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Abstract Title: Brainbot, An Innovative mHealth App for Concussion Self-Management and Occupational Performance in Adults: A Mixed Methods Study Investigating Usability

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ABSTRACT:

Abstract Theme: Mild TBI / Concussion

Topic(s) of Interest: Innovation Profession Specific

Purpose of Project: Brainbot, an AI-powered digital rehab tool, aids in managing persistent concussion symptoms, promoting safe activity resumption. It features activity/symptom tracking, weekly pacing advice, recovery analytics, and educational resources for symptom management and occupational performance improvement. This project evaluates its usability and engagement among concussion patients over 4 weeks.

Methods, Procedure, Results/Outcome, Conclusion: Methods. A mixed methods design was used to investigate Brainbot's usability and engagement in individuals with persistent post-concussion symptoms (PPCS). Participants who were diagnosed with concussion by a physician or nurse practitioner and who continued to have symptoms at least 4 weeks post injury were recruited. Participants were taught to use the app and then used the app independently for a 28 day intervention period. Study measures were administered over Zoom post intervention and included the modified System Usability Scale (SUS), and a semi-structured interview to capture participants' experiences about using the app. Engagement data from the app was collated to explore participant engagement.

Results. Twenty individuals who met inclusion criteria participated in the study. The average age of participants was 42.1 years, and 52.6% were more than 24 months post concussion diagnosis. The majority of participants were female (94.7%).

The SUS results indicated an average score of 69.6, (range = 47.5 - 92.5) surpassing the standard benchmark of 68 for digital health apps. This score denotes a satisfactory level of usability and a slightly higher acceptability for Brainbot, aligning it with mobile health apps used in various chronic health conditions.

Preliminary analysis of the qualitative data has been conducted. Participants were categorized as Non-Users (n=1), Casual Users (n=4), Intermittent Users (n=3), and Dedicated Users (Not Employed) (n=6) and Dedicated Users (Employed) (n=6). Each group used the app 7%, 41%, 69%, 92%, and 93% of the intervention period, respectively. Regarding engagement with the app, 75% (N=15) of participants used the app to track activities and symptoms for a mean of 6.15 days per week (range = 4.5 to 7 days/week) during the intervention period.

Our preliminary analysis of user engagement has unveiled intriguing patterns, particularly regarding activity logging and planning behaviors.

Conclusion. Findings suggest that, according to usability standards, the Brainbot app is acceptable to individuals with persistent concussion symptoms and shows promise for supporting self-management in this population. Further study of user engagement patterns is anticipated to lead to transformative changes in the way that self-management strategies and functional rehabilitation can be delivered.