

# Motivating people to stay at home: using the Health Belief Model to improve the effectiveness of public health messaging during the COVID-19 pandemic

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Stay at home, Public health messaging, Health Belief Model, Persuasion

## INTRODUCTION

Since the beginning of the COVID-19 pandemic in Canada, governments at the municipal, provincial, and federal level have imposed public health measures, restrictions, and advice intended to limit the spread of COVID-19. Despite the good intentions of these directives, which include such things as stay-at-home orders, limits on social gathering sizes, and advice to avoid all nonessential travel, they have been met with considerable noncompliance, running the gamut from gatherings exceeding provincial size limits, to anti-stay-at-home marches [1], to the establishment of underground casinos and nightclubs [2, 3]. In response to these acts, the government has doubled-down on its public health messaging, urging its residents to “Help limit the spread of COVID-19,” and “Restez à la maison!” Yet, blatant disregarding of public health directives to gather and travel continues, even as the overwhelming majority of Canadians remain partially or fully unvaccinated [4]. This begs the question: Where are public health messaging and mass media campaigns failing in their attempts to convince residents to stay at home?

If we conceptualize staying at home as a health behavior that can limit one's susceptibility to contracting COVID-19, then we can harness psychological theories of health behavior to understand why people may choose to gather and travel during the COVID-19 pandemic, despite public health messaging urging otherwise. The Health Belief Model, which aims to explain why and under what conditions people take action to prevent disease [5], may be especially useful in elucidating why noncompliance to public health messaging exists. The Model can also be harnessed to develop theory-driven public health messaging that is more effective at persuading residents to stay at home not only during this pandemic, but during future epidemics or pandemics as well.

## Implications

**Practice:** The Health Belief Model can be applied to public health messaging in order to increase the effectiveness of public health messaging at motivating individuals to adhere to stay-at-home orders during the COVID-19 pandemic, and to inform future pandemic planning.

**Policy:** Public health agencies wishing to increase compliance with stay-at-home orders should apply the Health Belief Model-informed recommendations, provided in the below commentary, to the creation of COVID-19 public health messages.

**Research:** Future research should aim to identify which constructs of the Health Belief Model, when applied to public health messaging, are most effective at influencing individuals to limit traveling and gathering during the COVID-19 pandemic.

## THE HEALTH BELIEF MODEL

The Health Belief Model was developed in the mid-20th century by social psychologists at the U.S. Public Health Service [6] in an attempt to identify several variables that explain health behavior in individuals who believe themselves to be free of illness [5]. In the case of the current pandemic, this theory applies to individuals who have not contracted COVID-19, or who are ignorant of their pre- or asymptomatic COVID-19 status. The Model was developed from a large body of both theoretical and empirical research [5, 7], and its utility in explaining and predicting the undertaking of preventive health behavior has been validated in a large body of research studies and meta-analyses [8–10].

The Health Belief Model identifies five variables that predict health-promoting behavior [5]. The first is *perceived susceptibility*, the degree to which an individual feels vulnerable or susceptible to a particular health condition. According to the model, individuals who believe they are at high risk of

contracting COVID-19 may be more likely to follow stay-at-home orders than those who believe they are at low risk. The second, *perceived seriousness*, is the extent to which an individual believes that contracting a condition would have serious consequences for them. Importantly, the model argues that “serious consequences” may extend beyond medical consequences to factors like the negative effects of the condition on social relations, or on an individual’s job. Thus, a person who does not perceive themselves to be at risk of serious health consequences if they contract COVID-19, but who may lose their ability to work if they contract the illness, may be likely to stay at home. The third and fourth variables, *perceived benefits* and *perceived barriers to taking action*, assert that an individual’s decision to take a recommended preventive health action is influenced by how effective the individual believes the health action is at reducing disease threat (i.e., benefits), *less* the extent to which they see the action as having negative aspects (i.e., barriers). Thus, an individual who does not believe that staying at home will be effective in reducing the threat of contracting COVID-19, and who also perceives many negative aspects to staying at home (e.g., increased family conflict, boredom), will be unlikely to follow stay-at-home orders. The last variable, *cues to action*, is a trigger to engage in the appropriate preventive health behavior, and, as the model argues, includes mass media campaigns directed towards residents.

Each of the five variables provides different avenues for improving public health messaging. To illustrate how we can use the Health Belief Model to improve public messaging about staying at home, I will apply the Model to public health messaging from the Government of Canada, which produced a series of public service announcements (PSAs) and informational flyers (<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/awareness-resources.html#covid-awareness-table>) in response to the COVID-19 pandemic. Though federal messaging will be used as an illustrative example, insights gained from this analysis can be applied to public health messaging at all levels of government.

#### APPLYING THE HEALTH BELIEF MODEL CONSTRUCTS TO IMPROVE PUBLIC HEALTH MESSAGING

##### Perceived seriousness

According to the Health Belief Model, individuals who believe that contracting COVID-19 will have serious consequences for them will be more likely to follow preventive public health regulations and advice [5]. The model also posits that the degree of emotional arousal created by the thought of contracting a disease is more influential in driving health behavior than cognitions surrounding contracting the disease [5]. These tenets suggest that

public health messages should attempt to evoke strong emotional arousal (e.g., fear, sadness) by emphasizing and *depicting* the serious health and related consequences that may result if individuals fail to stay at home, such as severe sickness and death. These types of public health messages, known as fear-based appeals, have been shown to be effective at influencing health behaviors [12], particularly when the messages contain efficacy statements (i.e., statements that assure individuals that they are capable of undertaking the recommended health behavior, or that undertaking the behavior will result in desirable consequences), depict high susceptibility and severity, and target women [12]. When it comes to media campaigns, fear-based ads have proven useful for motivating other health behaviors, such as reducing smoking behaviors [13, 14].

Given past successes with fear-based appeals in encouraging health-promoting behaviors, it is incumbent that stay-at-home messages include fear-based appeals, ideally combined with efficacy statements [12]. Unfortunately, none of the PSAs or flyers posted on the Government of Canada’s repository of ads includes direct fear-based appeals. Instead, PSAs include such statements as “Together, we can help stop the spread,” “Let’s protect each other,” and “Putting yourself at risk puts everyone at risk” [11]. Though well intentioned, these PSAs seem unlikely to evoke strong emotional arousal, and they do not emphasize the serious medical consequences of COVID-19. What might messages that successfully incorporate these recommendations look like, specifically? A good example comes from a Washington State Department of Health PSA (<https://www.youtube.com/watch?v=419GfiRoXiA>) [15]. The PSA opens at a small social gathering of young adults, who are watching television together. It then cuts to a hospital, where one gatherer can be seen, supine on a hospital bed and intubated. The commercial includes two other scenes of social gatherings, each ending in the same result: a gatherer intubated on a hospital bed. This type of powerful message is more likely to persuade people to stay at home.

##### Perceived susceptibility

An important tenet of the Health Belief Model is that it is an individual’s *subjective* risk of contracting a condition, and not a professional’s (e.g., epidemiologist’s, other health care worker’s) view of the risk, that affects their readiness to take a specific preventive health action [5]. How does this apply to public health messaging that encourages individuals to stay at home? At the very least, it suggests that, beyond producing PSAs with fear-based appeals, PSAs should primarily include actors or actual COVID-19 survivors from groups who perceive themselves as being less susceptible to contracting COVID-19, and as experiencing less severe symptoms if they

do contract the illness. Young adults would be one such group to target [16]. Exposés featuring young people who have been hospitalized for the virus may be even more useful in encouraging individuals to stay at home (e.g., see <https://www.nytimes.com/video/opinion/100000007578176/covid-icu-nurses-arizona.html?searchResultPosition=1>) [17]. Lastly, PSAs that emphasize the increased transmissibility of COVID-19 variants and what that means for individual susceptibility to the virus or for virus transmission to loved ones may be beneficial.

It is important to note that public health agencies are often reluctant to air hard-hitting emotional ads including the elements described above [14]. Perhaps they worry that by increasing viewers' fears and anxieties, fear-based ads will backfire (e.g., they will lead to viewers avoiding the ads and the preventive health actions altogether). Luckily, research does not support this concern [12]. Thus, given extant literature on their effectiveness, as well as the rampant destructiveness of the current pandemic, it is crucial that governments put aside their reluctance and produce fear-based ads, rather than comical or upbeat ones, if they are to bring about behavioral change.

#### Perceived benefits and barriers to taking action

According to the Health Belief Model, the perceived benefit of staying at home must outweigh the perceived risk, or barriers, to staying at home for the health behavior to occur [5]. In the context of COVID-19, there are myriad risks of staying at home, such as loneliness [18], poorer mental health [19], boredom [20], economic disadvantage [21], and intimate partner violence [22]. Ultimately, if an individual perceives these risks as outweighing the benefits, they may forgo stay-at-home orders in favor of gathering and traveling (Table 1).

Given the constructs of benefits and barriers, how can public messaging be improved to increase the salience of staying at home relative to the risk of doing so? Firstly, it is important for public health messaging to emphasize the benefits of staying home for decreasing the risk of contracting and spreading COVID-19. On this front, the Canadian government's public messaging appears to be relatively strong: many of the PSAs that the government has produced inform viewers that staying home can save lives, be the difference between life and death, and help limit the spread of COVID-19 [11]. However, these PSAs must be coupled with others that identify the barriers to staying at home and that provide *specific, concrete* suggestions and resources that can be accessed to reduce these barriers. For example, PSAs could include suggestions for staying connected with friends, family, and community during stay-at-home orders (e.g., through videoconferencing, online community events and initiatives, etc.). Other PSAs that include *easily accessible*

mental health resources could aid individuals in overcoming psychological barriers by increasing their self-efficacy surrounding getting help. These resources could include phone numbers or websites that connect residents to *pro bono* or sliding-scale mental health care. For instance, in Ontario, PSAs could instruct frontline workers to call 211 to obtain free psychological services through the Disaster Relief Network; other PSAs could provide phone numbers for specific community and social services, crisis phone-lines, local food banks, and so forth. Disappointingly, a perusal of the Government of Canada's COVID-19 Awareness Resources archive at the time of this writing revealed only three resources (out of 64 listed) that provide information about how to reduce the psychological risks of staying at home: an informational flyer about parenting during the pandemic, a second about reducing COVID-19 stigma, and a third for mothers who have given birth during the pandemic. While the first two flyers provide specific, concrete, and easily accessible information on coping strategies and mental health resources, the informational flyer for new mothers fails to provide this type of information; instead, mothers are simply advised to "reach out" to others to talk about their mental health. If the Government of Canada's aim is to influence its residents to stay at home, then it is clear that its messaging is insufficient when it comes to helping Canadians reduce the perceived barriers to staying at home. A two-pronged approach of commissioning public health messages that underscore the health benefits of staying at home, while providing resources for social, community, financial, and psychological services that residents can access to reduce the risks of staying at home (coupled with sufficient funding to increase the provision of these services in the first place) can help promote stay-at-home behaviors. If these risks are left unaddressed, then it is easy to understand why individuals may choose to travel and gather despite directives to stay at home (Table 1).

#### Cues to action

Due to the difficulty in directly assessing cues to action, because they may be quite fleeting or difficult to remember retrospectively, this tenet of the Health Belief Model has been less researched than other variables in the model [5, 8]. Nonetheless, the logic behind it is sound: increasing cues that trigger stay-at-home behavior (such as the frequency with which a resident views a PSA) will increase instances of that behavior. Preliminary evidence supporting the utility of cues comes from a longitudinal study using UMass Tobacco Study data [14], which found that the odds of individuals quitting smoking over a 2-year period increased by 14% with each 10 additional ads that they potentially saw that were highly emotionally evocative. These data suggest that

**Table 1** | Summary of Health Belief Model strategies to enhance public health messaging about staying at home

Health Belief Model construct	Description	Application of each construct to public health messaging
Perceived seriousness	The extent to which an individual believes that contracting COVID-19 would have serious consequences for them	<ul style="list-style-type: none"> <li>• Develop messages that evoke strong emotional arousal like fear and sadness in viewers (i.e., fear-based appeals)                             <ul style="list-style-type: none"> <li>◦ <i>Example:</i> a PSA that depicts individuals or an individual's loved ones becoming severely sick or dying from COVID-19</li> </ul> </li> <li>• Develop messages that highlight the serious medical and related consequences of contracting COVID-19                             <ul style="list-style-type: none"> <li>◦ <i>Example:</i> a PSA that depicts a patient with long COVID who explains the medical, psychological, interpersonal, and financial consequences they have faced as a result of having long COVID</li> </ul> </li> <li>• Pair fear-based appeals with messages that clearly communicate that staying at home is effective in reducing an individual's chances of contracting COVID-19 or of spreading COVID-19 to a loved one</li> </ul>
Perceived susceptibility	The degree to which an individual feels vulnerable or susceptible to contracting COVID-19	<ul style="list-style-type: none"> <li>• Develop messages that use actors or actual COVID-19 survivors from demographic groups who believe that they are less susceptible to contracting/experiencing severe symptoms of COVID-19                             <ul style="list-style-type: none"> <li>◦ <i>Example:</i> an interview with a COVID-19 denier who contracted the virus and experienced severe symptoms, or who lost loved ones from the virus</li> <li>◦ <i>Example:</i> an exposé of an intensive care unit that features younger adults who are severely sick and/or dying from the virus</li> </ul> </li> </ul>
Perceived benefits and barriers to taking action	<p><i>Benefits:</i> How effective an individual believes staying at home is at reducing the risk of contracting COVID-19</p> <p><i>Barriers:</i> The extent to which an individual sees staying at home as having negative consequences</p>	<ul style="list-style-type: none"> <li>• Develop messages that emphasize that staying home decreases the risk of contracting and spreading COVID-19                             <ul style="list-style-type: none"> <li>◦ <i>Example:</i> news conferences that highlight how past stay-at-home orders have been successful at decreasing COVID-19 case numbers</li> <li>◦ <i>Example:</i> messages that compare COVID-19 case numbers between regions that have used stay-at-home orders to regions that have not used stay-at-home orders</li> </ul> </li> <li>• Produce messages that provide specific, concrete, and accessible suggestions and resources to help people stay at home                             <ul style="list-style-type: none"> <li>◦ <i>Example:</i> infographics depicting activities that people can do to reduce social isolation and boredom during stay-at-home orders</li> </ul> </li> </ul>

(Continued)

Table 1 | Continued

Health Belief Model construct	Description	Application of each construct to public health messaging
		<ul style="list-style-type: none"> <li>o <i>Examples:</i> PSAs that communicate provincial/state sick day entitlements to viewers; posters that clearly indicate the steps to obtaining paid sick leave through one's union</li> <li>o <i>Examples:</i> PSAs/Tweets that communicate phone numbers and websites for local community and social services, <i>pro bono</i> or sliding-scale mental health services, local food banks, etc.</li> </ul>
Cues to action	A trigger to engage in staying at home	<ul style="list-style-type: none"> <li>• Increase the frequency with which stay-at-home PSAs are played on diverse forms of media and social media</li> <li>• Monitor viewers' exposure to PSAs and target future advertising to demographic groups with lower exposure/views of the PSAs</li> </ul>

PSA, public service announcement.

increasing the frequency with which individuals encounter cues to action (e.g., emotionally evocative stay-at-home messages) increases the odds that individuals will engage in preventive COVID-19 health measures. As such, Canadian public health authorities should be strategic about the amount of advertising that they put out, through a range of channels, and then monitor exposure to advertising so that additional advertising can be targeted to empirically identified population gaps (Table 1).

### CONCLUSION

The Health Belief Model cannot explain all of the variance in people's health behavior choices regarding staying at home. Constructs from other theories of health behavior change, such as self-efficacy, may add additional explanatory power to our predictive models. Demographic, financial, personal, political, social, privilege, and structural factors will surely also influence individuals' choices to gather and travel [7]. Furthermore, public health messaging must be combined with other health behavior control strategies, such as nonessential business and school closures, limits on gathering sizes (and enforcement of those limits), and expanding/improved paid sick leave for essential workers if it is to succeed in keeping its residents indoors [23].

Nonetheless, there is much room for improvement when it comes to public health messaging aimed at slowing the spread of COVID-19, and empirical research shows that theory-driven messaging strategies can be highly effective. Health behavior change theories, including the Health Belief Model, can be

harnessed to increase individuals' propensity to forgo gathering and traveling in favor of staying at home. And though beyond the scope of this commentary to discuss, it is important to note that the Model can also be applied to messaging aimed at motivating individuals to practice frequent handwashing, wear masks, and get vaccinated. Stay-at-home messages that increase individuals' perceived susceptibility to contracting COVID-19, that emphasize the seriousness of the condition, and that amplify the perceived benefits of staying at home relative to the risks, will be key to improving adherence to stay-at-home directives. Even as cases of COVID-19 begin to decline with the rollout of vaccines, public health messaging following this formula becomes all-the-more important. We must resist ineffective messages that imply that all is well, and that the benefits of limiting gathering and traveling no longer outweigh the risks. Instead, we must provide messages that will continue to motivate residents to limit their movement, while providing them with information about the psychological, financial, and physical tools they will need to do so until we cross the metaphorical "finish line" of this pandemic.

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### Compliance with Ethical Standards

**Conflict of Interest:** The author declares that there are no conflicts of interest to report.

**Human Rights:** This article does not contain any studies with human participants performed by the author.

**Informed Consent:** This article does not involve human participants and informed consent was, therefore, not required.

**Welfare of Animals:** This article does not contain any studies with animals performed by the author.

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