

## Patients with schizophrenia are under-vaccinated for COVID-19: a report from Israel

After the first report published in this journal<sup>1</sup>, several other studies conducted in the US, France, Korea and Israel have confirmed that individuals with severe mental illness (SMI), especially those diagnosed with schizophrenia, are at increased risk for COVID-19-related severe morbidity and mortality<sup>e.g., 2,3</sup>. These reports have led to the call to prioritize these patients for early COVID-19 vaccination<sup>4</sup>.

While prioritization is especially pivotal during periods of vaccine deficiency, there are several reasons to suspect that, when vaccinations become widely available, they will not be fully utilized in individuals with SMI. Studies indicate that these patients are less likely to receive available standard levels of care for most of their medical diseases<sup>5</sup>, and overall receive less treatment for diseases they are more susceptible to suffer from<sup>6</sup>. Furthermore, rates of vaccination for diseases such as influenza, which is mostly available to the public, have been reported to be low among individuals with SMI<sup>7</sup>.

Israel has been highly proactive in engaging citizens to follow its mass COVID-19 vaccination plan<sup>8</sup>. Vaccinations became available to all citizens above the age of 16 by the end of January 2021. In a recent study from this country, we found that individuals with schizophrenia were more likely to suffer from COVID-19 morbidity and mortality compared to age and gender matched controls<sup>3</sup>. To explore whether patients with this diagnosis are being vaccinated to the same extent as their matched controls, we revisited the cohort of patients and updated their medical registry with information regarding vaccination rates.

The original cohort included 25,539 patients with schizophrenia and their matched controls (overall N=51,078). Deceased cases were omitted from the analysis, thus leading to a total of 50,240 cases (25,120 cases of schizophrenia and their age and gender matched controls). The study utilized the databases of Clalit Health Services (CHS), the largest operating health care organization in Israel<sup>9</sup>. These databases are regularly updated with real-time information derived from patients' medical registries, and undergo routine validation procedures for medical and psychiatric diagnoses.

The diagnosis of schizophrenia in this study was made by a senior psychiatrist in the patient's medical registry or was listed on a psychiatric hospital's discharge letter. Matched control participants comprised individuals with no diagnosis of schizophrenia randomly sampled at a 1:1 ratio. The study was approved by the CHS institutional review board, where informed consent was waived due to the anonymous nature of data extraction.

For the purposes of the current analysis, vaccination was considered as implemented if the patient received at least one dose. Univariate logistic regressions were employed to assess the odds of being vaccinated, and odds ratios (ORs) and 95% confidence intervals (CIs) were reported. The dataset was stratified for age and gender groups. All statistical analyses were performed using SPSS software, version 25.

The odds of receiving COVID-19 vaccination were significantly lower in the schizophrenia group compared to the control group (OR=0.80, 95% CI: 0.77-0.83,  $p<0.0001$ ). No significant differences were observed in the 16-21 age subsample. Differences between the two groups were more profound as age increased: OR=0.90, 95% CI: 0.83-0.97,  $p<0.0001$  in the 21-40 age subsample; OR=0.83, 95% CI: 0.79-0.88,  $p<0.0001$  in the 40-60 age subsample; and OR=0.61, 95% CI: 0.57-0.64,  $p<0.0001$  in the subsample at age 60 and above. The odds of being vaccinated were lower in the schizophrenia group for both male and female participants, with males showing slightly greater gaps in vaccination rates (OR=0.79, 95% CI: 0.75-0.82,  $p<0.0001$ ) than females (OR=0.82, 95% CI: 0.77-0.87,  $p<0.0001$ ).

These results indicate that individuals with schizophrenia, although well known by the scientific community for their medical and social vulnerabilities, are being under-vaccinated for COVID-19 in Israel compared to the rest of the population. This inequality is especially pronounced in people aged 60 and above, where the convergence of risk factors may create an additional accumulating mortality risk.

The lack of significant differences in the 16-21 age subsample may be related to the overall low rates of vaccination in young people. On the other hand, the increasing gap between the schizophrenia and control groups as age increases indicates that, when vaccination is more available (as older age groups could be vaccinated immediately upon the launch of the national plan), schizophrenia patients are more profoundly disadvantaged.

A variety of factors previously described as barriers to immunization in SMI people, such as lack of awareness and knowledge, fear, and lack of active recommendation from primary caregivers<sup>7</sup>, may also serve as barriers to COVID-19 vaccination. Proactive efforts should be made to provide SMI people with easier access to vaccination as part of routine medical care policy. Such access can be obtained by, for example, providing *ad-hoc* vaccination to patients presenting for psychiatric examinations or follow-ups, who are interested in being vaccinated. Patients should also be actively monitored for completing the vaccination plan so as to make sure that they follow through on the recommendations made by the vaccine producers.

The results of this study are based on analyses of associations; therefore, no causality can be inferred from the study design. Future studies should explore whether accessibility to vaccination is associated with specific chronic diseases, as well as with other sociodemographic factors. They should also assess the mediating factors associating schizophrenia with under-vaccination for COVID-19.

The lower rates of vaccination among patients with schizophrenia reported in this study should alert public health policy entities to provide better care in the form of easier access to COVID-19 mitigation/prevention efforts for individuals with schizophrenia.

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# Some good news for psychiatry: resource allocation preferences of the public during the COVID-19 pandemic

The COVID-19 pandemic has put tremendous strain on health care systems all over the world and has particularly challenged mental health services. During the first wave of the pandemic, for reasons of both infection control and resource allocation, many mental health services have been downsized or even closed worldwide. A rapid assessment of 130 World Health Organization member states revealed that more than 60% of countries fully or partially closed community-based mental health services, and more than 40% fully or partially closed inpatient services for substance use disorders<sup>1</sup>.

At the same time, it has been widely recognized that the pandemic increases the burden on people with mental illness and puts many healthy people at risk of developing mental health problems<sup>2</sup>. Maintaining adequate mental health services and adapting the way mental health care is delivered during the pandemic is thus of tremendous importance<sup>3,4</sup>.

Previous population studies have shown that mental disorders enjoy low standing in the public opinion when it comes to allocation of financial resources<sup>5,6</sup>, so there is reason to suspect that the current shortage of health care resources puts people with mental disorders at risk of structural discrimination. In this study, we examined how public priorities on health care spending have evolved from 2001 through 2011 to 2020.

From July to September 2020, a representative face-to-face survey was carried out among the adult population in Germany (N=1,200, response rate: 57%). The survey was a methodologically identical replication of surveys in 2001 (N=5,025, response rate: 65%) and 2011 (N=1,232, response rate: 64%)<sup>7</sup>. In 2020, respondents were asked: "In order to have sufficient resources for the care of patients with the coronavirus disease, it may become necessary to cut budgets for the care of people with other diseases. Please choose from the following list those three conditions where, in your opinion, it would by no means be acceptable to reduce funding for patient care". They were then presented with a list of nine diseases, including physical conditions such as diabetes, rheumatism, cancer, AIDS and cardiovascular diseases, as well as mental disorders such as Alzheimer's disease, alcoholism, depression and schizophrenia. In 2001 and 2011, the question had been posed similarly, only with the first sentence being

framed in more general terms: "There is an increasing shortage of financial resources within the health care system. Please choose from the following list..."

In 2020, depression ranked fourth – after cancer (84%), cardiovascular diseases (60%) and diabetes (41%) – among conditions for which funding should by no means be reduced, with 25% of the respondents selecting it to be spared from budget cuts. Its rise from the 8th position in 2001 and 6th position in 2011 mostly reflected two developments: a growing share of respondents indicating a funding preference for depression (up from 6% in 2001 and 21% in 2011), and a declining share of people giving priority to the funding of AIDS care, which started at 47% in 2001 and went down to 35% in 2011 and 20% in 2020.

Schizophrenia, although remaining on the 8th position in the list, was nevertheless chosen by 17% to be spared from financial cuts in 2020, about doubling its share from 9% in 2001 and 8% in 2011. Alcoholism, in contrast, remained firmly at the bottom of the list, chosen by 5% in 2001, 8% in 2011, and 6% in 2020.

Our results show that, under the unprecedented pressure of the coronavirus pandemic on our health care systems, resources for the treatment of people with mental disorders have solid support among the general public, at least in Germany. Probably, this reflects the extensive coverage of the mental health consequences of the pandemic both in the public media and medical journals<sup>8</sup>, and possibly also the personal experience of psychological vulnerability during the crisis.

Comparing our recent survey with those from 2001 and 2011, there is evidence for a trend of growing support for mental health care funding, especially for the treatment of depression. It is striking, however, that alcoholism remains firmly excluded from this supportive public sentiment, despite evidence for an increased burden due to substance use during the pandemic<sup>9</sup>.

Our findings are thus reassuring with respect to funding priorities for depression and schizophrenia, with little indication of public support for structural discrimination of people with these disorders. They are worrying, however, with regard to alcohol use disorders. Despite their high prevalence, considerable burden, and available treatment options, people with these latter conditions remain at particular danger to be neglected when competing for