COVID-19 vaccine willingness amongst patients with mental illness compared with the general population

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Abstract

Patients with mental illness are at an increased risk of COVID-19 infection, morbidity, and mortality, and prioritisation of this group for COVID-19 vaccination programmes has therefore been suggested. Vaccine uptake may, however, be compromised by vaccine hesitancy amongst patients with mental illness, posing a critical public health issue. We conducted two surveys to provide weighted estimates of vaccine willingness amongst patients with mental illness and the general population of Denmark. Vaccine willingness was high in both groups, but slightly lower amongst patients with mental illness (84.8%), compared with the general population (89.5%) (p < .001). Based on these findings, vaccine hesitancy does not appear to be a major barrier for vaccine uptake amongst patients with mental illness in Denmark, but may be so in other countries with lower general vaccine willingness. Replication of the present study in other countries is strongly warranted.

Introduction

Patients with mental illness face an elevated risk of COVID-19 infection, morbidity, and mortality (Wang et al., 2021). Therefore, prioritising this group in COVID-19 vaccination programmes has been suggested, and, in some countries, implemented (De Hert et al., 2021, Mazereel et al., 2021, De Picker et al., 2021). However, several barriers, including vaccine hesitancy, may hinder the vaccination of individuals with mental illness. Indeed, studies on influenza vaccination programmes have found lower vaccination rates amongst individuals with mental illness compared to the general population, and have mainly attributed vaccine hesitancy to lack of information or negative perceptions about vaccine safety and efficacy (Miles et al., 2020, Lorenz et al., 2013, Druss et al., 2008). Whether this hesitancy generalises to the COVID-19 vaccine remains unknown. In a survey conducted in Ireland in the Spring of 2020, vaccine hesitancy was higher amongst respondents with a history of mental health problems (Murphy et al., 2021). It, therefore, seems likely that COVID-19 vaccine willingness may be lower amongst individuals with mental illness, especially amongst those for whom the illness is more severe, requiring hospital treatment. Despite having obvious clinical relevance (Wang et al., 2021), this issue has not been sufficiently studied, and so research on this issue is urgently needed.

Aims of the study

We aimed to compare estimates of vaccine willingness amongst patients diagnosed with mental illness by psychiatric hospital services and individuals from the general population in Denmark.

Methods

We conducted two questionnaire-based online surveys: one targeting randomly selected patients with mental illness from the psychiatric services of the Central Denmark Region (n = 992) (Kølbæk et al., 2021) and one targeting the general Danish population (n = 2458) (Sønderskov et al., 2020a) (Fig. 1A). Both were follow-ups of prior surveys (Sønderskov et al., 2020a, Kølbæk et al., 2021, Sønderskov et al., 2020b, Sønderskov Dinesen & Østergaard, 2021), and are described in detail in the Supplementary Material. The surveys were fielded from 9 February to 22 February 2021 (patient sample) and from 4 February to 21 February 2021 (general population sample). For each of the two surveys, an overall measure of weighted vaccine willingness was calculated based on the following questions: ‘Have you accepted this offer?’ (for those offered COVID-19 vaccination) and ‘Will you accept vaccination against coronavirus,'
once it is offered to you? (for those not yet offered COVID-19 vac-
cination) (Fig. 1B). Responding ‘Yes’ to either of these two ques-
tions was considered as vaccine willingness. We compared the
weighted estimate of overall vaccine willingness for the patients
with mental illness, and the weighted estimate for the general pop-
ulation using a two-sample test of proportions with a one-sided
p-value (supplemented with a one-sided Fisher’s exact test when
comparing small samples). We conducted equivalent comparisons
of vaccine willingness for those who had been offered COVID-19
vaccination, and those who had not yet been offered COVID-19
vaccination, respectively. Finally, we performed multivariate logis-
tic regressions for both the patient sample and the general popu-
lation sample to identify correlates of vaccine hesitancy.

Results
Of the 992 patients with mental illness who were invited to partici-
pate, a total of 608 (61.3%) responded to the questions regarding
vaccine willingness (Fig. 1A). Of the 2458 individuals from the gen-
eral population panel invited to participate, a total of 1654 (67.3%)
responded to the questions regarding vaccine willingness. Supplemen-
tary Tables 1 and 2 present the characteristics of the respondents. Vaccine willingness was high in both populations, albeit slightly lower amongst those with mental illness (84.8%) compared with the general population (89.5%) (Fig. 1C). This dif-
fERENCE in vaccine willingness is statistically significant (p < 0.001).
Figure 1D also reports the reasons for vaccine hesitancy amongst
patients with mental illness.

The results of the logistic regression analyses are shown in
Supplementary Tables 5 and 6. There was a strong and statistically
significant positive association between younger age and vaccine
hesitancy both amongst patients with mental illness (OR for ≤ first
age quartile compared to > third quartile = 5.76, 95% CI =
1.62;22.16, p = 0.008) and amongst the general population (OR
for ≤ first age quartile compared to > third quartile = 3.41, 95%
CI = 1.48;7.84, p = 0.004). For patients with mental illness, divorce
or repeal of the registered partnership was also positively associ-
ated with vaccine hesitancy (OR = 4.18, 95% CI = 1.52;12.02,
p = 0.006), as was being born outside Denmark (OR = 4.50, 95%
CI = 1.84;11.01, p = 0.001). No psychiatric diagnosis was found
to be particularly strongly associated with vaccine hesitancy. For
the general population, having children living in the household
(OR = 4.18, 95% CI = 1.52;12.02, p = 0.006), having a low educa-
tional level (OR for primary and lower secondary school as the
highest obtained level compared to long-cycle higher education
= 3.36, 95% CI = 1.49;7.56, p = 0.003), and being absent from
employment due to illness (OR = 3.87, 95% CI = 1.60;9.38,
p = 0.003) were positively associated with vaccine hesitancy.
COVID-19 vaccine willingness amongst patients with mental illness was high, albeit slightly lower than in the general population. Moreover, vaccine willingness in the general population was higher than in previous surveys of the Danish population (Lindholt et al., 2020), which could be due to the safe implementation of the vaccination programme in Denmark that began on 26 December 2020, and was well underway by the time of survey collection in February 2021. This hypothesis is supported by recent reports from England and Wales, where vaccine hesitancy fell after the vaccination programme commenced (Moherly, 2021).

Patients with mental illness generally receive less preventive care than the general population (Lord et al., 2010, Druss et al., 2002, Mitchell et al., 2009). The reason for this imbalance is likely multifactorial. In the case of the COVID-19 vaccine, however, concrete and modifiable factors may be present. Indeed, the reported reasons for COVID-19 vaccine hesitancy amongst patients with mental illness suggest that addressing safety concerns more thoroughly may increase vaccine willingness in this population (Miles et al., 2020).

Here, the findings from our logistic regression analyses are informative. Across both samples, younger age was strongly associated with vaccine hesitancy, consistent with previous reports from other western countries (Murphy et al., 2021, Daly and Robinson, 2021, Robertson et al., 2021, Schwarzinger et al., 2021). Consequently, the difference in vaccine hesitancy between the two populations in this study may be partly explained by the fact that the sample of patients with mental illness was substantially younger [weighted median age (years) = 36, IQR = 26–50] than the general population sample [weighted median age (years) = 51, IQR = 34–65].

The most important limitations of this study are related to its survey-based design. Specifically, although our findings were weighted to be representative on a set of known parameters (see the Supplementary Material), we cannot rule out social desirability and non-response biases, which may have led to an over-estimation of vaccine willingness in the present study. Furthermore, the data presented in this study were collected prior to the reports of venous blood clots in relation to the COVID-19 vaccine from Oxford–AstraZeneca, which led to a pause in the use of this vaccine in many countries including Denmark (Østergaard et al., 2021, Wise, 2021, Schultz et al., 2021). In a follow-up survey of the general population sample after the reports of venous blood clots related to the Oxford–AstraZeneca vaccine, vaccine willingness appeared to be unaffected (Sønderskov et al., 2021). Whether the same is true for patients with mental illness remains unknown.

In conclusion, vaccine hesitancy does not appear to be a major barrier for the COVID-19 vaccination of patients with mental illness in Denmark. However, it could be a barrier in countries with lower general vaccine willingness (Lindholt et al., 2020) and less trust in institutions, both of which are very high in Denmark. Importantly, previous estimates of vaccine willingness exhibit very large variation between countries (Lazarus et al., 2020). We, therefore, strongly encourage replication studies in other countries to address this critical public health issue. Furthermore, we urge national health authorities worldwide to provide targeted information on COVID-19 vaccine efficacy and safety to patients with mental illness – especially amongst the younger – to increase vaccine uptake in this at-risk population.


