



**Review of a habilitation thesis „COVID-19 Vaccine Hesitancy: A Tale of Two Pandemics“  
by Abanoub Riad, PhD, DDS, FRSPH**

Č.j.: UKLFP/522221/2023-11

The strengths of the thesis lie in its well-timed surveys, conducted at opportune moments, and encompassing diverse populations across Czechia, Germany, Poland, Palestine or Algeria. The large sample size is commendable. The thesis is well-written, demonstrating formal proficiency with no typos and an engaging writing style. It is adeptly situated within theoretical frameworks and existing literature, employing validated instruments.

The organization of the thesis is effective. The results contribute novel insights, generating new knowledge, particularly in the significant area of vaccine hesitancy. This topic holds major relevance, and the global applicability of the findings makes it valuable for policymakers. Furthermore, the thesis provides constructive suggestions on addressing vaccine hesitancy, adding practical value to its academic merit.

The thesis is based on 9 original articles and 7 of them are published in MDPI journals, which do not hold a good reputation in the scientific community (see, for example, the article by Oviedo-Garcia 2021, <https://academic.oup.com/rev/article/30/3/405/6348133>; or the statement of the Scientific Council of Charles University about publications in journals with reduced level of peer-review: [https://cuni.cz/UK-128-version1-stanovisko\\_vr\\_uk\\_ke\\_spolupraci\\_s\\_casopisy\\_se\\_snizenou\\_urovni\\_recenzniho\\_rizeni.pdf](https://cuni.cz/UK-128-version1-stanovisko_vr_uk_ke_spolupraci_s_casopisy_se_snizenou_urovni_recenzniho_rizeni.pdf)).

A weakness of the studies lie in the sampling strategy, particularly with the specificity of the chosen target groups, non-random snowballing technique, and unclear response rates. This raises concerns about low external validity, selection bias, and limited generalizability of the

findings, which have not been sufficiently addressed in the discussion of the thesis. The studies show a rather narrow range of methodological approaches and exclusively rely on online self-administered questionnaires with their inherent limitations concerning self-reported data, and descriptive cross-sectional design, making it difficult to eliminate the possibility of reverse causation in the studied associations.

In terms of statistics, aside from the application of a machine learning technique in one study, the methods employed have not demonstrated advanced levels. Insufficient attention has been given to multivariable analysis, and some conclusions are drawn from univariable statistics, wherein numerous predictors were tested, significantly elevating the risk of type one error without adjustment for multiple testing, potentially leading to false positive results. The rationale for the inclusion of variables into the logistic regression or linear regression models is in several instances based on statistical significance in univariable analysis, which carries great limitations, and reasoning about the choice of confounding factors for adjustment is lacking. This deviates from theoretical model-based approaches or the use of directed acyclic graphs to prevent emergence of collider biases.

Despite these limitations, the strengths of this thesis outweigh its weaknesses. Consequently, I recommend defending it and awarding the title docent.

Yours sincerely,

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In Prague, 24.1.2024

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