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GAIA: A HOLISTIC APPROACH TO ASSESS THE LOGISTICS OF MENSTRUATION IN SPACE TO
DRAW PARALLELS ON EARTH

Abstract

There have been 72 women in space out of 596 people as of 2021. That comprises 12% of women, and the number is expected to grow as nations and space agencies are committing themselves to make space more inclusive, by welcoming more people with physical impairments and women. Physical impairments might not be disabilities anymore in microgravity environments; women's physiological health is significantly different from that of men's. However, there is a lack of study on how these differences can actually benefit our endeavour to become a space-faring species. Our team recognises that there is a potential improvement for both of these studies, and decided to tackle the latter, more precisely women's menstruation health in space. Previously, space sciences and exploration have been male-dominated which lead to a lack of data about the effects of spaceflight on women, and we aim to bridge this gap. Menstruation has been at the forefront of social, economic, political and biological issues around the world. In many circumstances, the logistics of menstruation and the products are not widely discussed. In harsh conditions, such as space missions and the military, the implications of menstruation and its effects are not well known. Additionally, based on a survey conducted for this study targeting more than 300 women across various disciplines, we have observed that 90% of women undergo premenstrual syndrome and 70% find harsh conditions (military, mountaineering), and travelling (public washrooms, rural areas) uncomfortable while undergoing menstruation. This study aims to initiate experimentation and education in menstruation during human spaceflights, and it draws parallels from women who are in the military, rural regions and are specially-abled. It utilizes space as an inspiration to facilitate the ease of logistics of menstruation, using design in space as an inspiration for life on Earth. In this study, the UN Sustainable Development Goals for gender equality, good health and well-being are discussed, to encourage and facilitate participation to draw comparisons in menstruation between space and Earth. As humankind hopes to become a multi-planetary species eventually, we need to ensure that everyone has equal opportunities and resources to make this dream a reality. The research we have conducted so far serves as the basis for the paper to tackle the aforementioned problem by commencing a project, Gaia. Through Gaia, we aim at providing a well-packaged product to store clean and unclean sanitary products and assuage their disposal. Gaia aims to do further research, spread awareness on menstruation and test the product both on Earth and Space.