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Extended reality interventions to support mental health in post-secondary students

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Background

Post-secondary students experience high rates of overwhelming stress, anxiety and depression.[1] Recent epidemiological data indicate that over 60% of undergraduates meet criteria for at least one mental health disorder, and up to one-quarter experience suicidal ideation.[2,3] However, many affected students do not access treatment services due to financial constraints, time limitations, long wait times, insufficient available treatment resources, stigma and cultural barriers.[1] Therapeutic extended reality (XR) – encompassing virtual, augmented and mixed reality - may be an optimum modality for addressing these treatment gaps.[4]

XR equipment is rapidly increasing in accessibility and affordability, and stimuli can be individualized to provide culturally appropriate and trauma-informed care.[5] Accordingly, therapeutic XR is being increasingly applied to improve mental health outcomes in youth, with systematic reviews supporting its efficacy in improving psychological distress in adolescents and young adults.[6] There has however been limited synthesis of therapeutic XR interventions to support mental health specifically within post-secondary contexts.

Given the wide array of mental health concerns facing post-secondary students, a scoping review encompassing the full range of extant interventions is required to map the potential of XR technology to address the unique stresses and challenges of post-secondary settings.

Objective

This scoping review aims to map how XR interventions are currently being implemented to improve mental health outcomes among post-secondary students. The findings will inform a series of co-design workshops with students with lived experience and caregivers to develop a research agenda identifying key priorities for the use of XR in student mental health.

Methods

A comprehensive search of PubMed, EMBASE, PsycINFO, and MEDLINE was conducted in January 2025 using search terms related to XR, mental health, and post-secondary students.

Eligible studies included those that evaluated XR interventions aimed at improving mental health outcomes for post-secondary students in school or community-based settings.

A sample search strategy for PubMed is shown in Figure 1.

Figure 1:

Example of the full search strategy for PubMed from our registered Open Science Framework protocol.

Query strings

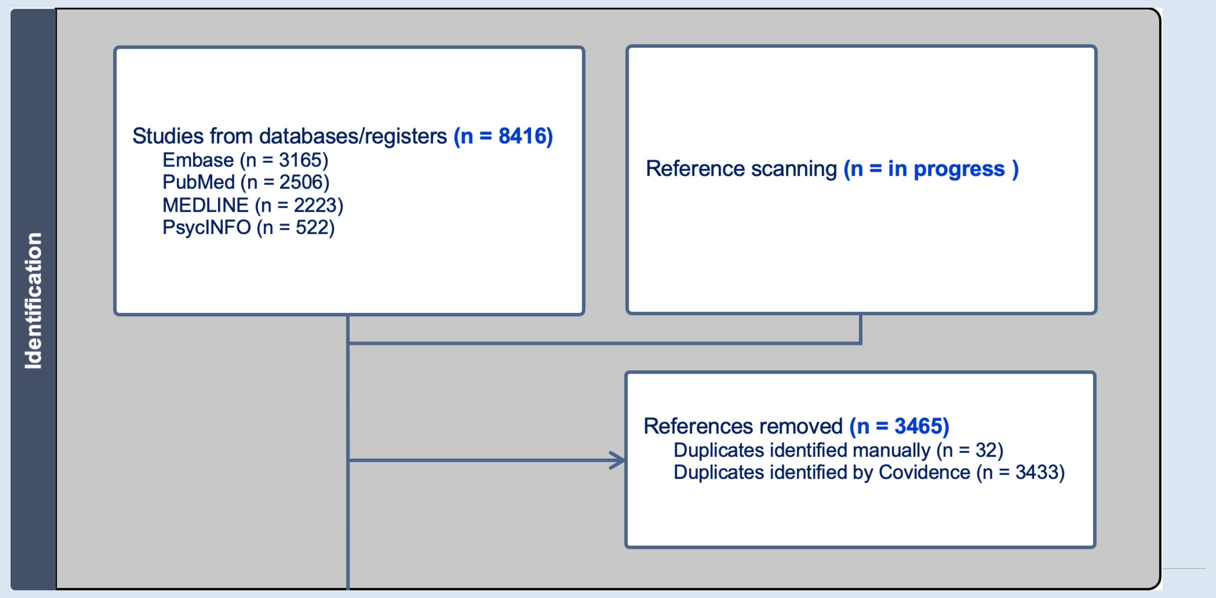
The search terms are composed of three sections, descriptors of population, descriptors of mental health outcomes and descriptors of extended reality.

An example of the full search strategy for PubMed is as follows:
((universit*[Text Word] OR undergraduate*[Text Word] OR student*[Text Word] OR post-secondar*[Text Word] OR college*[Text Word] OR campus*[Text Word] OR young adult*[Text Word] OR university student*[Text Word] OR college student*[Text Word])) AND ((mental health*[Text Word] OR well-being*[Text Word] OR wellness*[Text Word] OR stress*[Text Word] OR anxiet*[Text Word] OR anxious*[Text Word] OR depress*[Text Word] OR emotion*[Text Word] OR psychologic*[Text Word] OR substance us*[Text Word] OR alcohol*[Text Word] OR binge drink*[Text Word] OR suicid*[Text Word] OR self-harm*[Text Word] OR mood*[Text Word] OR distress*[Text Word])) AND ((virtual realit*[Text Word] OR extended realit*[Text Word] OR augmented realit*[Text Word] OR mixed realit*[Text Word] OR VR[Text Word] OR XR[Text Word] OR AR[Text Word] OR MR[Text Word]))

After removing duplicates, 4951 studies were identified for title and abstract screening.

Figure 2:

A preliminary version of the Identification section of the PRISMA Flow Diagram. Systematic reviews and scoping reviews relevant to our topic will not be included but will be scanned for relevant studies.



Eight reviewers conducted independent screening, and pilot full-text screening is currently underway. The study team comprises post-secondary students, individuals with lived experience, and clinical researchers, ensuring a participatory approach. This protocol is registered with the Open Science Framework, and the review is being conducted and reported according to PRISMA-ScR guidelines.

Results

Upon completion of full-text screening, data extraction and thematic synthesis will begin. Preliminary findings, including narrative summaries of recurring themes, key concepts, and knowledge gaps, will be presented.

Figure 3:

A preliminary version of the data extraction form

Draft Data Extraction Form

Study No.	Authors	Date of Publication	Country	Research Design	Objectives	Methods	Settings	Population Characteristics	Details of XR Intervention (typehow it was used, frequency/duration)	Outcome Measures	Key Results	Conclusions

Conclusions

This review will offer a comprehensive overview of how XR interventions are being utilized to support mental health among post-secondary students. It will identify current practices, highlight gaps in the literature, and guide future research priorities for developing and evaluating XR-based mental health interventions in this population.

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