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MEDIA RELEASE

UP-led study provides data to assist with global preparation for impact of COVID-19 Omicron variant among children

PRETORIA – A multidisciplinary study led by two University of Pretoria (UP) researchers has found that Tshwane District hospitals were under immense pressure to provide clinical services in the face of an influx of paediatric patients (under 19 years old) during the early stages of the COVID-19 Omicron wave in November and December 2021.

The study provides data to assist with the worldwide preparation for the impact of the Omicron variant among children.

It describes the rapid rise in paediatric COVID-19-associated hospitalisations in the Tshwane District (which has a population of 3 552 452 and a population density of 527 people/km^2), one of the first known epicentres of the Omicron variant. The study showed that there had been an increase in infections among paediatric patients, starting from mid-November 2021 onwards.

Professor Ute Feucht – Director of the Centre for Maternal, Fetal, Newborn and Child Health Care Strategies in UP's Faculty of Health Sciences – and Adjunct Professor and paediatrician Jeané Cloete of Steve Biko Academic Hospital (UP's main teaching hospital) headed up the study. They collaborated with Dr George Mukhari Academic Hospital, Tshwane District Health Services, the Gauteng Department of Health, the National Institute for Communicable Diseases, district officials and other scientists.

The study – titled 'Paediatric hospitalisations due to COVID-19 during the first SARS-CoV-2 Omicron (B.1.1.529) variant wave in South Africa: a multicentre observational study' – was published in *The Lancet Child & Adolescent Health*, and was conducted over a six-week period in which 6 287 paediatric COVID-19 cases were recorded in Tshwane.

According to the scientists, 462 (7.3%) paediatric patients were admitted to 38 hospitals, making up 18% of overall admissions. "This was in stark contrast to the number of paediatric cases in the previous three waves, uncharacteristically preceding adult hospitalisations, thus raising the alarm about the readiness of hospitals, which had previously generally focused on adult COVID-19 patients," Prof Feucht said.

The relevant data was extracted from various sources, including COVID-19 line lists for contact tracing activities; SARS-CoV-2 testing data collated by the National Institute for Communicable Diseases; and SARS-CoV-2 genomic sequencing data from specimens obtained within the district through UP's Zoonotic Arbo- and Respiratory Virus research group.

“Information obtained during the study revealed that young children (0–4 years) were most affected,” the researchers explained. “Symptoms included fever (61%), coughing (57%), shortness of breath (31%), seizures (31%), vomiting (26%) and diarrhoea (25%). The length of hospital stay was short, averaging 3.2 days, and in 45% of cases, COVID-19 was the primary diagnosis.”

Most children received standard ward care (92%), with 27 (23%) receiving oxygen therapy. Seven children (6%) were ventilated; four died as a result of additional illnesses that were the main cause of death. However, no child died primarily due to the COVID-19 virus.

Prof Cloete said the fourth COVID-19 wave started from a low base, with evidence in Tshwane District communities of low transmission levels; there were very low numbers of COVID-19 infections documented in Tshwane despite continued testing.

She added that the wave started earlier than expected, with paediatric hospital wards noticing marked increases in admissions of COVID-19-infected children from mid-November 2021, at much higher levels than during the previous three COVID-19 waves and uncharacteristically ahead of adult COVID-19-related admissions.

“The increased numbers of paediatric admissions, and rapid upward trajectory thereof, created logistical issues locally, as few paediatric COVID-19 hospital beds were available,” Prof Cloete said. “Coupled with acute staff shortages due to COVID-19-related isolation and quarantine, this created a challenging environment in which to admit the unexpectedly large number of COVID-19 paediatric patients.”

“Most of the admitted COVID-19 paediatric patients had mild-to-moderate symptoms and had been discharged after only a few days in hospital,” Prof Feucht said. “The clinical picture is mixed with other childhood illnesses – children were presenting with childhood diseases at different times of the year compared to the pre-COVID-19 period.” She added that many COVID-19 diagnoses were incidental in that children presented with trauma or injury before being diagnosed with COVID-19.

“What happened in Tshwane was unexpected – it seemed to have come out of nowhere. For genomic sequencing, the clinical specimens were used from public sector health facilities, showing that the Omicron variant was causing this fourth COVID-19 wave. The lessons would provide insight into other parts of South Africa that experienced a surge, and Europe and the US, which subsequently also contended with escalating numbers.”

The scientists said that district-based research must continue to include research around the impact of COVID-19 on children and how this affects the healthcare system. This is critical in the long term in order to save the lives of children by ensuring that they get the same access to treatment as adults.

Media enquiries

For interviews with Prof Ute Feucht and Prof Jeané Cloete, please email Liesel Swart at liesel@roundtree.co.za / liesel.swart@up.ac.za or call 082 672 0067.

ABOUT THE UNIVERSITY OF PRETORIA

The University of Pretoria (UP) is one of the largest contact and residential universities in South Africa, with its administration offices located on the Hatfield Campus, Pretoria. This 114-year-old institution is also the largest producer of research in South Africa.

Spread over seven campuses, it has nine faculties and a business school, the Gordon Institute of Business Science (GIBS). It is the only University in the country with a Faculty of Veterinary Science, which is ranked top in Africa. UP has 120 academic departments and 92 centres and institutes, accommodating more than 55 000 students and offering about 1 100 study programmes.

UP is one of the top five universities in South Africa, according to the 2019-2020 rankings by the Center for World University Rankings. The QS World University Rankings also placed UP among the top 100 universities worldwide in three fields of study (veterinary science, theology and law), and UP is in the top 1% in eight fields of study (agricultural sciences, clinical medicine, engineering, environment/ecology, immunology, microbiology, plant and animal sciences and social sciences), according to the Web of Science Essential Indicators.

In May 2020, the annual UK Financial Times Executive Education Rankings again ranked GIBS as the top South African and African business school. The University also has an extensive community engagement programme with approximately 33,000 students involved in community upliftment. Furthermore, UP is building considerable capacities and strengths for the Fourth Industrial Revolution by preparing students for the world beyond university and offering work-readiness and entrepreneurship training.

As one of South Africa's research-intensive universities, UP launched the Future Africa Campus in March 2019 as a hub for inter- and transdisciplinary research networks within UP and the global research community to maximise 4IR innovation and address the challenges and stresses our continent and world is facing. In addition, UP also launched the Javett Art Centre in September 2019 as a driver of transdisciplinary research development between the Humanities and other faculties. In November 2020 UP launched Engineering 4.0. as a hub not only for Smart Cities and Transport, but also to link the vast resources in technology and data sciences to other faculties via Future Africa. These initiatives are stimulating new thinking at the frontier of 'science for transformation'.

For more information, go to www.up.ac.za