Supplementary Material

Risk Factors for Longer-Term Mortality in Discharged Patients with Dementia and SARS-CoV-2 Infection: A Matched Case-Control Study

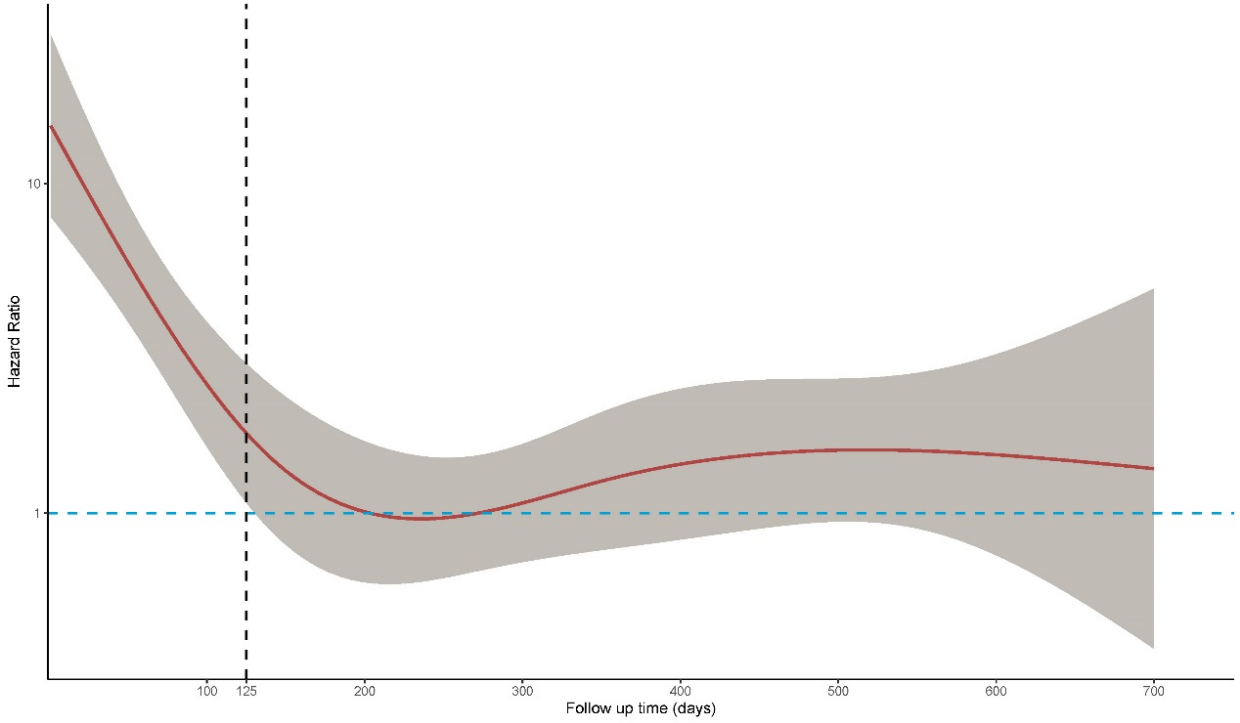
Supplementary Table 1. List of medicines included in the analysis

Antipsychotics	**First-generation:** benperidol, chlorpromazine, flupentixol, fluphenazine, haloperidol, levomepromazine, pericyazine, perphenazine, pimozide, pipotiazine, prochlorperazine, promazine, trifluoperazine, zuclopenthixol **Second-generation:** asenapine, amisulpride, aripiprazole, clozapine, iloperidone, lurasidone, olanzapine, paliperidone, quetiapine, risperidone, sertindole, sulpiride, ziprasidone, zotepine
Antidepressants	agomelatine, amitriptyline, bupropion, citalopram, clomipramine, dosulepin, doxepin, duloxetine, escitalopram, fluoxetine, fluvoxamine, imipramine, isocarboxazid, lofepramine, maprotiline, mianserin, mirtazapine, moclobemide, nefazodone, nortriptyline, paroxetine, phenelzine, reboxetine, sertraline, tranylcypromine, trazodone, trimipramine, tryptophan, venlafaxine, vortioxetine
Antiepileptic medications	acetazolamide, brivaracetam, carbamazepine, eslicarbazepine, ethosuximide, fosphenytoin, Gabapentin, lacosamide, lamotrigine, levetiracetam, oxcarbazepine, phenobarbital, primidone, methohexital, ethotoin, phenytoin, ethadione, paramethadione, trimethadione, methsuximide, magnesium sulfate, oxcarbazepine, perampanel, pregabalin, rufinamide, sultiame, tiagabine, topiramate, valproate, divalproex, valproic acid, vigabatrin, zonisamide
Benzodiazepines	clobazam, clonazepam, diazepam, lorazepam, midazolam, alprazolam, chlordiazepoxide, clorazepate, estazolam, flurazepam, halazepam, oxazepam, prazepam, quazepam, temazepam, triazolam
Opioids	codeine, fentanyl, hydrocodone, hydromorphone, levorphanol, meperidine, methadone, morphine, opium, oxycodone, oxymorphone, remifentanil, sufentanil, tapentadol, tramadol, buprenorphine, butorphanol, nalbuphine, pentazocine, dihydrocodeine
Anti-dementia medications	**Acetylcholinesterase inhibitors (AChEIs):** donepezil, galantamine, rivastigmine **memantine**

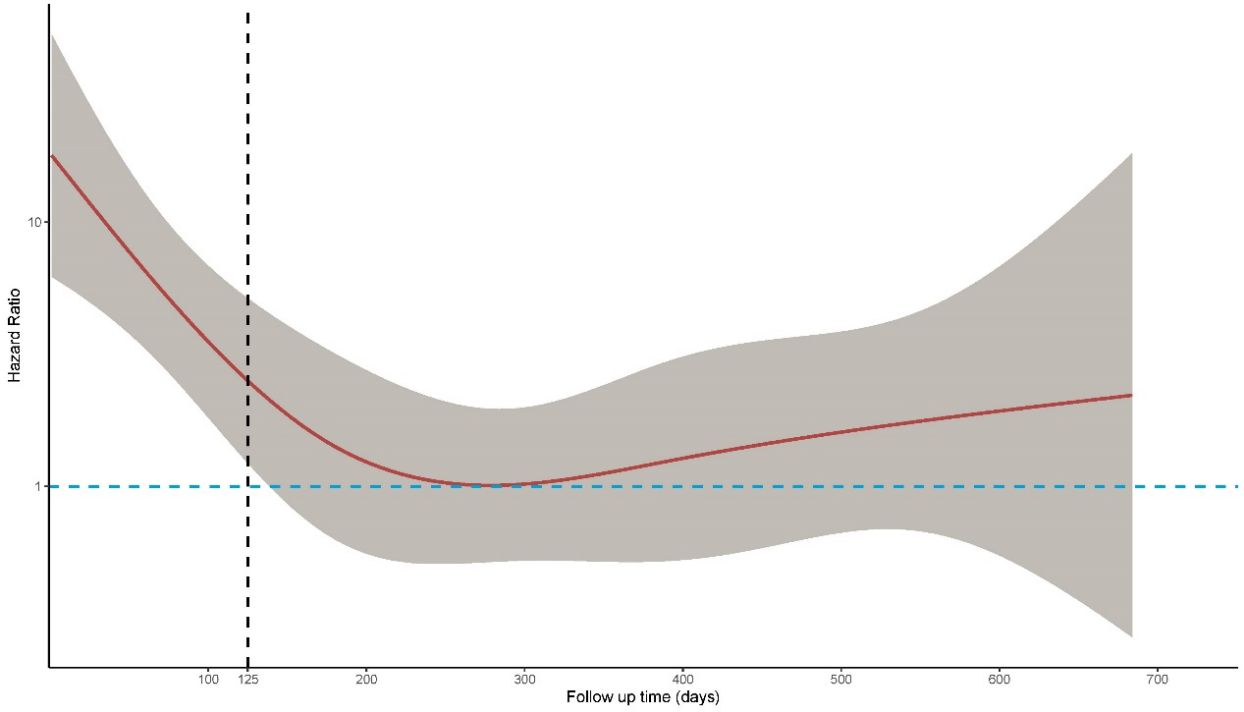
Supplementary Table 2. Schoenfeld test for the proportional hazards assumption. Results extracted from a Schoenfeld test (via the function cox.zph in R) on a Cox proportional hazard model, which was used to estimate the association between SARS-CoV-2 infection and mortality, controlling for socio-demographic variables, physical co-morbidity, and use of antipsychotics, antidepressants, antiepileptic drugs, benzodiazepines, AChEIs, and memantine, with matching group identity as a cluster variable. CCI, Charlson Comorbidity Index; AChEI, acetylcholinesterase inhibitor

	chisq	df	p
SARS-COV-2 exposure	36.5797	2	<0.0001
Sex (=male)	0.4327	1	0.5110
Age (y)	0.1762	1	0.6750
Marital status	2.5024	1	0.1140
Ethnicity	3.3486	2	0.1870
Physical comorbidity (CCI score)	0.01	1	0.9200
Antidepressant use (=yes)	0.0546	1	0.8150
Antipsychotic use (=yes)	0.3467	1	0.5560
Antiepileptic use (=yes)	0.501	1	0.4790
Benzodiazepine use (=yes)	1.4762	1	0.2240
Opioid use (=yes)	0.8333	1	0.3610
AChEI use (=yes)	3.5815	1	0.0580
Memantine use (=yes)	0.0917	1	0.7620
GLOBAL	49.732	15	<0.0001

Supplementary Figure 1. Hazard ratio (with 95% CI) against follow-up time, with people with dementia (without SARS-CoV-2 infection) as the reference. Results extracted from a Schoenfeld test (via the function cox.zph in R) on a Cox proportional hazard model, which was used to estimate the association between SARS-CoV-2 infection and mortality, controlling for socio-demographic variables, physical co-morbidity, and use of antipsychotics, antidepressants, antiepileptic drugs, benzodiazepines, AChEIs, and memantine, with matching group identity as a cluster variable.



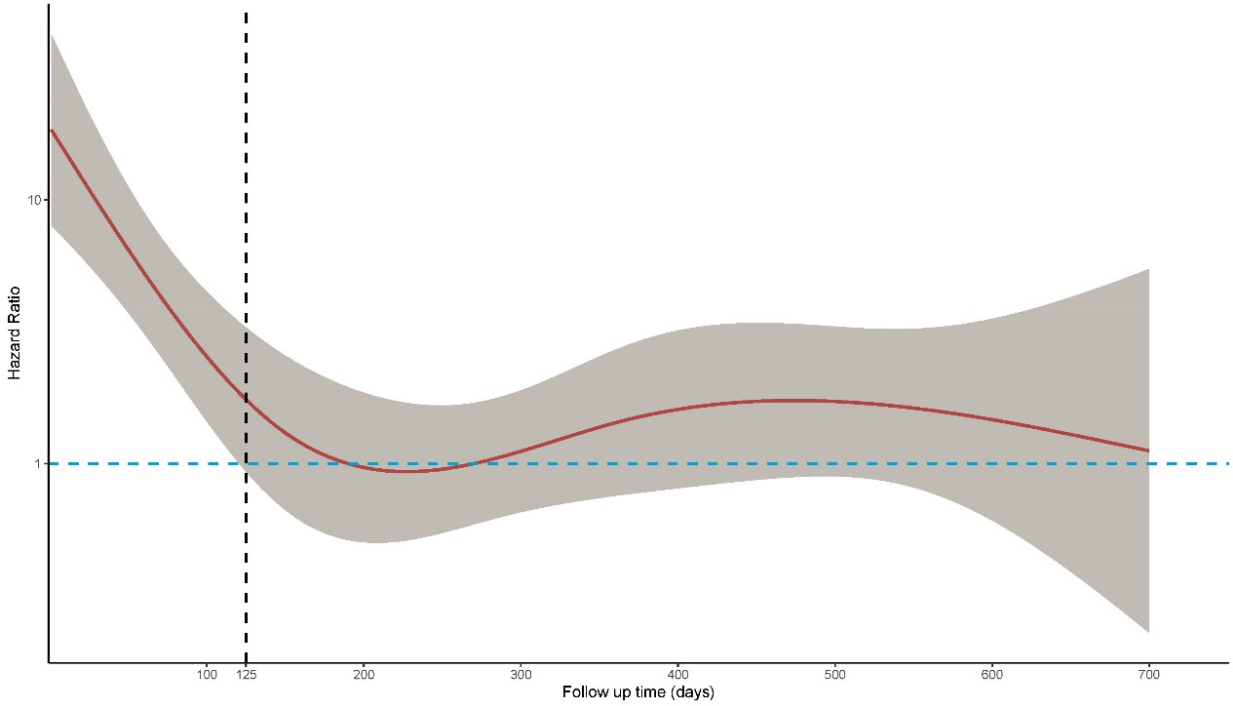
Supplementary Figure 2. Hazard ratio (with 95% CI) against follow-up time, using people with dementia (without SARS-CoV-2 infection) as the reference, including only exposure cases and their matched control cases with index dates between October 1, 2020 and June 1, 2021. Results extracted from a Schoenfeld test (via function cox.zph in R) on a Cox proportional hazard model, which was used to estimate the association between SARS-CoV-2 infection and mortality, controlling for socio-demographic variables, physical co-morbidity, and use of antipsychotics, antidepressants, antiepileptic drugs, benzodiazepines, AChEIs, and memantine, with matching group identity as a cluster variable.



Supplementary Table 3. Association between SARS-CoV-2 infection and mortality, including only exposure cases and their matched control cases with index dates between October 1, 2020 and June 1, 2021. Data are shown as hazard ratios (HRs) and their 95% confidence intervals. Follow-up time was split into two segments as the risk changed over time (see Methods). Model 1 estimated the unadjusted HR. Model 2 adjusted for age, sex, marital status, and ethnicity. Model 3 adjusted for age, sex, marital status, ethnicity, physical comorbid, antidepressant use, antipsychotic use, antiepileptic drug use, benzodiazepines use, opioid use, acetylcholinesterase inhibitor use, and memantine use. *p < 0.5, **p < 0.01, ***p < 0.001

	Model 1	**Model 2**	**Model 3**
COVID-19 status			
No COVID-19 infection	Reference	Reference	Reference
COVID-19 infection	5.99 (3.46-10.38) ***	5.81 (3.29-10.18) ***	5.70 (3.22-10.07) ***
COVID-19 infection × follow-up >125 days (=yes)	0.17 (0.07-0.40) ***	0.17 (0.07-0.42) ***	0.20 (0.08-0.49) ***

Supplementary Figure 3. Hazard ratio (with 95% CI) against follow-up time, with people with dementia (without SARS-CoV-2 infection) as the reference, including only exposure cases and their matched control cases with index date between August 1, 2021 and April 1, 2022. Results extracted from Schoenfeld test (done by function cox.zph in R) on a Cox proportional hazard model, which was used to estimate the association between SARS-CoV-2 infection and mortality, controlling for socio-demographic variables, physical co-morbidity, and use of antipsychotics, antidepressants, antiepileptic drugs, benzodiazepines, AChEIs, and memantine, with matching group identity as a cluster variable.



Supplementary Table 4. Association between SARS-CoV-2 infection and mortality, including only exposure cases and their matched control cases with index dates between August 1, 2021 and April 1, 2022. Data are shown as hazard ratios (HRs) and their 95% confidence intervals. Follow-up time was split into two segments as the risk changed over time (see Methods). Model 1 estimated the unadjusted HR. Model 2 adjusted for age, sex, marital status, and ethnicity. Model 3 adjusted for age, sex, marital status, ethnicity, physical comorbid, antidepressant use, antipsychotic use, antiepileptic drug use, benzodiazepines use, opioid use, acetylcholinesterase inhibitor use, and memantine use. *p < 0.5, **p < 0.01, ***p < 0.001

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