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Einladung zum

Biometrischen Kolloquium

am Donnerstag, dem 9. Juni 2005, 14:00 Uhr s.t.

in der Bibliothek (Ebene 3, gegenüber Lift) des MSI
(Besondere Einrichtung für Medizinische Statistik und Informatik)
der Medizinischen Universität Wien
Spitalgasse 23, 1090 Wien

Es spricht Frau Dr. Yasemin Genç vom Institut für Biostatistik der
Universität Ankara zum Thema:

Closed Form Methods to Compare Two Proportions for
Clustered Data

Wir ersuchen um zahlreichen Besuch für diesen sehr interessanten
und aktuellen Vortrag.

Karl Moder   Werner Brannath
Präsident   Sekretär

CLOSED FORM METHODS TO COMPARE TWO PROPORTIONS
FOR CLUSTERED DATA

- ### *Yasemin Genç*

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The most common problem encountered in many medical studies is the incorrect statistical analysis of multiple observations taken from the same subject. While observations from the different subjects can be considered statistically independent, different observations from the same subject are correlated. The actual correlation varies from study to study and measurement to measurement. This data structure is called as "clustered data" in statistical literature.

Clustered data occur frequently in several fields of studies. For example, in periodontal studies, observations can be taken from multiple sites (gums, teeth or tooth surfaces) on each subject. In teratologic studies the litter is the cluster, but measurements are taken from each animal in the litter. A special class of the studies are community intervention trials in which medical practices, factories, or entire cities are taken as cluster.

Conventional statistical methods are not appropriate for clustered data, since they do not take into account the dependencies among observations within the same cluster. Therefore, several statistical methods have been proposed in the literature. Some of these are based on likelihood inference and others moment methods. However, to make reliable estimates, these methods require fairly large sample sizes (more than 40 cluster per group). Another shortcoming of them is the requirement for computationally intensive iterative solution.

In our study, we have presented closed-form methods for clustered-binary data to compare two proportions estimated from independent groups. These methods include Adjusted chi-square test, Ratio estimate chi-square test, Pooled ratio estimate chi-square test, Two-sample t test and Wilcoxon rank-sum test for single 2x2 tables and Mantel-Haenszel tests for multiple 2x2 tables. These methods has been applied on a data arising from a periodontal study and compared to the result of a Standard Pearson chi-square test.

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