MEDIA RELEASE
For immediate release

Screen-viewing time related to greater body fat among boys aged 5 years and below

Singapore, 14 May, 2019 – A new Singapore-based study has found that time spent watching television and handheld devices is related to greater adiposity in boys aged 5 and below, but not in girls. This is the first of its kind study which investigates the associations of handheld device viewing time with adiposity and blood pressure in children less than 5 years of age.

This study, carried out between December 2011 and February 2019, was led by scientists from the Saw Swee Hock School of Public Health, National University of Singapore, Yong Loo Lin School of Medicine (NUS Medicine), National University of Singapore, National University Health System (NUHS), A*STAR's Institute for Clinical Sciences (SICS), KK Women's and Children Hospital (KKH) and the National University Hospital (NUH). It was done in collaboration with other local and overseas institutions, namely Duke-NUS Medical School (Singapore), Medical Research Council Lifecourse Epidemiology Unit, University of Southampton, (United Kingdom), Liggins Institute, University of Auckland (New Zealand), Departments of Pediatrics and of Epidemiology and Biostatistics, McGill University Faculty of Medicine (Canada) and Institute for Social Medicine, Epidemiology and Health Economics, Charite University Medical Centre (Germany).

To examine the potential link between screen-viewing time with adiposity and blood pressure (BP), data were collected from about 1,000 children, who were enrolled under the Growing Up in Singapore Towards Healthy Outcomes (GUSTO[1]) cohort. Average screen-viewing time for children aged 2 and 3, as well as height, weight, skinfold thicknesses and BP of those aged 3, 4 and 5 were analysed.

Results showed that screen-viewing was associated with greater skinfold thicknesses, but not with Body Mass Index (BMI) or BP. There are significant associations with both BMI and sum of skinfold thicknesses in boys, but not in girls. Analyses showed a mean increase of 0.12 kg/m² higher body mass index and 0.68 mm greater skinfold thickness for every additional hour of screen viewing in boys. Nearly 25% of the toddlers aged 2 to 3 engage in more than 4 hours of screen-viewing time per day. The long-term impact on adiposity may be high for this group of toddlers and the effect increases with age. Screen-viewing was not associated with BP in both genders. The findings were consistent across different types of screens which ranged from television to handheld devices (smartphones, tablets, Game Boy®) to video games (PlayStation®, Wii™, Xbox™, etc.).

A large proportion of Singaporean children are increasingly using screen devices and their screen time is on the rise, from 60 to 120 minutes among children aged 6 and 24 months. The GUSTO study shows that 2-3 year-old kids spend on average 2.5 hours per day in screen devices, comprising 1

[1] GUSTO is a long-term study that seeks to determine effects of maternal health and lifestyle on growth outcomes of their children. The study is a collaboration between KK Women's and Children's Hospital (KKH), the National University Health System (NUHS) and A*STAR's Singapore Institute for Clinical Sciences (SICS). Participants represent the three major race groups in Singapore – Chinese, Malay and Indian. GUSTO is part of NUHS' Summit Research Programmes (SRPs), which aim to achieve significant improvements in disease understanding, clinical practice and innovations that will transform healthcare. Other SRPs include key diseases and health challenges affecting Singapore today, including cancer, cardiovascular diseases, metabolic diseases, synthetic biology and tuberculosis.

hour and 40 minutes of watching television and nearly an hour in handheld screen devices. This is much higher than recent WHO guidelines which recommends limiting total screen time to less than an hour per day for kids aged 2-5 years and avoiding screen use before age 2 years.

“Excessive screen-viewing has become a major public health concern, as we track early childhood screen-viewing behavior over time. Usage in smartphones and tablets among toddlers have increased, signaling that more young children are exposed to health risks brought about by sedentary behaviours. Our results raise the possibility that reducing screen-viewing time for young children and channeling their attention to other non-sedentary behaviors such as active plays, could possibly prevent adverse health outcomes later in childhood and over the life course,” said Associate Professor Falk Müller-Riemenschneider, from the Saw Swee Hock School of Public Health, National University of Singapore and lead author of this study.

The findings suggest that preventing sedentary behavior spent watching all types of screen as early as toddlerhood, especially for boys, could potentially reduce the risk of childhood obesity in later years.

Meanwhile, more must be done to study why the effect of screen-viewing time is more pronounced in boys than girls. The researchers proposed several reasons – one underlying reason might be that screen-viewing time displaces physical activity in boys which will reduce the energy expenditure and bring them closer to the risk of adiposity excess. Compared to boys, girls are more likely to engage in non-screen-based sedentary behavior, so the impact of the screen-viewing time may not be as pronounced.

These results are part of the Growing Up in Singapore Towards healthy Outcomes (GUSTO) study, which is the largest and most comprehensive longitudinal cohort study that involves Singaporean mothers and their children. It is aimed at studying the growth and development of individuals from early life to discover effective prevention and early intervention strategies to optimise health over the life course.

This research is supported by the National Research Foundation under its Translational and Clinical Research (TCR) Flagship Programme and is administered by the Ministry of Health (Singapore)’s National Medical Research Council (NMRC). Additional funding is provided by the Singapore Institute for Clinical Sciences, the Agency for Science, Technology and Research (A*STAR); and the Duke-NUS Medical School’s Signature Research Programme, with funding from the Singapore Ministry of Health and A*STAR.

- End –

Note to Editor:
The study, “Sex-specific longitudinal associations of screen viewing time in children at 2-3 years with adiposity at 3-5 years” is published in the International Journal of Obesity”, 2 April 2019.
Link: https://rdcu.be/bunHG

For media enquiries, please contact:

Brandon Tan
National University Health System
DID: +65 6772 3622
Mobile: +65 9092 6345

Email: brandon_yy_tan@nuhs.edu.sg

Amanda Ang
National University Health System
DID: +65 6772 7596
Mobile: +65 9731 7928
Email: amanda_ht_ang@nuhs.edu.sg

About NUS Saw Swee Hock School of Public Health (SSHSPH)
Building upon more than seven decades of experience in research, training and practice in epidemiology and public health, the Saw Swee Hock School of Public Health (SSHSPH) under the National University of Singapore was established in October 2011 as Singapore's first and only full-fledged national public health tertiary education institution. The School is also a member of the National University Health System (NUHS).

The School aims to continually foster healthier communities in Singapore and the region, and impact public health programmes and policies through its robust educational programmes and translational cross-disciplinary research work on cohort studies and life course epidemiology, infectious disease research, health technology assessment, health promotion, workplace safety and health, health systems evaluation and health services research. An interdisciplinary approach, augmented by rigorous training, applicable research and regional partnerships, places SSHSPH at the forefront of public health knowledge discovery and practice in Asia.

The School actively collaborates with many partners including the London School of Hygiene and Tropical Medicine, Karolinska Institutet, Harvard School of Public Health and University of Michigan School of Public Health. Its flagship programme, the Master of Public Heath (MPH) degree, attracts students from a wide range of disciplines from within Singapore and throughout the region.

For more information, please visit https://sph.nus.edu.sg.

About NUS Yong Loo Lin School of Medicine (NUS Medicine)
Established in 1905, the NUS Yong Loo Lin School of Medicine is the first institution of higher learning in Singapore and the genesis of the National University of Singapore.

The School offers one of the finest undergraduate medical programmes in the Asia Pacific region and enjoys international recognition and respect. The Times Higher Education World University Rankings 2019 by subject and Quacquarelli Symonds (QS) World University Rankings by Subject 2019 list NUS Medicine as the leading medical school in Asia.

It admits 300 students to the MBBS degree programme annually and its principal missions are to educate and train the next generation of healthcare professionals, and foster research that will help to advance the practice of medicine.

The 18 NUS Medicine departments in the basic sciences and clinical specialties work closely with the Centre for Medical Education, the Centre for Biomedical Ethics, the Centre for Healthcare Simulation as well as the restructured public hospitals to ensure that teaching and research are aligned and

relevant to Singapore's healthcare needs. The School is a founding institutional member of the National University Health System.

For more information about NUS Medicine, please visit http://nusmedicine.nus.edu.sg.

About the National University Health System (NUHS)
The National University Health System (NUHS) aims to transform how illness is prevented and managed by discovering causes of disease, development of more effective treatments through collaborative multidisciplinary research and clinical trials, and creation of better technologies and care delivery systems in partnership with others who share the same values and vision.

Institutions in the NUHS Group includes the National University Hospital, Ng Teng Fong General Hospital, Jurong Community Hospital and Alexandra Hospital; three National Specialty Centres - National University Cancer Institute, Singapore (NCIS), National University Heart Centre, Singapore (NUHCS) and National University Centre for Oral Health, Singapore (NUCOHS); the National University Polyclinics (NUP); Jurong Medical Centre; and three NUS health sciences schools – NUS Yong Loo Lin School of Medicine (including the Alice Lee Centre for Nursing Studies), NUS Faculty of Dentistry and NUS Saw Swee Hock School of Public Health.

With member institutions under a common governance structure, NUHS creates synergies for the advancement of health by integrating patient care, health science education and biomedical research.

As a Regional Health System, NUHS works closely with health and social care partners across Singapore to develop and implement programmes that contribute to a healthy and engaged population in the Western part of Singapore.

For more information, please visit www.nuhs.edu.sg.

About the Agency for Science, Technology and Research (A*STAR)
The Agency for Science, Technology and Research (A*STAR) is Singapore's lead public sector agency that spearheads economic oriented research to advance scientific discovery and develop innovative technology. Through open innovation, we collaborate with our partners in both the public and private sectors to benefit society.

As a Science and Technology Organisation, A*STAR bridges the gap between academia and industry. Our research creates economic growth and jobs for Singapore, and enhances lives by contributing to societal benefits such as improving outcomes in healthcare, urban living, and sustainability.

We play a key role in nurturing and developing a diversity of talent and leaders in our Agency and research entities, the wider research community and industry. A*STAR's R&D activities span biomedical sciences and physical sciences and engineering, with research entities primarily located in Biopolis and Fusionopolis.

For ongoing news, visit www.a-star.edu.sg.

About the Singapore Institute for Clinical Sciences (SICS)
Established in 2007, the Singapore Institute for Clinical Sciences (SICS) is a research institute within the Agency for Science, Technology and Research (A*STAR), and its mission is to develop disease-oriented clinical and translational research programmes in key disease areas.

SICS is distinguished by its focus on clinical sciences and the use of innovative approaches and technologies that enable the efficient and effective study of human health and diseases. The clinical scientists in SICS conduct the full spectrum of “bench to bedside” research activities in metabolic diseases (including diabetes, obesity and insulin resistance), pathways to normal growth and development (including cognitive and behavioural development), nutritional sciences as well as in certain viral infectious diseases such as chronic viral diseases.

The institute aims to attract, train and nurture clinician-scientists and to develop joint programs with universities, academic medical centres, government hospitals and research institutes.

For more information on SICS, please visit: www.sics.a-star.edu.sg.

About National University Hospital (NUH)
The NUH is a tertiary hospital cum academic medical centre and major referral centre for a comprehensive range of medical, surgical and dental specialties including Cardiology, Gastroenterology and Hepatology, Obstetrics and Gynaecology, Oncology, Ophthalmology, Paediatrics, Orthopaedic Surgery and Hand and Reconstructive Microsurgery. The Hospital also provides organ transplant programmes for adults (in kidney, liver and pancreas) and is the only public hospital in Singapore to offer a paediatric kidney and liver transplant programme. Staffed by a team of healthcare professionals who rank among the best in the field, the NUH offers quality patient care by embracing innovations and advances in medical treatment. In 2004, the NUH became the first Singapore hospital to receive the Joint Commission International (JCI) accreditation, an international stamp for excellent clinical practices in patient care and safety. Today, patient safety and good clinical outcomes remain the focus of the hospital as it continues to play a key role in the training of doctors, nurses and allied health professionals, and in translational research which paves the way for new cures and treatment, offering patients hope and a new lease of life. 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.

For more information about the NUH, please visit: www.nuh.com.sg.

About KK Women’s and Children’s Hospital (KKH)
KK Women’s and Children’s Hospital (KKH) is a leading healthcare centre for Obstetrics, Gynaecology, Paediatrics and Neonatology. Founded in 1858, the 830-bed JCI accredited hospital is a referral centre providing tertiary services to manage complex conditions in women and children. More than 400 specialists adopt a multi-disciplinary and holistic approach to treatment, and harness the latest innovations and technology for the best medical care possible.

As an academic and research institution, KKH is a major teaching hospital for Duke-NUS Graduate Medical School, Yong Loo Lin School of Medicine and Lee Kong Chian School of Medicine. The hospital also runs the largest residency programmes for Obstetrics and Gynaecology and Paediatrics in Singapore, accredited by the Accreditation Council for Graduate Medical Education International (ACGME-I).

For more information on KKH, please visit: www.kkh.com.sg.