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Worker's Distribution Model: A Remedy for Global Economic Crisis by the Continuation of Work during Pandemic

By Sah MK

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The idea of the Worker's Distribution Model (WDM) of management is innovated. There is a global economic crisis during this pandemic. This WDM is justifiable to sustain the economic crisis of the country and stands aside to raise the economy of a country or community.

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The idea of the Worker's Distribution Model (WDM) of management is innovated. There is a global economic crisis during this pandemic. This WDM is justifiable to sustain the economic crisis of the country and stands aside to raise the economy of a country or community. This model of management of human resources in the pandemic situation may decrease the transmission of the disease. This WDM will be very effective in saving workforce, reducing the chance of infection, and to the continuation of an organization. Thus the aim of writing this opinion is to introduce with WDM model for worker's distribution during the pandemic situations to reduce transmission and improve economic crisis by the continuation of an organization.

Conclusion: The cyclic WDM has a scientific basis of quarantine, thus helpful in reducing disease transmission during the pandemic. This model is also helpful in mitigating the global economic crisis and the continuation of any organization during the pandemic.

Keywords: pandemic, COVID-19, quarantine, epidemic, economic-crisis, worker's distribution model, transmission, human resource.

I. Introduction

In early January 2020, a novel coronavirus (2019-nCoV) was identified as the infectious agent causing an outbreak of viral pneumonia in Wuhan, China, where the first cases had their symptom onset in December 2019 (Backer, Klinkenberg, and Wallinga 2020). Now, COVID-19 with symptoms like fever, dry cough, shortness of breath, and breathing difficulties, tiredness has spread at a lightning speed to affect several countries (Hamouche 2020; Bi et al. 2020). COVID 19 is spreading worldwide. According to the World Health Organization, until August 19, 2020, more than 216 countries and territories are affected by this disease, and 21.9 million cases of COVID-19 are confirmed. Nearly one Million deaths are recorded, until now (WHO 2020). Since the World Health Organization declared COVID-19 as a global pandemic, nearly 80 percent of the global population has come under stay-home orders, lockdowns, and quarantines, inflicting increasingly severe direct and indirect economic impacts (United Nations 2020).

Due to the COVID threat, the international institutions, governments of countries, and various organizations are forced to use unprecedented restrictive measures in many spheres of activity. As a result, the economies of the countries worldwide are significantly affected and are on the verge of crisis (Danylyshyn 2020).

As with public health overall, several changes in the practice of communicable disease control can be anticipated due to the health care delivery system's transition from a predominantly fee-for-service system to a predominantly managed care system (Rutherford 1998). Transmission of SARS-CoV-2 can occur through direct, indirect, or close contact with infected people through infected secretions such as saliva and respiratory secretions or their respiratory droplets, which are expelled when an infected person coughs, sneezes, talks, or sings (Scientific Brief 2020). The evidence suggests that SARS-CoV-2 RNA can be detected in people 1-3 days before their symptom onset, with the highest viral loads, measured by RT-PCR, observed around the day of symptom onset, followed by a gradual decline over time. The duration of RT-PCR positivity generally appears to be 1- 2 weeks for asymptomatic persons, and up to 3 weeks or more for patients with mild to moderate disease. In patients with severe COVID-19 disease, it can be much longer (Scientific Brief 2020). The number of COVID-19 infections may be attributable to the late identification of sources-of infection and the ability of the host to shed the infection

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while asymptomatic. The transmission may occur during the incubation period (Huang et al. 2020).

SARS (severe acute respiratory syndrome) was notable because infectiousness increased around 7–10 days after symptom onset. Onward transmission can be substantially reduced by containment measures such as isolation and quarantine (He et al. 2020).

During epidemic or pandemic situations, though the other sectors which are related to the basic need of people are important, the most concerned sector is the health and thus to save the lives healthcare services must function appropriately. And to run the health sector as well as other sectors, the human resource must be managed so that there will be no shortage of workforce. In most of the countries, the lack of proper health workforce planning has resulted in imbalances that threaten the capacity of healthcare systems to attain their objectives and due to which people cannot get proper health facilities. This issues has directed attention towards the prospect of developing healthcare systems that are more responsive to the needs and expectations of the population by providing health planners with a systematic method to effectively manage human resources in this sector (Al-Sawai and Al-Shishtawy 2015) even in the situation like epidemic and pandemic. In contrast to effective workforce planning, imbalances in the health workforce represent a challenge for health policymakers, and hinder effective planning. Imbalances between available inputs and requirements characterize health systems in developed and developing countries (Dal Poz et al. 2010). A Human Resource for Health (HRH) Action Framework was formulated by the WHO and partners to achieve better health outcomes using improved health workforce. This framework has shown to be effective in planning in normal as well as an abnormal situation or from a higher level (Ministry or Policymaking Department) to ground level of working area (healthcare centers) and thus a proper human resource can be managed even in crisis (Dal Poz et al. 2010).

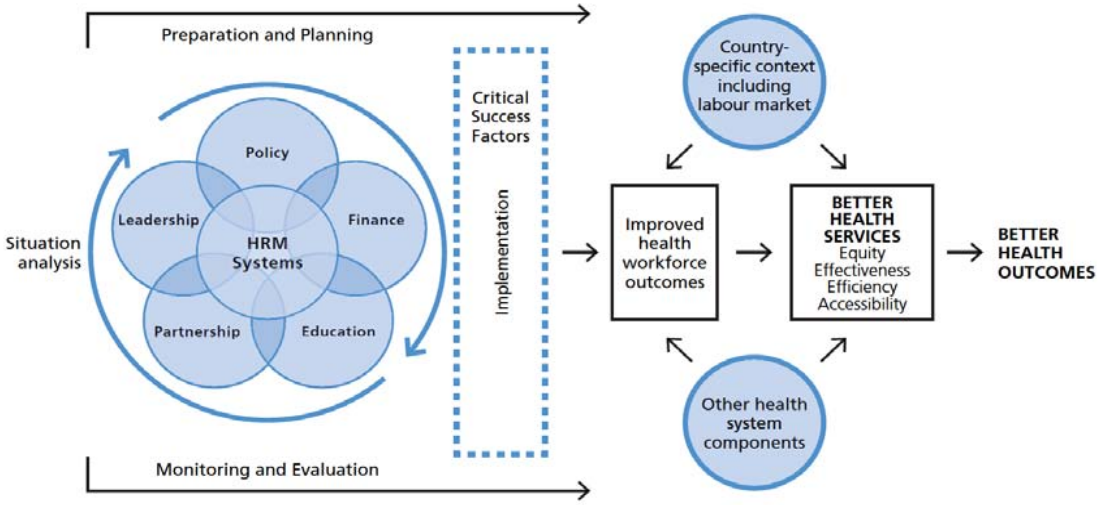


Diagram 1: HRH Action Frame Work. (Dal Poz et al. 2010)

In the COVID-19 pandemic, the health person or any other staffs of other organizations which are in direct contact with suspected or confirmed case of COVID-19 is generally quarantined or isolated. The same is true for other pandemic or epidemic diseases. As many cases should be isolated or quarantined, there is a challenge to meet the demand of health personnel in such scenarios, including COVID-19. If the health personnel working in close contact with a suspected, probable, or confirmed case of epidemic or pandemic disease, then there is possibilities of transmitting the disease to others. So they must be quarantined or isolated. Further, it is impossible to repeat test every day or every week to the health worker/staff of an organization. So that managing the human resource in such a situation, keeping most of the worker/staff quarantine is challenging.

The idea of the Worker's Distribution Model (WDM) of management is innovated. This model of management of workers is scientific and may be useful in a situation of pandemic/epidemic. This model of human resource management in the pandemic situation may decrease the transmission of the disease and help in raising the global economy. Thus the aim of writing this opinion is to introduce with WDM model for worker's distribution during the pandemic situations to reduce transmission and improve the economic crisis by the continuation of an organization.

II. Proposed Innovative Idea

The group of human resources can be managed if their duty is assigned cyclically in such a way that they will have time to be quarantined as long as the average disease period with possible disease

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transmission ability of a disease (epidemic/pandemic). At the same time another group will be able to work in the organization providing health services or services in the other fields (industries, civil service offices, schools and colleges). Generally, human resources (HR) should be divided into three groups and they must work cyclically for a time period. The following formulae are being proposed and will be useful to reduce transmission of disease and ultimately very helpful for continuous running of the organization and minimizing the possible economic crisis during the epidemic/ pandemic, including the COVID-19 pandemic.

III. Assumption

1. Number of the days of average disease period with possible disease transmission ability of a disease (epidemic/pandemic) in an infected person is always taken as a multiple of 2 unit (X), so this value is considered as constant (C_1) = 2
   (Example: If for COVID-19 pandemic, the average disease period with possible disease transmission ability is 14 days then, X = 7 days as C_1 is 2, if it is considered 20 days, then X is 10 days as C_1 is 2)
2. The number of groups of workers required in WDM is always the same, so this is considered as another constant (C_2) = 3
3. Total number of staffs/workers of service providing organization or section of an organization: N

Calculations and some basic formulae:

1. Calculation of number of Human resources in each group of the WDM
   Number of staffs in each group: $n = N/C_2$
2. Calculation of the number of days of a complete cycle of the WDM
   Number of days of a complete cycle: $d = X(C_1+1)$
3. Calculation of the number of days to work in a cycle of the WDM
   Number of days to work by a group of the WDM; Dn= X days at a time
4. Calculation of the number of the group that will be at home quarantine in the WDM
   Number of groups that will be at home quarantine at the working time of another group during a cycle of the WDM = C_2-1= 2
5. Calculation of duration of quarantine
   Duration of home quarantine (not in work): Average disease period with possible disease transmission ability of a disease (epidemic/pandemic) in an infected person = C_1X
6. Calculation of the number of groups that will work
   The number of groups that will work (g) = C_1-1

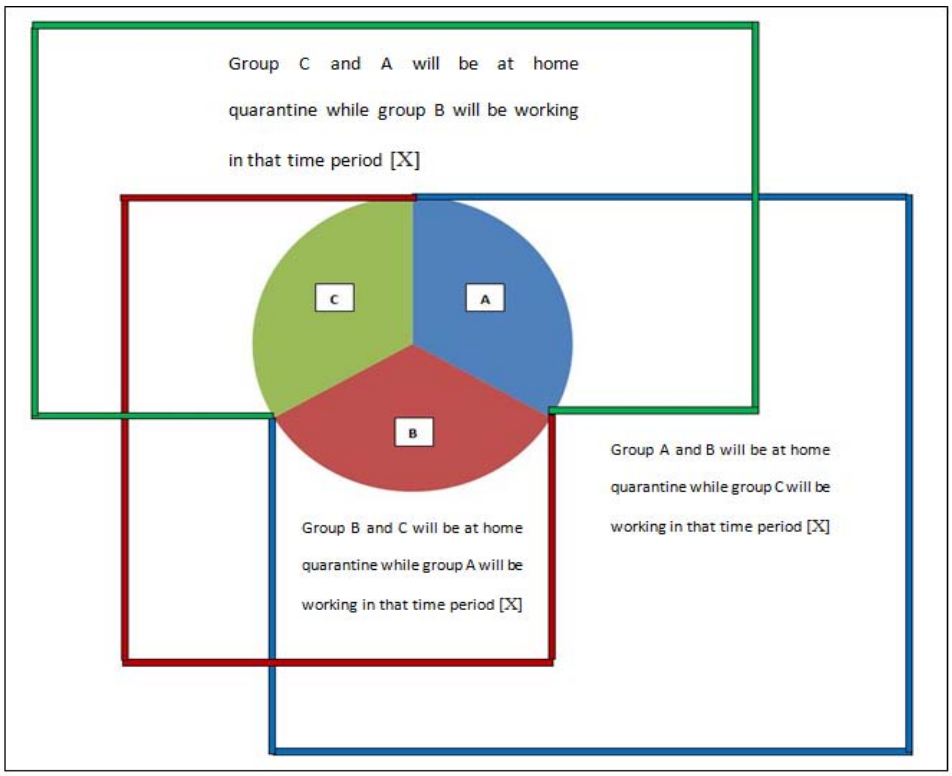


Diagram 2: This diagram shows the method of group formation that is distributed for work so that each group will have time to be home quarantined for the duration of the average disease period with possible disease transmission ability of particular communicable disease. Due to such distribution of manpower, there will be less chance of infection transmission from any worker to other workers or health workers to the patient. Persons in a group must divide their working hours with alternate 12 hours duty in a day if the organization provides 24-hour services. No need of shift duty if an organization provides a single shift in a day.

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IV. Discussion

According to Hamouche S et al; coronavirus is a new virus that has been discovered with its outbreak in Wuhan, China, in December 2019. Now, it has spread at a lightning speed to affect several countries (Hamouche 2020). Due to the spread of this virus, almost all countries of the world face difficulties not only due to loss of life but also due to the economic crisis. Many industries are not running now. There is a scarcity of resources and products as well. World Health Organization report shows, till August 19, 2020, more than 216 countries, and territories are affected by this disease and 21.9 million cases of COVID-19 are confirmed. Nearly a Million deaths are recorded until now (WHO 2020). Vaccines are still in the trial phase, so it will take time to come in the market. So there are possibilities of further loss of life and down following the economy worldwide. According to the scientific brief of WHO, the duration of RT-PCR positivity generally appears to be 1- 2 weeks for asymptomatic persons, and up to 3 weeks or more for patients with mild to moderate disease. In patients with severe COVID-19, it can be much longer (Scientific Brief 2020). According to Huang L et al.; the number of COVID-19 infections may be attributable to the late identification of sources of infection and the ability of the host to shed the infection while asymptomatic. (Huang et al. 2020).

So that, it can be believed that the communicable disease when it develops the potential to spread/transmit to a large number of the population, then it becomes a burden to the community/country as shown by COVID 19 pandemic, the same is for epidemic but limited geographical regions. In such situations, there may be a down flow of the economy, shortage of workforce to work, and health services due to inadequate health personnel because they may be infected if not managed. Further, those service providers who work in a group or directly with the contact of other people or provides services to a patient at that time, the possibilities of transmission of the disease is markedly increasing so that pathetic situation may develop. According to the June 2020 global Economic prospectus of The World Bank, the baseline forecast envisions a 5.2 percent contraction in global GDP in 2020. This prediction using market exchange rate weight shows the deepest global recession in decades, despite the extraordinary efforts of governments to counter the downturn with fiscal and monetary policy support (World Bank Group 2020). According to reports of the World Bank, every region is subject to substantial growth downgrades. East Asia and the Pacific will grow by a scant 0.5%. South Asia will contract by 2.7%, Sub-Saharan Africa by 2.8%, Middle East and North Africa by 4.2%, Europe and Central Asia by 4.7%, and Latin America by 7.2% (The World Bank 2020). To reduce such unfortunate situations we must divide the working staffs so that there is less chance of disease transmission and continuation of work can be enforced. In this proposed model of the Workers Distribution Model (WDM), the working staff will get time to be quarantined at home for the duration of possibilities of disease transmission (average disease period with possible disease transmission ability of disease, epidemic, or pandemic, in an infected person). This model should be followed at least in hospitals and such service-areas where it is compulsory to provide daily services, still it can be applied to other service sectors also including industries, schools/colleges, and other sectors, which are the basis to raise the economy of the country directly or indirectly. This will markedly reduce the chances of disease transmission and the shortage of workforce. Ultimately there would be a little chance of economic crisis of a country.

The pandemic puts as many as 160 million jobs in tourism, manufacturing, and commodity sectors in developing countries at risk, potentially threatening economic growth and decent jobs as envisaged in SDG-8 (United Nations 2020). But with the help of the WDM, there is no need for terminating the staff as many companies have done even the hospitals are doing so because of the decreased income of an organization. In this model, among workers at a home quarantine, an investigation is required only for those who develop signs and symptoms. So this will reduce the unnecessary burden of investigations also and can save lots of money in the economic crisis and the crisis of medical resources.

In this WDM, the whole workers of a section or organizations are divided into; "n" numbers (groups). If C_1 is a constant having value 2 and X is the unit, twice of which is the average disease period with possible disease transmission ability of a disease (epidemic/pandemic) in an infected person and G is the number of group of workers required, then C_1-1 group will work while C_2-1 group will be at home quarantine for the same period. Since this is a cyclic model, each group will get a chance to be home quarantined for average disease period with possible disease transmission ability. Thus, this model has a scientific basis for the prevention of disease transmission and controlling the bad situations in epidemic or pandemic. If any organization provides 24-hour services like a hospital, a shift duty of 12 hours among the members of a group should be managed.

a) The benefit of the Worker's Distribution Model

The Worker's Distribution Model is effective in an abnormal situation when there is a burden of infective disease in a community (Epidemic or Pandemic). Because there is the proper time of quarantine (average disease period with possible disease transmission

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ability of a disease) for the working staffs, who are believed to be the suspected case during working days of the cycle of the WDM. It also reduces the chances of transmission of disease among the normal people (general public or working staffs) from suspected or probable cases among the people or staffs, mostly during the working hour in epidemic and pandemic situations. There is no need to stop any organizations if we follow the WDM. So the services will continue for the public, and patient and productivity of the industry will be adequate, almost the same as previously. This model does not require additional workforce; rather, they will have to work half of the time of certain days (X) but alternatively with 12-hour duty in a day. This WDM is justifiable to sustain the economic crisis of the country and stands aside to raise the economy of a country or community during a crisis that develops due to situations like epidemic/pandemic diseases. Currently, the COVID-19 pandemic has reduced the global economy, and there is a global economic crisis as well as in the individual country. This model is also applicable to staff, teachers, and students of schools and colleges. So that there will be less chance of infection transmission, with this model, school and college can also be continued in such a situation besides hospitals, civil service offices, and industries.

b) Limitation of Worker's Distribution Model

There must be a minimum of 3 members is a section of a company to follow this model. Staff less than 3 in a section cannot be distributed in the groups to complete the cycle and that prevent continuous work for certain days (X). This model can reduce the chance of infection at maximum and does not prevent transmission completely.

V. Conclusion

The Worker's Distribution Model (WDM) is effective in an abnormal situation when there is a burden of infective disease in a community (Epidemic or Pandemic). This WDM is justifiable to sustain the economic crisis of the country and stands aside to raise the economy of a country or community during a crisis that develops due to the epidemic or pandemic disease-related situations like the COVID-19 pandemic. This model can be applied in hospitals, social service sectors, school/colleges, and industries. This WDM will be very effective in saving workforce, reducing the chance of infection. There is no need to stop any organizations completely if organizations follow WDM. This cyclic WDM has a scientific basis of quarantine for the average disease period with possible disease transmission ability of a disease (epidemic or pandemic).

Abbreviation

COVID-19: Corona Virus Disease of 2019

GDP: Gross Domestic Product

HR: Human Resource

nCoV: Novel Corona Virus

RT-PCR: Reverse Transcription Polymerage Chain Reaction

SARS-CoV-2: Severe Acute Respiratory Syndrome Coronavirus type 2

SDG: Sustainable Development Goals

WDM: Worker's Distribution Model

WHO: World Health Organization

Declaration

Ethical approval and consent to participate
NA

Consent for publication
NA

Availability of data and materials
NA

Competing interests
There are no competing interests.

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