Could you begin by giving a brief synopsis of your research careers to date?

JE: I am Acting Director of the Center for Prevention Research at Tennessee State University (TSU) and an investigator with 10 years of experience in health-related research focusing on health policy, cancer and obesity prevention. Most of my experience has been community-based participatory research with an emphasis on forming partnerships to establish lasting benefit to the targeted populations. I am co-Principal Investigator (co-PI) and Administrative Director on a grant funded by the US Department of Agriculture (USDA) called Nashville Children Eating Well (CHEW) for Health, which involves local community organizations and universities collaborating to address childhood obesity prevention through research, extension and education. I am also PI on a USDA-funded project designed to ‘Assist Parents to Purchase (APP) for children’s health’ by development of a shopping tool to educate parents on age-appropriate servings for children.

PH: I am Assistant Professor in the Vanderbilt University School of Medicine Division of Epidemiology. I have over 10 years of experience as an investigator, conducting community-based preventive health research. As a medical sociologist, my research focuses on developing and testing interventions to promote healthy behaviours in youth, including healthy eating and physical activity. I co-led a five-year study to test a family-based educational programme for childhood obesity prevention designed for Hispanic families. I am also co-PI of the CHEW project, for which I lead the education team at Meharry Medical College, led by Dr Courtney Kihlberg, is implementing curricula with medical students, medical residents, physicians and TSU undergraduate students related to medical aspects of nutrition, obesity and disease prevention.

Who are you working with to this end?

PH: Our effort to improve the food environment is being implemented by our extension team at TSU, led by Dr Chiquita Briley, and includes working with WIC-approved grocers to improve the availability and marketing of fresh fruits and vegetables, whole grains and low fat dairy products. The extension team has also trained WIC participant mothers as community health promoters to share nutrition information with their peers.

In what ways does your team support you in this study?

JE: Dr Baqar Husaini is PI and provides direction as needed. Our team is highly multidisciplinary and we employ a collaborative approach in all aspects of our work. Backgrounds in medicine, nutrition, sociology, psychology and health policy all add to the scope and ability of the CHEW team to reach study goals and maximise benefits to our community.

PH: Members of the CHEW Community Advisory Board contribute perspectives of community-based organisations and WIC participants, which are extremely valuable to ensuring that the project addresses the needs of the community.

What are the objectives and target population of your study into childhood obesity?

JE: The focus of CHEW is low-income families with children aged two to four years participating in the federal Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), with a focus on African American and Hispanic families, as well as the WIC-authorised grocers that serve this population in Nashville, Tennessee, USA. The objective of the research is to develop and test a culturally appropriate nutrition intervention for these populations, which can complement the nutrition education being provided in WIC clinics.

PH: Based on survey data, we identified that some WIC participants struggle to understand how to use the WIC vouchers while shopping in the grocery store, since the requirements of allowed and non-allowed items are quite complex. In addition, the WIC programme is interested in finding ways to help families maximise the use of WIC vouchers, given that they provide participants with food products that are healthy and meet the nutritional needs of children. We aimed to develop an intervention that would address these needs.

Could you describe your multi-level approach to preventing childhood obesity?

JE: Our grant has three integrated components – research, education and extension – and addresses childhood obesity at multiple levels. The research arm of the project involves testing a smartphone app with WIC families to encourage more nutritious food intake in preschool children. Our education team at Meharry Medical College, led by Dr Courtney Kihlberg, is implementing curricula with medical students, medical residents, physicians and TSU undergraduate students related to medical aspects of nutrition, obesity and disease prevention.

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An innovative community-based research programme led by Tennessee State University is helping low-income families to adopt healthier and more nutritious diets, thereby reducing the prevalence of childhood obesity in at-risk groups.

**CHILDHOOD OBESITY** is a growing problem in the US, where in the past 30 years, prevalence has more than doubled. In fact, according to the US Centers for Disease Control and Prevention, a staggering 17 per cent of children and adolescents in the US are now obese. This concerning trend has serious health repercussions. For example, those who are obese in their youth are more likely to develop chronic diseases including cardiovascular disease and type 2 diabetes.

The persistence of the childhood obesity epidemic clearly illustrates the need for new and more innovative approaches to prevention. Some of the most promising interventions are family-based, instilling healthy eating habits in children early on in life. Targeting parents is also key, as they play a critical role in monitoring what their children eat and their level of physical activity.

Despite their benefits, very few family-based interventions to prevent obesity have been tested in the US. The Nashville Children Eating Well (CHEW) for Health study is working to change this and is tackling childhood obesity in Tennessee where the problem is particularly acute. Funded by the Agriculture and Food Research Initiative of the US Department of Agriculture (USDA-AFRI), this multi-institution project aims to prevent childhood obesity through a combination of research, extension and education activities.

For their children, naturally, parents want to provide a healthy environment for their children, but low-income families often lack the resources, information and skills to accomplish this. Within this group, CHEW’s target population comprises African-American and Hispanic families, as they have higher rates of obesity than other ethnic groups. “We aim to develop strategies that are culturally appropriate for these populations,” adds co-PI and leader of the CHEW core component Dr Janice Emerson.

In order to reach these groups, the project team is working closely with USDA’s federal Women, Infants and Children (WIC) supplemental nutrition programme, which is designed to support low-income families with young children. The programme provides parents with ‘vouchers’, which they can use to purchase specific food items that have been selected to support the nutritional needs of the mother and each child under age five. CHEW collaborates with the programme at the state and local level to optimise the use of these vouchers, develop strategies to improve the diets of participant families, and complement the nutritional education delivered by the WIC programme.

**HURDLES TO HEALTHY EATING**

As well as being collaborative, the CHEW team’s approach is multi-level, including family-based education programmes, efforts to improve the environment for purchasing food, and a more formal education programme for future and practicing physicians. At the core of the project is the research component, which develops and tests nutrition education materials.

In order to ensure these materials are culturally appropriate, the group employs a community-based, participatory approach – actively involving the target audience in its research. Reflecting this, the CHEW Community Advisory
The CHEW team’s approach is multi-level, including family based education programmes, efforts to improve the environment for purchasing food, and a more formal education programme

Board (CAB) is made up of WIC participants, WIC vendors and community organisations. Through quarterly meetings, this board provides direct input on all CHEW activities. CHEW has an extension team at Tennessee State University that delivers nutrition education through healthy food samplings at small to medium grocery stores and by lay community health promoters.

Unfortunately, nutritional education alone is often unable to significantly reduce the prevalence of obesity. Environmental barriers frequently prevent members of low-income communities from obtaining healthy food in the first instance, as revealed by the 2012 CHEW Nutrition Survey. This survey asked 150 WIC families with preschool aged children about a range of factors related to nutrition: their diet, shopping habits, food preferences and more. The survey revealed a number of environmental obstacles to healthy eating, including the cost of fruit and vegetables (which can often exceed the WIC allowance), a lack of greengrocers in the local area, and an inability to access the nearest grocery store, leading to a reliance on small convenience stores that tend to lack fresh and healthy food items. “In addition to these environmental barriers, not liking fruits and vegetables and not knowing how to prepare them were also reported as reasons for not buying and consuming them,” Emerson reveals.

As a result of these findings, the CHEW project’s educational outreach activities include both the individual and environmental levels.

SMARTPHONE SHOPPING APP
As well as generating interesting findings, this survey formed the basis for a novel nutritional intervention – a smartphone application to promote healthy eating among WIC families. This Android application was developed in collaboration with the Vanderbilt School of Engineering and has both English and Spanish functionality, expanding its user base to the Hispanic community.

The app includes a shopping tool to help parents to spend their WIC vouchers, as well as an educational component focused on healthy snacking and beverages. The shopping tool improves the process of grocery shopping using WIC vouchers, which can be complicated by the often strict requirements for permitted products and multiple vouchers for each family member. Users can scan items to confirm they are permitted and keep track of the products that have been selected for each voucher. Calculator tools also help the user to apply the WIC cash value voucher to fruits and vegetables.

The second component of the app promotes healthy snacking among pre-school aged children through push notifications. These offer tips to encourage the consumption of fruit, vegetables, water and milk and reduce intake of unhealthy snacks and sugary drinks. “The app also includes a ‘Yummy Snack Gallery’ where parents and children can choose healthy snacks, view preparation instructions and add ingredients to a shopping list,” Hull elaborates.

A NATIONWIDE TOOL?
The CHEW target audience of African-American and Hispanic WIC participants in Nashville is currently testing the first version of the app. The pilot study is assessing its ability to make the process of shopping with WIC vouchers easier, increase the availability of healthy food in the home, encourage healthier snacking practices, and ultimately improve children’s diets. If the CHEW smartphone app is successful, there will be high interest for it to be implemented throughout the state and in other states across the US.

**KEY COLLABORATORS**
Dr Baqar Husaini, Dr Chiquita Briley, Tennessee State University, USA
Dr Courtney Kihlberg, Meharry Medical College, USA

**PARTNERS**
Metropolitan Public Health Department of Nashville/Davidson County
Progress Community Center
CHEW Community Advisory Board

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**DR PAMELA HULL** is a medical sociologist with 10 years of experience in developing and testing interventions to promote healthy behaviours in youth, including childhood obesity prevention and HPV vaccination. She has a BA in Sociology from Duke University and an MA and PhD in Sociology from Vanderbilt University.

**CHEW smartphone app Yummy Snack Gallery**