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Journal of Dental Research Publishes Study Exploring the Impact of Early Childhood Exposure to Fluoride on Cognitive Neurodevelopment

Alexandria, VA – The International Association for Dental, Oral, and Craniofacial Research (IADR) and the American Association for Dental, Oral, and Craniofacial Research (AADOCR) have announced the publication of a new study in *Journal of Dental Research* that examines how cognitive development among young children is affected by early exposure to fluoride.

It is important to maintain confidence in the risk and benefit balance of major caries-preventive programs using fluoride. The ongoing debate about potential effects of early life exposures to fluoride on cognitive neurodevelopment requires high quality scientific evidence. The new study by Loc Do, The University of Queensland Faculty of Health and Behavioural Sciences, School of Dentistry, Brisbane, Australia, et al. aimed to investigate potential effects of fluoride exposure on cognitive neurodevelopment assessed with the Wechsler Adult Intelligence Scale 4th edition (WAIS-IV) in an Australian population-based sample.

“The fluoridation of drinking water has been enormously beneficial to oral health over the decades, and to public health more generally,” said AADOCR President Effie Ioannidou. “It is crucial that a wealth of scientific evidence always be available should the public ever need reminding of this fact.”

The sample was selected from the National Child Oral Health Study (NCOHS) 2012-14. NCOHS collected data on socioeconomic factors, oral health behaviors, and residential history to estimate percent lifetime exposure to fluoridated water during the first five years of life (%LEFW). NCOHS children were also examined by trained and calibrated examiners to assess dental fluorosis (a reliable and valid individual biomarker of total fluoride intake during early childhood). The sample was followed up in 2022-23 to collect data on cognitive neurodevelopment (intelligence quotient (IQ)) using the WAIS-IV, which was administered by trained and calibrated qualified psychologists.

Multivariable regression models were generated to investigate associations between the two exposure measurements (%LEFW and dental fluorosis) with full-scale IQ (FSIQ) scores, controlling for important confounding effects. Hypotheses of noninferiority were also tested contrasting different levels of exposure to fluoride. Some 357 participants aged 16-26 years completed WAIS-IV, with a mean FSIQ score of 109.2 (95%CI: 107.8-110.5). The multivariable regression models’ estimates demonstrated slightly higher the FSIQ scores among the exposed than the non-exposed. Adjusted β of 100%LEFW vs. 0%LEFW was 1.07 (95%CI: -2.86, 5.01), and of having dental fluorosis vs. no fluorosis was 0.28 (95%CI: -3.00, 3.57).

The hypothesis of non-inferiority tests found that the FSIQ scores of those exposed and non-exposed to fluoride were equivalent. The study provided consistent evidence that early childhood exposure to fluoride does not have effects on cognitive neurodevelopment.

About the *Journal of Dental Research*
The IADR/AADOCR *Journal of Dental Research* (JDR) is a multidisciplinary journal dedicated to the dissemination of new knowledge in all sciences relevant to dentistry and the oral cavity and associated structures in health and disease. The *JDR* Editor-in-Chief is Nicholas Jakubovics, Newcastle University, England. Follow the *JDR* on Twitter at @JDentRes.

About IADR
The International Association for Dental, Oral, and Craniofacial Research (IADR) is a nonprofit organization with a mission to drive dental, oral, and craniofacial research for health and well-being worldwide. IADR represents the individual scientists, clinician-scientists, dental professionals, and students based in academic, government, non-profit, and private-sector institutions who share our mission. Learn more at www.iadr.org.

About AADOCR
The American Association for Dental, Oral, and Craniofacial Research (AADOCR) is a nonprofit organization with a mission to drive dental, oral, and craniofacial research to advance health and well-being. AADOCR represents the individual scientists, clinician-scientists, dental professionals, and students based in academic, government, non-profit, and private-sector institutions who share our mission. AADOCR is the largest division of IADR. Learn more at www.aadocr.org.