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introduce face-to-face, multicomponent exercise programs into nursing homes and long-term care facilities¹¹ as an essential activity to protect older adults from severe functional decline as a consequence of strict confinement conditions.

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Does Copper Prevent Nosocomial Transmission of COVID-19?



Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has killed more than 1 million people worldwide since early 2020.¹ Age is one of the main risk factors for death from coronavirus disease-2019 (COVID-19).² In France, a third of COVID-19 deaths occurred in long-term accommodation establishments for dependent older people (nursing homes).³

Uncertainties persist on the relative importance of modes of transmission of SARS-CoV-2, but it is widely accepted that it is transmitted by respiratory droplets and by hands (especially through contact with contaminated surfaces).⁴ The relative contribution of airborne versus surface transmission of COVID-19 remains unclear. Several antimicrobial surfaces have been studied and used around the world to prevent human-to-human transmission of SARS-CoV-2. Copper is a metallic element well known for its antimicrobial properties, and in vitro studies have shown that coronaviruses do not survive for a long time on it.^{5,6}

A nursing home in France was divided into 2 distinct identical and symmetrical wings. In 2014, one of them was equipped with elements (door handles, handrails, and grab bars) covered with a copper alloy known to be antimicrobial. This structure, with its two identical wings but different by the copper equipment, enables to evaluate the epidemic spread in each wing and to assess the preventive effectiveness of copper.

We therefore carried out a quasi-experimental study within this nursing home to study the preventive efficacy of copper in infections by SARS-CoV-2 and thus improve knowledge on virus transmission by hands. During the study period, corresponding to the COVID-19 epidemic peak of the first semester in France (from March 20, 2020, to May 15, 2020), we systematically recorded the date of the first positive test in reverse transcription polymerase chain reaction (RT-PCR), for each case confirmed. In case of a suspicious infection, later confirmed as positive by serologic tests (false negative RT-PCR),⁷ we chose the date of the negative RT-PCR as the theoretical date of infection. The relative risk and its 95% confidence interval were calculated from the incidence rates of COVID-19 in each wing.

Among the 353 people followed, 47 cases of COVID 19 were recorded (13%) during the study period. The relative risk of infection was significantly higher in the copper-equipped wing (ie, 2.98, 95% confidence interval 1.60–5.89).

These results show that the copper surfaces had no protective effect in preventing the transmission of SARS-CoV-2 and make us question the importance of hand contamination. Recent studies have highlighted the importance of airborne transmission of SARS-CoV-2 via microparticles, and our findings may be additional evidence.⁸ Indeed, if the transmission is mainly aerial, it is logical that the protection offered by copper is not sufficient.

A previous study, carried out in the same nursing home, led to similar conclusions with an epidemic of seasonal influenza (also known to be airborne transmitted), and showed that copper did not appear to have any protective effect, although it was effective in

reducing the risk of contamination for manual nosocomial infections, especially bacterial.⁹

In terms of prevention, even if transmission through hands must be combated by regular hand washing, its relative weight is likely to be less than that of transmission by respiratory droplets.

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Mental Health Status of the Older Adults in Japan During the COVID-19 Pandemic



The pandemic of coronavirus disease 2019 (COVID-19) has had a serious impact worldwide. Abnormal situations such as the fear of being infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), restrictions on going outdoors, abundant financial losses, fewer opportunities of communicating with close friends, and conflicting messages from authorities could cause anxiety or

depression moods in all ages.^{1,2} Older people infected with COVID-19 have been reported to be at an increased risk of death and exacerbations, thereby requiring mechanical ventilation and extracorporeal membrane oxygenation (ECMO). Herewith, older people are more anxious and frightened of COVID-19 than young adults. A study reported that social isolation and loneliness during the COVID-19 pandemic could worsen older adults' anxiety and depression³; however, differences in older adults' mental health prior to and during the COVID-19 pandemic have not been thoroughly studied yet. Therefore, this study investigated the effects of the COVID-19 pandemic on older adults' mental status.

A preliminary analysis for our questionnaire survey named Toyoyama town complex intervention project promoting “Exercise,” “Nutrition improvement,” and “Going out” (TENGO project) was conducted. In this study, the physical, mental, and social status of community-dwelling older adults were examined every 6 months starting from October 2018. The study protocol was approved by the local ethics committee (approval no. 2018-0221) and written informed consent was obtained from all participants. The present analysis included the responders in December 2019 and July 2020. Depression and apathy during the first wave of COVID-19 pandemic were examined using the 15-item Geriatric Depression Scale (GDS-15) and apathy scale in the questionnaire.^{4,5} The score ranges of the GDS-15 and apathy scale were respectively 0 to 15 points and 0 to 42 points, with higher scores indicating more severe symptoms. Baseline characteristics used in the study included age, sex, comorbidities, living conditions, economic, and frailty status. Economic status was graded as follows: good economic status with no anxiety, fair economic status with minor anxiety, poor economic status with some anxiety, and severe economic status with anxiety, whereas the frailty status was graded using the Kihon checklist, having 0 to 3 points for robust, 4 to 7 points for prefrail, and 8 or more points for frail. The changes in the GDS-15 and apathy scale between December 2019 and July 2020 were assessed using generalized estimation equations that were adjusted with the above-mentioned baseline characteristics. Two subgroups, including individuals who are aged <75 years and who are aged ≥75 years were analyzed using the same methods. Two-sided $P < .05$ was set as significant, and all analyses were conducted using the R software (version 3.6.1, R Foundation for Statistical Computing, Vienna, Austria).

Overall, 519 participants with valid responses were analyzed. Age at baseline was 74.8 ± 5.3 years, and 259 participants (49.9%) were male. Among them, 149 (28.7%) were prefrail and 68 (13.1%) were frail. Depression and apathy scores both significantly deteriorated in July 2020 compared with December 2019. Depression score values increased from a GDS-15 score of 2.94 ± 3.27 to 3.62 ± 3.41 with an estimated change of 0.21 (95% confidence interval 0.12–0.31). Apathy scores also escalated from 13.65 ± 6.70 to 15.20 ± 6.98 with an estimated change of 0.11 (95% confidence interval 0.06–0.15) (Table 1). In subgroup analyses, both the GDS-15 score and apathy scale were significantly increased in those aged <75 years, whereas those aged ≥75 years showed significant change only in the GDS-15 score.

The results showed that the COVID-19 pandemic had worsened depressive mood and apathy among the community-dwelling older adults. The results were remarkable especially in adults aged <75 years. Yamada et al reported the results of an online-based survey revealing that daily physical activity among community-dwelling older adults has decreased during the COVID-19 pandemic.⁶ Higher physical activity is important in maintaining mental health⁷; however, those who were less fit were found to have little deterioration in mood, despite a reduction in their physical activity. Individuals aged ≥75 years might be less affected by COVID-19 because their baseline physical activity was lesser than that of individuals aged <75 years. Additionally, this study

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