

MEDIA RELEASE

Elimination of outdoor playtime post circuit breaker linked to increase in body mass of school-aged children in Singapore, one year on

- *Joint study by A*STAR's Singapore Institute for Clinical Sciences (SICS), KK Women's and Children's Hospital (KKH), National University Hospital (NUH) suggests the COVID-19 circuit breaker appears to have resulted in an increase in body mass. Its long-term effects should be studied.*
- *Findings suggest that children should adopt healthy lifestyle behaviours, including more outdoor physical activities.*

Singapore, 10 March 2022 – A Singapore study has found that a substantial proportion of children studied no longer engaged in outdoor play, one to three months after the circuit breaker. Those who ceased outdoor play were observed to have accumulated more body mass one year on.

There are strong links between obesity in children and adults. According to a 2017 Health Promotion Board (HPB) survey¹, it was found that 70 percent of overweight children went on to become obese adults. While child weight status alone is not critical, there is proven correlation with chronic conditions such as diabetes, hypertension, and heart disease later in life, if left unattended. A recent Ministry of Health (MOH) survey² has also shown that school-aged obesity has been steadily climbing in recent years.

The study was helmed by Dr Jonathan Huang, an A*STAR Principal Investigator, in collaboration with clinician-scientists from KKH, NUH and NUS Yong Loo Lin School of Medicine.

The team found that among 585 children, over a third of school-aged children and a quarter of preschool-aged children did not have any outdoor play two months after the circuit breaker in April 2020. Approximately one year post-circuit breaker, school-aged children who ceased outdoor activity showed increased body mass index (BMI) by at least half a unit.

¹ <https://www.straitstimes.com/singapore/health/chubby-kids-are-more-likely-to-be-fat-as-adults>

² <https://www.hpb.gov.sg/community/national-population-health-survey/survey-findings>

“Many pandemic studies in other countries have looked at changes during and after their lockdown periods. What’s unique about Singapore and our study is that we had a short circuit breaker and a lot of activities resumed soon after, yet a substantial number of children had reported elimination of all outdoor activities, which could have led to an increase in body mass among this group,” says lead author Dr Huang.

At the moment, this is the only study that shows a link between specific changes in behaviours during the pandemic and longer term changes resulting in increased body mass in children. Studies conducted outside of Singapore have reported increases in child adiposity over the past two years, but they were not able to link this finding to the contributing sources, nor conduct follow-up studies with the same children over time.

“Active play indoors may not be sufficient to replace outdoor activity, particularly at older ages,” adds Ms Sum Ka Kei, an epidemiologist at A*STAR’s SICS and first author of the study. “It is important to understand how to address this effectively, as outdoor time is associated with numerous other benefits to children including better sleep, learning, and socio-emotional development.”

Co-author Professor Fabian Yap, Head and Senior Consultant, Endocrinology Service, Department of Paediatrics, KKH, said, “The findings highlight the importance of sustaining healthy lifestyle behaviours in children, in order to achieve good long-term health outcomes. Continuous advocacy for children to engage in outdoor physical activities can prevent the development of chronic diseases and transform national health. This is also emphasised in the Singapore Integrated 24-Hour Activity Guidelines for Early Childhood as well as for Children and Adolescents³ recently launched at KKH. The guidelines offers suggestions for activities standardised across four areas - physical activity, sedentary behavior, sleep and diet – for children within a 24-hour period, to lay the foundation for good health.”

Co-author Professor Lee Yung Seng, Head, Department of Paediatrics & Senior Consultant, Division of Paediatric Endocrinology, Khoo Teck Puat – National University Children’s Medical Institute, National University Hospital, shares that, “Pandemic weight gain in children can be attributed to the increased social restriction, increased screen time including home-based learning programmes, cessation of outdoor co-curricular activities, overall less physical activity which led to a more sedentary lifestyle, and ease of access to calorie-dense food. It is important for families to be aware of the significance of healthy dietary habits and physical activity. This helps to combat obesity and can lead to better overall stamina, mental health and wellbeing, among many other benefits. Managing this global health problem requires a multifaceted approach with commitment from policy makers, healthcare

³ These guidelines are developed by KKH-led IPRAMHO, based on locally and globally established studies and best practices, and are endorsed by the College of Paediatric and Child Health.

professionals from both the primary care and hospital setting, the local food and beverage industry, schools and of course children and their families.”

Outdoor play is not the only change that the research team intends to study. It will also look at long-term consequences of changes in child sleep, family income, and other factors that have disrupted lives over the past two years.

Dr Huang and his colleagues aim to use the study’s data to delve deeper into understanding different family and social dynamics and the motivations underlying such behaviour changes, to inform potential interventions extending beyond the pandemic.

The study, "[COVID-19-Related Life Experiences, Outdoor Play, and Long-term Adiposity Changes Among Preschool- and School-Aged Children in Singapore 1 Year After Lockdown](#)” was published in the Journal of the American Medical Association (JAMA) Pediatrics on 24 January 2022.

About the study

A*STAR’s Singapore Institute for Clinical Sciences (SICS) conducted a longitudinal cohort study of over 600 parents and 350 children from the Growing Up in Singapore Towards healthy Outcomes (GUSTO) and Singapore Preconception Study of long-Term maternal and child Outcomes (S-PRESTO).

An electronic survey from July to September 2020 was administered, and measurements were then followed up through June 2021.

At the time of interview, the GUSTO birth cohorts were 9 to 10 years old, and the S-PRESTO birth cohorts were 1 to 4 years old.

GUSTO and S-PRESTO are Singapore’s largest birth and preconception cohort studies involving collaborators from KKH, NUHS, NUS, and SICS. GUSTO aims to investigate the conditions during pregnancy and early childhood while S-PRESTO focuses on the pre-conception factors and its effects on the eventual health of the mother and child. Both studies are supported by the National Research Foundation (NRF) Singapore under its Translational and Clinical Research (TCR) Flagship Programme, and administered by the Singapore Ministry of Health’s National Medical Research Council (NMRC), Singapore.

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Enclosed:**ANNEX A – Notes to Editor**

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About the Singapore Institute for Clinical Sciences (SICS)

Founded in 2007, the Singapore Institute for Clinical Sciences' (SICS) mission is to promote health and human capacity in Singapore, Asia and globally. The first institute within the Agency for Science, Technology and Research (A*STAR) to focus on clinical sciences and translational research, SICS posits that health has its origins in good beginnings and continued interactions between our physiological makeup and environment. To fulfil our vision of building gateways and an evidence base for positive health, our institute strongly promotes clinical research that supports the understanding of metabolism, neuroscience and how they impact human development. To take our research into the real world, we launched seminal nationwide birth cohort studies such as Growing Up in Singapore Towards healthy Outcomes (GUSTO) and Singapore PREconception Study of long-Term maternal and child Outcomes (S-PRESTO). By paving the way for scientific research to make a difference to the social and economic fabric of our communities, we are committed to 'Changing Tomorrow's Health, Today'.

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About KK Women's and Children's Hospital

KK Women's and Children's Hospital (KKH) is Singapore's largest tertiary referral centre for obstetrics, gynaecology, paediatrics and neonatology. The academic medical centre specialises in the management of high-risk conditions in women and children.

Driven by a commitment to deliver compassionate, multidisciplinary care to patients, KKH leverages innovation to advance care. In 2021, the hospital launched the SingHealth Duke-NUS Maternal and Child Health Research Institute (MCHRI). This centre of excellence aims to support the growth of every woman and child to their fullest potential through research and innovation, to transform national health in Singapore and the region.

Some of the hospital's recent breakthroughs include uSINE®, a landmark identification system for the administration of spinal epidural, the discovery of new genetic diseases like Jamuar Syndrome, and a series of guidelines for women and children to improve metabolic health.

The Academic Medical Centre is also a major teaching hospital for Duke-NUS Medical School, Yong Loo Lin School of Medicine and Lee Kong Chian School of Medicine. In addition, KKH runs the largest specialist training programme for Obstetrics and Gynaecology, and Paediatrics in Singapore. The programmes are recognised by the Accreditation Council for Graduate Medical Education International (ACGME-I), and are highly rated for the quality of clinical teaching and translational research.

KKH was founded in 1858. For more information, visit www.kkh.com.sg

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About Integrated Platform for Research in Advancing Metabolic Health Outcomes of Women and Children

*Integrated Platform for Research in Advancing Metabolic Health Outcomes of Women and Children (IPRAMHO) is a research platform that seeks to develop a seamless integrated model of care through optimal implementation of effective population prevention strategies and diabetes and weight reduction programmes for women and children.

It is led by KKH in partnership with SingHealth Polyclinics and National Healthcare Group Polyclinics; and is a collaborative centre grant funded by the National Medical Research Council.

In 2022, IPRAMHO led and launched the Singapore Integrated 24-Hour Activity Guidelines for Early Childhood. Its workgroup members include the College of Family Physicians Singapore, Singapore Medical Association, College of Paediatrics and Child Health in Academy of Medicine Singapore, Exercise is Medicine Singapore, Sports Medicine Association, Singapore, Perinatal Society of Singapore and Singapore Paediatric Society.

This set of guidelines for early childhood is part of a series designed by IPRAMHO since 2018. Other guidelines in the series include the 24-Hour Activity Guidelines for Children and Adolescents from seven to 18 years old, management of gestational diabetes and exercise and physical activity for pregnant women, as well as for perinatal nutrition.

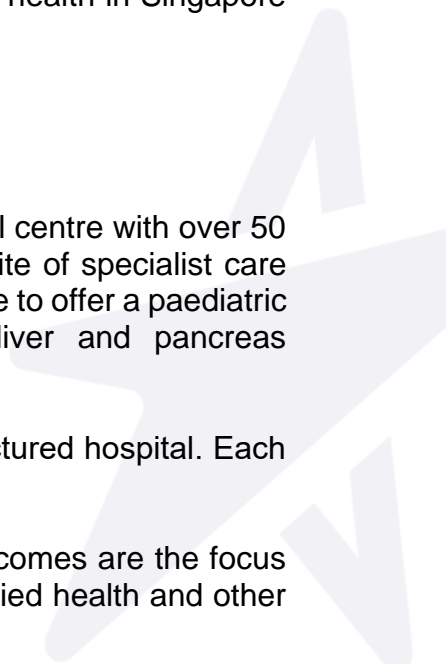
IPRAMHO is one of the main programmes by the SingHealth Duke-NUS Maternal and Child Health Research Institute (MCHRI). The MCHRI serves as the centre of excellence for maternal and child health research, to transform and improve national health in Singapore and the region.

About the National University Hospital

The National University Hospital is a tertiary hospital and major referral centre with over 50 medical, surgical and dental specialties, offering a comprehensive suite of specialist care for adults, women and children. It is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme, in addition to kidney, liver and pancreas transplantation for adults.

The hospital was opened on 24 June 1985 as Singapore's first restructured hospital. Each year, the Hospital attends to more than one million patients.

As an academic health institution, patient safety and good clinical outcomes are the focus of the Hospital. It plays a key role in the training of doctors, nurses, allied health and other



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healthcare professionals. Translational research is pivotal in the Hospital's three-pronged focus, and paves the way for new cures and treatment.

A member of the National University Health System, it is the principal teaching hospital of the NUS Yong Loo Lin School of Medicine and the NUS Faculty of Dentistry.

ANNEX A – NOTES TO EDITOR

Paper published in JAMA Pediatrics journal on 24 January 2022:

<https://pubmed.ncbi.nlm.nih.gov/35072692/>

COVID-19-Related Life Experiences, Outdoor Play, and Long-term Adiposity Changes Among Preschool- and School-Aged Children in Singapore 1 Year After Lockdown

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