Self-Study

Center Name:
Center for Cancer Prevention, Health Disparities Research and Training

Director:
Archana J. McEligot, PhD, Professor

Co-Director:
Lohuwa Mamudu, PhD, Assistant Professor

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2. Mission and Goals:
Mission: The mission of CCP-HDRT is to promote scholarship and creative activities to improve cancer-related health, health disparities and equity via prevention, control and training.

CCP-HDRT goals are to:

- Advance interdisciplinary, health disparities and equity research with a focus on cancer, disease prevention and training.
- Educate and train students and faculty on preventative measures;
- Raise community awareness about cancer and disease prevention;
- Raise public awareness about cancer through educational workshops and events.

University, Department/College Level Goal Alignment:
CCP -HDRT scholarly, educational and collaborative activities directly align with CSUF Strategic Plan Goals (2018 – 2023 Strategic plan during the review period), as well as with the College of HHD, and Health Science/Public Health goals of excellence in programs, student success and scholarship. In terms of the following CSUF Strategic Plan, CCDR goals align clearly with the following values:

Student Success. A key goal for CCP -HDRT is to specifically train under-represented students through curricula development, pedagogical and didactic training. An additional key objective is to mentor students through research processes from collecting data, analyzing to data presentation. And, ultimately, the goal is to provide mentorship for student success via navigation, and/or support for professional, graduate and employment entry.

Scholarly and creative activities. A primary aim for CCP-HDRT is to engage in research and scholarship through developing research hypotheses, planning and designing studies, collecting data, accessing existing databases and platforms, analyzing and synthesizing data and subsequently presenting it to the scientific community. Additional goals also include pursuing external funding via NIH and other funding opportunities.

Diversity, equity and inclusion. A primary goal of CCP-HDRT is to address health disparities and fill the health and education equity gap through research, teaching and training and community engagement.

3. Activities: What activities took place in the most recent three-year period?
3.a Research Activities:
Interdisciplinary Health Science Cancer Research Lab (IHSCRL): The IHSCRL of the center, under the leadership of Dr. Lohuwa Mamudu, collaborates with the Tennessee Cancer Registry (TCR) and NIH to research cancer diseases. Research projects in the IHSCRL lab focuses on health disparities, several types of cancers, including lung cancer. Lung cancer continues to be the leading cause of cancer deaths in the United States. Surgical treatment has proven to offer a favorable prognosis and a better 5-year relative survival for patients with early or localized tumors. Therefore, the lab investigates the factors associated with the odds of receiving surgical treatment for localized malignant LC in Tennessee via cancer registry data. Overall findings suggest that disparities exist in the receipt of surgical treatment among patients with localized malignant LC in Tennessee. Health policies should target reducing these disparities to improve the survival of these patients. Other factors including psychosocial factors associated with cancer diagnoses and outcomes have also been examined.

Co-morbidities, Health Disparities and Cancer: Increasingly research suggests that disease etiology co-occurs with pre-existing co-morbid conditions, including the association between cancer, diabetes, hypertension and dementia. Importantly, psychological conditions (including depression), in conjunction with cancer, may potentially exacerbate other comorbid conditions Therefore investigating the relationship between comorbid conditions, including cancer may provide insights into not just health disparities, but also disease prevention and control. Therefore Dr. McEligot with Dr. Lohuwa and other colleagues have examined the role of comorbid conditions, including cancer on disease outcomes. Our analyses, via multivariate logistic regression analysis of the interaction (joint effect) between depression and comorbid (diabetes, hypertension, and cancer) conditions may influence dementia, adjusting for covariates (age, sex, race/ethnicity, and education). Preliminarily, we've observed a statistically significant interaction effect (joint effects) on dementia with a potential joint effect of depression and

cancer (Wald = 7.94, df =1, p=0.005)]; Reference group: Individuals without the co-occurring of the two conditions. Similar work has also been conducted in under-resourced, underrepresented communities, including the Native Hawaiian and Pacific Islander community.

Cancer Prevention/Etiology Exploration through Data and Modern Statistical Techniques: The advent of big data lends enormous scalable opportunities to explore cancer outcomes. As part of CSUF's Big Data Discovery and Diversity Through Research Education Advancement and Partnership (BD3-REAP) program, we applied a novel, modern statistical shrinkage technique, logistic least absolute shrinkage and selection operator (LASSO) regression. We examined the association between dietary intakes in women, ≥50 years, with self-reported breast cancer (n = 286) compared with women without self-reported breast cancer (1144) from the 1999-2010 NHANES cycle. We observed that as the penalty factor (λ) increased in the logistic LASSO regression, well-established breast cancer risk factors, including age (β = 0.83) and parity (β = -0.05) remained in the model. For dietary macro and micronutrient intakes, only vitamin B12 (β = 0.07) was positively associated with self-reported breast cancer. Caffeine (β = -0.01) and alcohol (β = 0.03) use also continued to remain in the model. These data suggest that a diet high in vitamin B12, as well as alcohol use may be associated with self-reported breast cancer. Nonetheless, additional prospective studies should apply more recent statistical techniques to dietary data and cancer outcomes to replicate and confirm the present findings.

Phytoestrogens and Their Association with Female Hormonal Cancers: Under the direction of Dr. Alice Lee, and via BD3-REAP partnership, we examined whether dietary phytoestrogens were linked to women's likelihood of having breast, endometrial, and ovarian cancer. This leveraged large-scale population data from the National Health and Nutrition Examination Survey (NHANES) from over 4,600 women in 1999 to 2010 and found that phytoestrogens were positively associated with breast and endometrial cancer although the associations varied by the type of phytoestrogen after controlling for important demographic, lifestyle, and reproductive factors. While this research cannot draw any conclusions regarding phytoestrogens' role in cancer etiology given the cross-sectional nature of the data, the findings do add to our understanding of an important dietary exposure.

3.b Student Engagement

The **IHSCRL** provides training and mentoring to at leave five students for a ***complete academic year (AY)*** Under Dr. Mamudu's mentorship, training, and supervision. In each AY, the cohort students are enrolled in independent study during the spring and fall semesters. At least ten students have benefited from the lab since 2022.

- Students learn, gain knowledge, and develop skills in the following areas:
  - Designing cancer research studies
  - Understanding, using, and managing cancer registry data
  - Exploring and extracting data from the SEER database
  - Cancer data cleaning, organizing, and processing in SPSS, R, and MS Excel
  - Cancer data analysis and visualization in SPSS, R, and MS Excel
  - Statistical methodologies and techniques for analyzing cancer data
  - Writing research reports and manuscripts
  - Research presentation slide or poster preparation
  - Research oral or poster presentation
  - Effective communication skills
  - Effective research, professional, and team collaboration
  - Effective stress and time management

Student participation has culminated in student poster presentations at local and regional conferences, co-authorship on manuscripts, as well as successful entry into professional and graduate careers. Support has been also provided via the following and led to student success.

- Student Recommendations:

  The center provides recommendations to support students in various ways. One student from the lab has been a member of the Student Research Scientist Committee of the CDC Preventing Chronic Disease Journal since the fall of 2023.

- Student Scholarship & Awards:

  We identify scholarships for students and guide them in applying. In spring 2023, a student from the lab, Joanne Leslie S Reyes, was awarded the Kathryn T. McCarty Scholarship for honor scholastic achievement and outstanding research ability from the Department of Public Health.
- Preparing Students for Graduate School and the Job Market:

  The center assists and supports students in pursuing further studies and job-seeking through recommendations or references. In 2023, one graduate student from the center was recruited as a Project Assistant for the Alcohol & Other Drugs Prevention Program at the Orange County Department of Education.

Dr. McEligot in collaboration with Dr. Mamudu has also mentored students on research topics, including the intersection between health disparities, modifiable risk factors and cancer outcomes in efforts to reach health equity. Trainings include pedagogical understanding and identification of structural and systemic causes of health inequalities to hands-on data collection, data cleaning, analyses and interpretation; Other students have initiated research and training via utilization readily available open-access databases. Four students have been trained via the comorbid condition work, while one Masters student collaborated on the modern statistical technique work, garnering co-authorship on a publication, as well as entry into a doctoral program.

The work with Dr. Lee involved a public health undergraduate student who was paired with the faculty research team (Dr. Lee from the Department of Public Health, Dr. Valerie Poynor from the Department of Mathematics) and in partnership with the BD3-REAP Program. The student regularly met with both faculty and assisted with literature review as well as analysis and interpretation of preliminary data, eventually preparing an abstract that was submitted and accepted for a poster presentation at the Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS). The student also presented this work at the BD3-REAP Research Day Symposium.

3.c Service:

CCP-HDRT directors and co-director have engaged with communities addressing cancer and health disparities via the following invitations, events, as well as media publications:

Contributed newsletter published: Three contributions have been made to the APHA Aging & Public Health section newsletter.

1. Gender-Age Disparities in Delayed Time to Surgical Treatment for Invasive Lung Cancer – February 2023 newsletter
2. Age Differences in Surgical Treatment Localized Malignant Breast Cancer in the Appalachian and non-Appalachian Tennessee – August 2023 newsletter
3. Age Differences and Trends in Surgical Treatment of Breast Cancer in Tennessee, 2005-2017 – February 2024 newsletter

Community and research conference invitations and participation

McEligot AJ. Southern California Pacific Islander Community Response Team (SoCal PICRT) Monthly Meeting, December. *Aging Study Preliminary Results and Health Disparities work in NHPI.*

McEligot AJ and Mamudu L. Third Annual Nixon National Cancer Conference, 2022.

McEligot AJ. International Women's Day event hosted by the Salk Institute and the Lustgarten Foundation, 2024.

4. Organizational Structure and Governance:

The primary organizational structure includes the director and co-director, as well as it's participating members, and affiliated faculty via the externally funded programs. Although CCP-HDRT does not have a specific designated advisory board (due to budgetary constraints), the externally funded programs and activities do engage advisory board members to solicit input on program activities, specifically research and student engagement. The BD3-REAP Advisory Board (from 2015 – 2020) consisted of 11 BD3-REAP members from three departments at CSUF, and the

following Advisory Board members: Dr. Valerie Poynor Ph.D., Mathematics- CSUF; Dr. Trina M. Norden-Krichmar Ph.D., Epidemiology- UCI; Dr. Dominique Duncan Ph.D., Neurology- USC and Brenda Gutierrez, MPH Student- CSUF. BD3-REAP program overview, student research experiences, student selection, curricula, student career pathways and faculty training were presented and discussed.

5. Resources and Sustainability:

The primary activities conducted via the center are primarily via externally funded programs and faculty/student-centered activities, but currently no funds are provided to the center via any of the external funds listed below:

Externally Funded Grants:

06/15/23 –05/31/24	Principal Investigator/MPI. Neurocognitive Aging, Health Disparities Research and Education, NIH/NIA. $207,207 (Supplement)
06/01/21 – 05/31/26	Principal Investigator/MPI. Neurocognitive Aging & Analytics Research Education (NAARE), NIH/NIA. $1,789,638
07/01/16 – 06/30/21	Principal Investigator. Big Data Discovery & Diversity through Research Education Advancement & Partnerships (BD3-REAP) SUPPLEMENT, NIH/NIMHHD. $155,550
08/01/21 – 07/30/22	Principal Investigator. Neurocognitive Aging, COVID-19 and co-morbid conditions in Native Hawaiians in Southern California. CSU FILA award & HHD Research Support Program. $10,000 & $1,500,
09/25/15 – 06/30/21	Principal Investigator. Big Data Discovery & Diversity through Research Education Advancement & Partnerships (BD3-REAP), NIH/NIMHHD. $1,021,329

Faculty Affiliated with the Center:

Archana McEligot, Ph.D., Professor, Dept. of Public Health; **Lohuwa Mamudu, PhD**, Assistant Professor, Dept. of Public Health; **Jasmeet Gill, Ph.D.,** Associate Professor, Dept. of Public Health; **Alice Lee, Ph.D.,** Associate Professor, Dept. of Public Health.

Space and Other Resources:

Space in KHS 106D is partially available for CCP-HDRT activities, and graduate assistants assigned to Dr. McEligot have been available to assist with CCP-HDRT activities, including website development. No assigned time for the director has been provided, and/or any other types of funding for center activities; therefore, assigned time and/or other initial start-up sources of funding may promote sustainability and more robust, cancer-focused activities, including workshops, special seminary and collaborations with UCI and other institutions.

6. Highlights and Accomplishments:

The primary impact for CCP-HDRT is related to conducting research, but importantly providing educational and research opportunities to underrepresented students via it's externally funded programs.

Presentations/Publications:

Lohuwa Mamudu, Bonita Salmeron, Emmanuel A. Odame, Paul H. Atandoh, Joanne L. Reyes, Martin Whiteside, Joshua Yang, Hadii M. Mamud, Faustine Williams. Disparities in Localized Malignant Lung Cancer Surgical Treatment: A PopulationBased Cancer Registry Analysis. Cancer Medicine DOI: 10.1002/cam4.5450

Adzrago D, Saanie Sulley, Ismael Tagoe, Cameron Ormiston, Emmanuel Odame, Lohuwa Mamudu, Williams F. Assessment of anxiety/depression among cancer patients before and during COVID-19 pandemic. Psycho-Oncology, Published 2022 August 27. https://doi.org/10.1002/pon.6026

Williams F, Mamudu L, Talham CJ, Montiel Ishino FA, Whiteside M. Sociodemographic Factors and Health Insurance Coverage Are Associated with Invasive Breast Cancer in Tennessee: Appalachian and Non-Appalachian County Comparison. Womens Health Rep (New Rochelle). 2022;3(1):543-551. Published 2022 May 20. doi:10.1089/whr.2021.0136

Parker C, Lee AW, Poynor V, McEligot A. Phytoestrogen and its association with ovarian cancer. Society for Advancement of Chicanos/Hispanics and Native Americans in Science. San Antonio, TX; October 2018.

McEligot A.J., Poynor V., Sharma R., Panangadan A. (2020) Logistic LASSO regression for dietary intakes and breast cancer. Nutrients, 12(9):2652.

Chandler L., Abdujawad A., Mitra S., McEligot A.J. (2021) Marijuana use and high-risk health behaviors among diverse college students post-legalization of recreational marijuana use. Public Health in Practice, Vol. 2: 100195

Lee A.W., Poynor V., McEligot A.J. (2022) Urinary phytoestrogen levels are associated with female hormonal cancers: an analysis of NHANES data from 1999 to 2010. Nutr Cancer, Epub ahead of print. PMID: 35014926.

Mamudu L., Sulley S., Atandoh P.H., Reyes J.L., Bashar R., Whiteside M., McEligot A.J., Mamudu H.M., Williams F. Time to treatment initiation of invasive lung cancer: disparities between Black and White in Tennessee. Cancer Causes Control, (under review)

Lee AW, Poynor V, McEligot AJ. Urinary phytoestrogen levels are associated with female hormonal cancers: an analysis of NHANES data from 1999 to 2010. Nutr Cancer, 11:1-9, 2022.

Lee AW, Poynor V, McEligot A. Urinary phytoestrogen levels are associated with female hormonal cancers in NHANES data from 1999 to 2010. American Public Health Association Annual Meeting. Philadelphia, PA; November 2019.

Mamudu L., Sulley S., Atandoh P.H., Reyes J.L., Bashar R., Whiteside M., McEligot A.J., Mamudu H.M., Williams F. Time to treatment initiation of invasive lung cancer: disparities between Black and White in Tennessee. American Public Health Association, November 2022

McEligot AJ. Tackling Health Disparities Through Research Education, Tackling Health Disparities Through Research Education, Training and Advancement: A Best Practice Model. Los Angeles, CA, June 2021

Student Presentations:

Disparities in Surgical Treatment of Female Localized Malignant Breast Cancer in Appalachian Tennessee, 2023 Summer Research Academy (SUReA) Conference

Assessing Surgical Treatment of Localized Malignant Breast Cancer Among Non-Appalachian Tennessee Residents, 2023 SUReA Conference

Disparities in Time to Surgical Treatment Among Females with Invasive Lung Cancer, CSUF HHD Student Showcase

Perceive Risk of Getting Cancer Association with Depression: Comparative Analysis Between Male and Female, Minority Health and Health Disparities Research Training (MHRT) Symposium

7. Planning and Strategic Outlook:

Strategic planning and outlook for the center are via a collaborative, iterative process involving formal and primarily informal meetings. The center currently has no support, although several of it's members obtain external support; and therefore dedicated discussions regarding support for the center will be a priority for the next six years.