Alzheimer's Disease Risk Model Using Survival Analysis: Identifying Key Modifiable Risk Factors to Be Implemented in Public Health Strategy

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In its present form, this fourth-year investigation into Alzheimer's disease risk factors addresses the following question: what factors contribute the most in increasing an individual's likelihood of developing Alzheimer's disease (AD)? Currently, AD pathogenesis is thought to occur as a result of complex interactions among genes and other risk factors. While factors such as age and family history of cognitive impairment have been strongly correlated to increased AD risk, other factors that are the product of environment and lifestyle are a source for continued exploration. Through survival analysis, this study compared the relative risks of modifiable risk factors. To determine which risk factors to include in model development, a systematic review of AD risk literature was conducted to promote the selection of factors with the strongest supporting evidence. Utilizing the Uniform Data Set from the National Alzheimer's Coordinating Center database, 1,185 subjects and 8 potential explanatory variables were examined from 2005 to 2015. After using binary code to prepare the variables for analysis, the resulting values were entered as covariates in the building of a Cox Proportional Hazards Model through R Statistical Programming. Upon analysis of each covariate's hazard ratio, the model revealed that subjects who lived alone and subjects who had obtained less than or equal to a high school education were more likely to be diagnosed with AD. Furthermore, these factors were shown to have greater significance over factors related to the vascular system. Given that the heart-head connection has been given greater attention over education and social interaction, this study suggests that here should be a refocus on these factors by the AD research

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