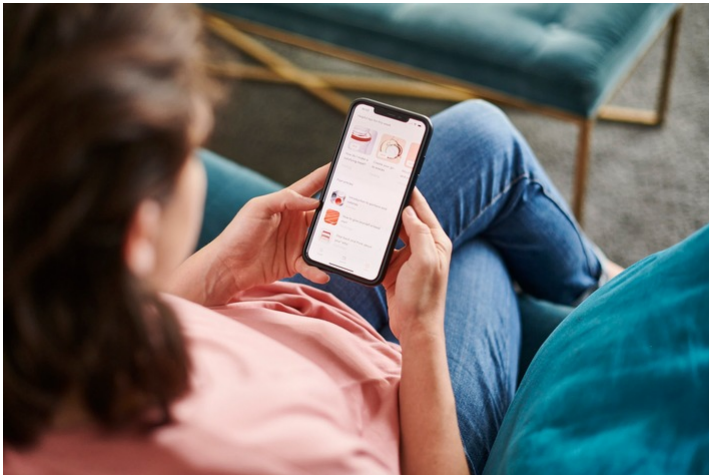


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## ZOE Study Reveals Eating a Plant Rich Diet Reduces Risk of Developing COVID-19 and Going to the Hospital



BOSTON, MA (ots) -

--News Direct--

Researchers at health science company [ZOE](#), Harvard Medical School, and King's College London found that people who eat a high quality, gut-friendly diet\* are less likely to develop COVID-19 or become severely ill. Alternatively, they discovered that those eating poorer quality diets are more at risk, especially if they live in a more socioeconomically deprived area.

The findings are published in medRxiv online as a preprint.

### Key points from the study:

- Researchers analyzed data from nearly 600,000 [ZOE COVID Study](#) app contributors who completed a survey about the food they ate during Feb 2020 (pre-pandemic), making it the largest study in this space.
- People with the highest quality diet were around 10% less likely to develop COVID-19 than those with the lowest quality diet, and 40% less likely to become severely ill.
- This is the first longitudinal study of diet and COVID-19 and the first to show that a healthy diet cuts the chances of developing the disease in the first place.
- The scale of the study meant researchers were able to adjust for multiple confounding factors, which can be a challenge for studies of smaller sizes.
- The effect of diet on COVID-19 is independent of other known risk factors, including age, weight, race, ethnicity and underlying health conditions, but was amplified by social inequality.

### Measuring diet quality

While it is already known that diet-related health conditions like diabetes, heart disease and obesity increase the chances of becoming seriously ill with COVID-19, it is not yet clear how the foods people eat affect their risk of catching the virus independently of these factors.

To learn more about the interplay between food and health, the team analyzed data from 592,571 UK and US contributors who completed a survey about their eating habits within the ZOE COVID Study app. Based on analysis of symptoms or PCR test results reported in the app, 31,815 contributors (19%) ultimately caught COVID-19.

Rather than looking at specific foods or nutrients, the survey was designed to look at broader dietary patterns which are reflective of how we actually eat. The survey produced a 'diet quality score' that reflected the overall merit of each person's diet. Diets with high quality scores were found to contain plant-based foods such as fruits, vegetables, whole grains and nuts, as well as oily fish, healthier fats like olive oil, less processed foods and refined carbohydrates.

High quality diet scores were also linked with a 'healthier' and a more diverse gut microbiome, which was also [associated with a wide range of favorable health outcomes, including reduced inflammation and body fat and improved levels of blood lipids and glucose](#). For these aforementioned reasons, higher quality scoring diets were also referred to as 'gut-friendly' diets. A low diet quality score is associated with diets high in ultra processed foods and low amounts of plant-based foods, like fruit and vegetables.

### Connecting diet and COVID-19 risk

The researchers found that people who ate the highest quality diet were around 10% less likely to develop COVID-19 than those with the least nutritious diet and 40% less likely to become severely ill if they developed COVID-19.

Recent research on a smaller cross-sectional sample has shown that people who eat a plant-based or pescatarian\*\* diet are less likely to become severely ill with COVID-19. However, this is the first study to show that a healthier diet actually reduces the chances of developing the disease in the first place.

Importantly, the relationship between diet quality and COVID-19 risk still remained after accounting for all potential confounding factors. Factors included age, body mass index (BMI), ethnicity, smoking, physical activity and underlying health conditions. Mask-wearing habits and population density were also considered.

Strikingly, the impact of diet was amplified by individual life situations, with people living in low-income neighborhoods and having the lowest quality diet being around 25% more at risk from COVID-19 than people in more affluent communities who were eating in the same way.

Based on these results, the researchers estimate that nearly a quarter of COVID-19 cases could have been prevented if these differences in diet quality and socioeconomic status had not existed.

This further highlights that improved access to nutritious, healthier food could be substantive for bettering public health, especially among the underprivileged members of the community.

**Professor Tim Spector, lead scientist at ZOE COVID Study and professor of genetic epidemiology at King's College London, said:** "These findings chime with recent results from our landmark PREDICT study, showing that people who eat higher quality diets (with low levels of ultra-processed foods) also have a healthier collection of microbes in their guts, which is linked to better health. You don't have to go vegan, but getting more diverse plants on your plate is a great way to boost the health of your gut microbiome, improve your immunity and overall health, and potentially reduce your risk from COVID-19."

**Dr Sarah Berry, study co-lead and associate professor in nutritional sciences at King's College London, said:** "For the first time we've been able to show that a healthier diet can cut the chances of catching COVID-19, especially for people living in the poorest areas. Access to healthier food is important to everyone in society, but our findings tell us that helping those living in more deprived areas to eat more healthily could have the biggest public health benefits."

**Professor Andrew Chan MD, MPH, gastroenterologist and director of epidemiology at Massachusetts General Hospital, and**

**professor at Harvard Medical School, said:** "Diet quality is an established risk factor for many conditions that are known to have an inflammatory basis. Our study demonstrates that this may also hold true for COVID-19, a virus which is known to provoke a severe inflammatory response. We also highlight how diet quality is also an important social determinant of health. COVID-19 has laid bare how such social determinants underlie the severe racial and socioeconomic disparities in COVID-19 risk that we and others have documented."

**Jonathan Wolf, CEO of ZOE, added:** "At ZOE we're using the latest data science to unpick the complex connections between diet and health, bringing together our expertise in COVID-19 and nutrition to help improve health for all."

**NOTES TO EDITORS**

For more information about the ZOE COVID Study app or to request an interview with Professor Tim Spector, please contact Eleanor Griffiths: +44 (0)7950 335916 [eleanor@joinzoe.com](mailto:eleanor@joinzoe.com)

For more information about ZOE or to request an interview with Jonathan Wolf, please contact; Fiana Tulip: [fiana@joinzoe.com](mailto:fiana@joinzoe.com)

- Preprint available here: [Diet quality and risk and severity of COVID-19: a prospective cohort study.](#)
- The research team includes scientists from: King's College London; Massachusetts General Hospital, Harvard Medical School and the Harvard T.H. Chan School of Public Health, Boston, USA; The Broad Institute, Cambridge, USA; UTHealth, Texas, USA; Lund University, Sweden; ZOE Global Ltd.
- \*A gut-friendly diet explained: A high quality diet contains more plant-based foods such as fruits, vegetables, whole grains and nuts as well as oily fish and healthier fats like olive oil and less processed foods and refined carbohydrates. This diet quality score is associated with a 'healthier' more diverse gut microbiome, which in turn is [associated with a wide range of favorable health outcomes, including lower inflammation and body fat and improved blood lipids and glucose.](#)
- \*\*A pescatarian diet is predominantly vegetarian but includes fish and seafood.

<https://eur03.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.kcl.ac.uk%2Fnews%2Fheadlines.aspx&data=04%7C01%7C7C6171491960744b7c55208d92a6dc495%7C8370cf1416f34c16b83c724071654356%7C0%7C0%7C6375874731>

**About ZOE**

ZOE is a healthcare science company helping people understand their body's responses to food. By using machine learning combined with large scale human studies, ZOE is decoding the impact of nutrition on health.

ZOE leads the PREDICT Studies and the ZOE COVID Study, which are the world's largest community powered research programs of their kind in nutrition and COVID-19 respectively.

Located in London and Boston, ZOE was founded by Professor Tim Spector of King's College London, data science leader Jonathan Wolf and entrepreneur George Hadjigeorgiou. ZOE was named one of the Deloitte Fast 50 Rising Stars in 2019 for the company's contribution to science enabled by technology and machine learning. For more information on ZOE's mission and science, visit [joinzoe.com](http://joinzoe.com)

**About ZOE COVID Study**

The ZOE COVID Study is a not-for-profit initiative that was launched at the end of March 2020 to support vital COVID-19 research. The app was launched by health science company ZOE with scientific analysis provided by King's College London. With 4 million contributors globally, the study is the world's largest ongoing study of COVID-19 and is led by ZOE Co-Founder and King's College London Professor, Tim Spector. The team has published over 20 research papers since March, most notably in Nature Medicine.

To date the app is funded by the Department of Health and Social Care. The funding was awarded to enable the app to continue collecting data from its 4million+ users to help the UK government's response to COVID-19 and beyond. The app provides unique insight on asymptomatic and symptomatic information across the UK with 1.2 million logging on a weekly basis. For more information on The COVID Symptom Study app visit [covid.joinzoe.com](http://covid.joinzoe.com).

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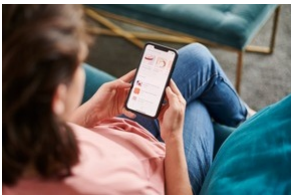
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--News Direct--Researchers at health science company ZOE, Harvard Medical School, and King's College London found that people who eat a high quality, gut-friendly diet\* are less likely to develop COVID-19 or become severely ill. Alternatively, they discovered that those eating poorer quality diets are more at risk, especially if they live in a more socioeconomically deprived area. The findings are published in medRxiv online as a preprint. Key points from the study: Measuring diet quality While it is already known that diet-related health conditions like diabetes, heart disease and obesity increase the chances of becoming seriously ill with COVID-19, it is not yet clear how the foods people eat affect their risk of catching the virus independently of these factors. To learn more about the interplay between food and health, the team analyzed data from 592,571 UK and US contributors who completed a survey about their eating habits within the ZOE COVID Study app. Based on analysis of symptoms or PCR test results reported in the app, 31,815 contributors (19%) ultimately caught COVID-19. Rather than looking at specific foods or nutrients, the survey was designed to look at broader dietary patterns which are reflective of how we actually eat. The survey produced a 'diet quality score' that reflected the overall merit of each person's diet. Diets with high quality scores were found to contain plant-based foods such as fruits, vegetables, whole grains and nuts, as well as oily fish, healthier fats like olive oil, less processed foods and refined carbohydrates. High quality diet scores were also linked with a 'healthier' and a more diverse gut microbiome, which was also associated with a wide range of favorable health outcomes, including reduced inflammation and body fat and improved levels of blood lipids and glucose. For these aforementioned reasons, higher quality scoring diets were also referred to as 'gut-friendly' diets. A low diet quality score is associated with diets high in ultra processed foods and low amounts of plant-based foods, like fruit and vegetables. Connecting diet and COVID-19 risk The researchers found that people who ate the highest quality diet were around 10% less likely to develop COVID-19 than those with the least nutritious diet and 40% less likely to become severely ill if they developed COVID-19. Recent research on a smaller cross-sectional sample has shown that people who eat a plant-based or pescatarian\*\* diet are less likely to become severely ill with COVID-19. However, this is the first study to show that a healthier diet actually reduces the chances of developing the disease in the first place. Importantly, the relationship between diet quality and COVID-19 risk still remained after accounting for all potential confounding factors. Factors included age, body mass index (BMI), ethnicity, smoking, physical activity and underlying health conditions. Mask-wearing habits and population density were also considered. Strikingly, the impact of diet was amplified by individual life situations, with people living in low-income neighborhoods and having the lowest quality diet being around 25% more at risk from COVID-19 than people in more affluent communities who were eating in the same way. Based on these results, the researchers estimate that nearly a quarter of COVID-19 cases could have been prevented if these differences in diet quality and socioeconomic status had not existed. This further highlights that improved access to nutritious, healthier food could be substantive for bettering public health, especially among the underprivileged members of the community. Professor Tim Spector, lead scientist at ZOE COVID Study and professor of genetic epidemiology at King's College London, said: "These findings chime with recent results from our landmark PREDICT study, showing that people who eat higher quality diets (with low levels of ultra-processed foods) also have a healthier collection of microbes in their guts, which is linked to better health. You don't have to go vegan, but getting more diverse plants on your plate is a great way to boost the health of your gut microbiome, improve your immunity and overall health, and potentially reduce your risk from COVID-19." 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COVID-19 has laid bare how such social determinants underlie the severe racial and socioeconomic disparities in COVID-19 risk that we and others have documented." Jonathan Wolf, CEO of ZOE, added: "At ZOE we're using the latest data science to unpick the complex connections between diet and health, bringing together our expertise in COVID-19 and nutrition to help improve health for all." NOTES TO EDITORS For more information about the ZOE COVID Study app or to request an interview with Professor Tim Spector, please contact Eleanor Griffiths: +44 (0)7950 335916 eleanor@joinzoe.com For more information about ZOE or to request an interview with Jonathan Wolf, please contact; Fiana Tulip: fiana@joinzoe.com About ZOE ZOE is a healthcare science company helping people understand their body's responses to food. By using machine learning combined with large scale human studies, ZOE is decoding the impact of nutrition on health. 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