

Report on Bachelor Thesis

Institute of Economic Studies, Faculty of Social Sciences, Charles University

Student:	Anna Marie Břicháčková
Advisor:	PhDr. Mgr. Jana Votápková, Ph.D
Title of the thesis:	The effect of SSRIs on the severity of COVID-19

OVERALL ASSESSMENT:

Short summary

The thesis investigates the impact of SSRIs (Selective Serotonin Reuptake Inhibitors) on the severity of COVID-19. Using the logistic regression model and the zero-inflated negative binomial model, the thesis examines the impact of several independent variables (e.g. gender, age, medical condition, wave of COVID-19 and the use of SSRIs) on the probability of hospitalization and death due to COVID-19, and their effect on the length of stay in hospital. It finds that while SSRIs are associated with a higher probability of hospitalization and death due to COVID-19, their effect on the length of hospital stay is insignificant. The analysis is based on data from 612,368 individuals who tested positive for COVID-19 in the Czech Republic between March and December 2020. Due to the small, statistically significant association between SSRI use and severe COVID-19 outcomes, the study concludes that SSRIs should not be used as a preventive antiviral therapy against COVID-19.

Contribution

The thesis makes a valuable contribution by exploring the relationship between long-term SSRI usage and COVID-19 severity, focusing on the Czech Republic where such a relationship has not been examined before. Specifically, it addresses whether SSRIs have any significant impact on the likelihood of severe COVID-19 outcomes, including hospitalization and death. The findings are noteworthy as they suggest a small but statistically significant association between SSRI use and increased severity of COVID-19, adding a new perspective to the ongoing discussion about drug repurposing during the pandemic. The study also emphasizes that SSRIs should not be viewed as potential antiviral treatments for COVID-19, providing important implications for clinical practice and public health policy. I would however welcome some commentary on the connection between this medical study and the field of economics, e.g. some possible implications to save costs, etc.

Methods

The study employs a retrospective cohort analysis, utilizing data from 612,368 individuals in the Czech Republic who tested positive for COVID-19 between March and December 2020. The analysis focuses on determining the relationship between SSRI usage and three key outcomes: probability of hospitalization, probability of death and length of hospital stay. The data is adjusted for various covariates to ensure robustness, including demographics, comorbidities, and the time period of infection. Two statistical models (logistic regression and zero-inflated negative binomial model) are used to assess the associations between SSRI use and the different outcomes, ensuring that the analysis accounts for potential confounders.

Literature

The author provides a detailed overview of the existing research on SSRIs, their known effects, and their potential antiviral properties. It discusses the pharmacological mechanisms of SSRIs, including their impact on serotonin levels and immune response, which could theoretically influence COVID-19 severity. The review also covers previous studies that have investigated the role of SSRIs in treating viral infections, providing a solid foundation for the thesis' research question. The literature review demonstrates the author's knowledge of recent literature, with clear referencing.

Manuscript form

The thesis is well-structured, with a clear flow from the introduction to the conclusion. The arguments are logically presented, and the methodology is described in sufficient detail to allow for reproducibility. The figures and tables are well-organized and effectively support the narrative of the thesis. However, some areas could benefit from additional clarification or emphasis, particularly in discussing the implications of the findings and their potential limitations. The language is generally clear and precise, although some minor editing for grammar and style might improve readability.

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Overall evaluation and suggested questions for the discussion during the defense

The thesis is a well-executed study that addresses a timely and relevant research question. It offers significant contributions to the understanding of SSRIs' effects on COVID-19 outcomes, particularly in the context of drug repurposing during the pandemic. The methodology is sound, and the analysis is thorough, though there could be a more detailed discussion on potential confounding factors and the generalizability of the findings. The literature review is comprehensive, providing a strong background for the study, and the manuscript is generally well-written.

In my view, the thesis fulfills the requirements for a bachelor thesis at IES, Faculty of Social Sciences, Charles University, I recommend it for the defense and suggest a grade A. The results of the Turnitin analysis do not indicate significant text similarity with other available sources.

For the defense, the author could discuss:

1. How do you interpret the statistically significant association between SSRIs and severe COVID-19 outcomes in light of the possible influence of underlying psychiatric conditions?
2. Could you comment on the possible economic implications of this study, e.g. is there any way your findings could be used to save costs in the future pandemic?
3. How might the findings differ if the study were conducted in a different population or geographical area? What factors could influence these differences?
4. If you had access to additional data or resources, how would you expand or modify your study to further explore the relationship between SSRIs and COVID-19 severity?
5. How do you see your findings being integrated into clinical practice, especially concerning the prescription of SSRIs during pandemics?
6. What other drug classes or therapies would you consider studying in the context of COVID-19, based on the insights gained from your research on SSRIs?
7. Could you discuss any ethical considerations related to your research, particularly regarding the potential risks of using SSRIs as a preventive measure against COVID-19?

SUMMARY OF POINTS AWARDED (for details, see below):

CATEGORY	POINTS
<i>Contribution (max. 30 points)</i>	27
<i>Methods (max. 30 points)</i>	30
<i>Literature (max. 20 points)</i>	20
<i>Manuscript Form (max. 20 points)</i>	18
TOTAL POINTS (max. 100 points)	95
GRADE (A – B – C – D – E – F)	A

NAME OF THE REFEREE: *Petra Landovská*

DATE OF EVALUATION: *August 15, 2024*

Digitally signed (August 15, 2024):
Petra Landovská

Referee Signature

EXPLANATION OF CATEGORIES AND SCALE:

CONTRIBUTION: *The author presents original ideas on the topic demonstrating critical thinking and ability to draw conclusions based on the knowledge of relevant theory and empirics. There is a distinct value added of the thesis.*

METHODS: *The tools used are relevant to the research question being investigated, and adequate to the author's level of studies. The thesis topic is comprehensively analyzed.*

LITERATURE REVIEW: *The thesis demonstrates author's full understanding and command of recent literature. The author quotes relevant literature in a proper way.*

MANUSCRIPT FORM: *The thesis is well structured. The student uses appropriate language and style, including academic format for graphs and tables. The text effectively refers to graphs and tables and disposes with a complete bibliography.*

Overall grading:

TOTAL	GRADE
91 – 100	A
81 - 90	B
71 - 80	C
61 – 70	D
51 – 60	E
0 – 50	F