

SPACE LIFE SCIENCES SYMPOSIUM (A1)
Medical Care for Humans in Space (3)Author: Ms. Linda Dao
CanadaMr. Volker Damann
ESA, Germany

DENTAL HEALTHCARE IN SPACE

Abstract

With longer duration and exploration class space missions (i.e. to the Moon and Mars) soon becoming a reality, preparations to address problems within all aspects of human health in the microgravity environment, including dental care, is critical. Dental health problems involving dental caries, pulpal necrosis, pulpitis, periodontitis, periodontal abscess, temporomandibular joint disorders, and even impact forces by free-floating objects have been considered as potential adverse events. These inflictions, if left untreated, are capable of interrupting the affected crew's performance, possibly leading to a hindrance in mission success. Of the diagnostic and treatment strategies developed so far for dental healthcare in space, however, many rely on temporary care until terrestrial landing for definitive treatment. Limitations to resources and dental expertise on a space mission consequently puts a strong emphasis on preventative procedures against dental disorders. With a strong prevention strategy, the risk of a significant dental emergency capable of affecting crew productivity for a short-duration mission is minimal. Although this makes dental healthcare an under-represented topic of astronaut health, the importance of it rises considerably for long term space missions.

This report looks into the field of how dental healthcare is provided in space and provides an overview of current dental prevention techniques against adverse oral health, the diagnostic procedures and treatment options in space. From this review, dental health issues in long duration space flights are explored, paving the way for countermeasure considerations and recommendations to improve dental care in space. The feasibility of increased aeronautic dentistry studies for future space missions is explored as a result.