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Mini Review

COVID-19 and Cardiovascular Disease: A Worksite Intervention

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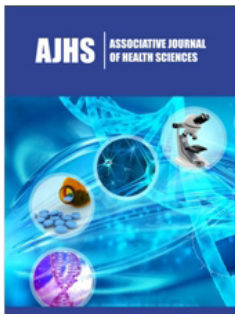
Abstract

The Coronavirus Disease 2019 (COVID-19) pandemic has resulted in social and working environments that have significantly changed. This has included mandatory international lockdowns, quarantine regulations, social distancing policies, suspention of productive work activity, loss of income, anxiety, and the fear of future employment. This lockdown has also exacerbated a number of health aliments, including weight gain and high blood presuure, which can lead to Cardiovascular Disease (CVD). A number of workplace interventions can help to allieviate the stress and uncertainty of this pandemic. This includes policies of anti-contagion measures, requiring and providing health care workers with personal protective equipment, and the implemenation of health promotion programs to enhance quality of life for employees. The Health Belief Model (HBM) and the Transtheoretical Model (TTM) are theortetical frameworks that can assist to deliver work-related health promotion programs. This mini review is an intervention proposal in order to provide approaches to better understand and provide assistance relative to the health and well-being of worksite employees.

Keywords: COVID-19; Cardiovascular disease; Worksite health promotion programs



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Introduction

The COVID-19 pandemic has significantly transformed both social and working environments. This has ranged from social distancing polies, restricted lockdowns, isolation periods, quarantine, loss of income, interruption of productive activity, and an overall fear of future employment. Characteristics of any workplace can play a vital role in an employee's metal and physical health status [1]. A high percentage of workplace employees are overweight or obese and are treated for type 2 diabetes, hypertension, anxiety, stress, and depression [2,3]. These issues increase the chance of developing Cardiovascular Disease (CVD). Recent studies support an above-average annual weight gain due to COVID-19 restrictions [4]. Individuals who work for companies are often lacking a healthy culture which may directly impact employee health and mental well-being [5,6]. Administrative and executive employees are often unaware of how an unhealthy work environment affects overall productivity and employee satisfaction. Little seems to be done in many work-place facilities to address the unhealthy social norms this environment can create. Often onsite cafes cater to unhealthy food options, employee recognition rewards include candy and junk food, there is limited focus on stress management, and most employees have a sedimentary job with few opportunities to move around.

A workplace initiative aimed to target at-risk employees for COVID-19 and Cardiovascular Disease (CVD) is an important initiative. Current recommendations from the Centers of Disease Control and Prevention (CDC) for both COVID-19 and CVD focus on controllable risk factors. Recommendations include wearing a mask in public and while at work, practicing healthy hygiene, 30 minutes of physical activity five days a week, a healthy diet consisting of lean proteins, fruits, and vegetables, limiting high fat and sugar intake, not smoking, initiative alcohol consumption, and managing levels of stress [3]. This can lead to employees living a healthier life, lower the risk of COVID-19 and CVD, and increase longevity to live a healthier life. This evolution will directly influence the culture, change current social norms, and increase employee engagement in health initiatives. This can decrease insurance costs for both employees and the company. This paper is a proposed intervention that applies the Health Behavior Model (HBM) and the Transtheoretical Model (TTM) to address how a worksite intervention can help minimize the severity of COVID-19 symptoms and reduce

Cardiovascular Disease (CVD) while creating a healthy work environment.

Intervention Theories

Health Belief Model (HBM)

The HBM focuses on the likelihood of an individual participating in preventative screenings or actions for healthier behaviors. Employees' attitudes toward the program's effectiveness and the disease/illness's threat will determine participation probability. This theory allows focus on an employee's attitudes toward the implications of COVID-19 and CVD and how it influences their motivation to adopt healthier behaviors. This model accounts for an individual's expectation of the initiative's benefits and barriers to determine their desire to participate. The HBM consists of six constructs that support people's desire to act or not in preventative or maintenance health initiatives. Please see Table 1.

Table 1:

Health Belief Model (HBM)	
Perceived Susceptibility	Is my excess weight and lack of physical activity affecting my risk for COVID-19 or cardiovascular disease?
Perceived Severity	Do I know anyone who has been diagnosed with COVID-19 or cardiovascular disease? How was their experience?
Perceived Benefits	If I participate in the employee wellness health program, will it lower my severity of COVID-19 or cardiovascular disease? Participation will lead to monetary and other incentives.
Perceived Barriers	Do I have time to exercise? Am I dedicated to keep a food journal? Will I count my calories? Can I substitute unhealthy food options for healthier ones? Can I practice stress management techniques to reduce anxiety? Will my friends and family support my new lifestyle behaviors?
Cues To Action	Losing a coworker, family, or friend to COVID-19 or cardiovascular disease. Incentives offered in employee wellness programs. Accountability with coworkers such as checking-in with each other's progress.
Self-Efficacy	I know if I join this employee wellness program, it will benefit me as a person. I will lose weight, lower my risk of COVID-19 and cardiovascular disease, gain support from my co-workers, receive monetary and other incentives for participation, and feel more confident about myself leading to be a more productive and confident employee.

Perceived susceptibility: This construct is an individual's belief that they may contract a disease or illness. Focusing on COVID-19 and CV disease will allow us to reach more employees with one initiative. For example, suffering a recent heart attack experienced by a current employee will increase the awareness of the detriments of type 2 diabetes, high blood pressure, and obesity in a workplace.

Perceived severity: This construct consists of how serious one feels about contracting an illness and its effects. According to recent research by Brocq et al. [7], obese individuals exhibit fear and anxiety of obesity-related COVID-19 complications, and they were worried about limited access to medical assistance.

Perceived benefits: Benefits of participation in an employee wellness program are multifold. Employees can save money on medical costs, be able to use paid time off for vacation versus sick time and will feel better both mentally and physically. Incentives provided throughout a program can enhance participation.

Perceived barriers: Barriers to any program can cause a program to fail. If employees view the program to be physically or emotionally inconvenient, participation lacks. Some barriers can be resolved before the program exists. Barriers include time, money, social support, and lack of self-efficacy.

Cues to action: An example of cues to action is having a coworker suffer a heart attack in a tight-knit organization. This could be a wake-up call to employees as a catalyst for change. At-risk employees are concerned for their well-being. Those not at risk often know other employees who are at risk.

Self-efficacy: Self-efficacy is the belief that one is confident enough to accomplish tasks provided to be successful. Participants will see the effects of their efforts. Typically, people want to avoid illness and are confident that a specific health behavior will prevent disease.

Transtheoretical Model (TTM)

The TTM addresses change as a process that happens over time, based on a person's decision-making. People can start at any stage, depending on their attitudes and beliefs at the program's introduction. Each stage is unique in its intervention strategies to motivate people to change and move to the next step. The goal is to adopt to change and reach a level of maintenance. The TTM consists of six stages of change [8]; Table 2.

Table 2:

Transtheoretical Model (TTM)	
Precontemplation	Employees do not realize they are candidates for any health promotion program. They have yet to realize the health detriments of their behaviors.
Contemplation	Employee wellness initiatives have taken place. Health benefit incentives have been offered. These triggers have allowed the dangers of unhealthy lifestyle behaviors to be realized. Employees may be speaking to the wellness team and other participants for details.
Preparation	Small changes are being made by employees. Parking further away from the building, bringing a healthy lunch versus eating out, weighing oneself, purchasing new walking shoes and work-out clothing.

Action	Employees start to participate in the employee health wellness program. Small benefits are being realized. Employees feel motivated and are encouraged. They are provided with little rewards and incentives for program participation.
Maintenance	This stage requires at least 6 months of non-relapse to a previous stage. In this stage, employees become self-reliant. They create a new routine with friends, family, and support groups to maintain their healthy behaviors.
Termination	This stage is very difficult to reach. It is always in progress, as people are consistently working on their own health behaviors.

Precontemplation: This stage pertains to those who are six months or more out from making behavioral changes. These individuals do not recognize the benefits of change and focus more on the inconveniences of changing.

Contemplation: Once individuals realize the danger of their unhealthy behaviors, they consider the pros to change. These people tend to make changes in the next six months.

Preparation: This is when a person starts making small steps to change. For example, purchasing new workout clothing or buying a comfortable pair of walking shoes.

Action: People who continue to make changes for six months have reached the action stage. They experience the benefits of healthy behaviors both mentally and physically. They continue moving forward with healthy behavior changes.

Maintenance: This stage applies to those who have managed to stay on track and not relapse to a previous stage for at least six months. They feel confident in their ability to change and may remain in this stage for up to five years.

Termination: Those who have achieved self-efficacy and will not relapse have entered into the termination stage. Reaching the termination stage is not common, as individuals are always working on their own health behaviors.

Proposed Program Implementation

Combining the HBM with the TTM provides a framework for a company to develop a wellness team using a multilevel approach. It will include employees who are at a variety of risk levels. This wellness committee will generate motivation on the floor and provide word-of-mouth advertising before the start of the intervention. Mailers will be sent out to all employees a month before the program. These will encourage employees to take baby steps toward the program, including parking further away from the building, bringing lunch versus ordering out, and being active during scheduled breaks. The company Wellness Coordinator will partner with the onsite cafe to update the menu from high sodium and carbohydrate options to healthier food choices. The wellness team will use Microsoft Teams to send random alerts, such as Drink Water and Get Up and Move. A Registered Dietitian will be available onsite once a month for participants who would like a nutritional consult.

This employee program will target high-risk employees who volunteer to participate. A company health survey concentrating on risk factors for CVD and mental wellness caused during COVID-19 will be sent out to employees introducing the Health Belief Model (HBM) and the Transtheoretical Model (TTM). This will help the wellness team identify the stage of change employees fall under and rank participants according to willingness to change. Enlisting employees prepared to engage in lifestyle changes will allow them to utilize their resources efficiently. Introducing a lifestyle management program that supports and encourages employee participation will help them make better lifestyle choices. Employees will have easy access to practice in a number of lifestyle modifications at work.

This program will begin with a biometric screening to measure employee's blood pressure, blood sugar, cholesterol, triglycerides, and BMI. According to the TTM, moderate or high-risk employees will be classified into the preparation phase; and low-risk employees can be categorized into the maintenance phase. The Wellness Coordinator will design an infographic to email all participants. This infographic will include reference ranges for BMI and blood levels along with CDC risk levels. Biometric screening numbers will measure program success, with the goals being a decrease in COVID-19 and CVD occurrences among company employees (Table 3).

Table 3:

Blood Pressure Risk Categories			
	Low Risk	Moderate Risk	High Risk
Blood Pressure	below 120/80mm Hg	120-139/80-89mm Hg	above 140/90mm Hg
Fasting Glucose	below 99mg/dL	100 to 125mg/dL	above 126mg/dL
Lipid Profile			
Total Cholesterol	below 200mg/dL	200-239mg/dL	above 240mg/dL
LDL	below 130mg/dL	130-159mg/dL	above 160mg/dL
HDL	above 50mg/dL	40-49mg/dL	below 40mg/dL
Triglycerides	below 150mg/dL	150-199mg/dL	above 200mg/dL

A Registered Dietitian will instruct high-risk participants to decrease their caloric intake and maintain a nutrition journal for accountability. The wellness team will promote Trot the Lot to encourage participants to walk five times a week, for 15 minutes a day at work. Participants will be provided with the same metrics from the biometric screening measured quarterly to see their results.

The wellness committee team will support focused initiatives and show continued enthusiasm throughout the program. They will be able to provide feedback from the floor to share employees' ideas and critiques. There will be a physical and virtual Health Champion wall to recognize employee participation and provide incentives to employees who have achieved success. Support and encouragement are vital to the program. Employees at risk for COVID-19 or CVD can experience the benefits of a proper nutrition program, stress management, and an exercise regime through a workplace initiative [9,10]. Those who have adopted healthier behaviors and see the benefits will likely share their positive experiences with other employees, allowing them to become health advocates.

Conclusion

The global pandemic of COVID-19 has impacted social and workplace environments. The workplace presents an important environment to focus efforts on both mental and physical health issues. Major employee health concerns include increased stress, anxiety, and lack of physical activity – all of which contribute to CVD. Improvement of workplace conditions, including the adoption of anti-contagion measures and requirements of personal protective equipment such as masks can create a more safe and healthy work environment. The goals of employee health promotion programs should be to create an environment that encourages employees to make healthy choices voluntarily. Participants in employee health promotion programs can adapt lifestyle changes. Healthier employees will lead to an increase productivity, satisfaction, and overall quality of life.

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