

UNIVERSITY OF CALIFORNIA

Los Angeles

Observer Variability
in the Histologic Diagnosis of
Breast Disease

A dissertation submitted in partial satisfaction of the
requirements for the degree Doctor of Philosophy
in Public Health

by

Morgan Elizabeth Stewart

1985

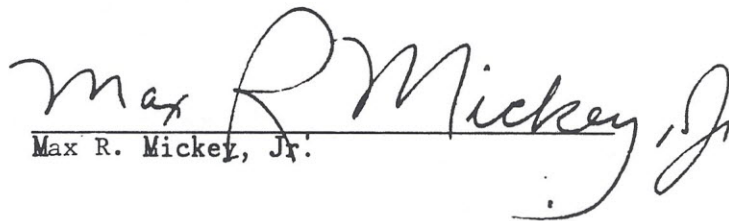
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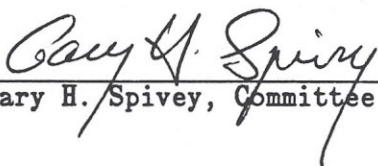

Virginia A. Clark


Anne H. Coulson


Walter F. Coulson


Max R. Mickey, Jr.


Barbara R. Visscher


Gary H. Spivey, Committee Chair

University of California, Los Angeles

1985

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VITA

August 21st, 1949 Born, Glendale, California

1970 B.A., Mills College, Oakland, California

1977 to 1979 Survey Worker and Survey Supervisor, Hypertension
Detection and Follow-Up Program (HDFP),
School of Public Health, UCLA

1979 M.S.P.H., UCLA

1979 to 1981 Statistician, Benign Breast Disease Study,
School of Public Health, UCLA

1982-present Senior Biostatistician and Manager, Statistical
Services Dept., Cedars-Sinai Medical Center,
8700 Beverly Blvd., Los Angeles, California

1983-present Adjunct Assistant Professor, Chapman College,
8740 La Tijera Blvd., Los Angeles, California

1984 - present Member of the Editorial Board,
Journal of Perinatology.

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ABSTRACT OF THE DISSERTATION

Observer Variability in the Histologic
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Professor Gary H. Spivey, Chair

Diagnostic reliability or reproducibility is important in medicine because treatment and prognosis depend to a large extent on diagnosis; it is also important in epidemiologic research, since a disease must be reliably diagnosed before exposures associated with its development may be investigated. Numerous studies of diagnostic reproducibility, both within and between observers, have demonstrated that the level of reliability attained in clinical diagnosis is frequently poor. To examine the reliability of histologic diagnosis of benign breast lesions and breast cancer, tissue slides from 1039 breast biopsies were independently classified by two expert surgical pathologists, using two major classification schemes. A subset of cases was examined twice by each pathologist. Intra-observer and inter-observer reliability were assessed using two techniques: ordinal-scaled agreement scores and kappa statistics. While excellent reliability was observed for classification of cases as cancer or benign disease, the degree of inter-observer reliability attained using either of

the two classification systems was for many of the benign lesions disappointing. While intra-observer reliability is generally found to be better than inter-observer reliability, this was not the case in this study; the intra-observer and inter-observer reliabilities were comparable. This was probably due to the large proportion of "difficult" slides which were reread by one or both pathologists and hence were available for the intra-observer reliability analysis. Over the past several years, many investigators have postulated that the more severe types of breast atypia (hyperplasias and intraduct papillary lesion) are precursors of breast cancer, while less-hyperplastic types of BBD such as fibroadenoma and cystic disease have no association with subsequent cancer. The finding of only slight-to-moderate reliability in the diagnosis of duct hyperplasia and lobular hyperplasia has implications for this hypothesis: specifically, rate ratios and risk ratios comparing cancer rates in patients with and without a history of the more hyperplastic-type benign lesions may be subject to a large degree of misclassification bias.