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Commentary

When public health messages become stressful: Managing chronic disease during COVID-19



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ABSTRACT

To curb the spread of COVID-19, the United States has endorsed a variety of public health measures and distributed their content expediently. While these measures are critical for saving the lives of thousands, they may be sources of stress for individuals managing a chronic disease or make disease management more challenging. Forty-five percent of Americans live with chronic disease and already manage a range of everyday stressors related to their disease, making the additional stress produced by this public health guidance and their messages more difficult. Guided by Cohen and colleagues' Stage Model of Stress and Disease (Cohen et al., 2016) and Ryan and Sawin's Individual and Family Self-Management Theory (Ryan & Sawin, 2009), this paper identifies the various dimensions of these public health measures that may cause stress and negatively impact individuals managing chronic disease. Further, this paper presents a conceptual model for understanding how these stressors and common stressors associated with managing chronic disease interact and significantly impact chronic disease management. Considering the impact of these stressors on individuals managing chronic disease is paramount to ensure this population is empowered to manage this additional stress healthily and effectively. Recommendations for individuals managing chronic disease and health care professionals working with this population are provided.

1. Introduction

The World Health Organization (WHO) and the United States (US) Centers for Disease Control and Prevention (CDC) are calling for health systems around the world to address the COVID-19 pandemic (Time, 2020 and March). Such calls for action are leading to the implementation of public health measures by various sectors at the federal, state, and community levels (Centers for Disease Contr, 2020a). While the implementation of these public health measures is important to controlling the spread of this pandemic, the stress induced by these efforts must not be overlooked, particularly for those already dealing with health-related stress regularly by living with chronic disease (Garfin et al., 2020). In a March 2020 press release, the WHO recognized the added burden placed on those with chronic conditions in the early days of the pandemic, providing advice specific to individuals living with chronic health conditions on dealing with the stress (World Health Organization, 2020a, 2020b). Approximately 45% of Americans live with at least one chronic disease (Raghupathi & Raghupathi, 2018). To the authors' current knowledge, no current model exists for conceptualizing the stress impact of COVID-19 public health measures on populations

managing chronic disease. The purpose of this article is to outline a proposed pathway on how COVID-19 pandemic public health measures can produce stress, fear, and anxiety in individuals with existing chronic diseases. Stress, fear, and anxiety may ultimately impact the ability of those with chronic disease to effectively manage their care, resulting in more morbidity and mortality during this pandemic, further overwhelming healthcare systems in our communities. The article concludes with recommendations on how to mitigate these compounded stressors for individuals living with chronic disease.

2. Current public health measures

US public health authorities have attempted several strategies to limit the spread of COVID-19 such as increasing personal hygiene and social distancing campaigns (Ali & Alharbi, 2020; Franki, 2020). These measures are intended to combat virus transmission and to prevent it from overwhelming our healthcare system; hospitals around the country have limited resources to care for the expected number of severely ill individuals with COVID-19 (Franki, 2020). Since scientists have demonstrated how the virus can be transmitted, there has been an increased

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demand for protective personal equipment (PPE) for healthcare workers in the face of a country-wide shortage (Ranney et al., 2020). This has led to regulatory agencies recommending the appropriate usage of PPE to optimize its availability for healthcare workers on the frontlines (World Health Organization, 2020a, 2020b). Despite these efforts, there have been reports of widespread shortages of PPE with many agencies attempting to address the opportunities that currently exist in our country's supply chain (Bauchner et al., 2020). Additionally, earlier CDC reports discouraging the public from wearing face masks (Servick, 2020) have shifted due to new research developments with the CDC now recommending the public wear face masks to prevent the spread of the virus by asymptomatic individuals (Centers for Disease Contr, 2020b). Further, conflict amongst prominent public figures as to the utility and necessity of public health measures elicits further confusion and stress (Weissert & Lemire, 2020). These shifts in recommendations surely contribute to individual's uncertainties and the brutal reality of this pandemic. The CDC recognized the stress in individuals created through fear and anxiety and therefore made recommendations on how to cope during this outbreak (Centers for Disease Contr, 2020c). Therefore, it is important to understand and identify all possible stressors that may exist during this pandemic, including those that may stem from the public health measures themselves.

3. Impact of stress on chronic disease

The impact of stress on both disease trajectory and self-management capabilities cannot be understated. Cohen and colleagues' Stage Model of Stress and Disease delineates how stressful life events can lead to overall poor health decisions and behaviors, leading to negative health outcomes (Cohen et al., 2016). Specifically, life events perceived as stressful may elicit a negative emotional response, leading to changes physiologically (e.g., activation of the hypothalamic-pituitary-adrenal system) and psychologically (e.g., poor health decisions and behaviors) (Cohen et al., 2016).

Whereby the physiological effects are difficult to avoid, the psychological effects, specifically regarding self-management, can be altered. Ryan and Sawin's Individual and Family Self-Management Theory describe how contextual factors can impact the process of self-management for those living with chronic disease, having lasting implications for both proximal and distal health outcomes (Ryan & Sawin, 2009). Contextual factors can be either risk or protective factors and encompass condition-specific factors (e.g., the complexity of condition or treatment trajectory), factors regarding the physical and social environment (e.g., access to care, culture, and transportation), and individual factors (e.g., perspectives, information processing, literacy, and developmental stage). Given that self-management is critical to chronic disease care (Bodenheimer et al., 2002), intervention around contextual factors may work to better facilitate the process of self-management under times of extreme duress.

Together, these frameworks address how additional stressors, such as those caused by a global pandemic, may be uniquely affecting individuals living with chronic disease. Intervention around contextual factors, such as communication around public health measures, may work to better facilitate the process of chronic disease self-management during these times of tremendous stress.

4. Public health measures as sources of stress

We recognize that there are many stressors during the COVID-19 pandemic such as the fear of falling ill with the virus, inability to sleep due to worrying, worsening of chronic problems, alcohol abuse, and even the loss of employment (Blessing, 2019; Chan & Larson, 2015). This paper proposes that current public health measures that are being enforced to address this pandemic are also independent stressors that can negatively impact people living with chronic diseases [Fig. 1].

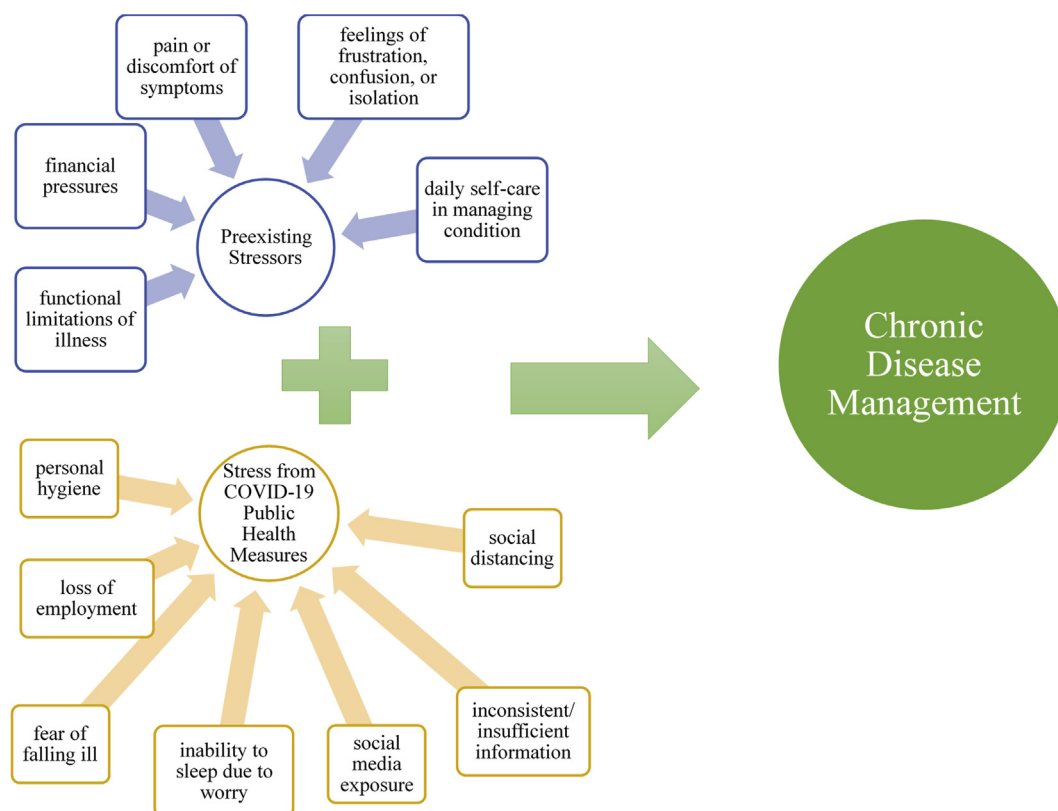


Fig. 1. Additive effect of preexisting stressors and stress from COVID-19 public health stressors on chronic disease management.

4.1. Media consumption

Consuming public health messages that provide information regarding public health measures may serve as a stressor for individuals during this pandemic (Garfin et al., 2020). Specifically, the rapid pace at which recommended public health measures change and the resulting inconsistency across news reports may cause confusion and stress among consumers. Research has demonstrated that consuming broadcast media during and after traumatic regional, national, or global disasters are correlated to increases in the development of post-traumatic stress disorder symptoms and may cause long-term physiological and mental difficulties (Centers for Disease Contr, 2020e; Centers for Disease Contr, 2020f). Although increases in stress have been linked to media exposure, there are indications that the desire for accurate information outweighs the cost of such worrying that is produced by exposure to such media (Fischhoff et al., 2018). However, the integrity of news media has increasingly become questionable with the rise of “fake news” and the use of social media as an unreliable source of information acquisition (Allcott & Gentzkow, 2017). Further, the fast pace at which news becomes obsolete may confuse individuals as to which public health measures to follow.

The ability to pick trustworthy and up-to-date news sources may cause stress responses impacting physical health during a pandemic (Garfin et al., 2020). Individuals managing chronic diseases are disproportionately affected by stress; these individuals must limit excess exposure to news media. A study by Chan and Larson found that while increased social media information increases protective behaviors, the more people read about the virus on social media, the higher their perceived risk (Chan and Larson, 2015).

4.2. Personal hygiene

It has already been recognized that stress can interfere with people's ability to adhere to and perform sufficient and effective personal hygiene (Blessing, 2019). Whilst people across the globe are actively fighting this pandemic, personal hand hygiene is paramount in protecting individuals and avoiding the further spread of the virus (Centers for Disease Contr, 2020e). The CDC has instructed how to conduct proper personal hand hygiene which includes frequent handwashing with soap and water for at least 20 seconds and the use of alcohol-based sanitizers with at least 60% alcohol content (Centers for Disease Contr, 2020f). The adherence to such measures is important for our society to combat this pandemic. Yet, the impact of such measures on individuals as an added stressor is unknown as public life resumes in a limited capacity during the pandemic.

4.3. Social distancing

Social distancing has been recommended by the CDC as an effective means to addressing this pandemic (Centers for Disease Contr, 2020g). The importance of widespread education to the public of this strategy will help avoid overwhelming the resources at local hospitals and help “flatten the curve” (Hopkins, 2020). Social distancing is the function of creating enough physical space in between individuals to avoid close contact as well as the deliberate avoidance of large crowds (Ault, 2020). Although this is not the first time in the US that this strategy has been used to combat pandemics, for most people in America, this is their first experience with such extreme measures (Mapes, 2020). This was recognized as a source of stress due to its impact on meaningful activities that may lead to financial strains (i.e., being unable to work) and lack access to typical coping strategies, such as going to the gym or attending religious services (Brooks et al., 2020).

Moreover, quarantine and isolation could be a source of stress for most individuals (Brooks et al., 2020). Both can be done voluntarily or imposed by law to avoid transmission of the virus (Parmet & Sinha, 2020). The CDC has set forth guidelines on the appropriate use of both quarantine and isolation to ultimately reduce the transmission of the

virus to individuals that are deemed high risk of developing severe illness (Centers for Disease Contr, 2020g). Moreover, quarantine has been suggested for those at the highest risks for severe illness with the virus which include those who are older than 65, individuals with chronic diseases such as diabetes, chronic lung diseases, cardiovascular diseases, and those that are immunocompromised (Centers for Disease Contr, 2020h).

Related to quarantine and isolation, many states have issued lockdowns that have severely limited patient access to usual health services. The knowledge that accesses to health services has been reduced is stressful in and of itself; however, the knowledge that a highly contagious and lethal disease is the motivator for lockdowns increases the stress chronically ill patients may experience (Kretzschmar et al., 2020).

5. Impact of public health measures on chronic disease management

Individuals living with chronic diseases are already viewed as being among the most greatly impacted by stressors related to the COVID-19 pandemic (Centers for Disease Contr, 2020d). Chronic disease management is a co-creation between patients and physicians in which patient engagement is a key component to this relationship (Patient Management Hit (2), 2020). This is unsurprising because healthcare providers depend on patients to implement important daily routines in their lives and adhere to specific recommendations to manage their overall health. This level of patient engagement will need to continue especially during a time when stress and anxiety are heightened. Healthcare organizations have already proposed recommendations to patients on how best to deal with their fear during these uncertain times (McDonald, 2020). Stress and anxiety can lead to a disruption of daily activities in patients living with chronic diseases which may ultimately worsen their disease state and cause more morbidity and mortality.

5.1. Personal hygiene

Stress can interfere with people's ability to adhere to and perform sufficient and effective personal hygiene (Blessing, 2019). Personal hand hygiene as a stressor can interfere with patients managing their chronic diseases at home in that it can distract them from their routines or create extra steps, such as the diabetic patient who has to administer insulin to themselves while worrying about whether they are contaminating their needles or syringes with their hands. This may create more room for errors to occur due to the pre-occupation of ensuring that steps are done accurately to reduce their chances of getting infected with the virus. Overall, personal hand hygiene may negatively impact functional productivity in caring for themselves and following routines to control their chronic diseases at home which led the authors to identify it as a potential stressor.

5.2. Social distancing

The stress associated with social distancing is largely due to its impact on meaningful activities, potentially leading to financial strains (i.e., being unable to work) and lack access to typical coping strategies, such as going to the gym or attending religious services (Brooks et al., 2020). Social distancing certainly can disrupt patient's daily routines and can be hazardous to their health, such as limiting their options to exercise by closing gyms and further increasing their risk for a sedentary lifestyle. This is paramount given the negative impact physical inactivity can have on overall health and quality of life, especially for those living with hypertension, diabetes, and heart disease (Megari, 2013). Social distancing also discourages elderly people from going to the grocery store to reduce their risk of infection but may simultaneously potentially influence people to develop bad eating habits by ordering take-out, especially if they live independently.

Moreover, people who are in quarantine or isolation may be subject to

physical barriers and complexity that may create barriers and delays in the management of their chronic diseases. Despite the benefits of telemedicine in managing low acuity conditions and providing access to specialty care (Rockwell & Gilroy, 2020), this method of care is not recommended for symptomatic patients (Centers for Disease Contr, 2019a). Although the CDC has made recommendations for outpatient facilities to manage essential conditions during this pandemic (Centers for Disease Contr, 2019b), the authors believe patients in quarantine or isolation may still encounter barriers when they need to go to those essential visits that would put them at risk for deteriorating chronic disease. Caregivers may also experience logistical difficulties in supporting individuals who are quarantined or in isolation as they would need to use PPE when providing care and follow other safety protocols to reduce their risk of getting infected. Further, these patients would have to suspend all social gatherings such as church events and small prayer sessions which is concerning since such activities have been shown to improve the quality of life of people living with chronic diseases (Adegbola, 2011). Additionally, research posits that stress created by lack of access to usual health services may interfere with disease outcomes and medication adherence, overall undermining patient health (Kretchy et al., 2020).

The COVID-19 pandemic calls for immediate implementation of the above public health measures to reduce community transmission of the infection and to avoid overwhelming healthcare facilities (Hopkins, 2020). These measures also reduce the transmission of the virus, especially to those at the highest risk of developing severe illnesses (Centers for Disease Contr, 2019a). Although these measures are necessary to protect people from the virus, they can also be stressors that can negatively impact the health of people living with chronic diseases. Therefore, it is paramount that we find strategies to reduce the potential negative impact of these public health measures on people living with chronic diseases.

6. Recommendations on mitigating the stress from public health measures

The CDC has already made recommendations on how to mitigate stress from the COVID-19 pandemic with the recognition that those with chronic diseases would respond to the stress of the pandemic differently (Centers for Disease Contr, 2020d). However, the CDC recommendations, while effective, do not address stressors unique to the needs of patients with chronic disease. Below are recommendations that can be used to mitigate the overall stress experienced during this pandemic for individuals living with chronic diseases, ultimately reducing the overall impact of stress on one's health. A summary of these recommendations is provided in Table 1.

6.1. Limit news and social media consumption

Increased media consumption may lead to information overflow and overload, leading to decreased working memory, decreased decision-making capability, and increased negative emotions (Ledzińska &

Table 1

Summary of recommendations on mitigating the stress from public health measures.

Recommendations	
1	Limit news and social media consumption.
2	Focus on your circle of influence.
3	Adjust self-management plan.
4	Social distancing, not social isolation.
5	Try learning something new.
6	Stay in the present.

Note: This table summarizes recommendations that can be used to mitigate the overall stress experienced during this pandemic for individuals living with chronic diseases, ultimately reducing the overall impact of stress on one's health.

Postek, 2017). Reducing exposure to news media and social media is paramount in reducing stress from inconsistent and insufficient information regarding the pandemic.

6.2. Focus on your circle of influence

In *The 7 Habits of Highly Effective People*, Covey (Covey, 1989) describes a process of proactive management in overwhelming situations, where one focuses on tasks within one's "circle of influence." This serves as a proactive way to address stressful situations, compared to focusing on events outside of one's control, or "circle of concern" (Covey, 1989). Similarly, an internal health locus of control has been associated with greater treatment adherence in chronic disease management, leading to decreased stress in those patients (Gibson et al., 2016). During a pandemic when plenty is of concern (i.e., loss of employment or fear of falling ill), it may be overwhelming to think about. Focusing one's efforts on what is within one's circle of influence, such as self-care and personal hygiene, is one way to proactively address stress.

6.3. Adjust self-management plans

As much of American life has been disrupted, there can be added anxiety as to how to carry out the activities needed to manage a chronic disease. Integrating clinical guidelines with care management practices has been shown to increase clinical outcomes in those living with chronic disease by providing personalized self-management plans (Megari, 2013; Rockwell & Gilroy, 2020). Addressing how the added health precautions may interfere with their self-management plans can potentially save lives. For example, if regular exercise is necessary but gyms are closed, inquire if walking outside or participating in virtual workouts are viable options. Additionally, ensuring the patients know the proper procedures for personal hygiene, such as handwashing, to mitigate the stress of daily self-care of managing a condition. As healthcare infrastructures are still reeling from the impact of COVID-19 cases and patients are less likely to come in if serious symptoms do surface (Centers for Disease Contr, 2019b), taking five minutes to troubleshoot with chronic disease patients can save time and resources in the long run.

6.4. Social distancing, not social isolation

A recent study by Kong and colleagues (Kong et al., 2019) demonstrated how increased social support leads to decreased depressive symptoms and increased quality of life for patients with chronic disease. There are many ways to feel supported and to offer support during this time of social distancing. For example, call or video chat trusted friends about emotions arising such as fear, worry, frustration, and confusion. Taking walks with those with whom one is quarantined may provide a sense of social connection while adding physical activity into one's day. Further, community organizations such as churches and nonprofits are finding ways to keep people socially supported by providing resources and opportunities for connection while maintaining CDC guidelines. For those who are feeling particularly anxious or struggling with insomnia and other more serious mental health problems, seeking support from a mental health professional may be a more appropriate option. Several mental health professionals and organizations are offering telehealth services to accommodate the mental health needs of those in quarantine during the pandemic and beyond.

6.5. Try learning something new

Zhang and colleagues (Zhang et al., 2018) found learning something new can build positive resources to combat negative emotions, more so than relaxing. Although counterintuitive, temporarily unplugging from the pandemic reality to learn something new gives one a chance to engage mental and/or physical resources differently. Some potential activities include cooking a new recipe, crocheting, reading a book, or

learning a new dance. Further, these new activities may bring about creative ways to manage chronic disease.

6.6. Stay in the present

Increased mindfulness, or the practice of staying in the present moment, has been associated with increased cognitive functioning on both behavioral and neural levels (Gallant, 2016). Additionally, mindfulness can be protective against depression, anxiety, fatigue, and poor sleep, while also associated with a higher quality of life (Pagnini et al., 2019). Staying in the present moment disrupts processes of worry and rumination in which stress from the past or future is compounded with stress experienced in the present (Gu et al., 2015). Engaging in mindfulness activities is one way to stay grounded during these turbulent times.

7. Conclusion

Since the onset of COVID-19, well-intentioned public health measures have garnered a considerable amount of attention. These measures are undoubtedly essential for public health; however, almost constant exposure to and behavioral modification because of these public health measures may induce stress in chronically diseased populations and interfere with disease management. The present article presents a detailed conceptual model for understanding how public health measures may cause additional stress in chronically ill populations already experiencing disease-related stress. Specifically, this article focuses on the impact of public health measures focusing on personal hygiene and social distancing, as well as the impact of media exposure to these public health measures. This paper also puts forth recommendations to empower individuals with chronic disease to mitigate the stress caused by these measures. Physicians working with populations managing chronic disease may recommend limiting media consumption, focusing on one's circle of influence, adjusting self-management plans, engaging in social distancing rather than social isolation, trying new things, and staying focused on the present.

Individuals with chronic disease are particularly vulnerable to the virus and negative consequences of public health measures. It is imperative to develop a better understanding of what dimensions of the public health measures are affecting chronic disease management and to respond effectively to these negative impacts. The present article presents a novel conceptual model to better understand these critical areas, and further to serve as a foundation for future research. The current pandemic poses novel and daunting challenges for individuals already managing chronic disease; however, these individuals can be empowered to engage with thoughts and behaviors that can serve to reduce stress during this trying time.

CRedit authorship contribution statement

Sidney Coupet: Conceptualization, Writing – original draft, Writing – review & editing. **Guerda Nicolas:** Conceptualization, Writing – original draft, Writing – review & editing. **Ceewin N. Louder:** Writing – original draft, Writing – review & editing. **Marisol Meyer:** Writing – original draft, Writing – review & editing.

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