REVIEW ARTICLE

A Review of the Strategies and Policies for the Prevention and Control of the COVID-19 at Workplaces

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ABSTRACT

The occupational settings present high risk in terms of exposure and spreading of the Corona Virus-2019 (COVID-19) due to the gathering of many individuals. Although still uncertainty remains around COVID-19 and it is early to have conclusion on its prevention and control, different policies have been promoted by international organizations and health authorities regarding high risk staff to reduce exposure in occupational settings. The aim of this study was to provide a brief review of the required strategies and policies to prevent and control COVID-19 at workplaces. Because of the wide and rapid spread of new coronavirus globally, all people, including employees, and employers should implement the necessary instructions, training, and measures for the prevention and control of infection. Furthermore, governments and health organizations should promote prevention and control measures in three levels of engineering, administrative, and personal protective equipment (PPE) controls to prevent COVID-19 at workplaces.

KEYWORDS: *Coronavirus, COVID-19, Prevention and Control, Workplace, Policy and Strategy*

INTRODUCTION

In December 2019, Corona Virus-2019 (COVID-19) outbreak caused by a novel pathogen known as "severe acute respiratory syndrome coronavirus 2" (SARS-CoV-2) In Wuhan, China. On 11 March 2020, the World Health Organization (WHO) declared the situation a pandemic worldwide [1-3]. Now it is clear that human to human transmission via respiratory droplets is the essential transmission rout of the SARS-CoV-2 and has been confirmed by many researches [4-5]. However,

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according to available data, COVID-19 can show a wide range of symptoms and severity, including fever, headache, cough, abnormality on lung, etc. Therefore, COVID-19 can be easily spread between individual who have close contact with each other such as work-related situations [6-8]. Workplaces are susceptible places for exposure and outbreak the SARS-CoV-2 owing to contact many people together. Various cases demonstrated the consequences of COVID-19 outbreak at workplaces; hence, more attention should be paid to occupations and situation of workplaces. Therefore, various guidelines, policies, multiple types of interventions, and measures have been promoted by

international organizations and governments regarding high risk workers to prevent COVID-19 spread in different countries and regions. Given various features of coronavirus infection such as the increasing prevalence of SARS-CoV-2, difficulties in case detection, and unknown mechanism of the virus, many employees are at the risk of exposure to COVID-19 [9-11]. Considering the necessity of implementing health policies, the importance of prevention exposures and infection control at workplaces, in this paper, the required strategies and policies to prevent and control COVID-19 in the workplace was reviewed.

Occupations risk for COVID-19 infection:

Because of the wide and rapid spread of SARS-CoV-2, a different group of peoples and jobs are vulnerable, particularly those that involve direct contact with clients. So, a main section of cases are linked to occupational exposure and work-related transmission which was critical to infection diseases outbreaks [12-13]. Some employees such as front-line workers including clinical, paramedics and other staff, tourism industry, hotel and restaurant staff, waste workers, drivers and transport workers, services and sales workers, cleaning and domestic workers and public safety workers are at a higher risk owing to direct contact to individual or workplaces contamination [14-16].

According to the Occupational Safety and Health Administration (OSHA) high risk workers include:

- Health care workers (HCWs)
- Laboratories
- Airline operations
- Border protection
- Solid waste and wastewater management
- Workers who travel to areas where the virus is spreading [17].

According to the Centers for Disease Control (CDC), occupations that are more exposed to the SARS-CoV-2 include those involved in healthcare, the staff of the cemeteries and the funeral houses, officials and personnel of airports, airlines, railways, subways and all public transport (buses, taxis, etc.), border guards, solid waste and wastewater workers, and

employees who regularly travel, especially to contaminated areas [18]. HCWs have been identified as a high-risk group to acquire this infection. Among 315,531 U.S COVID-19 cases reported to the Centers for Disease Control and Prevention (CDC) during February 12 –April 9, 9282 (19%) cases were identified as HCWs [19]. In a study conducted in six countries including Hong Kong, Japan, Singapore, Taiwan, Thailand, and Vietnam, healthcare workers (HCWs) (22%), drivers and transport workers (18%), services and sales workers (18%), cleaning and domestic workers (9%) and public safety workers (7%) were considered occupation groups at risk of infection with the new coronavirus. Therefore, implementing preventive surveillance strategies for high-risk working populations is warranted [20].

Workplace strategies and polices for prevention and control of the COVID- 19:

In order to minimize the virus spreading and to respond to this pandemic, multiple types of strategies and policies have been implemented at workplaces. International Labor Organization (ILO) declared COVID-19 as fist new occupational disease in this decade. It recommended that all governments in various countries and regions should be prepared for interventions and control this disease [21-23]. Prevention and protection measures to control the SARS-CoV-2 and its exposure depend on the type of work carried out and the risk of exposure, including the potential to come in contact with infected people and workplace pollution [24]. Prevention and control measures are classified into three levels including engineering controls, administrative controls, and personal protective equipment (PPE). Engineering controls are including appropriate ventilation, microbiological safety cabinets, barrier between employee and costumers, and disposable tools and instruments using [25-27]. Providing optimal ventilation in places where many customers or clients such as banks, pharmacies, and front office activities is critical [26-28]. Proper ventilation protects staff against airborne transmission during the COVID-19 pandemic [29]. For example, WHO recommended that at least 160 L/s/patient natural ventilation should be used in COVID-19 infectious wards. The minimum number of air exchanges per hour, in accordance with the applicable building regulations, should be ensured

at all times. Increasing the number of air exchanges per hour will reduce the risk of transmission in closed spaces. This may be achieved by natural or mechanical ventilation, depending on the setting. For instance, isolation rooms should have negative pressure and 6 to 12 air changes per hour. To avoid the transmission of virus through the indoor environment between different places, air should not be recirculated as far as practically possible [30]. Moreover, separation of the workers from customers, especially in places with the interaction between staffs and clients should be implemented applying glass and plastic barriers [26]. Administrative controls also are a useful tool in the prevention and control of infectious diseases. These measures including limiting the number of staffs, reduced and flexible work hours, using disposable tools and instrument, providing information and education about COVID-19, washing and cleaning the hands, maintaining social distance, continuous cleaning and disinfection of the surfaces and objects, decreasing the sharing of objects, temporary closure of certain occupations, avoiding to hold meetings, quarantine and isolating sick workers [31-33]. CDC has announced guidelines for helping people to recognize risks, isolate the staffs, promote the hand and environment hygiene and social distancing, and encourage employers to provide health information for staff [34]. Although personal protective equipment (PPE) is considered as the last way of protection at workplaces, the use of PPE is an essential component of protecting staff against COVID-19 due to high contagiousness. PPEs have recommended for all individuals to avoid the spreading of new coronavirus. Providing the proper PPEs based on the kind of duty is critical. This equipment may be included mask and respirator, eye protection, gloves and special clothing, and gown. Various organizations such as CDC and world health organization (WHO) have recommended guidelines regarding prevention and control of the COVID-19 outbreak including the use of PPE [25-35-38]. It seems that combination of engineering and administrative controls plus PPE is necessary against spread of COVID-19 at workplaces [37]. In this regard, it is necessary to get the opinion of experts such as occupational hygienists.

DISCUSSION

The spread of SARS-CoV-2 has decreased the manufacturing activities worldwide and has resulted in some effects on various industries and works. Multiple health organizations and authorities such as WHO, CDC, and International Labor Organization (ILO) have recommended that all countries and governments should be prepared to prevent this disease and take measures for its control. In addition, more attention should be paid to the guidelines, strategies, and instructions at workplaces [18-22]. However, COVID-19 transmission is not completely understood. It is still too early to have a certain and absolute conclusion on its prevention and control. Most of the recent guidances and recommendations are based on the previous experiences obtained from similar outbreaks such as MERS-CoV, SARS, and influenza A (H1N1) [36-41]. Kalantary and Khadem (2020) demonstrated that control measures that are used to prevent or control exposure to biological agents and hazards should be properly maintained, examined, and tested to ensure that they are working efficiently. The control measures that are subjected to detailed examination and testing include engineering measures such local exhaust ventilation that include microbiological safety cabinets and extract ventilation for equipment; and PPEs such as respiratory protective equipment [11]. Kalantary et al. (2020) showed when the exposure to new coronavirus is unacceptable, the strategy provides guidance to select the appropriate control ways especially PPE, as an important and necessary measure [42]. Measures should be taken to prevent risks of exposure to biological agents and hazards or, where this is not reasonably practicable, to reduce the risk of exposure to an acceptable level [11-43]. In a study conducted by Wang et al. (2020), the relationship between workplace policies and measures and employees' behaviors for prevention of coronavirus concluded that awareness about pandemic and workplace guidelines and measures in prevention of COVID-19 should be promoted especially for manual laborers among staff, employers, and administrators. Governments and health authorities should guide disseminate and establishment of proper strategies and information and responses at the occupational settings [7]. According to Rafeemanesh et al. study, multiple parties including all managers, employers, workers,

and business owners should receive the necessary information, instructions, and training on prevention and control policies based on scientific resources, guidelines and standards provided by health authorities and organizations. These measures can decrease the number of individuals infected and prevent the spread of new coronavirus [26]. Various health organizations and authorities have published instructions and online resources for employers and employees to prevent COVID-19 in occupational settings [44]. So, adequate information, training, and recommended control measures for work at each containment level should be implemented in occupational settings, to reduce the new coronavirus spreading.

CONCLUSION

This paper was demonstrated workplace strategies and policies for prevention and control regarding COVID- 19 disease. Based on the results, it can thus be recommended that in order to protect against COVID-19 transmission, all employees and employers must implement appropriate prevention and control strategies against infections in occupational settings. These strategies help staff to assess the potential exposures to new coronaviruses. However, further studies are needed in different countries and regions for a thorough assessment of workplace strategies, policies, and instructions for prevention and control COVID-19 leading to minimizing the spread of infection.

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