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“Effect of Race and Sex on the Severity of Multiple Sclerosis”

Multiple sclerosis (MS) is an autoimmune disease that causes chronic inflammation and demyelination of the central nervous system and affects nearly 1 million people in the US. The genetic and environmental factors in determining the distribution and severity of MS have been debated ever since morbidity and mortality statistics were first derived. While there is a recent recognition that racial or sexual differences affect MS incidence and disease course, further investigation into these trends may provide additional evidence into the risk or protective factors within racial groups. To investigate the effect of race and sex on the severity of MS, we statistically analyzed different groups of patients with MS at the LSUHSC neurology clinic using the Expanded Disability Status Scale (EDSS) and Symbol Digit Modalities Test (SDMT). EDSS is a widely utilized measure of physiological disability in people with MS, and SDMT is an assessment tool which measures information processing speed as a surrogate measure of cognitive decline in people with MS.

For this study, 84 participants diagnosed with MS were recruited. Participant's EDSS was evaluated by physicians at the LSUHSC neurology clinic, and SDMT was administered to each participant. We used one-way analysis of variance (ANOVA) to compare different variables in black versus white and female versus male participants. In black versus white participants, there was no significant difference in EDSS score ($F=0.469$, $p=0.495$) or SDMT ($F=0.106$, $p=0.745$). However, the white sample was significantly older ($F=15.91$, $p<0.0001$) and had a longer disease duration ($F=4.93$, $p=0.029$) compared to the black sample. In Female versus Male comparison, EDSS score ($F=1.64$, $p=0.20$), SDMT ($F=2.49$, $p=0.12$), and age ($F=2.37$, $p=0.13$) were not significantly different between groups. However, male participants had a significantly higher disease duration ($F=4.27$, $p=0.042$).

Although there were no significant differences in EDSS score and SDMT in black versus white participants, the white sample was significantly older and had a longer disease duration compared to the black participants. This suggests that MS in black participants may have more aggressive disease course and lead to an earlier disability as they reached the same disease state (EDSS and SDMT) as white participants much more quickly. When comparing male and female participants, male participants had a significantly longer disease duration, but did not score significantly worse on the EDSS score and SDMT. This indicates that MS in female participants may lead to worse disease course.