



Who complies with coronavirus disease 2019 precautions and who does not?

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Purpose of review

Severe acute respiratory syndrome (SARS)–coronavirus disease 2019 (COVID-19) virus imposes a higher risk of complications and mortality among people with mental disorders. Until widely available vaccines, adherence to preventive behaviours remains the most crucial tool to prevent SARS/COVID-19 virus transmission. Our review focuses on the determinants of adherence behaviours.

Recent findings

Adherence behaviours include the use of a face mask and protective gloves, personal hygienic behaviours (handwashing or using hand sanitiser), and keeping physical distance and avoiding social gatherings. In almost all studies, males and younger people show less adherence. Risk perception and health beliefs (especially perceived severity of COVID-19 related conditions) can explain the sex and age differences in adherence. Studies covering the impact of mental disorders on adherence are surprisingly missing, with the exception of smoking.

Summary

Engaging men and young people in adopting preventive behaviours is crucial in protecting the whole community and specific vulnerable populations. There is a lack of studies investigating preventive behaviours among people living with mental disorders and addiction problems. Furthermore, descriptive and intervention studies are needed to understand and improve the adherence of this population to preventive behaviours.

Keywords

adherence, face mask use, personal hygienic behaviours, physical distancing, preventive behaviours

The pandemic of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), represents the most rapidly spreading infectious disease since the influenza pandemic of 1918–1919. Responding effectively to the COVID-19 pandemic requires responses from a medical perspective (i.e., implementing adequate treatment, vaccination, etc.), and it necessitates people worldwide changing their individual behaviours in response to the public health imperative of infection control. Consequently, social and behavioural sciences play central roles in coping with the challenges caused by the current COVID-19 pandemic and future pandemics [1*,2*]. To understand these mechanisms, we reviewed the literature on preventive behaviours from the onset of the COVID-19 pandemic to March 2021.

Possible routes of transmission include close contacts between people, contracting the virus through surface spread (via fomites), contracting it via large droplets (through coughing and

sneezing), and airborne (aerosol) transmission, especially in enclosed spaces [3]. Importantly, the transmission of SARS-CoV-2 is possible from infected people who are asymptomatic [4]. Preventive measures, therefore, need to be applied irrespective of apparent symptoms. Until now, only one study has shown that vaccination can dramatically decrease viral transmission [5]; therefore, adherence to preventive behaviours remains the most important tool to keep infectivity measured by the reproduction number low [6]. A key goal is to decrease this number <1.0 through coordinated prevention efforts,

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KEY POINTS

- Adherence to preventive behaviours is one of the most important ways to protect individuals and society against spreading severe acute respiratory syndrome (SARS)–coronavirus disease 2019 (COVID-19).
- People with mental and behavioural disorders have a higher risk of COVID-19 infection and mortality; therefore, their protection is essential.
- Currently, there is a lack of data on adherence to preventive behaviours among people with mental health and substance use disorders. There is a pressing need for research in these populations at increased risk of developing COVID-19 disease.
- Males and younger people have lower adherence to preventive behaviours; therefore, they may increase the risk to acquire and transmit the virus to other members of society.
- Specific communication strategies should correct risk perception for these groups and emphasise the severity of COVID-19 related conditions.

which require the engagement of members of the community and their adherence to these preventive approaches. Adherence to preventive behaviours is expected to reduce the spread of infection and provide an opportunity for the healthcare system to build up appropriate resources to treat severe cases [7]. The issue is whether and how this can be achieved in a sustained way.

There are specific populations who are more vulnerable to the burden of the current situation. Previous studies have highlighted the increased risk of SARS-CoV-2 infection and fatality among people living with a mental disorder [8[■]]. Furthermore, one study from Italy [9[■]] has reported increased odds of SARS-CoV-2 infection in older (≥ 65 years) people with dementia, psychosis, and anxiety. Younger patients (< 65 years) with dementia and anxiety also showed an increased risk of infection. There is also an increased risk of SARS-CoV-2 infection in patients with a recently diagnosed substance use disorder [10].

Furthermore, accumulating data about the higher risk of SARS-CoV-2 infection is paired with the alarming data that fatality due to SARS-CoV-2 infection is increased among patients with behavioural and mental disorders. For example, in a study from Italy, higher odds of fatality of SARS-CoV-2 infection were also associated with dementia, psychosis, and anxiety. The risk of infection was comparable or even higher than the risk of other chronic conditions such as heart disease and diabetes. Another study from the USA demonstrated that the risk of mortality is

increased in patients with schizophrenia spectrum disorder, even after controlling for age and other chronic medical conditions [11[■]]. Patients with a schizophrenia spectrum disorder had a 2.7-fold higher odds of mortality, which was found to be higher than diabetes, heart failure, or hypertension. These alarming data should direct our attention to the crucial importance of the prevention of SARS-CoV-2 infection among patients with mental disorders. Until the vaccination of patients with mental disorders, the prevention of viral transmission is the most important tool to protect all vulnerable populations. Therefore, a high degree of adherence to preventive behaviours is required from patients, caregivers and the wider social environment.

ADHERENCE TO PREVENTIVE BEHAVIOURS

Prevention of transmission of SARS-CoV-2 requires behavioural change that dramatically alters human interactions, which is challenging and stressful for all of us, and especially for patients with mental disorders. Most countries facing the COVID-19 epidemic have implemented public health interventions and legislation to decrease the frequency of close personal contact by spatial distancing measures [12] and promoting physical or chemical barriers to virus transmission through wearing face masks and gloves, and handwashing, respectively. We can learn from experiences with influenza viruses. For example, a meta-analysis of studies investigating interventions to prevent influenza provided evidence of the benefit of multiple preventive behaviours [13]. For example, hand washing in combination with face mask use significantly reduces influenza virus transmission [13]. Countries, however, differ in which protective measures they require. For example, the recommendation regarding wearing a face mask varies across countries [14,15]. The degree of adherence necessary for effective prevention across populations is still not known, but we assume that consistent – daily or almost daily – use of preventive behaviours can significantly decrease the rate of viral transmission. However, preventive behaviours are complex, and estimating adherence to them can be challenging.

Preventive behaviours may be grouped into three different clusters: the use of a face mask and protective gloves, personal hygienic behaviours (handwashing or using hand sanitiser), and keeping physical distance and avoiding social gatherings. Each preventive behaviour is so complex that performing it appropriately requires knowledge, skills, and motivation [16]. Wearing a face mask and protective gloves can be regarded as an effective way of protection, as previous

experience with influenza prevention emphasised the use of face masks with hand hygienic measures [13]. Surprisingly, at the beginning of the pandemic, the WHO did not yet suggest these important tools (WHO, 2020). Recent evidence supports the idea that a face mask can protect from the transmission of viral RNA [17]. Although face mask use has become an important way of preventing viral transmission, according to direct observational studies, the proportion of face mask users among observed participants was only 41.2% in the United States [18], 45.6% in Iran [19], and 66.5–73.6% in Poland [20^{***}]. Furthermore, a relatively low proportion of individuals used the mask correctly (approximately 60% in Poland and 75.6% in Iran).

Before the COVID pandemic, relatively few studies investigated personal hygienic behaviours; some reported low adherence to hand-washing behaviour among college students after using the toilet [21,22]. A relatively low compliance rate to hand hygiene guidelines was also observed among healthcare workers [23]. The COVID pandemic has somewhat increased hand hygiene performance in acute care hospitals [24], but less is known about personal hygienic behaviours in communities.

Physical distancing is an even more complex behaviour and it has far more consequences to people's well being. It aims to prevent exposure to high-risk situations such as closed spaces with poor ventilation, crowded places, and close-contact settings [25]. Community-level physical distancing, or lockdowns, are able to decrease SARS-CoV-2 related mortality; however, the effect is moderated by the local situation [26^{***}]. Using mobile technology, physical distancing can be measured on an ecological level; however, it is difficult to draw conclusions regarding individual behaviours. Analysing mobility data has revealed a large socioeconomic disparity in the adherence [27] to physical distancing. In regions with higher proportions of essential workers and a higher population density, the adaptation to physical distancing is less intense [28]. In cross-sectional self-report surveys [27,29,30], some degree of nonadherence to physical distancing was prevalent; however, the majority of these studies used convenience samples, which makes it difficult to quantify and generalise the results to the general population and may also suffer from social desirability bias.

FACTORS INFLUENCING ADHERENCE TO PREVENTIVE BEHAVIOURS

Sex

Almost all observational and questionnaire-based studies from different countries documented that

the adherence to all three clusters of preventive behaviours is lower among men [31^{***},32]. Males tend to use face masks less frequently and less appropriately [18,19,20^{***}], they are less likely to wash their hands [22,33], and they are more likely to transgress the rules of physical distancing and self-isolating [27]. Beside these adherence behaviours, men perceive a lower risk than women across countries [34^{***}]. However, culture and social hierarchy may also moderate the impact of sex on preventive behaviours. For example, a study in India reported an opposite pattern of sex difference [35]. The lower adherence to prevention and the lower perceived risk may contribute to the lower life expectancies in general and the higher mortality rate due to COVID-related complications among males. The sex difference concerning preventive behaviours, self-care, perceived immunity, or the perceived vulnerability to complications are possible explanations; nevertheless, we need further research on the gendered meaning of preventive behaviours that would explain the lower rate of preventive behaviours among men [36].

Age

The younger population without any symptoms of infection may contribute to viral transmission in communities [25]. Being of a younger age is an important predictor of nonadherence to preventive behaviours [32,37^{***}]. Frequent communication regarding the SARS-CoV-2 virus stressed the fact that COVID-19 mainly threatens the older population, which can lead to a false safety message to younger people [38], considering that despite the lower risks, 1% of hospitalisations due to COVID-19 in China were among those aged 20–29 years, and 3% from the age group of 30–39 years old [39]. Based on nine relevant health indicators, approximately one-third of young people are medically vulnerable to severe COVID-19 illness, at least in the United States [40]. Current smoking status dramatically increases medical vulnerability.

As for risk perception, their perceived lower vulnerability and the stage of brain development of adolescents and young adults predispose them to take more risks to gain social and emotional stimulation (such as social gatherings) and underestimate the long-term consequences of their behaviour [41]. Health communication to this age group should specifically consider increased attention to emotionally toned stimuli and lower sensitivity to negative consequences.

Cognitive factors: risk perception, health beliefs, self-efficacy

Risk perception and health beliefs may explain different adherence levels to preventive behaviours

[42]; these factors are also important because they are amenable to change with interventions. Risk perception and health beliefs include perceived susceptibility to and perceived severity of the infection and its consequences and perceived self-efficacy regarding preventive action. Being female, having a direct COVID-related experience, and prosociality had positive impacts, whereas an individualistic worldview had a negative impact on perceived risk across ten countries [34²²]. Interestingly, the predictive power of perceived vulnerability varied across nations. In contrast, the perceived severity of the COVID-19 illness and the perceived self-efficacy regarding preventive behaviours predicted the rate of adherence behaviours in various countries [32,43–45].

Substance use

After a screening of the relevant research, we could not identify any study focusing on how substance use impacts adherence behaviours, except smoking. Although smokers are more likely to develop symptomatic COVID-19 [46²²], it is still unclear whether smoking increases hospitalisation and mortality from COVID-19 infection [47²²,48,49]. Nevertheless, the assumed increased risk due to smoking is present in COVID-related communication; therefore, it may influence smokers' preventive behaviours. On the contrary, one study found that current smokers reported lower adherence than never smokers, even though they are more worried about becoming seriously ill from COVID-19 [50²²]. We can assume that both the physical and social contexts of substance use, predisposing personality characteristics (impulsivity, low self-control, delinquency) and the marginalisation of these groups may make substance users less adherent to preventive behaviours, while preventive behaviours and isolation, on the other hand, may increase problematic substance use, making the users more vulnerable to COVID-19 infection.

Lockdown

The most effective nonpharmacological interventions to mitigate the spread of SARS-CoV-2 include curfews, lockdowns, and closing places where people gather for a longer period of time [51²²]. These interventions force people to perform preventive behaviours, mainly physical distancing. Although most people adhere to these restrictions, some people can transgress them as well. Apart from the clear benefits of lockdowns and similar interventions, they also have high costs that should be considered as a limitation. First, such interventions cannot be

held for too long without risking economic and political instability [52]. Second, lockdowns, curfews, and closing venues may increase the sense of loneliness and isolation and heighten the risk of mental health problems, especially in the adult and young population [53–55]. Additionally, problematic alcohol and substance use [56²²], as well as behaviour addictions, for example, gaming disorder [57] or the problematic use of the internet or pornography [58], may also increase. The negative impacts of lockdown hit even harder those people who suffer from mental or addictive disorders [59] or those who live in economic hardship [60]. Therefore, instead of prolonging this intervention type, we need to find ways to increase adherence to other preventive behaviours in communities.

CONCLUSION

Understanding adherence to public health recommendations will help decrease the likelihood of SARS-CoV-2 transmission and potentially the severity of the COVID-19 illness. Everyone, irrespective of their particular risk of these infections, can contribute to the health of the community as a whole. Developing ways of engaging men and young people in adopting preventive behaviours and emphasising the severity of the illness is vital for the optimal prevention of SARS-CoV-2 transmission now and in the future. Besides the description of the situation about adherence to preventive behaviours, we also need to focus on how to improve individuals' preventive behaviours with the help of behaviour science [61] and the capacities of families and communities to mitigate the negative adverse effects of preventive interventions, such as the increased risk of substance use and problematic behavioural addictions [62²²].

There is a lack of data on adherence to preventive behaviours among people with mental health and substance use disorders. There is a pressing need for research to understand these vulnerable populations' determinants of adherence behaviour and specific needs to improve their self-care and adherence to public health recommendations.

Although biotechnological development of testing and vaccination is necessary, human behaviour within its globalised ecological context is still the cornerstone of preventing infectious diseases. Understanding the predictors of hygienic and adherence behaviours in the current COVID epidemic can inform us how to establish effective prevention programs in future outbreaks. Further research is necessary to explore the specific needs of people living with mental, behavioural or addictive

disorders to support their adherence behaviours in current and future pandemics.

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Conflicts of interest

There are no conflicts of interest.

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