

Dental epidemiology and public health

Programme Leader: Professor Murray Thomson

Deputy Programme Leader: Associate Professor Jonathan Broadbent

Our work has the two main strands of (1) dental epidemiological research and (2) dental health services research.

In our dental epidemiological research, we study the occurrence, determinants and natural history of the common oral conditions. To do this, we employ a number of standard dental epidemiological techniques and approaches, most notably the prospective cohort study and the cross-sectional survey.

Our dental health services research work is concerned with how the dental healthcare system works, and the extent to which users are benefitting from it. Key activities are measuring oral health outcomes, dental workforce research and enhancing understanding of how and why people use, or do not use, dental services.

Our group also plays an important role in the development and epidemiological validation of self-report measures, working in collaboration with a number of overseas researchers.

Current research projects

Life-course research in oral health (the Dunedin Study)

Prospective observational research into the natural history of oral health and disease in a representative birth cohort now in adulthood, aimed at uncovering unprecedented information on the natural history of oral health and disease.

The Dunedin Study is now the world's most important and influential source of information on the natural history of oral conditions through adulthood. Our influential life-course work in that study is "it" as far as understanding what happens to oral health throughout the lifecourse. There is no comparable archive of longitudinal oral health data anywhere else.

For example, consider dental caries (tooth decay), the most important cause of tooth loss and oral pain in humans. Our Dunedin Study work has made the following important contributions to knowledge of dental caries: unprecedented information on its natural history from childhood to midlife; the unexpected finding that the average caries increment is constant through life; tooth loss due to caries begins in late adolescence; early childhood caries is a risk factor for ongoing adult dentition caries; and characterisation of the widening of social inequalities in caries experience as we pass through adulthood.

We are also making seminal contributions to knowledge of the natural history of tooth loss and periodontal

Key personnel

Staff

Prof Murray Thomson
A/Prof Jonathan Broadbent
Ms Chuen Lin Hong
Dr Susan Moffat
Dr Lee Smith (to 2019)
Mr Graeme Ting
Prof John Broughton (retired June 2020)

Postgraduate students Completions 2019-2020

DClinDent
Adelyn Lau
Jessica Lee
Hamid Mohammed
Emma Morelli
Gracie Nichols
Simon Olliver
Master of Oral Health
Naseem Asadi
Keri Carruthers
Master of Community Dentistry
Kate Naysmith
Helen Lloyd
Alexander Holden
Philip Goh
Hayley Dixon

Postgraduate students

Current enrolments

PhD
Nazahiah Bakri
Deanna Beckett
Angela Benn
Dorothy Boyd
Begoña Ruiz Conrads

DClinDent

Zeina Al Nassan
Ceridwen Benn
Emma Jefferies (Johnson)
Hakimin Mohamed Ashri
Beatrice Ng
Lenoka Rupasinghe
Farah Zainuddin

Master of Oral Health

Jane Choi
Hayley James

Master of Community Dentistry

Rebecca Chapman
Sarah Lobb
Manisha Narsinh
David Rumble
Tania Stuart
Dhara Tilwawala

attachment loss. Such findings have influenced clinical oral health care provision, dental research and dental public health policy around the world.

In 2019-2020, we completed the age-45 assessments, supported by funding from a HRC project grant. The aims of the dental research component of the age 45 assessments were to: produce unprecedented information on the natural history of oral health and disease; test hypotheses for genetic and environmental risk factors for chronic dental diseases; identify treatable early-life antecedents of high-rate dental caries and periodontitis in adulthood; quantify ageing of the teeth and dentition, and relate this to early life exposures to environmental factors, along with genetic factors; and quantify the public health significance and financial burden of the cost of treating acute and chronic dental conditions through life.

Work in this area continues to attract international attention and to be published in the top international journals: 11 papers were published, and a number of conference presentations were made.

Other dental epidemiological and clinical research

Beyond our work with the dental component of the Dunedin Study, our group carries out a broad range of dental epidemiological and other studies in NZ and overseas. This is aimed at enhancement of the knowledge base for dental epidemiology, dental public health, and clinical practice. A key component of this work is our gerodontology research, which is growing in importance and scope as the dentate older population increases in size. Dr Moira Smith (UOW) and Prof Ngaire Kerse (University of Auckland) are key collaborators.



A/Prof Jonathan Broadbent and Chuen Lin Hong.



Graeme Ting, Farah Zainuddin and Prof Murray Thomson.

Funding for these projects has been forthcoming from a variety of sources, including the NZ Ministry of Health, NZ Dental Research Foundation, and the Health Research Council of NZ. Across 2019-20, 21 papers were published, and a number of conference presentations were made.

Dental health services research

Our work in this area encompasses dental health services research in New Zealand, including ongoing, systematic dental workforce research, work on social accountability, barriers to oral health for Pacific adolescents, and access to orthodontic treatment for disadvantaged adolescents. The aims of this work are in enhancement of the knowledge base for dental public health and clinical practice. Work in this area uses both quantitative and qualitative approaches, and continues to be diverse and productive. Support for this work across 2019-20 has come from a variety of sources, including the NZ Dental Research Foundation and the Health Research Council of NZ. Across this period, 23 papers were published.

Development of new dental epidemiological, clinical and health services researchers and research capacity

This objective is centred around the training of new researchers for NZ and the Asia-Pacific region, in order to build research capacity in our field. Across 2019-20, our successful postgraduate completions included seven Doctors of Clinical Dentistry and seven Masters degrees. We are currently supervising a further seven Doctor of Philosophy, nine Doctor of Clinical Dentistry, and five Masters degree candidates. We also continue to informally mentor colleagues working in the wider health sector, both internationally and in New Zealand.

Collaborations

National

Department of Public Health, University of Otago Wellington
 Canterbury District Health Board
 Massey University
 University of Auckland
 University of Canterbury
 Auckland University of Technology

Australia

University of Adelaide
 University of Queensland
 University of Melbourne

International

University of Toronto, Canada
 McGill University, Canada
 Osaka University, Japan
 Universiti Malaya
 Duke University, USA
 University of Michigan, USA
 University of North Carolina, USA
 GKT Dental Institute, UK
 University of London, UK
 Sheffield University, UK
 Dundee University, UK
 University of Chile
 Federal University of Pelotas, Brazil
 University of Rio Grande do Sul, Brazil

Key funding successes

Projects led by investigators from the Faculty of Dentistry

\$53,556. The affordability of dental care in New Zealand. Ministry of Health Oral Health Research Fund, 2019 (Jonathan Broadbent, William Leung (Public Health, UOW), Trudy Sullivan (Preventive & Social Medicine))

\$15,000. Community based oral health promotion among adult Syrian former refugees resettled in Dunedin, New Zealand. New Zealand Dental Research Foundation, 2019 (Jonathan Broadbent, Warwick Duncan, Moira Smith (Public Health, UOW), Zeina Al Naasan)

\$44,208. Oral health knowledge and attitudes of carers of home-based dependent older people. University of Otago Research Grant, 2019 (Graeme Ting, Moira Smith (Public Health, UOW))

\$39,152. Towards understanding inequality in oral health-related quality of life. Ministry of Health Oral Health Research Fund, 2020 (Jonathan Broadbent, Chuen Lin Hong, Murray Thomson)

Projects led by investigators outside the Faculty of Dentistry

\$619,189. NSC Ageing Well: through Eating, Sleeping, Socialising and Mobility (AWESSOM), 2019. (Moira Smith (Public Health, UOW), Rebecca Abey-Nesbit (Medicine, UOC), Ulrich Bergler (Medicine, UOC), Catherine Ferguson (Public Health, UOW), John Pickering (Medicine, UOC), Murray Thomson)

\$1,185,360. Novel methods of infant feeding in New Zealand - cause for concern or optimism? Health Research Council of NZ, 2019 (Anne-Louise Heath (Human Nutrition), Jillian Haszard (Human Nutrition), Lisa Houghton (Human Nutrition), Alison Meldrum, Rachael Taylor (Medicine, OMS))

\$38,506. Oral health inequity among patients diagnosed with cancer: exploring the impacts on quality-of-life and survivorship. University of Otago Research Grant, 2020 (Moira Smith (Public Health, UOW), Cheryl Davies (Public Health, UOW), Catherine Ferguson (Public Health, UOW), Virginia Signal (Public Health, UOW), Ramona Tiatia (Public Health, UOW), Graeme Ting)

\$44,000. Promoting and protecting the oral health of dependent older New Zealanders 'ageing in place'. Ministry of Health Oral Health Research Fund, 2020 (Moira Smith (Public Health, UOW), Anna Ferguson (Public Health, UOW), Graeme Ting)