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SAMPLING ERRORS OF PREVALENCE ESTIMATES OF RARE DISEASES
BASED ON SURVEYS OF MEDICAL SOURCES
(Abstract)

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A prior publication derived the formulas for three unbiased estimates of the prevalence of a rare disease in the population, based on a stratified random sample of medical sources. Deriving unbiased estimates of the number of diagnosed cases based on patients reported by a sample of medical sources presented a special problem, since it is not uncommon for the patients to have been treated by more than one medical source. The three formulas differed in the extent that they utilized information about multiple reporting of patients collected in the sample survey.

The present paper derives the variance formula for each unbiased estimate of the prevalence of a rare disease that was presented in the earlier publication. The variances are derived under certain simplifying assumptions: (a) a medical source reports at most one patient; and (b) each patient is reported by the same number of sources. The paper compares the variances of the different estimates, and for each estimate notes the effect on the variance of the multiplicity of patient reporting.