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ORAL HEALTH

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Oral Health Newsbites is a newsletter which highlights our key innovations and events under clinical research and education. We share some of the meaningful work and achievements of our clinicians, researchers, and educators and the ways they are contributing to the future of patient care and innovation.

The SingHealth Duke-NUS Oral Health Academic Clinical Programme (ORH ACP) was launched in August 2014. The ORH ACP brings together three clinical departments and seven specialties across National Dental Centre Singapore (NDCS), KK Women's & Children's Hospital (KKH), SingHealth Polyclinics (SHP), and Changi General Hospital (CGH). ACP's main priorities include focusing on the four key Research Themes (Bone Bioengineering, Oral Devices and Therapeutics, Genomics / Biomarker Discovery, and Health Services Research), nurturing budding clinician scientists, as well as collaborating with Duke-NUS on joint certification of Senior Residency and Fellowship Programmes.

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INNOVATION

Oral Disease Registry: Development of a Powerful Data Repository Tool for NDCS Researchers

The Oral Disease Registry initiative is a data repository for datasets extracted from National Dental Centre Singapore's (NDCS) Electronic Dental Records (EDR). The Oral Disease Registry will serve as a centrally located data resource to allow NDCS researchers and clinicians a common platform for oral health research and to identify data variables that could be used for their research proposals which are, otherwise, not found in currently available data sources (e.g., eHints).

The Oral Disease Registry will be set up under the purview of a new NDCS Oral Disease Registry Committee headed by Associate Professor Gustavo Nascimento, Research Fellow, ACP Office - Research, National Dental Centre Singapore, to ensure that the implementation of data governance to oversee and manage the use of Oral Disease Registry data is in place. Data requests are subject to approval by the NDCS Oral Disease Registry Committee before any data extraction can be made.

Integration of Oral Disease Registry with the Singhealth ODySSEy Platform

SingHealth has embarked on the ODySSEy (**O**nPremise Research **D**ata **S**cience and **S**ystems **E**xplorer) initiative to fulfil the research and innovation needs within and beyond the cluster.

The ODySSEY platform furnishes researchers with secure, efficient, and dependable data access that adheres to Health and Biomedical Research Alliance (HBRA) compliance standards. Furthermore, it separates data access for research purposes from clinical and operational requirements.

The key aims of ODySSEY are

1. To serve as a pipeline for SingHealth researchers who want to share data within SingHealth and with external entities
2. To facilitate data sharing in a safe and secure manner within SingHealth and with external entities, maintaining subject privacy and confidentiality
3. To provide a common resource for data exploration for researchers who may not have direct access to the data.

Oral health has been included in the Phase 1 roll-out of the Singhealth ODySSEY project implementation, with the first data linkage exploring the relationship between periodontitis and diabetes (Perio-Diabetes Study). This initiative is a partnership between NDCS and the Diabetes & Metabolism Centre (Singapore General Hospital) and is an important milestone for NDCS to get on board the ODySSEY platform. The success of this initiative will pave the way for future studies to explore the relationship between oral health and the various systemic diseases available on the ODySSEY platform.

SingHealth aims to implement transformative enhancement in health services by leveraging advanced data science and artificial intelligence capabilities via ODySSEy. The initiative will enable proactive adjustments to the dynamic requirements of Singapore's population health including swift responsiveness to challenges in both peacetime and crisis situations, such as disease outbreaks.

Workflow for using ODySSEy and Oral Disease Registry Platforms

Researchers may request to view de-identified data without patient-identifying information, such as national identity number and patient name, from existing datasets in the ODySSEy platform uploaded from the Oral Disease Registry. If the requested data variables are not available in ODySSEy, researchers must submit a data request for the new variables to be extracted from the EDR. Prior to the submission of each new data request, researchers are encouraged to seek access to view existing data in the ODySSEy platform to avoid extracting data that already exists in previously extracted datasets and to check for the completeness of their data requests. The data requests will be subjected to the approval of the new NDCS Oral Disease Registry Committee based on a

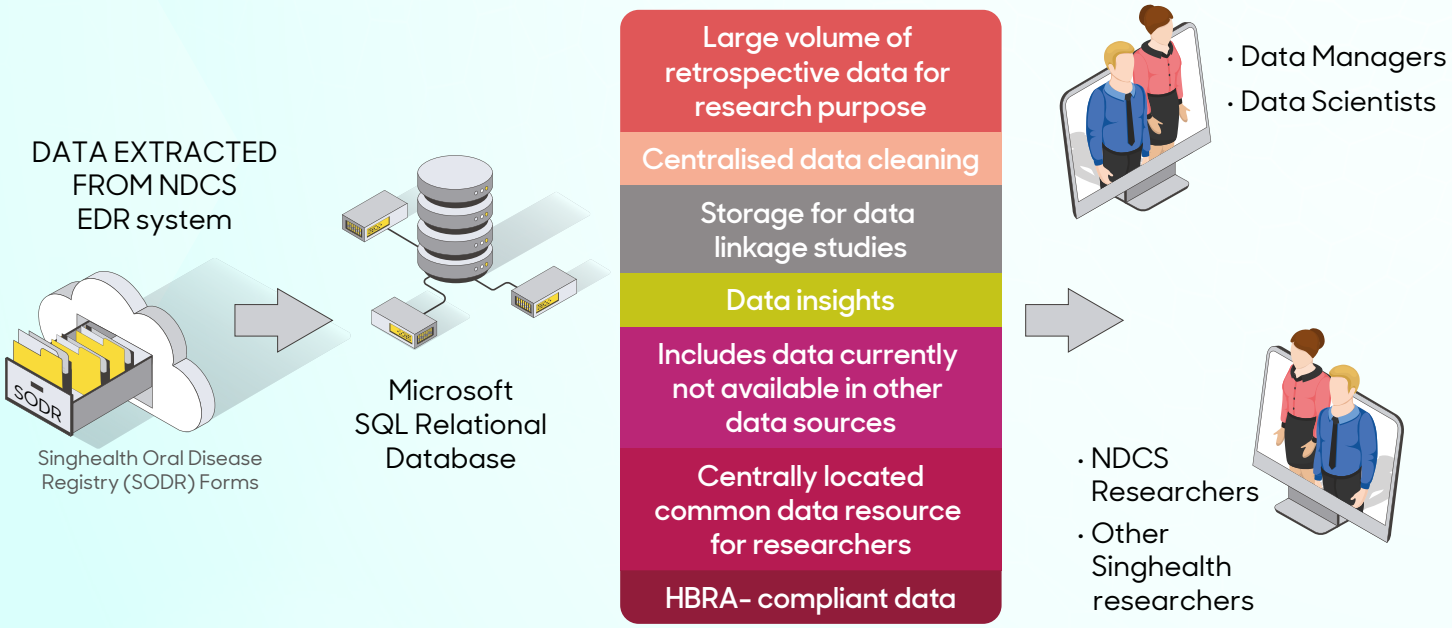
half-yearly cycle. Upon the committee's approval, extracted data from the EDR will be de-identified and stored in the Oral Disease Registry database as separate datasets before they are ingested into the ODySSEy.

A standalone database server will be set up to house the Oral Disease Registry data. Full access to the Oral Disease Registry database will be restricted to only authorised staff supporting the database server.

Current Status of the Oral Disease Registry

Data extraction for the Perio-Diabetes Study has been approved and the formal extraction is about to commence in 2024. The initial set of variables to be extracted include variables related to periodontal status, medical history, and odontogram chart variables. It is expected that the data will be Live by September 2024, after which the data-cleaning process should take place.

Overview of NDCS Oral Disease Registry



NDCS/NDRIS Stakeholders

A/Prof Gustavo Nascimento
Principal Investigator
NDCS

NMRC Singapore Translation Investigator Award (STaR): A National-level Oral Health Research Programme

The Singapore Oral Population Health Initiative (SOPI) aims to close the gap in epidemiological knowledge of the causal links between oral and general, non-communicable chronic diseases (NCDs), the impact of population-based oral health policies, interventions, and the current mode of delivery of dental care on the burden of oral diseases in Singapore. By adopting a hypotheses-driven and multidisciplinary approach, this programme will investigate the contribution of current and potential policies and interventions in reducing known risk factors for oral diseases.

SOPI looks to investigate the causal relationship between oral and general chronic diseases as there is a lack of well-designed, prospective cohort studies to address the relationship between oral diseases and NCDs, such as Diabetes and Cardiovascular Heart Diseases (CVD). In addition, the value of current dental care in Singapore is still unknown and should be investigated to inform policymakers and clinicians. Ultimately, SOPI hopes to describe, predict, explain, understand, and intervene in Singapore's oral diseases roots.

The STaR grant awarded to Prof Marco Peres, Deputy CEO (Research and Education), National Dental Centre Singapore, is the first for oral healthcare and has three main aims, namely,

1. To investigate the link between oral diseases and NCDs
2. To assess the impact and cost-effectiveness of policies to reduce the burden of oral diseases
3. To quantify the cost-effectiveness of dental services in Singapore

The overall objective of this STaR grant is to implement and further develop a translational population oral health research programme in Singapore by utilising population-based and administrative health data to describe, monitor, predict, understand, explain, and intervene in the most prevalent oral diseases and associated risk factors. Research from this programme will impact the management of oral diseases and clinical practice and associated costs in the Singaporean context.

To achieve aim one, SOPI will use two large cohort studies. The National Dental Centre Singapore Oral Disease Registry will be the baseline for the proposed first longitudinal study. This project will investigate whether Periodontal disease between 2013–2020 (nearly 10,000 patients a year) was causally associated with higher levels of surrogate markers of vascular disease (carotid intima-media thickness) and diagnosed CVD. The second longitudinal study is the SG70 study. The SG70 Study is a population-based prospective cohort study almost entirely funded by the Ministry Of Health and The National University of Singapore Medical School. National Dental Research Institute Singapore (NDRIS) dental scientists (the applicant is the main Principal Investigator from NDCS) have been invited to plan, conduct, and oversee the oral health component of this large study. The SG70 study aims to pool 3,000 subjects (data from 800 participants to-date from two previous cohorts have already been analysed: Singapore Chinese Health Study [SCHS] and Lifelong Education for Ageing Productively in Singapore [LEAP]). These subjects will be followed up for the next 10-15 years to study physical, cognitive, psychological, and socioeconomic well-being and the health of various organs and physiological systems. A part of this study is to understand the relationship between Oral Health of healthy aging among Singaporeans. This project aims to collect oral health data through a questionnaire, clinical assessments, and genomic sequencing of the oral microbiome.

To achieve aim two, the research plan will be built upon by adding to a substantial base of national data sets, including the National Adult Oral Health Surveys (NAOHS) conducted in 2003 and 2019, the annual dental surveys conducted by School Dental Services (SDS) since 2006, the 2024 Child Oral Health Study, and data for the incidence and mortality of oral and pharyngeal cancer from the Singapore Cancer registry since 1968.

Finally, aim three will be addressed by assessing the top 10 dental procedures in Singapore. Some have been reported as having low scientific evidence for recommendations for all populations: scaling and polishing,

repairing or replacing amalgam and composite fillings, and extracting wisdom teeth in certain conditions. For adults without severe periodontitis who regularly access routine dental care, routine scale and polish treatment make little or no difference to gingivitis, probing depths, and oral health-related quality of life over two to three years follow-up compared with no scheduled scale and polish treatments (high-certainty evidence). There may also be little or no difference in plaque levels over two years (low-certainty evidence). In addition, routine scaling and polishing reduce calculus levels compared with no routine scaling and polishing, with six-monthly treatments reducing calculus more than 12-monthly treatments over two to three years follow-up (high-certainty evidence). However, the clinical importance of these small reductions is uncertain. Available evidence on treatment costs is also shaky.

Given the high prevalence of dental problems and the impact these have on an individual's health-related quality of life and society through lost productivity, the Singaporean government's investment in the nation's oral health must be well-directed in terms of efficiency and outcomes. While evidence and expert opinion are the foundations of effective policy, a proposal's politics, economics, and timing can affect outcomes. Hence, this research will inform the link between oral and general health, the impact of policies on oral health, and the use of dental services in the Singaporean population.

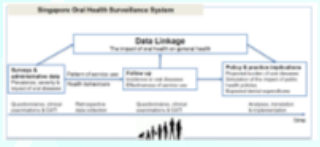
The SOPI research platform will contribute to better-informed national policy by evaluating the nation's oral health, the impact of preventive programs and dental care, and the links between oral and non-communicable diseases among Singaporeans. From an economic perspective, improvements in population oral health may be highly beneficial and could contribute to further increases in people's well-being, taking into account available resources. Therefore, the investment in oral health programmes is significant, not only in terms of expenditure but also in access to dental care, impact on general health, and contribution to the nation's productivity.

This study intends to generate scientific knowledge about a highly relevant topic in the national and international context, namely the relationship between oral diseases and NCDs. Oral health is an essential and inseparable part of general health. It is a marker of social inequalities that have also been identified as a possible risk factor for chronic diseases and other health problems among adults and the elderly. Findings from studies of this magnitude would be highly relevant to Singapore, where NCDs are the most important public health problem. In addition, data will provide the Singaporean government and non-governmental agencies with evidence-based information to determine priorities for research, educational curriculum development, policies, and funding.

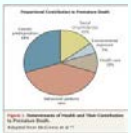
Findings will be disseminated through high-quality, peer-reviewed journal publications and stakeholder workshops involving representatives from academia, professional bodies, public and private dental healthcare providers, and key policymakers. This project will also build upon the ability of middle and young career researchers to apply innovative techniques to understand and tackle oral health diseases at individual and population levels.

PROPOSED RESEARCH PLATFORM

Aim 1: To investigate the link between oral and NCDs

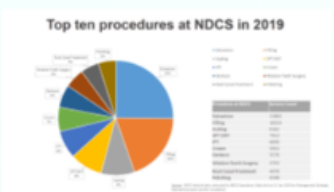


Aim 2: To assess the impact and cost-effectiveness of policies to reduce the burden of oral diseases



Singaporeans consume , on average 12 teaspoons (60g) of sugar daily

Aim 3. Quantify the cost - effectiveness of dental services in Singapore



NDCS/NDRIS Stakeholders

Prof Marco Peres
Deputy Chief Executive Officer (Research and Education) NDCS

GLOBICS: Generation of Evidence-based Oral Health Information for Advocacy in Oral Health

GLOBICS is the Global Consortium of Oral Health Birth Cohort Studies (OHBCS) aiming to enhance international collaboration on research studies. The consortium aims to generate and disseminate robust scientific evidence from OHBCS on chronic oral conditions. It works alongside policymakers and health professionals to instigate crucial changes in promoting, preventing, and treating chronic oral diseases in Singapore and worldwide.

The role of GLOBICS is globally essential because OHBCS follow a group of individuals from birth to adulthood, providing a unique opportunity to examine the lifelong impacts of early life factors on oral health conditions. For example, an early childhood diet can be linked to tooth decay risk and chronic diseases like obesity and diabetes in adulthood. Another aim of the GLOBICS project is to support OHBCS from middle and low-income countries as a transforming force in global oral health.

GLOBICS produces evidence-based oral health information from OHBCS to improve people's well-being and support advocacy in oral health. The key stakeholders of GLOBICS are National Medical Research Council (NMRC), Singapore; The Borrow Foundation, UK; and SingHealth Duke-NUS, Global Health Institute, Singapore.

We are grateful to the Partners on the GLOBICS board, and they are:

- **Generation R** Netherland
- **GUSTO** Singapore
- **Iowa Fluoride Study (IFS)** USA
- **Pelotas Birth Cohort Study (2004)** Brazil
- **São Luis** Brazil
- **German Birth Cohort** Germany
- **São Leopoldo Birth Cohort Study** Brazil
- **Early Life Nutrition and Health Birth Cohort Study** Porto Alegre, Brazil
- **PROMISE-EBF study** Uganda
- **Thai PCTC** Thailand
- **Elfe Study** France
- **Pelotas Birth Cohort Study (2015)** Brazil
- **MINA, Acre** Brazil

GLOBICS workshops organised in Bangkok and Brazil by NDCS

SingHealth DukeNUS ACADEMIC MEDICAL CENTRE
National Dental Research Institute Singapore

GLOBICS
Global Consortium of Oral Health Birth Cohort Studies

37th IADR-SEA Annual Scientific Meeting & 2nd International Oral Health Symposium (22 - 25 November 2023)

NDCS organised the Joint 37th International Association for Dental Research (South-East Asia) Annual Scientific Meeting and the 2nd International Oral Health Symposium between 22 – 25 Nov 2023 at the Academia building in SingHealth campus. The conference saw an attendance of close to 400 delegates and visitors from 28 countries, with 219 abstracts received for the oral and poster presentations. A total of 71 speakers delivered a diverse and enriching programme comprising three plenary lectures, one panel discussion, nine symposia, eight workshops, nine Lunch & Learn with the Experts sessions, three industry-sponsored symposia, 12 oral and 12 poster presentation sessions, and one preview of the Special Issue of the Community Dentistry Oral Epidemiology (CDOE) Journal on Singapore Oral Health.

Research innovation and advancement requires a multidisciplinary approach, with dental researchers working together with professionals in other fields such as computer scientists, bioengineers, etc. This joint meeting brought together experts from both the dental and non-dental fields and provides a platform for networking and finding new collaborative opportunities. The event also highlighted the importance of face-to-face meetings where physical interaction goes a long way towards robust exchange of ideas, and forging of prospective collaborations.

The International Association for Dental Research (IADR) was established to promote research in all aspects of craniofacial, oral, and dental research and to encourage development of newer methods for the prevention and treatment of oral and dental diseases, to improve the oral health of the public. IADR is also a platform to facilitate cooperation among investigators and the communication of research findings and their implications throughout the world. The IADR-SEA is its Southeast Asian Division, with member countries including Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. IADR-SEA Annual Scientific Meeting is an opportunity for oral health researchers of its member countries to showcase their research activities, foster collaborations, and expand their collaborative research network.

"Oral Health Coverage for All – a Southeast Asian Perspective", a Panel Forum comprising (from left to right) Prof May Wong (Hong Kong), Prof Hoang Trong Hung (Vietnam), Prof Marco Peres (Singapore), Prof Callum Durward (Cambodia), A/Prof Waranuch Pitiphat (Thailand), and Prof Edward Lo (Hong Kong)

The 37th IADR-SEA meeting was held jointly with the International Oral Health Symposium (IOHS). The IOHS stems from a collaborative platform between the National Dental Centre Singapore (NDCS) and oral health research institutes in Australia, Hong Kong, Japan, and Sweden. This meeting was the first face-to-face meeting since the start of the COVID-19 pandemic. The Opening Ceremony of the meeting was kick-started by a lion dance and graced by Singapore's Chief Dental Officer (CDO), Associate Professor Chng

Chai Kiat as its Guest of Honour. The theme for the Meeting was "Applying Oral Research Excellence to Advocate Oral Health for All". The meeting provided a highly anticipated opportunity for oral health researchers from the IADR-SEA Division to re-connect with friends and to develop new collaborative opportunities with scientists and researchers from Australia, Hong Kong, Japan, and Sweden, as true advancement and innovation require a multidisciplinary approach.

National Dental Centre Singapore on the topic of "Achieving Universal Oral Health Coverage for All". This was followed by a panel discussion comprising speakers from Vietnam, Hong Kong, Cambodia, and Thailand, to discuss and share the challenges and action plans of their own countries. The other plenary speakers were Laureate Professor Eric Reynolds who spoke on "Microbiome Modulation and Fluoride Activation by a Saliva Biomimetic Promotes Oral Health" and Prof Paul Pronyk who spoke on

Team NDCS at the Joint 37th IADR-SEA and 2nd IOHS

(Left) Associate Professor Chng Chai Kiat, Chief Dental Officer, Ministry of Health, gracing the event as Guest-of-Honour. He is accompanied by (right) Clinical Associate Professor Goh Bee Tin, CEO, NDCS

Highlights of the Meeting

The scientific programme was crafted by the IADR-SEA Council and the International Oral Health Consortium. The symposiums were sponsored by Unilever, Corlison, and National Dental Research Institute Singapore. Sponsorship was also obtained for the research competition awards, catering for the Welcome Reception, and the Trade Exhibition.

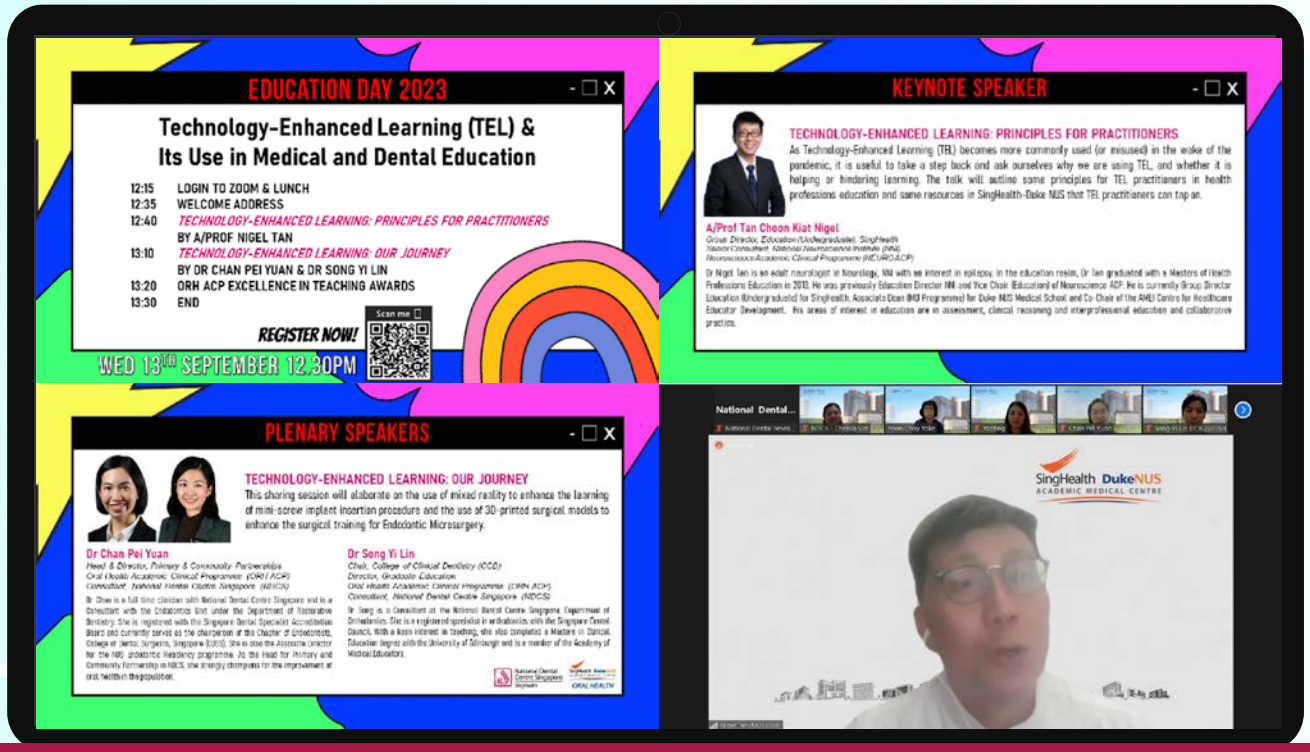
One focus of the meeting was on Population Oral Health. A plenary lecture given by Prof Marco Peres, "Evolutions in Global Health – What Does it Mean for Oral Health?"

A symposium sponsored by Unilever shed a spotlight on the most prevalent oral disease, dental caries. Panel discussion with representatives from different countries (Indonesia, Cambodia, Singapore, Vietnam) discussing on "Understanding and managing the dental caries challenge in South East Asia".

This meeting provided a unique opportunity for Singapore and NDCS to showcase our innovations, expertise, and capability in oral health research in the region. A preview of the special issue of the Community Dentistry and Oral Epidemiology Journal "Mapping Population Oral Health Over 50 Years in an Emerging Nation: Learnings from The Republic of Singapore" was held during the conference. The special issue showcased how population oral health in Singapore has changed over the past 50 years across three generations, a remarkable feat of achieving 1st world oral health status in 50 years. The journey to 1st world oral health status was of great interest to the conference delegates. The closing ceremony of the conference saw two Distinguished Service Awards presented and nine research competition awards.

The Joint IADR-SEA Annual Scientific Meeting and IOHS served as a 'nexus' in identifying and developing growth opportunities for collaborative research especially in emerging research fields in the oral health space, such as population oral health and digital innovations in dentistry, for the region.

ORH ACP Education Day 2023: Technology-Enhanced Learning (TEL) & Its Use in Medical and Dental Education



The virtual ORH ACP Education Day 2023 held on 13 September 2023

The virtual ORH ACP Education Day 2023 held on 13 September 2023 was attended by over 90 oral health professionals and education leaders. The event featured three distinguished speakers – Associate Professor Nigel Tan, Group Director Education (Undergraduate) for SingHealth, Dr Chan Pei Yuan, Consultant, Department of Restorative Dentistry, National Dental Centre Singapore and Dr Song Yi Lin, Consultant, Department of Orthodontics, National Dental Centre Singapore. Assoc Prof Tan outlined some principles for Technology-Enhanced Learning (TEL) practitioners in health professions education and some resources in SingHealth-Duke NUS that TEL practitioners can tap on. Dr Chan and Dr Song shared their journey on the use of mixed reality to enhance the learning of mini-screw implant insertion procedure and the use of 3D-printed surgical models to enhance the surgical training for Endodontic Microsurgery. The ORH ACP Excellence in Teaching Awards 2023 were also presented to two

Prof Marco Peres, DCEO (Research & Education) presenting the ORH ACP Excellence In Teaching Award 2023 (Post-Graduate) to Dr Rahul Harshad Nagadia

Prof Marco Peres, DCEO (Research & Education) presenting the ORH ACP Excellence In Teaching Award 2023 (Auxillary) to Ms Surayah Binte Ahmad

outstanding educators, **Dr Rahul Harshad Nagadia** (Post-Grad) and **Ms Surayah Binte Ahmad** (Auxiliary), in recognition of their teaching excellence and dedication to oral health education. Bento lunch sets were kindly sponsored by PPM Medical.

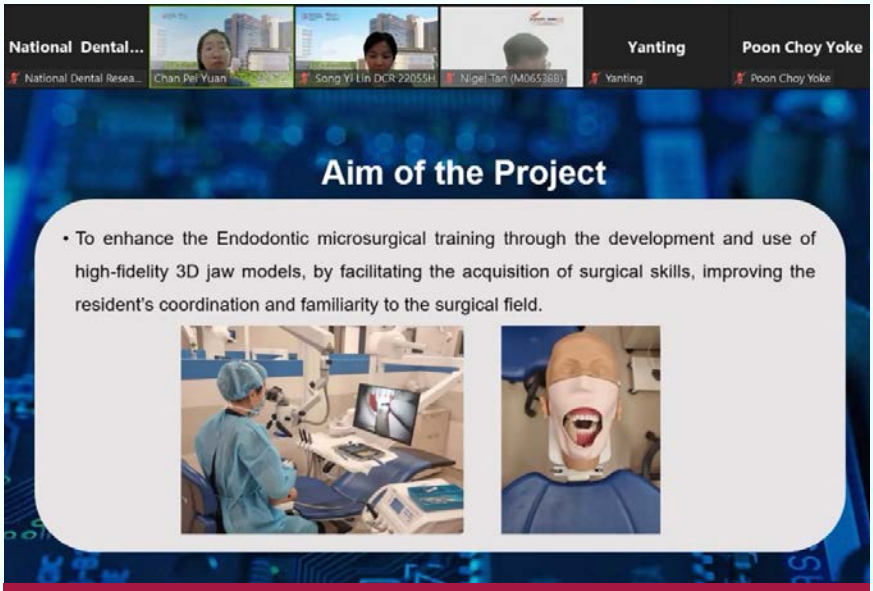
Thematic Significance of ORH ACP Education Day 2023

In an era where technology has become an integral part of our daily lives, its impact on education cannot be overstated. Our journey into the world of medicine and dentistry has been marked by extraordinary advancements in technology that are reshaping the way we learn and teach. We find ourselves at the crossroads of tradition and transformation, where the fusion of knowledge and innovation holds the potential to revolutionise how we prepare our future healthcare professionals.

Through the integration of technology lies the opportunity to transcend the limitations of time and space, creating dynamic learning environments that cater to diverse learning styles. From virtual simulations that replicate real-life medical scenarios to interactive platforms that facilitate global collaboration among students and experts, technology has equipped us with a palette of tools that enhance engagement, deepen understanding, and foster critical thinking.

Medical and dental education demand a level of precision and experiential learning and technology complements and helps facilitates that. With the aid of virtual and augmented reality, and advanced digital resources, our students can explore intricate anatomical structures, practice complex procedures, and confront challenging clinical situations within a safe and controlled environment.

In the realm of technology-enhanced learning, we must remember that these tools are not ends in themselves but means to an end. The essence of medical and dental education lies in nurturing compassionate caregivers, skilled practitioners, and lifelong learners who embody the values of empathy, ethics, and evidence-based practice. Technology amplifies our ability to achieve these goals but it is the guidance of our educators, the dedication of our students, and the spirit of collaboration that will ultimately define the success of this transformative journey.



Snippets from ORH ACP Day event: Virtual meeting in progress and clinician interactions

Young Clinicians Programme Suturing Workshop 2023

Attendees at the Young Clinicians Programme Suturing Workshop conducted on 28th October 2023

Surgical procedures in dentistry are an integral part of a General Practitioner's practice. This includes extractions, periodontal surgery, and implant dentistry. However, some clinicians may experience challenges such as tearing the flap during the surgery, wound dehiscence, premature suture loosening, and bent needles. Improper flap management and suturing often results in complications and can result in treatment failure.

Over 25 General Practitioners attended both the lecture and suturing workshop, facilitated by two of our registrars, Dr John Tay from the Department of Restorative Dentistry (Periodontics) and Dr Gary James Teoh from the Department of Oral and Maxillofacial Surgery. The event partner was Braun.

Mind the Gap between the Flap: Essential Dental Surgery Techniques

The goal of this two-part series was to train General Practitioners with an interest in surgery to achieve predictable outcomes in flap management. At the evening lecture on 2nd October 2023, participants learnt about different types of flap designs, different types of suture material, needle configuration, and indications for their use. Different suturing techniques were also covered during the lecture.

The suturing workshop conducted on 28th October 2023 at Academia enabled the participants to put what they have learnt to practice. Participants tried different surgical flap designs and suturing techniques to experience the most commonly used suturing techniques in dental practice.

Surgical Flap Designs & Suturing Techniques Covered in the Workshop

- Flap design for the right surgery
- Suture materials
- Needle types
- Envelope vs triangular vs trapezoidal flaps
- Full thickness vs partial thickness flaps
- Periosteal release
- Interrupted vs continuous vs sling suturing
- Coronal vs apical repositioning flaps
- Suturing for exodontia and bone grafting
- Managing post-healing complications

Young Clinicians Publication Awards – FY2023

The Young Clinician Publication Award aims to equip young clinicians with essential research skills in research proposal development, study implementation, results analysis and scientific writing.

Awardee	Designation	Publication Title
Dr Siow Shu Fen Dawn	Associate Consultant, Restorative Dentistry, Periodontics National Dental Centre Singapore	Risk Factors for Tooth Loss And Progression Of Periodontitis In Patients Undergoing Periodontal Maintenance Therapy
Dr Maria Binte Rahmat	Associate Consultant, Restorative Dentistry, Periodontics National Dental Centre Singapore	A Fully Digital Auricular Splint Workflow for Post Keloid Excision
Dr Lin Xin Yi Sheena	Registrar, Restorative Dentistry, Periodontics National Dental Centre Singapore	Mapping Out The Surgical Anatomy Of The Lingual Nerve: A Systematic Review And Meta-Analysis
Dr Tay Rong Hao John	Registrar, Restorative Dentistry, Periodontics National Dental Centre Singapore	· Healing Complications And Their Detrimental Effects On Bone Gain In Vertical-Guided Bone Regeneration: A Systematic Review And Meta-Analysis. · The Efficacy Of Probiotics In The Management Of Intra-Oral Halitosis: A Systematic Review · The Use of Artificial Intelligence to Aid in Oral Hygiene Education: A Scoping Review
Dr Tan Jun Ying Shawn	General Dentist	Comparison of 3D Positional Accuracy of Implant Analogs in Printed Resin Models versus Conventional Stone Casts: Effect of Implant Angulation

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FY23 Grant and Award Recipients

FY23 Grant and Awards Recipients

Recipient	Project	Grant Title	Awarded By	Amount
Associate Professor Karen Peres Principal Investigator, National Dental Centre Singapore	GLOBICS - Global Consortium of Oral Health Birth Cohort Studies: from global evidence to local action	Population Health Research Grant (open category)	NMRC	$913,362
Professor Marco Peres Deputy CEO, Research and Education National Dental Centre Singapore	Singapore Oral Population Health Initiative (SOPI): hypothesis-driven research to inform policymakers and health professionals and improve the oral health of Singaporeans	Singapore Translational Research (STaR) Investigator Award	NMRC	$5,950,567
Dr Bien Lai Senior Consultant and Head, Paediatric Dentistry, Department of Restorative Dentistry National Dental Centre Singapore	Trends and cost models of general anaesthesia in children due to dental reasons: using Artificial Intelligence-based interpretable clinical score (GA-AI triage) to reduce the intervention	Population Health Research Grant New Investigator Grant	NMRC	$124,800
Professor Marco Peres Deputy CEO, Research and Education National Dental Centre Singapore	Assessing the Impact of an Oral Health Programme on Pneumonia among Older People living in Nursing Homes: A Stepped Wedge Cluster Randomized Trial	Population Health Research Grant (thematic category)	NMRC	$2,615,876

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