

IAF/IAA SPACE LIFE SCIENCES SYMPOSIUM (A1)
Medicine in Space and Extreme Environments (4)

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ASTROMX: THE FIRST MEXICAN ROBOT FOR CONTINUOUS HEALTH MONITORING OF
ASTRONAUTS AND INDIVIDUALS ON EARTH**Abstract****Background:**

The current pandemic by SARS-CoV 2 changed the lifestyle, affecting health and evidencing the great need to focus on the care and prevention of chronic-degenerative diseases and mental health. It is certainly a new and challenging situation for humans on Earth, but for astronauts on the ISS it is a daily occurrence. Both are scenarios where there are major changes in health, risks and limited accessibility to health and emergency services.

Methods:

AstroMX is a modular personal medical assistant robot (car or drone), designed following Ulrich's product development methodology and object-oriented programming (OOP). The robot was monitoring 20 individuals (10 men and 10 women) for 3 days through biomedical sensors and artificial intelligence to obtain physiological variables such as heart rate (HR) and blood oxygen levels (SpO2) as well as, information on early detection of melanomas nutrition, oral health, exercise, regularization of the circadian cycle and mental health. Also, 3 emergency situations were simulated with the aim of testing our first aid technology in emergencies through videos, algorithms and voice commands.

Results:

We found statistical differences ($p < 0.05$) in HR between the first day and the third day [71.1 ± 4.18 bpm vs. 77.6 ± 5.84 bpm, respectively]. Also, 20 electronic clinical records were created to collaborate as auxiliaries in telemedicine. In addition, voice and facial recognition technology was successfully integrated with AstroMX, as well as plethysmography sensor, databases, our "ASTRO-SkinIA" tool for early detection of premalignant injuries and a support system with first aid.

Conclusions:

AstroMX has the function of taking care of the integral health of mexicans under the conditions of the "new normal", but also serve as a personal medical assistant of continuous monitoring of health, in different scenarios and environments, such as; analog space research stations, hospitals, schools, homes, mines, submarines, on board aircraft, in remote locations where access is not available, on the ISS, on future missions and space bases; AstroMX is technology created on Earth for space.