Britanny Butts: "The CNIC reminds me of the NIH in the U.S."

10/10/2024

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Dra. Britanny Butts is a professor at the Nell Hodgson Woodruff School of Nursing (USA). Dr. Butts earned her Ph.D. at Emory University, focusing on cardiovascular diseases, immunology, and exercise. She received her Bachelor of Science in Nursing from Georgia State University and her Bachelor of Science in Biology from the University of the Virgin Islands. Her translational research centers on the connection between cardiovascular diseases and Alzheimer's disease, encompassing areas such as immune cell subsets, the renin-angiotensin system, vascular and cognitive function, with a special emphasis on social determinants of health and patient-reported outcomes, such as symptoms and quality of life. Her main areas of interest include inflammatory pathways in cardiovascular diseases, the heart-brain connection, pathophysiological mechanisms associated with symptoms in heart failure, oxidative stress, the impact of the renin-angiotensin-aldosterone system on brain health, and biological aging in heart failure.

- **Your talk is titled "What is good for the heart is good for the brain." Could you share the connection and what you'll be discussing today?**

Today, we'll explore how cardiovascular disease can lead to cognitive changes, including cognitive impairment and dementia. We'll discuss the mechanisms linking cardiovascular health with brain health, such as inflammation, vascular changes, and blood flow regulation. For instance, reduced blood flow due to conditions like atherosclerosis can damage brain cells, leading to cognitive decline. We'll also delve into neural and hormonal mechanisms, such as the roles of the sympathetic nervous system and the renin-angiotensin system. These are central in cardiovascular disease but also influence brain health and cognitive function. Additionally, we'll review how cardiovascular drugs, like ACE inhibitors, beta-blockers, and ARBs, might impact brain health, with emerging evidence suggesting that ARBs could offer unique cognitive benefits.

- **I've read that you studied nursing and biology. Could you tell us more about your background?**

I initially studied biology and began a PhD in Immunology. However, my biology training focused more on evolutionary aspects, leaving me without sufficient knowledge of human health to conduct research on human subjects. I decided to attend nursing school to deepen my understanding of human health and disease. This shift allowed me to transition from basic science and animal models to researching human health. During this time, I also gained valuable experience working in the emergency room before completing my PhD.

- **You transitioned from biology to working directly with patients and focusing on quality of life. You also emphasize social determinants of health. Could you elaborate?**

My experiences shaped my focus on social determinants of health. In my research, we aim to capture a representative sample by recruiting from both clinical settings and communities. In Atlanta, where I work, we focus on Black and African American populations due to higher rates of cardiovascular conditions like hypertension and heart failure. Social factors such as housing, education, food security, and racism significantly influence cardiovascular and brain health. By understanding these lived experiences, we can better assess how social determinants impact health outcomes.

- **You mentioned these challenges specifically affect Black populations in the U.S., how can we address these disparities?**

It's a systemic issue that requires multifaceted solutions. Change can begin at the community level,

where resources, healthcare, education, and social support can be provided. For example, immigrant communities might benefit from spaces for social interaction and support, which can mitigate feelings of isolation. However, broader systemic changes, such as equitable healthcare policies, are essential for long-term solutions.

- **Your research focuses on both cardiovascular disease and Alzheimer's disease. How did you become interested in these connections?**

It started with the immune system, which is involved in nearly every disease. Cardiovascular risk factors, often evident in midlife, are linked to cognitive impairment and dementia later in life. I became interested in inflammation as a key connection between cardiovascular and brain health. Damage to the heart and blood vessels can disrupt the blood-brain barrier, allowing inflammation to harm the brain. I also study the renin-angiotensin system (RAS), a fascinating system that links cardiovascular health with cognitive outcomes.

- **Your research seems to integrate two approaches: biological pathways like inflammation and social factors. How do you manage this complexity?**

Integrating these approaches is challenging, especially when it comes to funding and logistics. In our studies, we collect biological data, such as blood and cerebrospinal fluid samples, alongside social data like lived experiences and neighborhood deprivation. For example, we use the Area Deprivation Index to measure factors like access to schools and green spaces, which correlate with cognitive function. This combined approach helps us understand how biological and social factors jointly impact health.

- **Do you face challenges involving families and caregivers in communities with limited healthcare access?**

Engaging communities requires effort and presence, but it's not necessarily difficult. We participate in community events—at Black churches, veteran gatherings, and LGBTQ+ events—to build trust and raise awareness about our research. Many participants have personal connections to Alzheimer's disease, motivating them to contribute to research that could benefit their communities.

- **Did you have mentors who guided you in your research journey?**

Mentorship has been pivotal to my career. I've been fortunate to have excellent mentors at every stage, from my undergraduate work in coral genetics to my current focus on cardiovascular and brain health. Now, I collaborate closely with Dr. Whitney Wharton, an expert in minority health and sex hormones, while I specialize in cardiovascular health.

- **It's inspiring to hear how mentorship shaped your career. Are you mentoring students now?**

Yes, and it's been incredibly rewarding. I believe in giving back, as I've benefited greatly from the guidance of my mentors. Supporting the next generation of researchers is an essential part of advancing science.

- **Is this your first visit to the CNIC? What are your impressions?**

Yes, this is my first visit. The CNIC reminds me of the NIH in the U.S., with its multidisciplinary collaboration across specialties. It's inspiring to see such innovative work happening here.