META-ANALYSIS OF CLINICAL TRIALS WITH HOMOGENEITY OF VARIANCES OF TREATMENT EFFECTS

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In combination summary information from independent studies which all of them are following the same goal , known as meta-analysis, choosing the proper model is a crucial part of it. Two models commonly used are fixed effect model and random effect model assuming homogeneity and heterogeneity for the true effect among studies respectively. These assumptions almost are tested in order to choosing the appropriate model so homogeneity in almost all of articles about meta analysis refers to equity of treatment effects in different studies. In this study we are discussing homogeneity among studies not about true effects but about variances of true effects in different populations .in the other words we are questioning about homogeneity of variances in different studies and it's consequences on estimation procedures of over all treatment effect. In the case of equality of variances in populations which studies come from them we can enhance precision of estimator of overall treatment effect by substituting a pooled variance by individual variances in weights of individual treatment effects computed from each study. Indeed we will use summary information from independent studies not only to improve estimated treatment effects but also common variance of populations which in turn will improve precision of estimator of overall treatment effect in meta analysis.

Homogeneity of variances of treatment effects in meta-analysis of clinical trials with binary response for the first time was proposed in this study and in this regard a new form of variance of odds ratio has been derived with the assumption of homogeneity of variances, ways of meta-analysis for both binary and continuous response variables in different models of meta-analysis with and without application of pooled variance is discussed .in. in application two meta-analysis has been performed in different models with and without pooled variance, one for studies about garlic effect in lowering cholesterol and second, studies of aspirin effect in reduction of mortality rate in MI patients. Comparison of proposed method for meta-analysis based on using pooled variance instead of individual variances, to previous methods in different models has been accomplished by a program written in S-plus .this program can produce data and simulate different ways of meta-analysis and compare them .programs are written for both situations for binary response variable and continuous in which of them comparing two method with and without pooled variance. Criteria for comparison of different methods in this programs are coverage probability of CIs ,mean square error of estimators and power of methods in detecting treatment effect.