ABSTRACT

TONYA E. FARROW-CHESTNUT. Defining Multimorbidity Space: Structural characteristics, spatial variation of inpatient multimorbidity networks (IMN), and coronary heart disease. (Under the direction of DR. HARRISON CAMPBELL)

Adults in the United States suffer from two or more chronic conditions at the same time (i.e. multimorbidity). Multiple chronic illnesses, such as coronary heart disease, cancer, and diabetes, dramatically shorten life expectancy and present the individual and healthcare system with numerous challenges. To date, no study has assessed multimorbidity and how it varies spatially using quantitative network analysis (QNA), exploratory spatial data analysis (ESDA), and the State Inpatient Discharge Database (HCUP SID). The goals of this study are first, to test the application of QNA as a complementary visualization and analytical tool; second, to explore the geographic variation of multimorbidity and coronary heart disease at the sub-state or county level; lastly, to examine if patterns differ based on gender, race and ethnicity. A cross sectional study design was implemented using the North Carolina HCUP SID. Visualization of multimorbidity networks was successfully demonstrated using QNA. Differences were detected between gender, race and ethnicity impatient multimorbidity networks (IMN). Relationships were observed between underlying social determinants of health and the average weighted degree of coronary heart disease. Multimorbidity varied spatially and average weighted degree of IMN was not distributed randomly; characteristics of multimorbidity space. Mecklenburg, Guilford and Wake Counties had the highest average weighted degree for non-Hispanic white and non-Hispanic black IMN. Limitations include endogeneity, quality of data, missing data, and selection bias. Causal inference cannot be made based on pattern layout of node interactions or generalization to other populations. In conclusion, QNA, network visualization and ESDA are useful exploratory and descriptive tools for studying multimorbidity. This study contributes to new measures and improved understanding of the geographic burden of multimorbidity at the sub-state level.