



Effects of Major Life Events on the Development of Fibroids in Black Women - SURF Proposal 2023

I. Project Goals or Aims

Uterine leiomyoma, known as uterine fibroids, are the primary indicators of hysterectomies for women in the U.S.¹ Over 80% of U.S. Black women are predicted to develop fibroids during their lifetime, at an earlier age and a higher prevalence than White women.² The reason for this differential outcome is yet unknown.

As only two existing studies have analyzed the relation between major life events and fibroids in Black women, there is an urgent call for further observation.^{3,4}

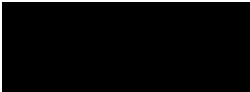
Using data from the NIH-funded Study of Environment, Lifestyle, and Fibroids (SELF),^{5,6} I will conduct an independent cross-sectional research project to infer possible relationships between major life events and disproportionate uterine fibroid occurrence in Black women, with a focus on life course stressors due to racism.

II. Project Background and Significance

Uterine fibroids affect the quality of life for 30% of premenopausal women.^{7,8} Studies have shown that at the time of hysterectomy, Black women present with larger and more symptomatic tumors.⁷ Furthermore, Black women of reproductive age are two to three times more likely to develop fibroids than their White counterparts and three times more likely to have a hysterectomy due to fibroid occurrence.⁹

Known risk factors do not explain the disparate incidence and outcome of fibroids in Black women.⁹ It has been shown that major stressors such as racism have negative health effects through psychosocial and bio-behavioral pathways over the course of a lifetime.^{10,11} There is very limited research relating stress from major life events (MLEs) and the presence of uterine fibroids. Given that the condition has such high morbidity,⁸ there is an urgent call to understand and identify risk factors.

There have only been two studies which have looked at the relationship between major life events and uterine fibroid occurrence, factoring in the health disparity between Black and White women.^{3,4} It was found that perceived racism and associated stressors predicted an increased risk of fibroids in Black women.⁴ Both studies determined that further research analyzing effects of racism over the life-course is critical to understanding the stressor-fibroid relationship.




The NIH-funded Study of Environment, Lifestyle, and Fibroids (SELF) enrolled a cohort of 1,693 Black women from the Detroit, Michigan area.⁵ The SELF study collected extensive information on fibroid occurrence and risk factor data, to investigate possible causes of uterine fibroids.⁶ Using the SELF data for my project, I will analyze different MLEs and resulting fibroid prevalence in Black women, adding to the limited information in the field.

Though the SELF study is sampled from Detroit, many of them migrated from the U.S. South. As over half of the Black population lives in the South,¹² this study will have strong implications for Black women in the South.

Besides studying major life events, I will also consider the inequitable social context in which Black women exist, which result in greater reproductive health issues.¹³ Stress and coping frameworks with an emphasis on racism and the biopsychosocial model are further theoretical frameworks that will guide my research.^{14,15}

My research project not only has potential to address the high morbidity of fibroids and learn more about the stressor-fibroid relationship, but is vital to movements for gynecological justice and health equity through a critical race theory lens.

III. Methods

In the latter half of the spring 2023 semester, Dr.  and I will be researching the effects of life-course racism in relation to fibroids. This will allow me to gain even more knowledge in the field and segue to this highly impactful SURF project.

Over the summer, I will begin by conducting a literature review of the existing research on uterine fibroids, including: the biological plausibility of stressors and fibroid occurrence, fibroid occurrence and impact among Black women, and fibroid risk factors.

I will also analyze the distribution of major life events (MLEs) and resulting stressors. Due to racial structural inequalities in the U.S. for Black people, such as disparate socioeconomic status (SES), education, and housing, I want to specifically analyze the disproportionate exposure of stress due to MLEs in Black women.¹⁶

Using information from existing literature, I will find exposure variables and identify all of the potential relevant covariates, as well as write the introduction section. Once I complete CITI training, I will be able to directly work with the data.

I will develop an analysis plan, conduct a preliminary analysis using the SELF data, and develop a conceptual model to visualize the MLE-fibroid relationship in Black women. With the data

analysis results, I will begin creating mock tables with information from univariate and bivariate analyses in SAS, and will write up the methods section of the manuscript.

Then I will complete the mock tables, analyses, and write the results. Finally, I will complete the discussion section and finish editing the manuscript. Soon after, my lab team will review the manuscript and send it out for publication.

I plan to work four days a week for ten weeks, totaling 280 hours over the duration of the summer. Dr. [REDACTED] and I have detailed each task week-by-week, with accomplishable deadlines for the analyses and each section of the manuscript. As we do currently, Dr. [REDACTED] and I will have weekly progress meetings over the summer and she will closely mentor me on this project.

IV. Preliminary Work and Experience

In the past three years, I have been a research assistant in three labs: one in Epidemiology at Gillings, one in the Institute for Trauma Recovery at the UNC School of Medicine, and my current position in Social Epidemiology at Gillings. All of my research projects have had a strong focus on health equity for minoritized groups and women's health, particularly reproductive health. This will guide my focused study of uterine fibroids and the differential impact that Black women face.


This past summer, I interned in the intensive 10-week Equity and Environmental Justice (QUEST) program at Gillings. I completed an independent research project, where I summarized the literature, conducted data analysis in R, created figures for my findings, developed a manuscript and presented a poster, and collaborated with a research team.

As a Biostatistics and Sociology double major, I have also completed extensive advanced coursework. To analyze large datasets such as the SELF data, I have taken three statistics courses and programming courses in Python and SAS. Furthermore, to frame the sociological aspects of my project, I have taken courses in critical race theory, women's and gender studies, social justice, and sociological theory.

I am a Chancellor's Science Scholar, awarded a 4-year merit scholarship for STEM achievement and research promise. Additionally, I am in Honors Carolina and the Accelerated Research Program. All of these experiences have prepared me to seek help and resources, be an effective research team member, and thrive in another independent summer project.



V. Final Products and Dissemination Plan

Throughout this research project, I will write a manuscript, which we will submit for publication at the end of summer. I will also create a poster to display my results. Dr.  and I will identify other opportunities, such as academic conferences and university presentations, so I can further present my work in the fall semester.

VI. IRB/IACUC Statement

This project does not require IRB or IACUC approval.

Total word count: 1199 words

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