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Review Article

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Symptoms, Transmission Methods, Care Techniques, and Strategies to Control Covid-19 Infection at Work

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ABSTRACT

Background and Aim: Following the Covid-19 epidemic and the great threats it posed to global health, many researchers have begun to study the field, and numerous guidelines have been issued by international organizations on high-risk occupations and the need for occupational health. The purpose of this study was to investigate into ways to avoid and control Covid-19 illness in the workplace because of the disease's high prevalence in the nation. Methods: In reviewing and writing this article, articles indexed in SID, SCOPUS, PUBMED, MAGIRAN databases, as well as library resources were used. Results: Studies have shown that many jobs, including health care workers, garbage collection and disposal workers, and public transportation workers, are at risk. Conclusion: All sections of society, including employers, business owners, workers and employees, must be fully prepared to fight the corona virus, even if the corona epidemic has not yet reached that country or region. This can be effective in reducing missed work days, staff absences and preventing the spread of the virus in the community.

Keywords: Covid-19, Care techniques, Job, Work environment, Control

Introduction

In 1960, coronaviruses were first identified and discovered in the world. These giant organisms belong to a family of enveloped viruses with a single-stranded RNA of animal origin belonging to the coronavirus family [1]. They are common in many animals and mammals around the world, depending on the biological region, and it seems that these animals can be the natural reservoir of the virus. A recent pandemic has shown that it can infect humans as well [2-4]. In general, coronaviruses cause a mild respiratory illness in humans with symptoms similar to colds and flu, but they have also been shown to be able to cause severe and even fatal respiratory illnesses [5]. Recent reports indicate that a large number of people with an unknown cause of pneumonia were linked to a local seafood market south of Hannan in Wuhan City, with a population of 11 million in China's Hubei Province in December 2019 [6-8].

The seafood market, which was thought to be the source, closed on January 1, 2020 [7]. On December 29, 2019, the World Health Organization announced the new name of the virus as Coronavirus 2019 [9-10] and the current reference name for this virus is SARS-CoV-2 Acute Respiratory Syndrome[6]. Shortly afterwards, the World Health Organization confirmed the outbreak of coronavirus in China; But he did not specify the main cause and relationship of this disease [11]. Finally, on January 7, 2020, the causative organism was identified as a new coronavirus (nCOV) [12-13], and on January 30, 2020, the World Health Organization declared the new Cronavirus epidemic 2019 a public health emergency with international concern. New coronavirus disease is spreading rapidly in China and other parts of the world. It is important to get accurate information about the symptoms and their progression, and given that most patients are asymptomatic or mild, it is essential that any common symptoms observed be reported and reported promptly [12]. Given the progressive spread of this disease around the world and the confirmation of many positive cases of coronavirus in the country, our purpose in writing this article is to review and analyze the studies conducted on the prevention and control of coronavirus in the workplace.

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Methods

In reviewing and writing this article, the articles indexed in SID, SCOPUS, PUBMED, MAGIRAN databases, as well as library resources and reference books were used in the field of corona virus disease and how to prevent it in the workplace.

Results

Employees at risk of exposure to the new coronavirus

Preventive and control measures to protect workers from exposure to the coronavirus depend on the type of work performed and the risk of exposure to infected people and workplace pollution [13]. According to the Centers for Disease Control and Prevention (CDC) guidelines, the main occupations that are more exposed to the new coronavirus and are more likely to be infected are as follows [14]:

1. Health care staff
2. Cemetery staff and burial officials
3. Officials and employees of airports, airlines, railways, subways, and all means of public transportation (buses, taxis, etc.)
4. Border guards
5. Garbage, waste or sewage collection staff and garbage collectors
6. Employees who travel frequently, especially to contaminated areas

In general, high-risk occupations include health care workers, tourism industry workers, transportation and security workers, hotel and retail industry workers, and construction workers. Elderly workers, people with a history of chronic cardiovascular disease, diabetes or exposure to respiratory chemicals in the workplace (gases, fumes, etc.) are more prone to infection and the risk of death in this People are higher [15].

Preparing the workplace to control the new coronavirus epidemic

Employers should implement infection control strategies based on an accurate and technical risk assessment using the opinions of health professionals in the workplace to prevent disease in employees. Certainly the risks associated with corona are not the same for everyone and in all neighborhoods. For example, employees of occupational health centers or occupational health homes or workers who are exposed to harmful chemical agents are at greater risk. Also, approaching infected or suspected people increases the risk of infection. Given this issue, in particular, more serious attention should be paid to high-risk cases [16]. In any case, according to the conditions and technical, political and economic considerations, the level of risk should be investigated and appropriate control measures should be taken. Many of these control strategies are low cost and can be implemented without the use of special equipment or tools and with management measures in the workplace [17]. The most important measures to control corona virus disease based on the principles of occupational medicine and occupational health in the workplace include the following hierarchy [18-19]:

Substitution

a. Prevent sick patients from entering the workplace
b. Granting compulsory sick leave to sick or suspected employees

Engineering Controls

a. Separate patients or suspects from other staff
b. Establish proper ventilation in work environments
c. Use of glass or plastic barriers between staff and clients or visitors
d. Use of disposable tools and equipment

Administrative Controls

a. Continuous training of employees regarding the observance of hygienic rules, hand washing and how to use personal protective equipment
b. Appropriate spacing between employees at work - at least two meters
c. Reduce staff working hours or do telecommuting
d. Reduce unnecessary staff missions and trips
e. Continuous washing and disinfection of surfaces and equipment
f. Restricting staff gatherings in sports and religious centers and holding meetings in absentia

Personal Protective Equipment (PPE)

- Use a mask
- Use eye protection, gloves and special clothing

The use of personal protective equipment is always the last way to control harmful factors in the workplace, but in the case of new coronavirus due to the possibility of rapid transmission of the disease and high prevalence is recommended in the workplace of integrated control methods: engineering, management and personal protective equipment simultaneously to be used. The use of medical or surgical masks is recommended for employees with respiratory symptoms, as well as for people who are in small, closed environments in contact with other colleagues or clients, such as bank employees, receptionists, or public transport drivers. The use of N95 or FFP2 respirators is recommended for hospital staff exposed to high levels of viral particles due to their high particulate matter filtration power. Studies have shown that providing personal protective equipment to employees is not enough to prevent the occurrence of disease, and it is necessary to provide equipment, necessary training to employees and the necessary advice on the need to observe the principles of personal hygiene and frequent hand washing [20]. It

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should be noted that employees should use personal protective equipment that they have previously been required to use based on harmful factors in the workplace and at the discretion of occupational health experts and HSE (Health, Safety Environment) based in the industry as in the past.

Discussion

The spread of coronavirus has caused great economic losses to business environments, reduced production activity and declined economic indicators in the world. Therefore, considering the involvement of all countries in the world in this disease and its progress, the World Health Organization has advised all countries to be prepared to control the epidemic and control the disease. Due to the differences in socio-economic status and lifestyle in different countries, the prevalence of the disease is different in different countries and it is necessary for each country to take the necessary measures according to their situation because there is no single version to deal with the virus.

According to an article published in the Journal of Medicine New England Journal in February 2020, a significant proportion of cases are related to occupational exposure. Because the virus is believed to have originated in the wild and then infected humans, it is not uncommon for the first occupational groups to be at risk from those working in the seafood wholesale markets in Wuhan, China. At the beginning of the outbreak, before January 2020, when the wholesale market closed, workers and market visitors accounted for 55% of the 47 cases. Only 8.5% of the 378 cases whose symptoms began after January 1, 2020 were associated with market exposure [21]. Others were identified as having the infection. Of the *138 patients treated at Wuhan Hospital, 40 (29%) were* (HCW)(Health Care Workers*)* patients. Among these people, 31 (77.5%) worked in the public sector, 7 (17.5%) in the emergency department and 2 (5%) in the intensive care unit (ICU) (Intensive Care Unit). Apparently there was an extremely expansive patient in the hospital who was admitted to the surgery ward with symptoms of abdominal pain. This patient was able to infect more than 10 hospital staff in this ward [22]. Epidemiological studies to evaluate the risk factors for infection in HCWs and early detection of subclinical or asymptomatic infections in this group seem more than necessary [23].

Dental professions are at high risk of developing the disease due to face-to-face communication with clients and frequent exposure to saliva secretions, blood and expiratory air of patients, as well as excessive use of sharp and sharp tools. Therefore, the implementation of control measures in this job in order to control infection and prevent personal transmission is very important. A multinational corporation held an international business meeting for 109 employees in Singapore from 20 to 22 January 2020. In this incident, the staff of Salem Company interacted with other infected participants, which led to the transmission of the virus to three employees based in Singapore. In addition to those infected from Singapore, an employee from Malaysia, two participants from South Korea and an employee from the UK were also infected. They were identified as infected after leaving Singapore [15]. The crews of cruise ships are also at risk due to contact with contaminated passengers. At least 10 cases have been reported among the 1,035 crew of the Diamond Princess, which was quarantined in Yokohama, Japan from February 3 to 19, 2020, with about 3,600 passengers. A Hong Kong man boarded a ship for a 14-day voyage January 20 in Yokohama. The passenger was traveling from Yokohama to Hong Kong and landed there on January 25. The ship continued its voyage until on February 1, it received news that the passenger had tested positive. The ship returned to Yokohama a day earlier and has since been quarantined, with guests isolated inside their cabins [24].

The results of a study conducted in Japan in 2020 showed that the most important factor in motivating health care workers to work in crisis situations such as epidemics, having a sense of security with the support of the country, government and hospital management and trust between staff and the organization. Based on the results of this study, the best ways to increase trust between the organization and health workers in the epidemic period, providing information to staff frequently, officials constantly communicating with staff and encouraging them, paying compensation in case of infection and providing appropriate protective equipment for they are [25]. In another article, a systematic review in this field found that a sense of trust strengthens social interactions and cooperation in health personnel, as well as improves motivation, performance and quality of care [26]. Another study, conducted in February 2020, identified migrant workers as another group at risk of infection with the new coronavirus. The study found that these individuals face more barriers to accessing health services in the host country (such as access to insurance services). In addition, these people have more mental disorders and a lower quality of life, which worsens during quarantine due to the outbreak of the new coronavirus and job loss. They may also not realize the seriousness of the epidemic and how to protect themselves against it due to the lack of reliable information in their language. It is therefore recommended that migrant workers have greater access to health services during epidemics and that public health campaigns in different languages be provided to them as soon as possible through various communication networks [27]. Webster et al in a review study stated that in the face of infectious diseases, it is

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important to pay attention to people's jobs to prevent the spread of the disease in the community. To prevent the spread of the disease and its health consequences in the workplace, organizations should also pay attention to the development of policies for the absence of sick employees in order to promote work culture. Further research is needed to identify risk factors for the spread of viral infections in workplaces, educational and industrial centers, through which preventive interventions can be planned at the organizational and individual levels [28].

Fear, anxiety and uncertainty are common in any biological disaster and can be considered as a barrier to appropriate medical and psychological interventions. Based on the experiences gained from previous epidemics of viral diseases and their psychosocial complications, it is necessary to use and provide support services and psychiatric therapies to achieve health goals in the epidemic of the new coronavirus [29].

In the absence of appropriate treatment for this virus, the best way to deal with it is to prevent the spread of infection and control the sources of infection. The main strategies, according to the recommendations of the World Health Organization, are timely diagnosis and reporting of the disease, continuous review of the epidemiological pattern of the disease, isolation and timely treatment of patients, and control measures such as social distancing at the community level. All sections of society, including employers, workers and employees, must be fully prepared to fight the Corona virus, even if the Corona epidemic has not yet reached that country or region. This will have a significant effect on reducing lost working days, staff absences and slowing down the spread of the virus in the event of an epidemic reaching the region.

Conclusion

Due to the increasing prevalence of Covid-19 disease in the country in recent weeks, it is necessary to provide all managers, employers and business owners with the necessary information and training on prevention and control of the disease based on scientific guidelines and standards. This can be effective in reducing the number of infections and preventing the spread of the virus in the community.

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