DIAGNOSTIC PERFORMANCE OF BREAST CANCER SCREENING TESTS IN THE ABSENCE OF GOLD STANDARD

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We evaluated the diagnostic performance of breast cancer screening tests; Mamography, Ultrasonography, Power Doppler, Contrast Enhanced Power Doppler in the absence of gold standard by Latent Class Analysis (LCA), Composite Reference Standard (CRS) and Discrepant Resolution (DR) approaches. Accuracy of combinations of tests was also evaluated. When a concept which is not directly observable exists and if there are some manifest variables that are imperfect indicators of this underlying latent variable, LCA can be applied to explain the covariation among the observed variables. CRS combines the results of several imperfect reference tests to define better reference standard. DR uses additional resolver tests to evaluate the discrepant results. Deficiencies with these approaches are identified. Analytic comparisons of the estimates obtained from each method are made. Accuracy of results was identified with histopathology results and percentage of correct classification was obtained for each approach. The best classification results were obtained by LCA. LCA yielded the best prevalence estimate of the disease. Prevalence estimated using CRS is always greater than the DR. Combination of all tests is highly specific when compared to individual tests. Specificity for tests is higher in CRS and DR, LCA gave the most sensitive results. Positive predictive values of tests are greater when DR and CRS are used but negative predictive values are greater when LCA is used.