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Improving episodic future thinking (EFT) in children with ADHD through VR game-based training

Li Zheng¹, Mei Si¹, Tingting Ma Qilu² and Aihua Cao Qilu²

¹Rensselaer Polytechnic Institute and ²Hospital of Shandong University Hospital of Shandong University

OBJECTIVES/GOALS: This study investigates how VR-based Episodic Future Thinking (EFT) training enhances prospection and self-regulation mechanisms in children with ADHD by engaging neural processes of future-oriented planning within ecologically valid virtual contexts. **METHODS/STUDY POPULATION:** This randomized controlled trial included 80 typically developing children aged 4–10 years, randomly assigned to a VR intervention group (n=40) receiving 10 days of gamified Episodic Future Thinking (EFT) combined with conventional executive function training, or an active control group (n=40) receiving only conventional training. Intervention efficacy was evaluated using pre- and post-tests with five standardized measures: the Behavior Rating Inventory of Executive Function (BRIEF), grade-specific Executive Function Assessment Scales (Grades 1–3 or 4–5), Children's Executive Functioning Inventory (CHEXI), Achenbach Child Behavior Checklist (CBCL), and Vanderbilt ADHD Diagnostic Rating Scale (VADRS). **RESULTS/ANTICIPATED RESULTS:** Mixed-design ANOVA revealed that the VR-EFT intervention significantly enhanced cognitive and emotional regulation, while traditional training showed advantages in behavioral control and planning, reflecting the dual-system nature of executive functions. BRIEF and EFAS results were consistent, showing significant gains in inhibition, emotional control, planning, and working memory ($\eta^2=0.06-0.17$). CHEXI indicated that the VR group improved in working memory and regulation, whereas the control group performed better in behavioral-level planning and inhibition. CBCL and Vanderbilt results showed reduced aggression, hyperactivity, and oppositional symptoms ($\eta^2=0.056-0.138$), highlighting VR-EFT's efficacy in enhancing self-regulation and reducing externalizing behaviors. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Findings suggest that VR-based Episodic Future Thinking (EFT) training effectively strengthens children's cognitive-emotional executive functions and self-regulation. By integrating future-oriented cognition into intervention models, it provides a novel, evidence-based approach to enhancing executive development.

Education, Career Development, and Workforce Development

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Obtaining a clinical research Master's degree among paradigm shifts: Is it worth it?

Lisa Kim

Rutgers University

OBJECTIVES/GOALS: Identify how graduates and talent acquisition specialists perceive the value and limitations of MS Clinical Research degrees in today's clinical research workforce. Apply insights from this study to reimagine curriculum, mentorship, and industry partnerships that strengthen the value and recognition of MSCR programs. **METHODS/STUDY POPULATION:** This descriptive qualitative study investigated the perceived value of the Master of Science in Clinical Research (MSCR) degree amidst pharmaceutical industry shifts. Data were collected from 23 participants: 17 degree completers (DCs) and 6 talent acquisition specialists (TASs). Using purposive and snowball sampling, participants engaged in semi-structured focus groups, dyadic conversations, and individual interviews. Data were coded through directed qualitative content analysis, guided by Sheth et al.'s consumption values framework, with inductive coding to capture emergent themes. **RESULTS/ANTICIPATED RESULTS:** Findings revealed that DCs emphasized professional identity formation, recognition barriers, curriculum impact, and beyond-the-classroom value; TASs stressed practical value, industry disruption, and bridging academia-workforce gaps. Both cohorts acknowledged MSCR's symbolic and strategic value but highlighted persistent "experience paradoxes" where degrees alone could not overcome entry barriers. **DISCUSSION/SIGNIFICANCE OF IMPACT:** Study shows MSCR builds core knowledge yet remains misaligned with industry needs due to skill gaps and credential ambiguity. Findings call for systemic professionalization, coordinated interventions across stakeholders, and research on identity, credential pathways, and employer perceptions.

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Development of the next generation of translational scientists in Puerto Rico (PR): Real-world impact on pre-university (Pu) and undergraduate (Ug) students (S)

Rubén García García, Lizbelle de Jesús Ojeda, Yisel M. Cantres Rosario, Edgardo L. Rosado Santiago, Juan C. Soto Santiago, Efraín Flores Rivera, José R. Ubieta Santiago and Gloribel Colón Ortiz
University of Puerto Rico, Medical Sciences Campus, Title V Project 2024

OBJECTIVES/GOALS: 1. To develop the next generation of translational scientists in PR. 2. To equip pre-university/undergraduate students with the necessary skills, knowledge, and experiences for their academic and professional development from a holistic perspective of life. 3. To strengthen the technological-translational science (TS) infrastructure. **METHODS/STUDY POPULATION:** Develop the Center for Research Education and Science Communication-Counseling Opportunities (CRESCO) to provide support to PuS and UgS in TS skills, statistics, scientific writing, emerging technologies, mentoring-tutoring and counseling-orientation; organize/launched the ACADEMIA-TS (ACAD-TS) with the inaugural activity to provide training/student development in TS to PuS and UgS, including peer-mentoring with graduate students (GS); create the Small Project in Translational Science (SPTS) program to offer

PuS and UgS hands-on experiences with participation in up-to-date research in TS under the mentorship of a principal investigator-mentor; offer the Title V Annual Symposium in TS; and acquire computers/laboratory supplies/equipment to health sciences undergraduate schools. RESULTS/ANTICIPATED RESULTS: CRESCO established a training infrastructure by acquiring 535 licenses (Consensus, Scite.ai, Mind-Graph) to integrate AI into research and offered 122 mentoring sessions. There were 296 participants in four new workshops. In ACAD-TS' inaugural activity (~200 attendees), 67 PuS expressed interest in the ACAD-TS; 12 PuS are part of it, and 38 PuS participated in a counseling workshop. The SPTS program integrated course enrolled 10 students (8 from other UPR campuses) and created five teams involving 26 students (8 PuS, 16 UgS, 2 GS) mentored by 5 Principal Investigators (PIs), representing 15 institutions. The 14th Annual Symposium had 136 attendees, with a 100% satisfaction rate (n=44). The technology/TS infrastructure was upgraded with 50 new computers and supplies/minor equipment for health science schools. DISCUSSION/SIGNIFICANCE OF IMPACT: Established a comprehensive model to develop early-career translational scientists, including a course, SPTS, and counseling workshops. Integrating AI tools, focused mentorship, and enhanced infrastructure strengthened participants' integral development, confirming this model boosts research capacity for the future TS workforce.

Inclusive Health and Community Engagement

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A community-based approach to promoting brain health and research engagement among black refugees

Darlingtona Esiaka¹ and Gaston N. Sankayi²

¹University of Kentucky College of Medicine and ²Global Lex - Office of the Mayor

OBJECTIVES/GOALS: Community engagement has long been an underutilized strategy when conducting dementia research, especially for the recruitment of high-risk communities such as refugees. We created CHAMP: Championing Healthy Aging in Multicultural Populations Health and Resource Fair, aimed to promote early cognitive screening in aging Black refugees. METHODS/STUDY POPULATION: On August 9, 2025, the Health and Aging from Multicultural Perspectives Lab (HAMPLAB), in partnership with Global Lexington and the Lexington Senior Center, hosted the inaugural CHAMP Health and Resource Fair. Twenty-two vendors participated in the fair, including the Neurology department, pharmaceutical practice department, Bluegrass Lions Diabetes Project, local fire department, and the Alzheimer's Association. Over 200 Black refugees in Lexington Kentucky and 18 volunteers attended the event. Complimentary services provided at the health and resource fair include health screening (e.g., A1C and blood

pressure measurements), fresh food produce, fire safety, and back-to-school supplies. RESULTS/ANTICIPATED RESULTS: Thirty-eight percent of the 55 attendees screened for A1C exhibited elevated levels. Many of these individuals were not previously diagnosed with prediabetes or diabetes and were offered counseling and follow-up. Also, over 100 people were screened for high blood pressure, and 62 eligible middle-older age adults signed up for various dementia research participation. These results indicate the importance of community-based events in which high-risk individuals can be identified and presented with practical next steps. DISCUSSION/SIGNIFICANCE OF IMPACT: The CHAMP Health and Resource Fair illustrates the dual benefit of community engagement: advancing public health awareness through immediate health feedback and strengthening recruitment for ongoing research initiatives.

Informatics

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Cachexia underdiagnosis and diagnostic delay in head and neck cancer: Insights from EHR weight data

Ronald Eldridge¹, Nabil F. Saba², Thomas R. Ziegler², Xin Hu², Tiffany Barrett³ and Jinbing Bai¹

¹Nell Hodgson Woodruff School of Nursing, Emory University;

²School of Medicine, Emory University and ³Winship Cancer Institute

OBJECTIVES/GOALS: Head and neck cancer (HNC) patients frequently experience cachexia ($\geq 5\%$ weight loss) that goes underrecognized in clinical practice. We assessed whether weights in electronic health records (EHR) were frequent and sustained enough to characterize weight-loss magnitude and timing, and to quantify cachexia underdiagnosis and diagnostic delay. METHODS/STUDY POPULATION: Patients were identified in the Emory Healthcare EHR (2016–2019) using ICD-10 codes for head and neck malignancies. Those with ≥ 2 codes within 90 days were eligible cases; the index date was the first code of the qualifying pair. Weights were extracted for all encounters six months before through one year after the index date; implausible values were removed. Feasibility analyses included all eligible patients while cachexia analyses were limited to those with ≥ 3 post-index weights. Baseline weight was the median pre-index value or the closest post-index value ≤ 14 days. Underdiagnosis was defined as $\geq 5\%$ weight loss from baseline without a cachexia-related ICD code recorded 90 days prior to, or any time after, the index date: cachexia (R64), abnormal weight loss (R63.4), muscle wasting (M62.5x), or anorexia (R63.0). RESULTS/ANTICIPATED RESULTS: EHR data demonstrated high feasibility for longitudinal analyses: among 561 HNC patients, the median number of weight measurements in the first year was 18 (IQR 8–27) with a median interval of 7 days (IQR 2–14). Among 499 patients analyzed for cachexia, the median max weight loss was 11.2% (IQR 4.9–18.2), occurring a median of 5 months after the index date