Research Opportunities
Dawn Misra Research Group

I am a PhD epidemiologist (MHS in Maternal and Child Health, Johns Hopkins University; PhD in Epidemiology, Columbia University). I have, however, had wonderful past experiences with postdoctoral fellows, one a fellow from the MSU T32 (Jaime Slaughter-Acey) and a second fellow supported on my grants (Jennifer Straughen) and a third who (Shawnita Sealy-Jefferson) who successfully obtained an NIH F32 postdoctoral fellowship. I am proud to say that all three are now in faculty positions!

My research interests and goals closely parallel the mission of the National Institute for Child Health and Human Development. A central goal of the Institute is to assure that every child is born healthy and that no mothers experience adverse consequences of pregnancy. Through my work on adverse pregnancy outcomes and pregnancy complications, I am seeking to contribute to a fuller understanding of the pathways which lead to optimal perinatal health. Although my doctorate is in Epidemiology, my approach to the study of perinatal health has been broad and has included qualitative and health policy methodologies. I am passionate about this area of research and am continually exploring new methods that may move my work forward, whether they are innovative statistical analyses, measures of constructs borrowed from fields such as sociology, or identification of genetic factors that may amplify the adverse effects of environmental factors.

In 2003, I published a paper describing a contemporary perinatal health framework rooted in a life course perspective (Misra, DP, Guyer, B, Allston, A. (2003). Integrated perinatal health framework: A multiple determinants model with a lifespan approach. *American Journal of Preventive Medicine* 25: 65-75). This work sought to integrate a seemingly disparate set of factors into a life course and multiple determinants model. The lifespan perspective focuses attention toward the preconceptional and interconceptional periods as targets for intervention in improving perinatal health. This framework has been the basis for my work going forward, in direct and indirect ways.

There are several projects where we have data available and I would welcome collaborations by a student or postdoctoral fellow. Data collection is complete in most of these studies but there may be opportunities for additional assays of biobanked specimens if good ideas are proposed.

Two of our NIH studies that are ongoing and could adopt new protocols.

**Biosocial Impacts on Black Births (BIBB) (2017 – 2023).**

BIBB is a prospective longitudinal study of Black women that focuses on how social (at the individual and neighborhood levels) relate to risk of preterm birth. We are recruiting Black women in early to mid pregnancy with data collected at 2 to 3 prenatal time points (depending on entry into the study). Data include self administered questionnaires (social and behavioral factors, including life course measures), blood (to measure the lipidome and cytokines, with banked extra specimens), saliva (to measure telomere length), and medical record abstraction (maternal health, birth outcomes). For a subset of women, we have collected postpartum questionnaires to assess prenatal care quality and a few additional measures. We are currently recruiting women at 2 prenatal care sites: St. John Hospital, Detroit MI; Ohio State University Health System, Columbus OH. Data collection will continue through December 2021. As of March 1 2020, we have enrolled about 650 pregnant women and had 400 deliveries.

Students interested in participating at any level should contact me.

**Fathers Matter (2018 – 2022)**

Fathers Matter is recruiting the father of the baby (fetus) of women enrolled in the BIBB study (see above). Most fathers are recruited during the pregnancy and complete a prenatal and postpartum questionnaire as well as providing a saliva sample (telomere length). We are also recruiting fathers only at delivery. As of March 1 2020, we have enrolled about 115 fathers.

Students interested in participating at any level should contact me.
Baltimore Preterm Birth Study (Grant Title: How Social Factors Influence the Risk of Preterm Delivery)

This was an NIH R01 study funded from 2000 through 2006. We collected data on 842 women, African-American Baltimore City residents seeking care either at a Johns Hopkins prenatal clinic or delivering at Johns Hopkins Hospital. Approximately half of the cohort was recruited prenatally and half recruited at delivery. A wide range of social and psychosocial factors were examined. The prenatally recruited cohort was also enrolled in collection of vaginal smear slides and limited saliva measures for cortisol assessment. Current residential address data was also collected. This design was intended to capture women receiving late or no prenatal care who would be missed by longitudinal (prenatal) designs. Consistent with the high risk study population, our preterm birth rate was approximately 17 percent. We have published several manuscripts but there are still many excellent questions that remain to be examined with these data.

Publications to date


LIFE Study (Grant Title: Impact of Racism on Risk of Preterm Birth in Black Women)

This is an NIH R01 study funded from 2008 through 2014. We collected data on 1410 African-American women delivering at Providence Hospital in Southfield Michigan. Our preterm birth rate was approximately 15 percent. This grant collected information on a wide range of social and psychosocial factors as well as measures of women’s exposures and experiences over the life course. It included interviews with approximately half of the mothers of women in the study to better examine life course measures. Addresses, both current and childhood, have been geocoded. We have published a few manuscripts with several out for review and in development. Again, the data set is very rich and many opportunities remain.

Publications to date:


GROW Study (Grant Title: Gestational Regulators of Weight)

The PI for this study is Vinod Misra (my spouse and collaborator). One of my past postdocs and I have continued to collaborate on this avenue of research. The research was undertaken at the University of Michigan where Vinod used his K award coupled with a Doris Duke Clinical Foundation Award he obtained to examine how maternal overweight and obesity influenced pregnancy. This was a longitudinal study of pregnant women who presented for early prenatal care at the University of Michigan Health System. Women were enrolled between 6 and 10 weeks gestation. Women were eligible for inclusion if they were between 18 and 45 years of age, had a singleton pregnancy, and intended to deliver at the study hospital. Participants were seen for four additional study visits at 10-14, 16-20, 22-26, and 32-36 weeks gestation. At each of the five study visits, questionnaire data, anthropometric measurements (maternal weight and fetal ultrasound, including measures of maternal and fetal fat on half the sample), and biological samples were collected. Baseline maternal characteristics were obtained by questionnaire and medical record review. Data were collected, over two phases, on 286 pregnancies. The sample was well educated, relatively high income, and primarily of white ethnicity. However, there was heterogeneity with regard to weight with approximately half of the cohort classified as normal weight and half as overweight/obese. We have published several manuscripts with more in development. Again, the data set is very rich and there are many opportunities that remain.

Publications to date:

Placenta Research
I collaborate with a placental pathologist on a number of studies concerning the placenta and its relationship to birth outcomes as well as later childhood outcomes. Most recently we are involved in research on the placenta as a screening tool to identify infants likely to develop autism spectrum disorders. We have an ongoing community cohort on autism and the placenta capitalizing on the universal placenta collection of a large New York city hospital.

General


10. Validity and reliability of measurement of placental infarcts (NCPP study, US)

**Developmental Origins Health and Disease**


**Prenatal Origins of Autism: Placental Predictors**


3. Placental vasculature differences in a high autism risk cohort and the general population.

4. Relationships between autism risk and placental size, shape, and vasculature in a low risk population based cohort (ALSPAC, UK).