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Psychiatry

## Supplementary appendix

This appendix formed part of the original submission and has been peer reviewed. We post it as supplied by the authors.

Supplement to: Tzur Bitan D, Kridin K, Dov Cohen A, Weinstein O. COVID-19 hospitalisation, mortality, vaccination, and postvaccination trends among people with schizophrenia in Israel: a longitudinal cohort study. *Lancet Psychiatry* 2021; published online Aug 5. http://dx.doi.org/10.1016/S2215-0366(21)00256-X.

## Appendix

### Proportional hazard assumption in Cox regression

Significant associations were found between the partial residuals of the adjusted proportional hazard models for hospitalization group, marital status, and smoking. In prediction of mortality, evidence for non-proportionality was detected in smoking. Therefore, the adjusted models were re-analyzed while stratifying time into two phases: early (first 208 days) and late (last 208 days). The results of the stratified adjusted proportional hazard regression models are specified in Table 1S.

Higher hazard ratio (HR) was detected in the early phase analysis of the effect of group on rates of hospitalization, while lower HR was found in the late phase. Nonetheless, both were greater than 1 and within the range of confidence intervals (CIs) of the original models, and both produced significant effects (p<·001). Hazard ratio of mortality in both the early and late stages was within the range of the original model produced with the whole sample; nonetheless, the early model failed to reach significance, most likely due to the small number of cases in the early phase.

Table 1S. Stratified adjusted proportional hazard regression models for hospitalization and mortality, divided into early and late stages.

| | Hospitalization | | | Mortality | | |
|---|---|---|---|---|---|---|
| | HR | 95% CI | p | HR | 95% CI | P |
| Whole sample | 4·81 | 3·57-6·48 | <·001 | 2·52 | 1·64-3·85 | <·001 |
| Early phase (0-6 months) | 6·44 | 4·19-9·90 | <·001 | 2·15 | 0·82-5·64 | ·11 |
| Late phase (7-13 months) | 3·40 | 2·22-5·20 | <·001 | 2·72 | 1·74-4·25 | <·001 |

**Vaccination prevalence among the schizophrenia and control group stratified by time**

For vaccinations, all variables except for asthma indicated non-proportionality; therefore, these models were also assessed for early (first month of vaccination plan) and late phases (second month of vaccination plan). Results are elaborated in Table 2S. Analyses indicated an HR estimate of 0.84 in the early phase, and a slightly higher HR in the late phase (0.88); nonetheless, both estimates are within the range of the HR in the full sample (0.83), and both produced a significant effect (p<.001).

Table 2S. Stratified adjusted proportional hazard regression models for vaccination, divided into early and late stages.

| | Vaccination | | |
|---|---|---|---|
| | HR | 95% CI | p |
| Whole sample | 0·83 | 0·81 | 0·86 |
| Early phase (0-6 months) | 0·84 | 0·82 | 0·87 |
| Late phase (7-13 months) | 0·88 | 0·84 | 0·92 |

**Predictors for COVID-19 vaccination**

Table 3S. Four-block hierarchical logistic regression predicting COVID-19 vaccination

| Models | Predictive variables | OR | 95% CI | p |
|---|---|---|---|---|
| Model 1: Demographics | Age | 1·04 | 1·03-1·04 | <·001 |
| | Sex | 0·88 | 0·85-0·92 | <·001 |
| | SES | 1·54 | 1·48-1·60 | <·001 |
| | Marital status | 1·34 | 1·28-1·39 | <.001 |
| | Population group - Ultraorthodox | 0·44 | 0·41-0·48 | <·001 |
| | Population group - Arab | 0·42 | 0·40-0·44 | <·001 |
| Model 2: Clinical risk factors | Asthma | 1·05 | 0·96-1·14 | ·25 |
| | Diabetes | 0·96 | 0·90-1·01 | ·16 |
| | Hypertension | 0·99 | 0·94-1·05 | ·83 |
| | Obesity | 1·05 | 1·01-1·10 | ·01 |
| | Smoking | 0·89 | 0·88-0·95 | <·001 |
| | COPD | 0·97 | 0·87-1·07 | ·51 |
| | Hyperlipidemia | 1·36 | 1·30-1·42 | <·001 |
| | IHD | 0·89 | 0·81-0·98 | ·01 |
| Model 3: Schizophrenia | Schizophrenia | 0·75 | 0·72-0·78 | <·001 |
| Model 4: Interactions of predictors with schizophrenia | Age | 0·98 | 0·98-0·99 | <·001 |
| | Sex | 1·06 | 0·97-1·15 | ·14 |
| | SES | 0·90 | 0·83-0·98 | <·001 |
| | Marital status | 0·60 | 0·56-0·66 | <·001 |
| | Asthma | 0·84 | 0·70-0·99 | ·04 |
| | Diabetes | 1·17 | 1·04-1·32 | ·009 |
| | Hypertension | 1·15 | 1·02-1·29 | ·014 |
| | Obesity | 1·20 | 1·09-1·32 | <·001 |
| | Smoking | 1·02 | 0·94-1·10 | ·59 |
| | COPD | 1·29 | 1·01-1·65 | ·03 |
| | Hyperlipidemia | 1·02 | 0·93-1·12 | ·64 |
| | IHD | 0·93 | 0·77-1·12 | ·45 |

*Note.* Reference group for sex is male; for SES is low; for marital status is not being married; for population group is general Jewish population; for COVID-19 infection is being infected; and not having the condition in all of the clinical factors. OR = odds ratio. CI = confidence interval.

STROBE Statement—checklist of items that should be included in reports of observational studies

| | Item No | Recommendation | Page No |
|---|---|---|---|
| **Title and abstract** | 1 | (*a*) Indicate the study's design with a commonly used term in the title or the abstract | 1 |
| | | (*b*) Provide in the abstract an informative and balanced summary of what was done and what was found | 2 |
| **Introduction** | | | |
| Background/rationale | 2 | Explain the scientific background and rationale for the investigation being reported | 7 |
| Objectives | 3 | State specific objectives, including any prespecified hypotheses | 8-9 |
| **Methods** | | | |
| Study design | 4 | Present key elements of study design early in the paper | 9 |
| Setting | 5 | Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection | 9-10 |
| Participants | 6 | (*a*) *Cohort study*—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up<br>*Case-control study*—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls<br>*Cross-sectional study*—Give the eligibility criteria, and the sources and methods of selection of participants | 9-10 |
| | | (*b*) *Cohort study*—For matched studies, give matching criteria and number of exposed and unexposed<br>*Case-control study*—For matched studies, give matching criteria and the number of controls per case | 10 |
| Variables | 7 | Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable | 10 |
| Data sources/ measurement | 8* | For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group | 10 |
| Bias | 9 | Describe any efforts to address potential sources of bias | 10-11 |
| Study size | 10 | Explain how the study size was arrived at | 11 |
| Quantitative variables | 11 | Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why | 10-11 |
| Statistical methods | 12 | (*a*) Describe all statistical methods, including those used to control for confounding | 10-11 |
| | | (*b*) Describe any methods used to examine subgroups and interactions | 10-11 |
| | | (*c*) Explain how missing data were addressed | N/A |

| | |
|---|---|
| (*d*) *Cohort study*—If applicable, explain how loss to follow-up was addressed<br><br>*Case-control study*—If applicable, explain how matching of cases and controls was addressed<br><br>*Cross-sectional study*—If applicable, describe analytical methods taking account of sampling strategy | N/A |
| (*e*) Describe any sensitivity analyses | N/A |

Continued on next page

| | | | |
|---|---|---|---|
| **Results** | | | |
| Participants | 13 * | (a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed | N/A |
| | | (b) Give reasons for non-participation at each stage | N/A |
| | | (c) Consider use of a flow diagram | N/A |
| Descriptive data | 14 * | (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders | 10 |
| | | (b) Indicate number of participants with missing data for each variable of interest | N/A |
| | | (c) *Cohort study*—Summarise follow-up time (eg, average and total amount) | N/A |
| Outcome data | 15 * | *Cohort study*—Report numbers of outcome events or summary measures over time | 12 |
| | | *Case-control study*—Report numbers in each exposure category, or summary measures of exposure | 12 |
| | | *Cross-sectional study*—Report numbers of outcome events or summary measures | 12 |
| Main results | 16 | (*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included | 12-13 |
| | | (*b*) Report category boundaries when continuous variables were categorized | 12-13 |
| | | (*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period | 12-13 |
| Other analyses | 17 | Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses | 14-16 |
| **Discussion** | | | |
| Key results | 18 | Summarise key results with reference to study objectives | 17 |
| Limitations | 19 | Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias | 19 |
| Interpretation | 20 | Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence | 17-19 |
| Generalisability | 21 | Discuss the generalisability (external validity) of the study results | 19 |
| **Other information** | | | |
| Funding | 22 | Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based | 11 |

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

**Note:** An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely

available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.