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Plant-based diets, pescatarian diets and COVID-19 severity: a population-based case–control study in six countries

Hyunju Kim,[1,2] Casey M Rebholz,[1,2] Sheila Hegde,[3] Christine LaFiura,[4] Madhunika Raghavan,[4] John F Lloyd,[5] Susan Cheng,[5] Sara B Seidelmann[6,7]

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For numbered affiliations see end of article.

Correspondence to
Dr Sara B Seidelmann, Stamford Hospital, Greenwich, CT 06830, USA; smb88@cas.columbia.edu

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ABSTRACT

Background Several studies have hypothesised that dietary habits may play an important role in COVID-19 infection, severity of symptoms, and duration of illness. However, no previous studies have investigated the association between dietary patterns and COVID-19.

Methods Healthcare workers (HCWs) from six countries (France, Germany, Italy, Spain, UK, USA) with substantial exposure to COVID-19 patients completed a web-based survey from 17 July to 25 September 2020. Participants provided information on demographic characteristics, dietary information, and COVID-19 outcomes. We used multivariable logistic regression models to evaluate the association between self-reported diets and COVID-19 infection, severity, and duration.

Results There were 568 COVID-19 cases and 2316 controls. Among the 568 cases, 138 individuals had moderate-to-severe COVID-19 severity whereas 430 individuals had very mild to mild COVID-19 severity. After adjusting for important confounders, participants who reported following 'plant-based diets' and 'plant-based diets or pescatarian diets' had 73% (OR 0.27, 95% CI 0.10 to 0.81) and 59% (OR 0.41, 95% CI 0.17 to 0.99) lower odds of moderate-to-severe COVID-19 severity, respectively, compared with participants who did not follow these diets. Compared with participants who reported following 'plant-based diets', those who reported following 'low carbohydrate, high protein diets' had greater odds of moderate-to-severe COVID-19 (OR 3.86, 95% CI 1.13 to 13.24). No association was observed between self-reported diets and COVID-19 infection or duration.

Conclusion In six countries, plant-based diets or pescatarian diets were associated with lower odds of moderate-to-severe COVID-19. These dietary patterns may be considered for protection against severe COVID-19.

What this paper adds

- In 2884 front-line healthcare workers from six countries (France, Germany, Italy, Spain, UK, USA), individuals who reported following plant-based diets and plant-based diets or pescatarian diets that were higher in vegetables, legumes and nuts, and lower in poultry and red and processed meats, had 73% and 59% lower odds of moderate-to-severe COVID-19, respectively.
- Plant-based diets or pescatarian diets are healthy dietary patterns, which may be considered for protection against severe COVID-19.

INTRODUCTION

Acute respiratory tract infections are a major driver of mortality and morbidity worldwide, as demonstrated by the recent coronavirus disease 2019 (COVID-19) and seasonal influenza epidemics. Globally, acute respiratory tract illnesses were estimated to cause approximately 2.4 million deaths, in people of all ages, in 2016.[1] COVID-19 is a respiratory tract illness caused by the novel coronavirus, SARS-CoV-2, that was declared a pandemic by the WHO on 11 March 2020. Since then, several new variants of SARS-CoV-2 have emerged,[2] adding to the global burden of infection despite public health practices including personal protective equipment (PPE), social distancing, and hand-washing. Healthcare workers (HCWs) who treat patients with COVID-19 illness in medical clinics, emergency rooms, and hospitals are particularly susceptible to contracting the infection given their high rates of exposure.[3] While HCWs are being vaccinated in many countries currently, with the emergence of new variants and challenges in accessing COVID-19 vaccines globally, understanding risk factors associated with COVID-19 susceptibility and disease course in physicians and nurses may help to develop supportive strategies for protecting these workers both now and in the future.

Prior studies suggest a strong connection between non-hygiene-related risk factors in conferring viral disease susceptibility. Specifically, nutritional factors play a key role in both innate and adaptive immunity.[4] Further, we have learnt that individuals with comorbidities are disproportionally affected with severe COVID-19 disease and mortality. Obesity, type 2 diabetes, atherosclerotic cardiovascular disease, and hypertension are risk factors for