

**Amy Frances Brown**

**Research  
in  
Nursing**

**W. B. Saunders Company**

# **Research in Nursing**

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Dedicated to my friend,  
MAVIS MARIE POWELL

"We do not know whence ideas come, but the importance of the ideas in medical research cannot be overestimated. From the nature of things, ideas do not come from prosperity, affluence and contentment, but rather from the blackness of despair, not in the bright light of day or the foot-lights' glare but rather in the quiet, undisturbed hours of midnight or early morning, when one is alone to think."

- Frederick Grant Banting

# Preface

Research is essentially a search for truth. One of the characteristics of a profession is that it has a body of knowledge, the extension of which is directed by members of that profession. Whether or not nursing is truly a profession is an issue frequently raised by both nurses and non-nurses. Members of other disciplines have stated that no group is making such strenuous efforts as is the nursing group to demonstrate professional status. Important evidences of this group self-consciousness are the lip service to and, to a lesser extent, actual participation in research activities. Yet it must be recognized that the essence of research is lacking in much of what is sometimes labeled as research in nursing. A part of this problem is, no doubt, a consequence of the fact that many nursing education programs are conducted by a nurse faculty without much guidance from professional colleagues who have had adequate educational and experiential background for utilizing the accepted criteria for research.

Some qualified nursing educators who are generally regarded as experts in particular clinical fields question whether there is content which may properly be classified at a master's level in certain of the clinical fields. There are other nurses, trained in research techniques through doctoral study in another discipline, who advise strongly against setting up doctoral programs in nursing. Whatever may be the proper answers to these questions, it is probably true that graduate nurses who wish to extend their skills in prosecuting or evaluating research studies in nursing would benefit by the utilization of a compact source of information on research methodology, with particular application to nursing. It is to this end that the writing of this book is directed.

The beginnings of the author's interest in research go back so far in terms of time and experience that it is difficult to distinguish them clearly. I should like to pay tribute here to some of the individuals who have intensified or directed this interest.

The first of the author's projects which might be described as having the nature of research were carried on as an instructor in medical nursing at Vanderbilt University. Vanderbilt University being a stronghold of scholarship and research, it was natural that this should be so. While there, with assistance in the collection and analysis of data from several graduate nurse students majoring in ward administration and teaching, the writer made a two-year study of the patient-days of various disease conditions found on the medical ward service;<sup>1</sup> a one-year study of the way in which a full time instructor in clinical nursing spends her time;<sup>2</sup> and a one-year study of the time required for supervising students with certain procedures.<sup>3</sup>

Another valuable experience at Vanderbilt University was the opportunity to study biostatistics in a class of selected medical, nursing, and public health colleagues under the guidance of Paul Densen. One of the

<sup>1</sup> Selected graphs from this study are included in Brown, Amy Frances: Clinical Instruction: 34, Figure 5. W. B. Saunders Co. 1949.

<sup>2</sup> Ibid.: 12, Figure 2.

<sup>3</sup> Ibid.: 63.

outstanding values of this experience was learning, through the evaluation of published research reports in the field of medical literature, the pitfalls into which many would-be medical researchers fall.

The imminent danger of such pitfalls was again forcibly demonstrated, in the context of educational research, while taking a research seminar in quantitative methods taught by Chester Harris, then of the University of Chicago.

While teaching nursing education courses at Western Reserve University, it was my privilege to participate in the stimulating all-faculty research seminars conducted by Genevieve Knight Bixler, to listen to the deliberations of a faculty group research project under the leadership of Margene O. Faddis, and to engage jointly with Anne L. Austin in a research study of the graduates of the advanced professional program for the years 1925-45. In such an environment, scholarship flourishes and one learns to combine the science and art of teaching, research, and writing.

To all my English teachers in high school, college, and the university I owe much, especially to Mabel Corbin, my mentor in English composition and in journalism at Western Illinois State College; and the late Professor J. Hubert Scott, under whom I had courses in advanced rhetoric during graduate study at the State University of Iowa.

In several courses of individual instruction and in graduate seminars conducted by Ralph W. Tyler, then Chairman of the Department of Education of the University of Chicago, the author learned more than can be acknowledged with regard to research methods and the art of writing.

Although wishing to acknowledge the contributions of these and other instructors to the concepts embodied in this book, the author must assume responsibility for any misinterpretation or errors if such there be.

Several staff members of the State University of Iowa gave suggestions or assistance with the research project reported in Chapter 11. Paul J. Blommers, Professor of Education; Carl Gochenour, Manager, Statistical Service Department; and Carl V. King, formerly Manager of Printing Service and now Assistant Registrar, gave technical advice on the formulation of the questionnaire on the teaching of medical nursing. Mrs. Dorothy K. King, Statistician, carried with distinction the responsibility for all the correspondence with respondents and also directed the tabulation of returns.

Other staff members from the State University of Iowa offered suggestions in the initial planning of the clinical investigation reported in Chapter 12: Gerhard Hartman, Superintendent of University Hospitals; and William B. Bean, Professor and head of the Department of Internal Medicine.

To Dr. Robert C. Hardin, Professor of Medicine and Associate Dean of the College of Medicine, I should like to acknowledge deep gratitude for his encouragement throughout the entire study, as well as his expressions of confidence in my ability to do research.

The doctoral dissertation was guided by advisers in the Department of Education, University of Chicago. Ralph W. Tyler served as chairman until December, 1954. After his leaving the University of Chicago, Maurice L. Hartung became chairman. Other members of the advisory committee were Benjamin S. Bloom and Kenneth Rehage.

Mavis Marie Powell, at that time a staff nurse at the State University of Iowa, devoted most of her free time for a period of five months in the spring of 1953 to assisting in the analysis of the case records. The other judges assisting in the case analysis were Sister Mary Adrian, Sister Mary Barbara Ann, Sister Mary Jean, Sister Mary Maureen, and Sister Mary Raymunda of Mount Mercy College Division of Nursing, Cedar Rapids, Iowa; and Sister Mary Bertrand, Sister Mary Roselita, and Mrs. Frances Cassel of Mercy Hospital, Iowa City.



Many individuals were thoughtful and helpful in providing information concerning nurses who hold a doctoral degree. Special acknowledgement is due Elizabeth K. Bixler, Dean of the Yale University School of Nursing, for detailed information concerning the Yale faculty members and the graduates of the Yale University School of Nursing.

Helpful suggestions on Chapters 1, 2, 3, 6, and 8 were made by Mrs. Martha M. Brown, Assistant Director in Charge of Graduate Nurse Education and Associate Professor of Nursing at Washington University School of Nursing, St. Louis, Missouri.

Finally, an invitation is extended for detailed comments from users of the book. The critical comments of members of the particular public to which a book is directed are an invaluable source of reference to the author in the event of possible revisions of any book.

AMY FRANCES BROWN

Alexis, Illinois

# List of Formulas

PROCEDURE	PAGES	FORMULA NUMBER	FORMULA
Short method for mean of frequency distribution	48	1	$M = M' + \frac{(\sum fd) i}{N}$
Median of grouped data	50	2	Median value = (Lower limit of interval in which median score falls) + $i \left( \frac{N}{2} - \frac{\text{number of cases below that interval}}{N} \right)$
Quartile deviation	55	3	$Q = \frac{Q_3 - Q_1}{2} = \frac{75\text{th centile} - 25\text{th centile}}{2}$
Skewness	58	4	Sk is positive when $(Q_3 - Q_2) > (Q_2 - Q_1)$ Sk is negative when $(Q_3 - Q_2) < (Q_2 - Q_1)$ Sk is zero when $(Q_3 - Q_2) = (Q_2 - Q_1)$
Kurtosis	58	5	$k_u = \frac{Q}{(P_{90} - P_{10})}$
Standard error of the mean	66	6	$SE_M = \frac{\sigma \text{ sample}}{\sqrt{N}}$
Standard error of difference between uncorrelated means	67	7	$SE_{\text{diff}}(M_1 - M_2) = \sqrt{(SE_{M_1})^2 + (SE_{M_2})^2}$
Standard error of difference between correlated means	68	8	$SE_{\text{diff}}(M_1 - M_2) = \sqrt{(SE_{M_1})^2 + (SE_{M_2})^2 - 2 r_{12} (SE_{M_1})(SE_{M_2})}$

Critical ratio if difference is stated in terms of means	71	9	$CR_{SE} \text{ of a difference in means} = \frac{M_1 - M_2}{SE \text{ diff } (M_1 - M_2)}$
Critical ratio if difference is stated in terms of percentages	71	10	$CR_{SE} \text{ of a difference in per cents} = \frac{P_1 - P_2}{SE \text{ diff } (P_1 - P_2)}$
Prevalence	89	11	Prevalence = $\frac{\text{number of cases at a given time}}{\text{population at a given time}} \times \text{unit (100 or 1000)}$
Incidence	89	12	Incidence = $\frac{\text{number of cases during a period of time}}{\text{population for mid-period}} \times \text{unit (100; 1000; or 100,000)}$
Birth rate	89	13	Birth rate = $\frac{\text{number of births for the year}}{\text{estimated mid-year population}} \times 1000$
Death rate	89	14	Death rate = $\frac{\text{number of deaths for the year}}{\text{estimated mid-year population}} \times 1000$
Infant death rate	92	15	Infant death rate = $\frac{\text{number of infant deaths in a year}}{\text{number of live births for the year}} \times 1000$
Neonatal death rate	92	16	Neonatal death rate = $\frac{\text{number of neonatal deaths in a year}}{\text{number of live births for the year}} \times 1000$
Maternal death rate (as usually computed)	92	17	Maternal death rate = $\frac{\text{number of maternal deaths for a year}}{\text{number of live births for the year}} \times 1000 \text{ or } 10,000$
Frequency rate	92	18	Frequency rate = $\frac{\text{illnesses beginning in a given period}}{\text{population at mid-period}} \times \text{unit (100 or 1000)}$
Disability rate	93	19	Disability rate = $\frac{\text{number of days of illness in a given period}}{\text{population at mid-period}}$
Severity rate	93	20	Severity rate = $\frac{\text{number of days of illness}}{\text{number of illnesses}}$
Relation of frequency rate, disability rate, and severity rate	93	21	Disability rate = frequency rate $\times$ severity rate

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# **Unit One**

## **Nursing and Research**



