GIGI

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School of Dental Sciences

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COVER STORY

IR 4.0 in Dentistry

Dr. Johari Yap Abdullah

The Fourth Industrial Revolution (IR 4.0) is transforming industries and marketplaces; dentistry is no exception. Dental procedures are evolving rapidly following the advancement of technology; dentists are morally obligated to provide the best oral health care using this new knowledge.

I am Dr. Johari Yap, a lecturer in Oral and Maxillofacial Radiology. My research interests include open-source craniofacial imaging and visualisation, 3D reconstruction and analysis of craniofacial deformity, CAD/CAM, and rapid prototyping of maxillofacial prosthesis.

Dental treatments are often perceived as painful procedures. People tend to avoid them as they do not like unusual things in their mouths such impression materials and sharp instruments. Even after going through all these mundane conventional techniques, the outcome is unpredictable. Digital dentistry helps to reduce the equipment needed to be in the mouth while increasing the accuracy of the outcomes. It also helps to abate patients' fear with painless methods of treatment. Furthermore, digitisation in dentistry saves time (and cost) for dentists, as well as patients.

Instead of using conventional method, intraoral scanner can be used to obtain accurate impression to fabricate dentures and other prostheses in the management of patients with maxillofacial defects. For example, recently the Prosthodontics Unit saw a 5-year-old girl with acquired orbital defect. Because of her active nature, the conventional impression taking could not produce a good model and patient was not keen to repeat the procedure. Alternatively, intraoral scanner was used to scan her defected orbit and surrounding facial structures. The scanned data were processed and saved in STL format for the 3D printer. The result was excellent, and this is just one of many examples of how digital dentistry can improve not only oral health, but the patient's quality of life.

Linking Lab to Life: Enriching Oral Health Care

Dr. Matheel Al-Rawas

Oral health care is an essential aspect of overall health and well-being. While many individuals may only think of dental hygiene in terms of brushing their teeth and visiting the dentist for check-ups, there is much more that can be done to enrich and improve oral health care. One way to achieve this is by linking laboratory research and technological advancement to everyday life.

Advancements in dental technology have made it possible to diagnose and treat oral health issues more effectively than ever before. Researchers are constantly studying the latest dental materials, devices, and techniques to enhance the quality of dental care.

I am Dr. Matheel Al-Rawas, and I'd like to share an example of lab-to-life integration. One day, a patient named YR came to the specialist clinic with a limited mouth opening and the need for a new obturator. He was unable to open his mouth to allow us to make dental impressions or even do intraoral scanning. Grateful for the assistance of Dr. Johari Yap and Ms. Suzana Yahya, we utilised his computed tomography scans and used a 3D reconstruction software to generate upper and lower virtual models. From these virtual models, a 3D printer machine printed the upper and lower physical models. This patient's treatment would not have been possible without incorporating the advanced dental technology, which, thankfully, is available at this institution.

These technologies enable efficient treatment planning, reduce patient discomfort, and create highly personalised restorations. This not only improves the quality of care but also enhances the overall patient experience. In conclusion, linking laboratory research to everyday dental practice can significantly improve the quality of oral health care.

Industrial Grants 2022

Associate Professor Dr. Norhayati Luddin

Co-researchers
Dr. Nik Rozainah Nik Abdul Ghani, Dr. Nor Aidaniza Abdul Muttlib, Dr. Nur Fatiha Ghazalli Dr. Imran Alam Moheet

Project Title
Evaluation of bioactivity properties of novel nanohydroxyapatitesilica added glass ionomer cement for use as dental restorations

Agency
Agrostone (Malaysia) Sdn. Bhd., Malaysia

RM 15,000.00

Dr. Tahir Yusuf Noorani

Co-researchers
Dr. Nik Rozainah Nik Abdul Ghani, Dr. Saleem

Project Title
Characterisation of commercially available bioceramic root canal sealers

Agency
KSA & Global Dental Research Consultants, Saudi Arabia

RM 10,500.00

Associate Professor Dr. Mohd Fadhli Khamis

Co-researchers
AP Dr. Suharni Mohamad, Haswati Abdullah

Project Title
In vitro evaluation of antimicrobial efficacy of Qumoor mouth rinse

Agency
Southern Medental Resources (SMR), Malaysia

RM 22,000.00

Dr. Norma Ab Rahman

Co-researchers
Dr. Basaruddin Ahmad

Project Title
Evaluation of maxillary skeletal expansion in young adult with two different activation protocol: A randomized clinical research

Agency
KPS Dentalcare Team Sdn. Bhd. Malaysia

RM 10,500.00

Associate Professor Ts. Dr. Wan Muhamad Amir W Ahmad

Co-researchers
Farah Muna Mohamad Ghazali, Mohamad Nasarudin Adnan, Dr. Muhammad Azeem Yaqoob Dr. Nor Azlida Aleng @ Mohamad

Project Title
Planning and designing your research hypothesis

Agency
Mediclaras Pharmacy, Pakistan

RM 3,215.25

Dr. Johari Abdullah

Co-researchers
Dr. Norsila Abdul Wahab, Dr. Nurulezah Hasbullah, Dr. Yanti Johari, Dr. Abdul Haadi Abdul ManapDr. Hamid Yusoff

Project Title
Stimulasi diod pemancar cahaya biru untuk optimisasi pertumbuhan cendawan tiram putih dalam persekitaran terkawal

Agency
Satumarin Sdn. Bhd., Malaysia

RM 50,000.00

Dr. Saidi Jaafar

Co-researchers
Dr. Norsila Abdul Wahab, Dr. Johari Abdullah Dr. Asilah Yusof, Dr. Abdul Haadi Abdul Manap Dr. Hamid Yusoff

Project Title
The use of light stimulation for oyster mushroom growth in a controlled environment

Agency
Samurai Yakiniku Sdn. Bhd. Malaysia

RM 15,000.00

Dr. Tang Liszen

Co-researchers
Prof. Lee Yeong Yeh
AP Ts. Dr. Wan Muhamad Amir W Ahmad

Project Title
The clinical safety and performance of TL Sharps Bin among experienced dental surgeons and medical doctors. A study in USM.

Agency
TL Borneo Sdn. Bhd., Malaysia

RM 17,272.50

Dr. Norsila Abdul Wahab

Co-researchers
Dr. Johari Abdullah, Dr. Hamid Yusoff
Dr. Roselinda Ab Rahman

Project Title
Penanaman cendawan di MACMA Kelantan bagi membantu ekonomi mualaf golongan B40

Agency
Kerajaan Negeri Kelantan, Malaysia

RM 20,000.00