Introduction
Humans will have a higher risk of developing cancer during future missions into deep space as they travel beyond the magnetosphere.
- 650-day mission to Mars likely to result in radiation dose beyond NASA’s current 600 mSv career limit [1]
It will be important to understand all the risks associated with cancer in space to facilitate research of health-based countermeasures in the future and application of future nursing practice beyond Earth.

Research Aims:
- Determine the general scope of research activity in spaceflight cancer risk research
- Find out what is known from literature about causes and risk factors of carcinogenesis in spaceflight
- Discuss how nursing can contribute to space health and space cancer research in the future

Preliminary Results - Full-Text Level
- Potentially eligible articles found in 35 different journals
  - *Life Sci Space Res* with most publications (n = 10)
- 77 unique publications screened at full-text
- Most studies dealt with cell samples
- Many different types of studies done
- No published literature from nursing backgrounds

Potential Risk Factors for Cancer in Space
- Radiation
  - Extensive but localized DNA damage from heavy, high-charge (HZE) particles common in space [2]
- Microgravity
  - Microgravity and radiation interact to produce more chromosomal aberrations than each alone [3]
- Environmental toxins
  - Benzene and ethylene elevated in areas where crew spent time and produced by waste disposal [4]
- Impaired immune system function
  - Cytotoxicity of NK cells reduced in space, significantly inhibited in rookie crewmembers [5]

Methods
We used PRISMA-ScR guidelines to perform a scoping review of literature.
- Search conducted in June 2023 across 3 databases using keywords based on common terms for cancer and spaceflight
- Results subjected to a systematic review process and screened for relevance
- Once screened at title and abstract level, full-text requested via interlibrary loan and screened again
- Data regarding type of study, study findings, subjects, and journal of publication were extracted

Impact & Conclusions
Cancer risk research in space is multifaceted and has many ongoing inquiries. New deep space exploration endeavors such as NASA’s Artemis program promise opportunities to generate new understandings of and develop new treatments for health risks including cancer.
- Nursing research can contribute by collaboration with other health disciplines
- Study of therapeutic approaches to risk reduction and endorsement of educational programs or classes to encourage nursing involvement in space health research

References

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