Journal of Infection 87 (2023) e51–e53

Contents lists available at ScienceDirect

Journal of Infection

journal homepage: www.elsevier.com/locate/jinf

Letter to the Editor

Authors' reply to a commentary on the potential impact of COVID-19 passports to epidemiological situation

Dear Editor,

We read the commentary by Jankunas et al.[1] that had raised some criticism to our previously published article in the journal[2] and we would like to take this opportunity to respond. The aim and scope of our study was to evaluate potential impact of *COVID-19 passports* to the epidemiological situation in Lithuania. As set out in our article, there is a need of further discussions regarding legal, social and ethical aspects of such interventions.

Jankunas and coauthors make several misleading statements and misinterpretations of information presented in our paper and we would like to highlight some of these for your readers. These commentators criticize our comment that "*Lithuania has been relatively successful in managing the first peak of a COVID-19 outbreak*", as this was referring only to low prevalence of SARS-Cov-2 antibodies. This is not true, as our statement in the original paper is based on a publication which presents not only seroprevalence, but utilization of the hospital sector during the first COVID-19 wave in Lithuania. Other authors support this opinion, in that the Baltic States (including Lithuania) did not experience a severe first wave of COVID-19 as was seen in other countries.[3] Jankunas et al. make a strange point, in that we were citing a pre-print paper to illustrate a similar impact of COVID-19 passports in other countries. On the contrary, this study was peer-reviewed and published in an academic journal in July 2022.[4] Jankunas et al. insist, that "*The idea for COVID-19 passports is based on a false claim that vaccination prevents the transmission of COVID-19*". This statement ignores results from rigorous studies, which confirm a reduction of transmission of SARS-CoV-2 amongst vaccinated people.[5] Although, according to Jankunas et al., "*mortality did not serve as endpoint*" in clinical trials, a solid number of studies throughout the world show a long-term effect of vaccines on the reduction of the risk of death from COVID-19.[6]

Some criticism of our publication seems to stem from a disagreement with use of the modified SIR (Susceptible-Infectious-Recovered) model for our calculations. According to Jankunas et al., the SIR model is not validated for non-pharmaceutical interventions and possibly neglects the probability of false-positive/false-negative tests as well as the fact that only a proportion of cases have been reported. We strongly object to this suggestion as firstly, the SIR based models are used by other authors in evaluating the effectiveness of COVID-19 non-pharmaceutical interventions.[7] Secondly, as was mentioned in the original paper, we modified a classical SIR model in order to apply it for the estimation of the effectiveness of quarantine measures on the spread of infection on the base of COVID-19 epidemiological data from various countries. The proposed approach is based on the assumption that the number of daily new cases of infection is the most reliable parameter and that the human population is not a passive herd. On the contrary, this population actively reacts and resists to a growing number of new infections. Such an approach allows for the estimation of the infection spread intensity even in the case where only a proportion of cases have been officially reported. It is noteworthy that our proposed and applied model was tested, evaluated and published in a peer-review journal.[8]

We do agree with the criticism of Jankunas et al. that our paper is missing an explanation of "*reasons to consider 1000 as a psychological threshold*". This assumption is based on the dynamics of COVID-19 in Lithuania and studies from other countries.[9] However, we think that the commentator's statement *"The number of new infections is proportional to the number of uninfected persons; therefore, the number of new infections grows exponentially"* should be explained by the authors because it contradicts with infectious diseases epidemiology in a general case.

Jankunas et al. illustrate a failure of *COVID-19 passports* by comparing total number of excess deaths in Lithuania with other Baltic Sea region countries. However, there are some serious limitations in these comparisons, which need to be addressed.

Firstly, we have concerns regarding the estimations used by Jankunas et al. According to them, the excess deaths ratio in Lithuania was 2063 / mln. population during September 12, 2021 - February 4, 2022. As they do not provide explanations for their calculations (only a link to the Internet database), we cannot comment on their results. However, we calculated excess deaths for Lithuania during the reference period (September 12, 2021 - February 4, 2022) according to the standard 5-years average method and used official mortality data from Lithuanian State Data Agency "Statistics Lithuania".[1] Our estimates suggest that the total number of excess deaths for the whole reference period was 4475 and the excess deaths ratio 1595 / mln. population. These calculated results significantly differ from those presented by Jankunas et al.

Secondly, there is considerable debate regarding the feasibility of international comparisons of excess deaths. The accuracy of results depends on the choice of the mortality index; the quality of internationally available statistical information; the number of years included in the reference period; the method; and the time unit of the death series. In a recent study, Nepomuceno et al. showed that excess mortality can differ nearly four times for Lithuania depending on the model used.[10] In making such comparisons and statements, Jankunas et al. seem to ignore not only methodological limitations but also the latest results from studies that show that increased mortality and poor health before the pandemic may have been the factor associated with the greatest increase in mortality during the pandemic.[11] It is well known that the population of Lithuania before

[1] Data for calculations can be downloaded from here: https://osp.stat.gov.lt/lt/statistiniu-rodikliu-analize?hash=60844f30-60a2-4e8f-a3e6-b4599e749f9a.

https://doi.org/10.1016/j.jinf.2023.06.010

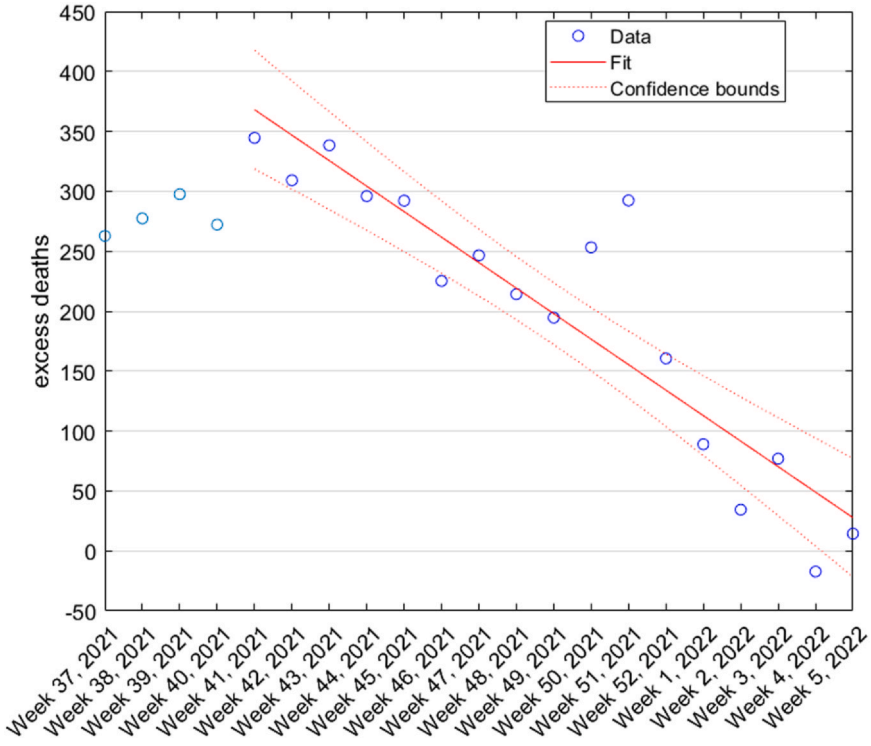

Fig. 1. The excess deaths in Lithuania from September 14 2021 till February 4, 2022. *(Total estimated number of excess deaths 4475; 1595 deaths / mln. population).* * excess deaths were calculated by comparing deaths for selected weeks in 2021–22 with the annual average number of death for the same weeks in 2015–19.

COVID-19 had much lower self-rated health and much higher preventable and treatable causes of mortality, compared with countries set out in Jankunas et al. commentary.[12]

Thirdly, the effectiveness of a specific intervention (in this particular case - *COVID-19 passport*) should not be evaluated by comparing the total number of excess deaths in different countries, but by measuring the changes in epidemic dynamics in the related country after the introduction of a particular intervention. A weekly review of the dynamics of the excess deaths in Lithuania demonstrates a clear trend of the decrease of excess deaths after 2–4 weeks following the installment of the *COVID-19 passports* (September 13, 2021, Week 38) and reached almost zero excess death until the end of the investigated period (February 4, 2022, Week 6) (Fig. 1). This fact specifically contradicts to the main argument of Jankunas et al., that *COVID-19 passports* could contribute to high excess mortality and supports our hypothesis that this non-pharmaceutical intervention could have a positive impact on the COVID-19 epidemiological situation in Lithuania.

Jankunas et al. statement that "*The COVID-19 passports could even have contributed to high excess mortality, e.g., due to disturbed health services (some healthcare professionals rejected both COVID-19 vaccines and expensive COVID-19 testing, etc.)*" is not presented as being based on any statistical or research data and therefore is of a speculative nature.

Finally, Jankunas et al. expressed some concerns regarding "missing ethical considerations". They criticized "*that MS did not disclose the critical direct interest: he was a member of the Advisory Board under the Government and favored COVID-19 passports*". It is important to emphasize that 1) the Advisory Board established by the Government was dissolved on 6th May 2022 (before acceptance and publication of original paper); 2) membership was a voluntary activity which was not a paid appointment; 3) the Health Experts Council, established by the President has recommended the evaluation the need for further use of *COVID-19 passports* in Lithuania on 11th January 2022; 4) the Health Experts Council still exists and MS and AD are members of it.[2] We acknowledge the critical importance of academic debate regarding political decisions during the COVID-19 pandemic. However, we expect that discussion and critical commentary needs to meet the highest standards of academic ethics and respect. We regret that the Jankunas et al. commentary cannot be presented as the best example of high standing in academic debate. In our opinion, expressions like *"we found an elephant in the room unnoticed"* and scientific "*cherry picking*" should be avoided in academic debate.

Funding

This research received no specific grants from any funding agency in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests: MS and AD are members of the Health Experts' Council under the President of the Republic of Lithuania.

References

1. Jankunas R, Sakalauskas L, Zamaryte-Sakaviciene K, Stakisaitis D, Helmersen M. *Commentary on the impact of the COVID-19 passports in Lithuania. J Infect* 2023;**86**:e78–9. https://doi.org/10.1016/j.jinf.2022.12.013
2. Stankūnas M, Džiugys A, Skarbalius G, Misiulis E, Navakas R. *Evaluating the potential impact of COVID-19 passports in Lithuania. J Infect* 2022;**85**:334–63. https://doi.org/10.1016/j.jinf.2022.05.039

[2] All information about structure and activities of Health Experts Council under the President of Lithuania can be found here: https://www.lrp.lt/lt/sveikatos-ekspertu-taryba.

3. Webb E, Winkelmann J, Scarpetti G, Behmane D, Habicht T, Kahur K, et al. *Lessons learned from the Baltic countries' response to the first wave of COVID-19. Health Policy* 2022;**126**:438–45. https://doi.org/10.1016/j.healthpol.2021.12.003
4. Oliu-Barton M, Pradelski BSR, Woloszko N, Guetta-Jeanrenaud L, Aghion P, Artus P, et al. *The effect of COVID certificates on vaccine uptake, health outcomes, and the economy. Nat Commun* 2022;**13**:3942. https://doi.org/10.1038/s41467-022-31394-1
5. Eyre DW, Taylor D, Purver M, Chapman D, Fowler T, Pouwels KB, et al. *Effect of Covid-19 vaccination on transmission of Alpha and Delta variants. N Engl J Med* 2022;**386**:744–56. https://doi.org/10.1056/NEJMoa2116597
6. Wu N, Joyal-Desmarais K, Ribeiro PAB, Vieira AM, Stojanovic J, Sanuade C, et al. *Long-term effectiveness of COVID-19 vaccines against infections, hospitalisations, and mortality in adults: findings from a rapid living systematic evidence synthesis and meta-analysis up to December, 2022. Lancet Respir Med* 2023;**11**:439–52. https://doi.org/10.1016/S2213-2600(23)00015-2
7. Chin V, Ioannidis JPA, Tanner MA, Cripps S. *Effect estimates of COVID-19 non-pharmaceutical interventions are non-robust and highly model-dependent. J Clin Epidemiol* 2021;**136**:96–132. https://doi.org/10.1016/j.jclinepi.2021.03.014
8. Džiugys A, Bieliūnas M, Skarbalius G, Misiulis E, Navakas R. *Simplified model of COVID-19 epidemic prognosis under quarantine and estimation of quarantine effectiveness. Chaos Solitons Fract* 2020;**140**:110162. https://doi.org/10.1016/j.chaos.2020.110162
9. Volpert V, Banerjee M, d'Onofrio A, Lipniacki T, Petroskii, Tran VC. *Coronavirus – scientific insights and societal aspects. Mat Model Nat Phenom* 2020;**15**:E2. https://doi.org/10.1051/mmnp/2020010
10. Nepomuceno MR, Klimkin I, Jdanov DA, Alustiza-Galarza A, Shkolnikov VM. *Sensitivity analysis of excess mortality due to the COVID-19 pandemic. Popul Dev Rev* 2022;**48**:279–302. https://doi.org/10.1111/padr.12475
11. Urashima M, Tanaka E, Ishihara H, Akutsu T. *Association between life expectancy at age 60 years before the COVID-19 pandemic and excess mortality during the pandemic in aging countries. JAMA Netw Open* 2022;**5**:e2237528. https://doi.org/10.1001/jamanetworkopen.2022.37528
12. O.E.C.D./European Observatory on Health Systems and Policies. *Lithuania: country health profile 2019*. State of Health in the EU, OECD Publishing, Paris/European Observatory on Health Systems and Policies, Brussels; 2019. ⟨https://doi.org/10.1787/35913deb-en⟩.

Mindaugas Stankūnas *
Lithuanian University of Health Sciences, Kaunas, Lithuania

Algis Džiugys, Gediminas Skarbalius, Edgaras Misiulis, Robertas Navakas
Lithuanian Energy Institute, Kaunas, Lithuania

*Correspondence to: Department of Health Management, Lithuanian University of Health Sciences, A. Mickevičiaus 9, Kaunas 44307, Lithuania.
E-mail address: mindaugas.stankunas@lsmuni.lt (M. Stankūnas).