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Georgia Southern University

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Dr. Nandi Marshall, Jiann-Ping Hsu College of Public Health Georgia Southern University, assistant professor and alumni, was selected as a 2017 Governor’s Teaching Fellow for the academic year symposium program. As one of 15 faculty members from institutions of higher education across the state, Dr. Nandi Marshall was selected after a highly competitive application and selection process.

The Governor’s Teaching Fellows Program was established in 1995 by Zell Miller, governor of Georgia, 1991-1999, to provide Georgia's higher education faculty with expanded opportunities for developing important teaching skills. Governor Miller envisioned that this program would address faculty members' pressing need to use emerging technologies and instructional tools that are becoming increasingly important for learning in today's society.

The Governor’s Teaching Fellows Program is an outreach program of the Institute of Higher Education at the University of Georgia. To improve the quality of instruction in Georgia's colleges and universities, the Governor's Teaching Fellows Program assumes the complex challenge of moving college faculty members to the leading edge of instructional practice. This effort to enhance instruction in public and private higher education statewide is very much in keeping with the University of Georgia's traditional mission as a land-grant institution committed to diversified outreach and public service.

To date, more than 84 different disciplines, professions and teaching areas have been represented by over 600 Fellows from more than 71 public and private institutions statewide. To learn more about the Institute of Higher Education and the Governor’s Teaching Fellows Program, including information on how to apply, go to http://ihe.uga.edu/outreach/governors-teaching-fellows/
Mosquito-borne diseases are common high-impact diseases in tropical and subtropical areas. However, other non-mosquito vector-borne pathogens oftentimes cause diseases with the same geographic distribution, seasonality, and clinical manifestations, thereby contributing their share to the morbidity and mortality caused by febrile illnesses in these regions. The purpose of this publication was to prepare a comprehensive literature review in order to identify knowledge gaps about tick, flea-, and louse-borne diseases of veterinary and public health significance in Nigeria.

Our analysis confirmed that Nigeria, as in many other countries in tropical and subtropical regions, is likely to have a broad spectrum of pathogens and diseases transmitted by various ectoparasites. However, these diseases are generally overlooked due to insufficient public health and veterinary resources, the instability of the political environment, and the many widespread health crises in the region. There is ample scientific evidence for the presence of a variety of ticks, fleas, and lice in Nigeria, the sine qua non for transmission of the vector-borne diseases they carry. Unfortunately, precise information about the incidence and prevalence of specific diseases transmitted by each of these vectors among sylvatic and domestic animals, and to people is very limited; this information is essential to drive the flow of additional domestic and international resources to address these challenges. Early investigations in Nigeria were primarily focused on the veterinary and economic impacts of these ectoparasites, while the more recent work utilizing more advanced molecular methods has provided more accurate and agent-specific data on the magnitude and complexity of the circulation of multiple non-mosquito vector-borne pathogens in Nigeria.

From a bird’s eye view, this publication provides an essential baseline summary of the scientific knowledge obtained to date in Nigeria about its non-mosquito vector-borne pathogens. It is hoped that it will stimulate improvements in the surveillance of the veterinary and human non-mosquito diseases occurring in Nigeria. Due to increasing recognition of these diseases in other African countries, veterinary and public health professionals in Nigeria should expand the list of possible diseases considered in patients presenting with fevers of unknown etiologies.

1. Oguntomole who was trained as a physician in Nigeria, states that this project was an excellent learning experience and an eye-opener with respect to the diagnosis and management of vector-borne diseases especially in rural areas.

Dr. Eremeeva adds that addressing these diseases will contribute to numerous positive public health outcomes. Previous observations in other tropical counties, such as Sri Lanka, have clearly demonstrated that including rickettsial diseases in the list of differential diagnoses for febrile illnesses improved patients’ outcomes. This improvement was due to enhanced physician recognition of these diseases and implementation of earlier correct treatments leading to faster recovery and release of patients from the hospital and a reduction in associated medical costs.

“Tick-, Flea-, and Louse-Borne Diseases of Public Health and Veterinary Significance in Nigeria,” was recently published in Tropical Medicine and Infectious Disease.

Jiann-Ping Hsu College of Public Health Georgia Southern University MPH students Mr. Oluwaseun Oguntomole and Mr. Ugochukwu Nwaeeze worked collaboratively on the study with their faculty mentor, Dr. Marina Eremeeva.
Georgia Southern Examines Methods for Improving the Estimate of Diagnostic Odds Ratio

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Diagnostic odds ratio is defined as the ratio of the odds of the positivity of a diagnostic test results in the diseased population relative to that in the non-diseased population. It is a function of sensitivity and specificity, which can be seen as an indicator of the diagnostic accuracy for the evaluation of a biomarker/test. The naïve estimator of diagnostic odds ratio fails when either sensitivity or specificity is close to one, which leads the denominator of diagnostic odds ratio equal to zero. We propose several methods to adjust for such situation. Agresti and Coull's adjustment is a common and straightforward way for extreme binomial proportions. Alternatively, estimation methods based on a more advanced sampling design can be applied, which systematically selects samples from underlying population based on judgment ranks. Under such design, the odds can be estimated by the sum of indicator functions and thus avoid the situation of dividing by zero and provide a valid estimation. The asymptotic mean and variance of the proposed estimators are derived. All methods are readily applied for the confidence interval estimation and hypothesis testing for diagnostic odds ratio. A simulation study is conducted to compare the efficiency of the proposed methods. Finally, the proposed methods are illustrated using a real dataset.

"Methods improving the estimate of diagnostic odds ratio," was recently published in Communications in Statistics – Simulation and Computation.

Ms. Yisong Huang, Biostatistics Alumni at the Jiann-Ping Hsu College of Public Health Georgia Southern University (JPHCOPH) and postdoctoral fellow and at Augusta University, was the lead author and Drs. Jingjing Yin and Hani Samawi, JPHCOPH Biostatistic Department were the co-authors.
Georgia Southern Examines Coliphage as a Quality Indicator of Beach Water

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Gastrointestinal disease affects millions of people in the United States and places a substantial economic burden upon healthcare systems. Recreational waters polluted with fecal material are a main source for transmission of gastrointestinal disease. Georgia beaches are monitored for the presence of fecal indicator bacteria, but these bacteria are not well associated with enteric viruses. The United States Environmental Protection Agency (US EPA) has recently proposed coliphage (a virus of Escherichia coli) as an alternative indicator of fecal contamination in recreational waters. The present study compares fecal indicator bacteria and coliphage concentrations at two Georgia beaches with adjacent creeks that have a history of pollution.

For one year, samples and environmental data were collected from four sites on Jekyll Island, GA, during the peak swimming season and the off-season. Samples were processed using US EPA-approved methods for membrane filtration and plaque formation. Statistical analyses were performed using t-tests and Spearman correlations.

The highest numbers of enterococci and significant differences with coliphage were found at Saint Andrews Creek during the swimming season and the off-season. The enterococci concentrations at Clam Creek sites did not exceed recommended recreational water criteria. During the off-season, concentrations of enterococci and coliphages were different at Clam Creek sites, indicating a potential risk for presence of enteric virus when enterococci could not be detected.

The US EPA has proposed to adapt coliphage concentrations as an alternative indicator of water pollution for routine beach monitoring nationally. The present study provides a background for adoption of this method in Georgia. Measures of enterococci do not provide sufficient information about the associated human health risk. Inclusion of these viral indicators will improve decision making for beach closures and for protection of the health of swimmers.

“Coliphage as an indicator of the quality of beach water to protect the health of swimmers in coastal Georgia,” was recently published in the Journal of the Georgia Public Health Association.

Mr. Javier Gallard-Gongora, MPH student at the Jiann-Ping Hsu College of Public Health Georgia Southern University (JPHCOPH), was the lead author, Ms. Kathryn McGowan Munck, JPHCOPH MPH student, Dr. Jeff Jones, and Dr. Asli Aslan, JPHCOPH assistant professors were co-authors.