Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Response

To the Editor:

We thank Dr Khurana et al for their thoughtful response to our letter[1] and for pointing out the value of serum zinc levels. Our study assessed the association between zinc supplementation and survival among hospitalized patients with coronavirus disease 2019 (COVID-19), using a causal inference approach to retrospective data. Our institutions do not routinely measure serum zinc levels. Although our study population consisted of patients admitted to a single hospital, our study assessed the effect of zinc in the contexts in which it was routinely used in the inpatient setting at the peak of the COVID-19 pandemic in the United States. Our findings may inform assessment of zinc's utility as it was commonly used in the inpatient setting for COVID-19, awaiting the results of randomized controlled trials.

We appreciate the references provided by Dr Khurana et al that demonstrated an association between lower zinc levels and worse pulmonary outcomes in children.[2,3] We note, however, that neither of these studies was conducted in adults or among patients with COVID-19. Although our study does not definitively rule out the clinical benefit of zinc among hospitalized patients with COVID-19, our research question looks into the routine use of zinc alone or as an adjunct to other candidate therapies in hospitalized patients with COVID-19––a question similar to those of current randomized trials for COVID-19 that involve zinc.[4] The role of zinc among COVID-19 patients with a deficiency of the trace mineral is unknown. Furthermore, the protective role of zinc against severe acute respiratory syndrome coronavirus 2 infection is another question that is left unanswered.[5] Therefore, we agree with Dr Khurana et al that prospective studies among patients with COVID-19 that take into account serum zinc levels before and after supplementation are needed.

Although our findings are based on retrospective data, thoughtful and thorough analyses of such data in light of the urgency of the ongoing pandemic will likely continue to play a valuable role in paving the way forward.[6] We recognize that prospective randomized controlled trials remain the gold standard of clinical studies. However, situations in which randomized trials are too costly, too slow, or not feasible may necessitate taking into consideration causal inference studies such as ours in informing clinical decisions.

We also must stress that, regardless of the methods employed, efforts must be made to broaden generalizability of the findings by incorporating patients from various clinical and sociodemographic backgrounds. Our hope is that future COVID-19 research ensures inclusion of diverse patient populations and clinical contexts to better identify groups that benefit the most from heterogeneous care strategies.

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Personalized Medicine for OSA Syndrome in a Nutshell

Conceptual Clarification for Integration

To the Editor:

In 2011, personalized medicine was defined as "the tailoring of medical treatment to the individual characteristics of each patient."[1] Since then, the term has been used widely in the field of Sleep Medicine, especially in the context of OSAS syndrome in *CHEST*.[2,3] However, the term personalized medicine is related to a wider range of concepts that can overlap[1] (Fig 1) for OSA syndrome. Despite a growing interest in this field, clarification is needed, especially concerning the conceptual structure of personalized medicine for OSA syndrome and how it may help in unifying the field.

We identify two key frameworks: precision sleep medicine (PSM) and stratified sleep medicine (SSM).

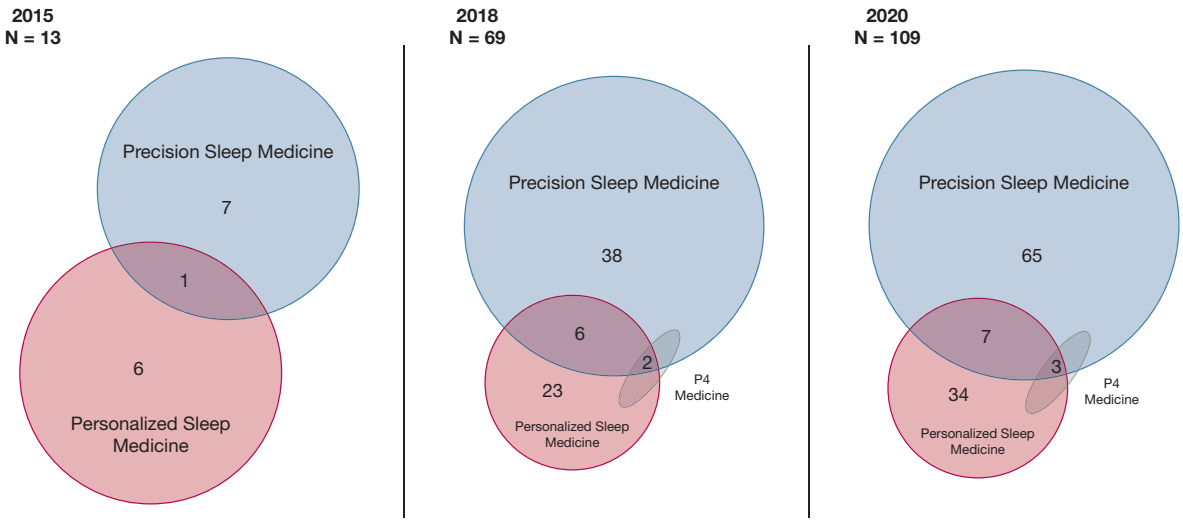

Figure 1 – *OSA syndrome-specific Venn diagram of various definitions of "personalized medicine" according to Pokorska-Bocci et al.[1] The following five searches were carried out on PubMed/MEDLINE in June 2020 using the terms: [("personalized medicine" OR "personalised medicine") AND ("obstructive sleep apnea" OR "obstructive sleep" OR "osas" OR "osa")];[("precision medicine") AND ("obstructive sleep apnea" OR "obstructive sleep" OR "osas" OR "osa")]; [("P4 medicine" OR "P4 approach") AND ("obstructive sleep apnea" OR "obstructive sleep" OR "osas" OR "osa")]; [("stratified medicine") AND ("obstructive sleep apnea" OR "obstructive sleep" OR "osas" OR "osa")]; [("individualised medicine" OR "individualized medicine") AND ("obstructive sleep apnea" OR "obstructive sleep" OR "osas" OR "osa")]. These searches were conducted with the following time restriction: before 2015 (N = 13), before 2018 (N = 69), and in 2020 (N = 109). Note that the terms "stratified medicine" and "individualized medicine" were not found in the literature on OSA syndrome.*