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Invited commentary

Factors associated with mask wearing among psychiatric inpatients during the COVID-19 pandemic

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We face urgent challenges for the prevention of mass infections in psychiatric hospitals. Psychiatric hospital inpatients are at increased risk of mass infection with COVID-19 (Yao et al., 2020). Wearing face masks and hand washing are important to reduce the risk of infection, by blocking aerosol spread and protecting those considered susceptible (Aledort et al., 2007). Especially, face masks can be a valuable tool for preventing infectious disease transmission (Lerner et al., 2020). Countries where mask-wearing is widely accepted have more effectively controlled the spread of SARS-CoV-2 (Cheng et al., 2020). However, inpatients with mental disorders might not be able to follow the recommendations and maintain physical distancing due to limited ability to comprehend directions (Brown et al., 2020; Li, 2020). In addition, the psychiatric inpatient unit is a perfect breeding ground for the virus (Kim and Su, 2020). Few studies have examined the factors affecting hygiene and preventive health behaviors in the context of COVID-19. The purpose of this study was to determine the factors associated with mask wearing among psychiatric inpatients during the COVID-19 pandemic.

This study was carried out among Korean hospitalized patients with mental illness in May 2020. This study was approved by the hospital's Institutional Review Board. The participants completed self-administered questionnaires on health-related behavior. All items were scored on a 5-point Likert scale. Scores of 4 (agree) and 5 (strongly agree) were considered positive responses. The main variable in this study was the

questionnaire item 'Since COVID-19 began spreading, I wear a face mask in the hospital to prevent COVID-19'. Other questions included washing hands for longer and more often because of COVID-19, worry about being infected with COVID-19 via hospital staff, afraid of mass infection, and receiving education from hospital staff on preventing COVID-19. Subjects were divided into two groups based on their responses to the question on mask-wearing in the hospital.

Knowledge about COVID-19 was assessed by a 6-item questionnaire, developed by the authors (Lee et al., 2020). The questionnaire consisted of questions about the transmission, and prevention of COVID-19. We excluded one question asking about fatality of COVID-19 from the analysis because of the high rate of incorrect responses, likely due to a failure to understand the meaning of fatality. A score of 0 was given for incorrect and unknown answers, and 1 point was given for correct answers. The higher the score, the higher the level of knowledge. The Cronbach's α value for this scale was 0.736. A questionnaire validated by the authors (Kim et al., 2020) was used to identify psychological and behavioral changes and distress due to the spread of COVID-19. Scales concerned with psychological status such as the Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001), the Generalized Anxiety Disorder Scale-7 (GAD-7) (Spitzer et al., 2006), and Gratitude Questionnaire-6 (GQ-6) (McCullough et al., 2002) were administered. Sociodemographic and clinical data were collected. A multivariate logistic regression analysis was used to identify factors independently associated with mask wearing after adjusting for variables including education level and factors that were statistically significant in *t*-test or chi-squared test. All statistical tests were two tailed, and the significance level was $p < 0.05$.

Among 261 patients who responded to a questionnaire about mask wearing behavior, 107 (37.4%) reported that they wore a mask in hospital. Mask wearing was significantly associated with voluntary admission, a diagnosis of psychosis, and hospitalization in a public hospital. There were no significant differences in age, sex, marital status, education, religion, or smoking status by mask wearing status (Supplementary Table 1). Mask wearing patients were significantly more likely to wash their hands, to worry about being infected with COVID-19 by hospital staff or visitors, to fear mass infection, and to have received education pertaining to the prevention of COVID-19 infection (Supplementary Table 2). The mask wearing group were more aware of the recommendation to not

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Table 1
Logistic regression analysis for variables associated with mask wearing.

	Odds Ratio (95% CI)	p-value
Education, ≤12 years	1.101 (0.485– 2.498)	0.818
Admission, voluntary	1.058 (0.368– 2.087)	0.899
Diagnosis, psychosis	0.388 (0.149– 1.010)	0.052
Institution, public	0.398 (0.144– 1.103)	0.077
Fear of infection	0.740 (0.460– 1.189)	0.213
COVID-19 knowledge score	1.465 (1.011– 2.124)	0.044
Gratitude questionnaire-6	1.032 (0.976– 1.090)	0.269
Frequent hand washing	7.082 (2.762– 18.158)	<0.001
Concerns about infection by staff or outsiders	6.540 (2.461– 17.363)	<0.001
Afraid of mass infection	1.975 (0.764– 5.109)	0.160
Receiving education on preventing COVID-19	0.915 (0.361– 2.317)	0.851

CI: Confidence interval, Bold values denote statistical significance at the $p < 0.05$ level.

touch one's own face, and of the recommended ways to wash their hands to prevent COVID-19 infection (Supplementary Table 3). Scores of the fear of infection and COVID-19 knowledge, and the GQ-6 scores were significantly higher in the mask wearing group. However, scores on the PHQ-9 and GAD-7 did not differ by mask wearing status (Supplementary Table 4). The regression analysis showed that frequent hand washing, concern about the spread of COVID-19 within the hospital via staff or visitors, and the COVID-19 knowledge score were independently associated with mask wearing (Table 1).

It is important to prevent mass COVID-19 infections in psychiatric hospitals. Patients with severe mental illnesses, such as schizophrenia, may have difficulty making health-related decisions because of functional impairment. However, previous studies of patients with psychosis have shown that health-related behaviors are associated with knowledge of physical illness (Kim et al., 2019). In this study, mask wearing and hand washing were positively associated. This suggests that preventive health behaviors tend to occur together. This study also showed that the higher the COVID-19 knowledge score, the more likely a patient is to wear a mask. In addition, patients who had received education about preventing COVID-19 were likely to wear a mask. However, receiving education was not a significant factor in the regression analysis. Therefore, simply offering education to psychiatric inpatients may be of limited use in promoting preventive health behaviors. For patients who suffer from mental illness, education should be more systematic and easier to comprehend.

The level of general anxiety was not associated with mask wearing in this study. However, patients tended to wear a mask in the hospital if they were specifically worried about being infected by hospital staff or visitors or feared mass infection within the hospital. An increase in fear may promote preventive behaviors, but an excessive amount can lead to social disruption (Basch et al., 2020). Therefore, fear of infection should be managed in a way that promotes healthy behaviors.

In conclusion, the psychiatric patients in our study with greater knowledge and fear of infection in the hospital environment were more likely to wear a face mask. Appropriate education to improve knowledge and health-related behavior should be provided to inpatients in mental hospitals, to assist in the prevention of COVID-19 infection.

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CRedit authorship contribution statement

HRJ, MJ, and SWK contributed to the conception and design of the study; HRJ and CP contributed to the data collection; HRJ, MK, and SWK were involved in the analysis and interpretation of data; HRJ drafted the manuscript; JWK, SR, JYL, JMK, KHP, SIJ, and SWK edited the draft; All authors critically reviewed the draft and have approved the final version.

Declaration of competing interest

The authors declare no conflicts of interest.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.schres.2020.12.029>.

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