25 countries, 5 regions	Global cases 43,103; global deaths 1,018 (China 72,528 cases and 1,017 deaths) International transport as source of transmission was confirmed for cases fresh case in new country outside china.
18 Feb	26 countries, 5 region	Global cases 73,332; global death 1,873 (China 72,528 1,870 death), an indication of three death record outside China. COVID-19 was also identified on a cruise-ship within Japan territorial waters. International Transport linked with all countries with first reported cases outside China.
25 Feb	34 countries, 5 regions	80,239 cases and 2,700 deaths globally. China was responsible for 77,780 cases and 2,666 deaths.
03 Mar	73 countries, 6 regions	Algeria, Senegal and Nigeria in Africa made the list of countries with reported cases

		of COVID-19. The Nigeria index case involved an Italian that travelled from Italy to Nigeria. As at 3 rd March 2020, the global record stood at 90869 and 3,112 (China had 80,304 and 2,946 death among the figure)
10 Mar	110 countries in all regions	Global cases 113,702 and 4,014 death. Among this China had 80,924 cases and 3,140 death)
17 Mar	158 countries All region	Global cases of 179,111 and 7,426 death. The Western pacific reported 3,357 death while Europe 3,108, Middle East 873, America 68, South East Asia 9 and Africa 4 deaths.
24 Mar	194 counties All regions	Global cases 372,755 and deaths 16,231. Western pacific 3,502 death, South East Asia 65, Middle East 1,877, America 565, Europe 10,189 and Africa 26
31 Mar	201 countries, All regions	Global cases 750,890 and 36,405 deaths. Western pacific had 3,671 reported death, Europe 26,694, South East Asia 166, Middle East 2,954, America 2,836 and Africa 77
07 Apr	210 countries, All region	Global cases 1,279,722 and 72,614 deaths. Western pacific 3,892 confirmed death, Europe 52,809, South East Asia 362, Middle East 4,149, America 11,097 and Africa 294
14 Apr	212 countries, all regions	Global reported cases 1,844,863 and 117,021 deaths. Europe had 80,712 deaths among the fatal cases, America 25,551, Western Pacific 4,161, Middle East 5,255, South East Asia 829 and Africa 501
22 Apr	212	Global cases 2,471,136 and

countries all region	deaths 169,006. Among the dead Europe accounted for 109,952, America 44,775, Western Pacific 5,793, Middle East 6,326, South East Asia 1,427 and Africa 720
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From the available data, the transmission of COVID-19 from Wuhan, China to all the regions was through international travelers via the international migrants.

Influence of COVID-19 on Aviation Transport

In assessing the influence of covid-19 on the global transportation system, the research utilized the Air Passenger Market Analysis for twelve months from April 2018 to March 2020. There were established records of consistent improvement in the Aviation Industry Passenger Kilometer (RPKs) and the Industry Wide Capacity (ASKs) from April 2019 while the growth achievement nosedived in the first quarter of 2020 due to the effect of COVID-19 pandemic. In January 2020, the industry-wide revenue passenger kilometer grew by only 2.4%, a clear negative performance in comparison with December 2019 (4.6%) record and the slowest growth rate since 2010. The industry-wide available seat kilometer (AKSs) also expanded by 1.17% and was established as the slowest outcome since 2013. The poor performance in January findings revealed were caused by COVID-19 impact on air passengers leading to cancellation of trips, travel bans and falling passenger demand as measure for containment.

Also in February, 2020, the RPK declined by 15% erasing the past three years gains, the industry-wide available seat kilometer contracted by 9% year-in-year and air passenger demand collapse to almost half of the capacity due to cancelled flights and fleet grounding driven by COVID-19. Furthermore, RPK for the month of March 2020 further declined due to rise in restrictive measures, heightened by traveler's anxiety and a new wave of travel ban that resulted in de-facto closure of international aviation. [60]

Conclusion

The transmission of COVID-19 to countries with first reported cases had documented evidence that the virus originated from Wuhan, China confirmed by the gene probe and DNA Analysis, the mutant strain inclusive and transmitted to all the countries through international travels. The research also established objective evidence that the international transmission was mainly through international aviation and maritime transport. It was also established that Covid-19 has a serious negative impact on International aviation and maritime transportation as well as other modes of transportation across the globe. There was also evidence that closure of international borders, airport, grounding of airplanes and ships as well as suspension of all modes of transportation across the globe has resulted in poor performance of the transport sector and huge financial losses of billions of dollars that might have been earned by the transport operators if COVID-19 had not surfaced. The loss of resources by international transport has increased factors that may negatively affect the health and wellbeing of international transport workers and other migrant workers. The fourteen days isolation protocol requirement for international migrants the research concluded may induce serious psychological and health challenges that may have critical post-COVID-19 impact on the occupational safety and health management systems of organizations and foreign workers. Therefore, we need to formulate a sustainable management system that will cater for post impact occupational safety and health challenges associated with COVID-19 and other future unforeseen global health challenges.

Recommendation

The research recommends the development of a sustainable Occupational Health and Safety Management System that will cater for the current emergence COVID-19 pandemic and possible re-

emergence of any form of coronavirus as well as other virulent microbial agents of pandemic capabilities across the globe with focus on international transport, migrant workers and the entire global business village. The importance for post-impact psychological needs for migrants and other categories of workers and business that COVID-19 pandemic may have affected. The research proposed to prevent loss of lives to economic challenges and social interaction gaps that the pandemic may induce.

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