LATENT CLASS MODELS IN DIAGNOSIS OF CEREBROVASCULAR ILLNESS

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Latent class analysis - LCA is a statistical method for finding subtypes of related cases (latent classes) from multivariate categorical data. Useful in finding distinct diagnostic categories given presence or absence of several symptoms, types of attitude structures from survey responses etc. Another use being the evaluation of diagnostic tests in the absence of a gold standard. The main advantage of the method is that it does not rely on traditional modeling assumptions, which are often violated in practice, (linear relationship, normal distribution, homogeneity).

In the present paper the method has been used for the classification of cerebro vascular illness into hemorrhage and infarction based on certain clinical variables which are binary in nature and which are used in the diagnosis of the illness. It is important to know the exact type as management depends on the type. The results obtained are compared with the familiar methods of linear discriminant analysis and Logistic regression analysis.

Assumption: Latent classes are the dimensions, which structure the cases with respect to a set of variables. When all latent classes are controlled, only a random relationship among variables remains. That is, latent class analysis divides the cases into latent classes, which are "conditionally independent", meaning that the variables of interest are uncorrelated within any one class.

Data : One hundred consecutive patients who presented to the Neurology services of National Institute of Mental Health and Neuro Sciences with H/O completed stroke of >24 hours and <2/52 and age >16years. Patients with hemorrhage because of HI or Tumor excluded. About 55 variables ranging from Demographic, Past history, family history, symptoms at onset,and neurological examination findings were included.

Results : A latent class analysis was done with 13 variables with a single latent class to begin resulted in two classes, which could be clearly identified as hemorrhage and infarction. The results will be presented.