# Evaluation of Different Factors Leading to the Genesis of Alzheimer's Disease: Research Proposal on Dementia

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Alzheimer's disease. Identification of the predisposing risk factors would help to reduce the prevalence and complications of both these diseases. Based on the evaluation of risk factors, a public health model

fndings of Finehout et al and implicated diferent sets of biomarkers from the CSF [37].

Studies have also implicated the assay of biomarkers from the serum and plasma of the target population. Graf-Radford et al have implicated that plasma Aβ-42/Aβ-40 ratio is an efective diagnostic measure for Alzheimer's disease [38]. Tis measure is efective in diagnosing Alzheimer's disease and cognitive defcits in elderly individuals. On the other hand, Paganelli et al indicated that plasma TNF-alpha/IL-1β-40 ratio is also an efective diagnostic measure for Alzheimer's disease. Te authors reported that plasma TNF-alpha/IL-1β-40 ratio was signifcantly lower in individuals who sufered from

Specific Endpoints: Prevalence of life-threatening injuries and evaluation of MMSE scores would be measured after 1-year engagement of the family members of study participants in therapeutic interventions.

## Statistical tests and plan of analysis

Continuous variables are expressed as mean (SD), or median (25%, 75%), and categorical variables are frequencies (%). The Student t-test or One-way analysis of variances was used for comparisons for continuous variables. The $\chi^2$ test would be used for comparisons for categorical variables. The prevalence and 95% confidence intervals for dementia and AD are calculated. The Student t-test, One-way analysis of variances and $\chi^2$ test would be used for comparison analysis. The comparisons would be based on the MMSE scores. The MMSE scores would be evaluated based on the individual determinants. The individual determinants would include the different Air Quality Indexes, physical/physiological parameters, and demographic/lifestyle characteristics of the study participants. The MMSE scores would be categorized into three classes of dementia. The individual determinants would be compared across three classes of MMSE scores. Such evaluation would help to speculate the causal relationship between the individual determinants of dementia. The statistical tests of comparison compare the mean of two or more groups. These tests help to signify whether the mean of one group is significantly different from another.

The causal relationships would be confirmed through correlation analysis. For this purpose, Pearson's correlation coefficient would be estimated. Pearson's correlation coefficient estimates the relation between two variables. The correlation coefficient could be positive or negative. A positive correlation indicates that increasing the magnitude of one variable would increase the magnitude of another variable. On the other hand, negative correlation indicates that increasing the magnitude of one variable would decrease the magnitude of another variable. If the correlation coefficients are statistically significant, they would be considered for regression analysis.

Regression analysis would be conducted to evaluate the relation of different independent variables with the dependent variable. The dependent variable for the present study would be MMSE score. The independent variables would include the different Air Quality Indexes, physical and physiological parameters and demographic and lifestyle characteristics of the study participants. The analysis would be based on a multiple logistic regression model. The regression model would holistically evaluate the impact of independent variables on the dependent variable.

## Hypothesis testing

These analyses would be repeated in both the experimental groups that are considered for the present study.

For Comparative Analysis: The null hypothesis contends that there is no significant difference in mean MMSE (Mini-mental state examination) scores between patients with respect to different independent variables. Any observed difference would be attributed to chance factors of random sampling. The null hypothesis would be accepted if the p-value for the statistical test of significance is greater than 0.05 ($p>0.05$). The alternative hypothesis contends that there is a significant difference in mean MMSE (Mini-mental state examination) scores between patients with respect to different independent variables. Any observed difference would not be attributed to chance factors of random sampling. The alternate hypothesis would be accepted if the p-value for the statistical test of significance is lesser than 0.05 ($p<0.05$).

For Correlation Analysis: The null hypothesis contends that there is no significant relation between MMSE (Mini-mental state examination) score and the different independent variables predicted to cause dementia. Any observed correlation would be attributed to chance factors of random sampling. The null hypothesis would be accepted if the p-value for the Pearson's correlation coefficient is greater than 0.05 ($p>0.05$). The alternative hypothesis contends that there is a significant relation between MMSE (Mini-mental state examination) score and the different independent variables predicted to cause dementia. Any observed correlation would not be attributed to chance factors of random sampling. The alternate hypothesis would be accepted if the p-value for the Pearson's correlation coefficient is lesser than 0.05 ($p<0.05$).

For Regression Analysis: The null hypothesis contends that MMSE scores could not be holistically and significantly predicted from the independent variables, which are predicted to cause dementia. Any observed prediction would be attributed to chance factors of random sampling. The null hypothesis would be accepted if the p-value for the regression analysis (based on ANOVA) is greater than 0.05 ($p>0.05$). The

2. Alzheimer's Association (2008) Alzheimer's disease facts and fgures. Alzheimers Dement 4: 110-133.
3. Boustani M, Callahan CM, Unverzagt FW, Austrom MG, Perkins AJ, et al.

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