of those initially infected, and the extent of previous exposure to coronavirus.

But the results from Discovery Health are in keeping with other studies in the country, says Waasila Jassat, a clinician and public-health specialist at the National Institute for Communicable Diseases in Johannesburg. "The picture is very consistent."

It will take time for a similarly consistent picture to emerge from countries that currently have fewer Omicron infections. On 13 December, Denmark released data showing that hospitalization rates for people infected with Omicron seemed to be on a par with those for people infected with other variants. But this comparison was based on only about 3,400 cases of Omicron infection and 37 hospitalizations.

Similarly, a 16 December report from Imperial College London (see go.nature.com/3mm2cmu) found no evidence of diminished hospitalizations from Omicron infections compared with Delta infections in England, although this was again based on relatively few cases. Overall, the numbers are still too small to allow firm conclusions about the severity of disease caused by Omicron, says Troels Lillebæk, an infectious-disease specialist at the University of Copenhagen.

And a rapidly spreading variant could dangerously strain health-care systems, even if the risk of severe disease or death is relatively low for any individual. "A small fraction of a very large number is still a large number," says Woolhouse. "So the population-level threat is very real."

South Africa's optimistic data might not be a sign that Omicron itself is more benign than previous variants. More than 70% of the population in regions heavily infected with Omicron have had previous exposure to SARS-CoV-2, and about 40% have received at least one dose of a COVID-19 vaccine, says Jassat. This makes it difficult to disentangle the effects of pre-existing immunity from inherent properties of the variant itself.

Vaccine protection

Laboratory studies have suggested that Omicron might be able to evade some immunity induced by COVID-19 vaccines, and early data from the UK Health Security Agency suggest that the vaccines are not as protective against Omicron infections as they have been against other variants, although the number of cases studied was too small for researchers to be sure about how much protection has decreased.

Even so, vaccines could continue to protect many recipients from severe disease and death from COVID-19. In addition to antibodies, the immune system in previously infected and vaccinated people deploys cells called T cells that can recognize fragments of viral proteins and destroy infected cells, potentially limiting the scope of an infection.

Researchers have mapped Omicron's panoply of mutations onto the menu of SARS-CoV-2 protein fragments recognized by T cells following natural infection and vaccination, and found no mutations in most of these fragments. In the case of vaccination, more than 70% of the fragments are fully intact, according to immunologist Alessandro Sette at the La Jolla Institute for Immunology in California.

"A small fraction of a very large number is still a large number. So the population-level threat is very real."

There is more work to be done — scientists are already conducting laboratory assays to determine how well T cells generated in response to vaccines and infection with other variants react to Omicron, with results expected in the coming weeks. "I'm optimistic that the reactivity is going to be preserved, at least in part," Sette says. "How much of it will be preserved remains to be seen."

As those data emerge, researchers will be looking particularly at the effects of Omicron on children. Results from South Africa have suggested that hospitalization rates for children infected with Omicron are higher than were seen in previous waves. But researchers again caution that this does not necessarily mean that children are more vulnerable to Omicron than they were to Delta or other variants. Jassat notes that children have lower rates of previous coronavirus infection and vaccination than adults, meaning that their levels of pre-existing immunity are not as high.

Higher rates of hospitalization in children during the early stages of an outbreak could also reflect more hospital capacity, affording the luxury of keeping in for observation a child who might otherwise be sent home, she adds.

EVIDENCE OF RACISM FOUND AT PRESTIGIOUS LONDON UNIVERSITY

London School of Hygiene & Tropical Medicine pledges to revise diversity policies following review.

By Linda Nordling

Evidence of racism and inequality at the London School of Hygiene & Tropical Medicine (LSHTM) — a prestigious 120-year-old research university — has been reported in an independent review commissioned by the institution last year.

The LSHTM has vowed to tackle racism.

DAVID A EASTLEY/ALAMY

The LSHTM says it is "determined to do better" after the review found that staff members of colour remain under-represented and face barriers to career advancement.

The 70-page report, published on 13 December, notes that "stakeholders" perceive that the LSHTM itself has not addressed and acknowledged the ways in which it has benefited from and perpetuated European colonialism. Staff and students also told its authors that they don't trust that complaints about racist behaviour will be dealt with fairly or sensitively.

The findings are "difficult to confront", said LSHTM director Liam Smeeth in a statement. "We deeply regret this and apologise sincerely to everyone affected."

"So many global-health institutions have either looked away or been lukewarm in response to growing calls to address inequities and injustices in their operations," says Ṣẹ̀yẹ Abímbọ́lá, a global-health specialist based at the University of Sydney in Australia. On whether the review will result in meaningful change at the LSHTM, he adds: "We'll have to wait and see."

The LSHTM commissioned the review in 2020, after the Black Lives Matter movement

inspired discussions about racism worldwide.

It was produced by a group of six independent reviewers, supported by three experts in racial equality. They reviewed data and documents from the LSHTM, surveyed current and former staff members and students, and had targeted discussions with some participants.

Fifty-two per cent of survey respondents who were people of colour said that they had witnessed or experienced racism at the university, and the review heard of several instances in which the LSHTM had failed to act on complaints about racist behaviour. Staff and students of colour also told the reviewers that they were reluctant to challenge racist acts because they feared causing offence, or were concerned about repercussions.

Institutional data show that staff members of colour have faced greater barriers to career progression than their white counterparts. Two-thirds of white staff members who applied for promotion from assistant to associate professor between 2017 and 2020 were successful, compared with one-third of staff members of colour.

The review makes a number of recommendations for the LSHTM, including mandating anti-racism training for senior leaders. Smeeth said in his statement that the university will revise its equity, diversity and inclusion plan by the end of January 2022.

"It will not be a quick or easy journey, but work is already under way and this review accelerates and strengthens the change that is needed," says Mohamed Osman, who is chair of LSHTM's diversity and inclusion committee. "If, by releasing this report, LSHTM is taking one of many steps to help to create a more inclusive and equitable sector, then that is one positive outcome," he adds.

OMICRON BLIND SPOTS: WHY IT'S HARD TO TRACK CORONAVIRUS VARIANTS

Researchers race to sequence viral genomes, but there are flaws in the global surveillance system.

By Amy Maxmen

Scientists are scrambling to detect Omicron, the latest SARS-CoV-2 variant of concern, by sequencing the genomes of coronaviruses infecting people. But surveillance through genomic sequencing can be slow and patchy, complicating the picture of how and where Omicron spreads.

One positive development is that researchers are sequencing more SARS-CoV-2 genomes than ever before. This is what enabled them to notice Omicron relatively swiftly. Last April — about 16 months into the pandemic — an online database belonging to the GISAID data-science initiative contained one million SARS-CoV-2 genomic sequences. In the roughly eight months since then, researchers have submitted another five million sequences to GISAID — a nearly tenfold rate increase (see 'Genome explosion'). "We are in much better shape to find Omicron or any other emerging variant now," says Kelly Wroblewski, director of infectious diseases at the Association of Public Health Laboratories in Silver Spring, Maryland.

Yet researchers warn that there are still troubling gaps in sequencing data that make any interpretation of a variant's movement fraught. "The numbers are complex, and there are so many caveats," Wroblewski says. For one, some countries don't have the laboratory capacity to sequence pathogen genomes, so it might look as if those places have no variants, when in fact the mutated viruses are spreading under the radar.

Sequencing rates vary within countries, as well, yielding an uneven picture of how a variant is spreading inside a nation's borders. For instance, 10 US states have sequenced coronavirus samples from less than 2% of their inhabitants who tested positive for COVID-19 in the past month, according to sequences posted at GISAID. By contrast, Wyoming, Colorado and Vermont sequenced more than 10% of their positive cases over the same time frame.

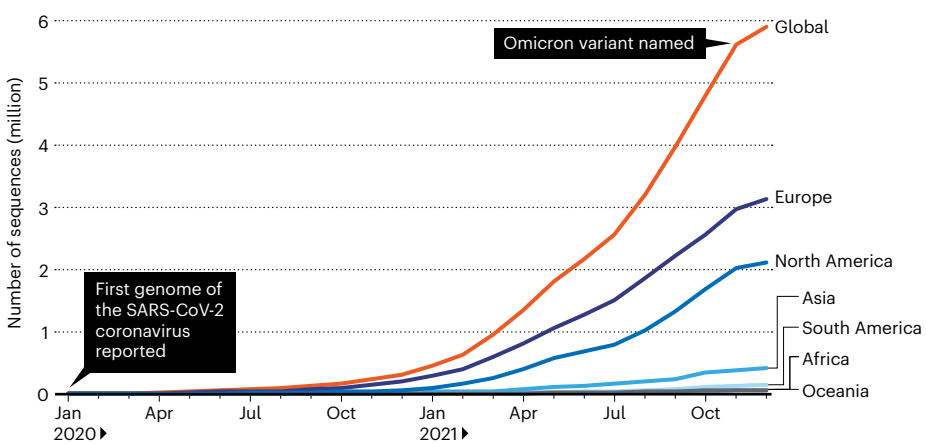
But even if a location is sequencing many of its positive cases, variants could still slip by if testing is poor or biased. "It's easy to sequence 100% of your cases if you only test a few people to begin with," explains Jennifer Nuzzo, an epidemiologist at Johns Hopkins University in Baltimore, Maryland. For example, some countries mainly test international travellers. Even if they sequence all of those samples, they might miss a concerning variant that is circulating domestically.

All of these studies are evolving daily as new Omicron sequences pour in from around the world. A hint of how fast this field is moving can be seen in the rapid rise in genomes reported after the World Health Organization named Omicron a variant of concern on 26 November. Soon after the agency's announcement, 15 countries submitted 187 genomic sequences belonging to Omicron to GISAID. By 14 December, 55 countries had shared 4,265 Omicron sequences. The figures are on course to balloon further — but Dave Luo, a data scientist who advises the Pandemic Prevention Institute at the Rockefeller Foundation in Washington DC, warns that's not necessarily representative of how fast the variant is spreading. Many testing centres are preferentially sequencing samples after a simple, fast genotyping test picks up a possible signal for Omicron — a particular amino acid in the gene for its spike protein. As a result, Omicron might be over-represented among SARS-CoV-2 genome sequences right now.

Genomic information is biased and messy in so many ways, Luo says. "We have to be careful about what we take away from any one source of data."

GENOME EXPLOSION

Scientists have shared about six million SARS-CoV-2 genome sequences on the GISAID data-sharing platform since January 2020, many of them in just the past eight months. Those deposited from Africa proved invaluable in sounding the alarm on the Omicron variant.



SOURCE: GISAID