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Behaviour, Performance and Psychosocial Issues in Space (1)

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ELECTRONIC PROBLEM-SOLVING TREATMENT (EPST): A THIRD WAY TO TREAT DEPRESSION IN SPACE

Abstract

Purpose

On a space mission, depression can impair performance, reduce morale, jeopardize safety, and increase workloads for fellow crewmembers. At its worst, depression can be lethal, through suicide or parasuicidal behavior.

At present there are two primary interventions for depression on the ISS: antidepressant medications and psychotherapy via private medical conferences. Although both could provide benefit, both have drawbacks. The pharmacokinetics of antidepressant medications in microgravity is unknown, and taking them can produce adverse side effects and potentially impair performance. Moreover, use of antidepressants is against the U.S. Federal Aviation Administration's regulations for pilots. Psychotherapy via crew-ground communication could provide benefit; however, flyers may be reluctant to seek treatment due to stigma. Furthermore, on a Mars mission a communications delay of approximately 3 to 21 minutes each way will prevent synchronous communication and potentially reduce the efficacy of distance therapy.

Computer-automated treatment for depression provides a third way to treat depression on long-duration missions, which could be accessed privately, be available onboard, and produce no side effects. Moreover, crew autonomy is supported by providing crewmembers tools to treat their own medical problems—including depression.

Methodology

A next-generation computer-automated treatment for depression was developed for use by long-duration flyers: electronic problem-solving treatment (ePST). ePST incorporates interactive video, audio, animations, graphics and text to simulate the experience of being treated by a master clinician. ePST is based on an empirically-supported intervention, problem-solving therapy. It provides six sessions of treatment, for use on a weekly basis, and is tailored to the user's clinical status. A pilot study (N=14) randomized participants with minor depression to use ePST or wait for treatment for 6 weeks.

Results

The pilot study suggested that ePST is highly acceptable and usable as an intervention. Two participants had longer than a three-week interval between sessions, excluding them from the completer analysis. Although the N was too small to provide statistical power to test efficacy, depression in completers with no delay between sessions (N=5) decreased by 52

Conclusions

ePST is a promising technology for the treatment of depression in space. The program is also in the process of being commercialized, has been translated into a second language, and has been used to train clinicians. A demonstration of ePST will be provided.