Biomedical Research Award

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Biography: I graduated from the Bachelor of Dental Surgery program at Ragas Dental College (The T.N. Dr. MGR Medical University) in India. I did my Orthodontics residency concurrently with the MMSc program at Harvard School of Dental Medicine and thereafter completed a Cleft Lip/Palate and Craniofacial Orthodontics Fellowship at Boston Children's Hospital in September 2013. I joined as an Associate Professor on tenure track in the Department of Orthodontics at College of Dentistry and Dental Clinics - The University of Iowa (UIOWA) in October 2013. I was granted tenure in April 2016 and was promoted to Professor of Orthodontics in April 2017. I serve as the Director of Clinical Research at the College of Dentistry and Dental Clinics – UIOWA. My area of research excellence is "*Health Process and Clinical Outcomes Evaluation*". My research during the early phase of my career represents evaluations of healthcare delivery processes, hospitalization outcomes, and educational processes. I have conducted research to examine and identify risk factors and effects of preventable adverse events, medical errors, and major peri-operative complications in patients undergoing complex surgical procedures. Currently, I serve as the principal investigator on the Class II – Practice Based Research Network (PBRN) study funded by AAOF. I am a co-principal investigator on the Iowa Biorepository project for which we are collecting bio-specimens, integrating medical and dental records, and conducting genomic sequencing of over 10,000 subjects. I serve as the lead investigator on the "*Big Data Analytics*" endeavor at College of Dentistry and Dental Clinics - UIOWA.

Project Narrative: I am collaborating with Dr. Min Kyeong Lee (Assistant Professor at Children's Hospital of Los Angeles and University of Southern California) to conduct the proposed study titled "*Patient Safety Indicator Events in Craniofacial Patients Undergoing Orthognathic Surgery*". Close to 15% of the newborns have congenital anomalies involving the oral and craniofacial regions. Patients with congenital craniofacial anomalies have skeletal imbalances owing to maxillary/mandibular deformities and require complex orthognathic surgical procedures in conjunction with comprehensive orthodontic treatment. Orthodontists play a pivotal role in the continuum of craniofacial care and work closely with oral surgeons to prepare patients to undergo complex orthognathic surgeries. Frequently, orthodontists are the first point of contact for patients and are questioned on the complications and outcomes associated with orthognathic surgeries. It is critical that an orthodontist is involved in the spectrum of surgical care and identifying process of care pathways that lead to improved quality of care delivered. In the proposed study, 14 validated patient safety indicator events will be examined to assess the quality of care delivered to patients with craniofacial anomalies undergoing orthognathic surgeries. Patient factors associated with poor outcomes following orthognathic surgeries will be identified. The proposed study results will enable health care providers and health policy makers to better understand and identify processes of care areas that should be the focus of quality improvement initiatives and create pathways that lead to better outcomes for craniofacial patients undergoing orthognathic surgeries. The study results will also have far reaching policy implications. For example, if teaching hospitals are associated with lower incidence of patient safety events, then complex surgical procedures should be regionalized to select teaching centers of excellence to realize good patient outcomes.

This is an exciting time for conducting clinical outcomes research and I am delighted that the AAOF is helping our profession in this endeavor. I am personally thankful to the AAOF for helping me kick-start my career path in Orthodontics clinical outcomes research by funding the Class II – PBRN study and the proposed study. I plan to use data obtained from the proposed study to apply for larger grants supported by NIDCR/AHRQ in future.