

RESEARCH DESIGN: A CONTRIBUTION TO THE AUTHOR

Dalmo Valério Machado de Lima¹

1 Universidade Federal Fluminense

ABSTRACT

Objective: To assist readers, researchers and authors to understand the main research designs used by the nursing and health in general. **Method:** Bibliographic research. **Results:** Schematic picture in one sheet with links to the essential characteristics of the various designs or methodologies used in health. Four categories of designs were identified: experimental, non-experimental, secondary and additional. The dismembering of the categories resulted in 36 designs. **Conclusion:** The proposed tool consisted of a facilitator to the authors in different sections of the articles: title, methodology and metadata.

Keywords: Measures, Methods and Theories; Access to Information; Authorship and Co-Authorship in Scientific Publications; Evidence-Based Nursing.

INTRODUCTION

The plurality of research methodologies that are brought, by chance, by the advancement of science include those related to the health sector. In this sense, it is essential to both the producer and the research consumer the sedimentation of classic designs for research, as well as the attention to new trends that underlie this advancement. The purpose of this guide is to help readers, researchers and authors to understand the main research designs used by the nursing and health in general.

METHODOLOGY

It is a bibliographic research which has used classical books of epidemiology, research in health methodology, nursing and social sciences.

RESULTS

It is a schematic picture with links to the essential characteristics of the various drawings used in health. Four categories of drawings were identified: experimental, non-experimental, secondary and additional.

Table 1 - Research designs adopted in health*

RESEARCH DESIGN	NON-EXPERIMENTAL	DESCRIPTIVE RESEARCH	Descriptive Documental Case Study Exploratory Motivation Opinion
		ANALYTICAL OR OBSERVATIONAL RESEARCH	Case Control Coorte Case Study Exploratory Motivation Opinion
	EXPERIMENTAL	ALMOST EXPERIMENT	
		CLINIC REHERSAL	Randomized Non-Randomized Controlled Non-Controlled
	SECONDARY	CROSS OVER	
		BIBLIOGRAPHIC RESEARCH INTEGRATIVE REVIEW	
	SITEMATIC REVIEW	Qualitative Meta-analysis	
	BIBLIOMETRIC STUDY ECOLOGIC STUDY METHODOLOGIC STUDY PSICOMETRIC STUDY ETHNOGRAPHY ETHNOMETHODOLOGY PHENOMENOLOGY HERMENEUTICS ACTION RESEARCH EVALUATION RESEARCH HITORIC RESEARCH SOCIAL REPRESENTATIONS SOCIOPOETICS CONVERGENT CARE RESEARCH THEORY BASED IN DATA		

*Each term in blue is a hyperlink that directs straight to the definition of the design adopted in article

1. NON-EXPERIMENTAL RESEARCH DRAWINGS

They are used when the researcher wants to build the framework of a phenomenon or explore events, people or situations as they occur naturally. In these studies the independent variables have already occurred, so to speak, and the investigator cannot control them directly by manipulation¹.

1.1. DESCRIPTIVE RESEARCH

1.1.1. Descriptive Research

The study focuses on, and is designed only to describe the distribution of existing variables, regardless of causality or other hypotheses. Contrast ANALYTICALSTUDY. An example is the community health survey used to determine the health status of individuals in a community. Descriptive studies, such as data analysis of cancer registry can be used to measure risks, generate hypotheses, etc².

1.1.2. Documental Research

The documental research, due to its characteristics, may be mistaken for bibliographic research. The main difference between these types of research is the difference of their sources. The bibliographic research uses mainly the contributions of several authors on a particular topic of study. On the other hand, the documental research is based on areas that have not yet received an analytic treatment or that can be redesigned according to the research objectives. Like most typologies, the documental research can be integrated to the list of surveys used in the same study or be characterized as the only one used for this design. In this typology of research, documents are classified into two main types: first-hand sources (official documents, newspaper articles, letters, contracts, diaries, films, photographs, recordings, etc.) and second-hand sources (research reports, reports of companies, statistical tables, etc.)³.

1.1.3. Case Study

Detailed investigations are a single entity or a small number of entities. Entity may be an individual, family, institution, community or other social unit. In a case study, the researchers obtain rich descriptive information and can examine relationships between different phenomena or trends over time. The researchers of case studies attempt to analyze and understand issues important to the history, development, or the circumstances of the entity studied⁴.

1.1.4. Exploratory

It is the study where the main objective is to explain, rather than simply describing a situation in which the effects of specific variables and the understanding the mechanisms of action are isolated².

1.1.5. Motivation

Seeks to know the hidden and unconscious reasons that lead, for example, the consumer to use a certain product or which determine certain behavior or attitudes⁵.

1.1.6. Opinion

Seeks to know attitudes, viewpoints and preferences that people have about any subject, in order to make decisions. The survey covers a very wide range of investigations aimed at identifying flaws or errors, describe procedures, discover trends and recognize other interests and behaviors⁵.

1.2. ANALYTICAL OR OBSERVATIONAL RESEARCH

The study designed to examine associations, commonly putative or hypothetical causal relationship. An analytical study is usually concerned with identifying or measuring the effects of risk factors, or is directed with effects in health or a more specific exposure. Contrast is a DESCRIPTIVE STUDY, which does not test hypotheses. The common types of analytical studies are CORRELATIONAL, COHORT and CASE CONTROL. In the analytical study, individuals in the population examined may be classified according to the absence or presence (or future development) of a particular disease and according to the attributes

that can influence the occurrence of the disease. These attributes may include age, race, gender, other diseases, genetics, biochemical or physiological characteristics, economic status, occupation, residence and any other environmental or behavioral aspects².

1.2.1. case-Control

(Synonym: comparison case study, partner case study, historical case study, reference case study, retrospective study)

This is the epidemiological observation study of individuals with the disease (or with symptomatic variation) of interest and a control group (for comparison and / or reference) of people without the disease. The relation of an attribute of the disease is examined by comparing the diseased and the healthy in relation to the frequency and presence of the attribute or, if quantitative, the levels of the attribute in each group. Briefly, the past history of the exposure to a suspected RISK FACTOR is compared among the "cases" and "controls" individuals who approach cases that respect age and gender, but do not share the disease or conditions of interest³.

1.2.2. COHORT

1.2.2.1. Prospective and

Classic

(Synonyms: rival, follow-up incident, longitudinal, prospective study)

The analytic method of epidemiological study in which portions of a defined population may be identified considering who they are, have been or hereafter may be exposed or not, or were exposed in different levels to a factor or several hypothetical factors that influence the likelihood of occurrence of a certain disease or any other outcome. The main feature of cohort studies is the observation of a large number for a long period (usually for years) with incidence rates of the groups that differ in exposure levels. Alternate terms for a cohort study such as follow-up, longitudinal and prospective study describe an essential feature of the method, namely the observation of the population of a sufficient number of individuals per year to generate a reliable incidence or mortality rates in some population groups. This study implies

in the study of a large population, a study for a long period (years), or both. The denominator may be individuals or time individual. See also historical cohort study².

1.2.2.2. Retrospective or historical

(Synonyms: a prospective historical study, non-concurrent prospective study, prospective study in retrospect)

This is a cohort study conducted by the reconstruction of information about individuals in a given moment or moments in the past. This method uses existing records on health or on other relevant aspects of the population sometime in the past and determines the current (or subsequent) state of the members of this population in relation to conditions of interest. Different levels of past exposure to the factor(s) of risk(s) of interest can be identified for the subgroups of the population. BOND RECORD Systems are commonly used in historical cohort studies. The growing concern about privacy protection threatens these types of studies, which once made a great contribution to the understanding of science of the causes of diseases. Reviewers of Ethics Committees of research proposals of historical cohort increasingly require researchers to obtain a declared consensus of individuals whose medical records are searched. If the study involves a very large number of people, and/or some or all them are dead or cannot be found, it is obvious that it is impossible to get such statements. Lines like the ones Master made by the Council for International Organizations of Medical Sciences (CIOMS) recommend that the consensus statement should be discarded in such circumstances².

1.2.3. Correlational

It is used to examine the relationship between two or more variables. The researcher is not testing whether one variable causes another variable or how different a variable is each from the other. The researcher is testing whether the variables vary together, in other words, as a variable changes, does a related change occur in another variable? There is interest in quantifying the strength of a relationship between the variables¹.

1.2.4. Research of Results

It is in the intervention results the research. It's a great deal of work of the clinical epidemiologists². For example: Rafferty and collaborators (2007) examine the effect of the levels of nursing staff in hospitals in relation to patient mortality, failures to rescue and service quality rated by nurses in the UK. Results similar to the United States' were found - high patient-nurse ratios associated with worse patient outcomes⁴.

1.2.5. Transversal or of Prevalence

(Synonyms: research on disease frequency, prevalence study)

It is a study that examines the relation among diseases (or other characteristics relating to health) and other variables of interest as they exist in a given population at a given time. The presence or absence of a disease and the presence or absence of other variables (or, if they are quantitative elements, what is their level?) are determined in each member of the studied population or in a representative sample at a given time. The relation between the variable and the disease can be examined(1) in terms of the disease prevalence in different subgroups of the population defined according to the presence or absence (or level of variables and(2) in the presence or absence (or level) of the variables in patients against non-patients. We note that the prevalence of a disease, instead of the incidence, is normally studied through the cross-sectional study. The temporal sequence of cause and effect is not necessarily determined in a transversal study².

2. EXPERIMENTAL STUDY

It is a study in which the conditions are under the direct control of the investigator. In epidemiology, it is a study where the population is selected for a planned test of a scheme in which the effects are measured by comparing the results in an experimental group with the results of another control group. To avoid the bias of the researcher and members of the experiment and of the control group, everything must be compared, except the scheme that is

offered to both. The location of individuals in an experimental or control group is done randomly, preferably. In a RANDOM CONTROLLED PROCESS, individuals are randomly allocated, in some experiments, such as fluoridation of drinking water; entire communities were (not randomly) allocated in experimental groups and groups of control². The experimental studies are a special type of cohort study in which the conditions of study - that is, the selection of the treatment groups, the nature of interventions, monitoring and management during the measurement of outcomes - are specified by the investigator with the purpose of making non-biased comparisons. These studies are generally referred to as clinical trials. Clinical trials are submitted to a control and a more intensive management than cohort studies. The researchers are conducting an experiment, similar to those made in a laboratory. They took on the task (with the permission of patients) study for of isolating the unique contribution of a factor, maintaining, wherever possible, all other determinants of the outcome⁶.

2.1. ALMOST EXPERIMENT

It is the situation in which the investigator does not have full control over the lease and / or time of intervention; however, he leads the study as if it were an experiment, allocating subjects into groups. The inability to randomly allocate subjects is the common situation that can best be described as a quasi-experiment. See also Natural Experiment 2. In a quasi-experimental design, a complete experimental control is not possible. They are research designs in which the researcher initiates an experimental treatment, but some characteristic of a true experiment is missing¹.

2.2. CLINICAL TRIAL

(Also: the therapeutic process)

It is a research activity that involves the administration of a test regimen to humans to evaluate its efficacy and safety. The term is subject to a considerable variety of use, since the first use in humans without any control treatment to an experiment designed and executed

rigorously, involving tests and treatments of control and randomness². Several phases of clinical trials are distinguishable²:

Phase I process safety and pharmacological profiles. The first presentation of a candidate vaccine or drug in a human population to determine its safety and course of action. In drug testing, this phase may include studies of dose and routes of administration.

The Phase I tests usually involve less than 100 healthy volunteers.

Phase II Pilot Efficacy Study process. Initial processes for the appraisal of the effectiveness in 200 to 500 volunteers, with vaccines, the focus is on the immunogenicity, and with drugs in the demonstration of safety and efficacy compared with other existing schemes. Usually, but not always, subjects are randomly assigned to study and control groups.

Phase III Clinical Trials Extensive process. This phase is intended to fully evaluate the safety and efficacy. It involves a much larger number, perhaps thousands of volunteers, usually with random allocation in study and control groups, and may have a multi-centered process.

Phase IV process with drugs. This phase is conducted after the national authority for registration of medicines (e.g. the Food and Drug Administration in the U.S.) approves the drug for distribution or sale. The Phase IV process may include a study designed to explore a specific pharmacological effect, to establish the incidence of adverse reactions or to determine the long-term effects. The ethical review is required for Phase IV processes, but not for a POST-MARKETING ROUTINE SURVEILLANCE.

2.2.1. Randomized Clinical Trial

The best way to balance all the external variables among the groups is to allocate patients randomly to groups, so that each patient has an equal probability of being in the exposed or unexposed group. A special feature of randomization is that it not only balances the variables known to affect the prognosis, but also balances the ones that are unknown. Therefore randomization offers good protection against incorrect conclusions over the risk factors or prognoses. Randomized clinical trials, in which treatment is allocated randomly, are the gold standard for scientific studies on the effect of treatment⁶.

2.2.2. Non Randomized Clinical Trials

Clinical trial in which random forwarding was not carried for exposed and not exposed groups.

2.2.3. Controlled Clinical Trial

An epidemiological study in which the individuals in a population are randomly allocated to groups, usually called study group and control group, to receive or not an experimental preventive or therapeutic procedure, maneuver or intervention. The results are evaluated by a rigid comparison of rates of disease, deaths, recovery or other appropriate results of the study and control groups. Randomized controlled processes are generally said to be the most rigorous scientific method of hypothesis testing that can be found in epidemiology. Few authors refer to this method as "random control process"².

2.2.4. Uncontrolled clinical trials

The non-controlled clinical trials describe the course of the disease in a single group of patients before and after exposure to an intervention. Another name for this design study is before/after. The hypothesis of this PE approach means that any improvement observed after treatment results from the treatment itself⁶.

2.3. CROSSOVER

It is the method of comparing two or more treatments or interventions in which the individuals or patients, after completing a stage of treatment, are exchanged for another. In the case of two treatments, A and B, half the subjects are randomly assigned to receive in the order A-B, and the other half to receive treatment in the order B-A. The criticism of this model is that the effects of the first treatment may be taken to the period in which the second is given².

3. SECONDARY RESEARCH

3.1. BIBLIOGRAPHIC RESEARCH

This is the assessment of the entire bibliography published as books, magazines, spare publications in written press. Its purpose is to put the researcher in direct contact with everything that was written about a subject, in order to allow the scientist to analyze the parallel strengthening of their researches or handling of their information⁷.

3.2. INTEGRATIVE REVIEW

It is a specific method of review that summarizes the previous literature of theoretical or empirical basis for a more comprehensive understanding of a phenomenon or particular sanitary problem (Broome, 1993). Integrative reviews have the potential to develop the science of nursing, informing researches, practices and public initiatives. Well developed integrative reviews present the state of science, contribute to the theoretical development and have direct application in practice and policies⁸.

3.3. A SYSTEMATIC REVIEW

It is the application of strategies that limit bias in an assembly, a critical evaluation and synthesize all relevant studies on a specific topic. The META-ANALYSIS may be, but it is not necessarily used as part of this process. Systematic reviews focus on reviewed publications by partners about a particular health problem and uses standardized and rigorous methods for selecting and evaluating articles. A systematic review differs from the meta-analysis by not including a quantitative summary of results².

3.3.1. Qualitative Systematic Review

The review is called qualitative RS, or just RS when the information obtained is not susceptible to statistical analysis⁹.

3.3.2. Meta-analysis

It is a statistical summary of the data of a separate study even though it is similar, such as comparative studies that lead to quantitative summary of results. In biomedical sciences, the systematic, organized and structured assessment in a problem of interest, using the information (usually in the form of statistical tables or other data) from a number of independent studies of a problem. The frequent application has been the congregation of the

results of a randomized controlled set of processes, none of them sufficiently strong to demonstrate statistically significant differences, but if added, will be able to show them. The meta-analysis has a qualitative component such as the application of a predetermined criterion of quality (e.g. complementation of data, the absence of bias), and a quantitative component (e.g. the integration of numerical information). The goal is to integrate the findings, mine the data and identify the general trend of results¹. An essential prerequisite is that the studies should be abstinent of any critical value and any bias². See also SYSTEMATIC REVIEW

4. ADDITIONAL METHODS

4.1. BIBLIOMETRIC STUDY

Bibliometrics emerged in the early twentieth century due to the need to study and evaluate the activities of production and scientific communication. Bibliometrics is understood as "technical and quantitative statistical measurement of the rates of production and dissemination of scientific knowledge"¹⁰. It is a set of laws and empirical principles that contribute to the establishment of the theoretical foundations of Information Science¹¹. It has two concerns since its origin. One of them is to analyze the scientific production, while the second is to seek practical and immediate benefits for libraries. The Bibliometrics was initially focused on the measurement of books (number of editions and copies, number of words contained in books, space occupied by books in libraries, statistics related to the book industry), and was slowly moving towards the study of other bibliographic producing formats, such as journal articles and other types of documents, and then also deal with the productivity of authors and the study of citations¹⁰.

4.2. ECOLOGICAL STUDY

It is a study in which the units of analysis are populations or groups of people rather than individuals. An example is the study of association between the middle class and rates of cancer mortality in administrative jurisdictions such as states and countries².

4.3. METHODOLOGICAL RESEARCH

It involves investigation of methods for collecting and organizing data and conducting rigorous researches. The methodological studies deal with the development, validation and evaluation of tools and research methods. The growing demands for assessments of results, solid and reliable, rigorous tests of intervention and sophisticated procedures for obtaining research nurses⁴.

4.4. PSYCHOMETRIC STUDY

Psychometry is a branch of statistics that studies psychological phenomena. It was developed by statistical of formation and, therefore, is still defined as a branch of statistics. For psychologists, it must be conceived as a branch of psychology that interfaces with statistics. Psychometry is not just about methods, it is inserted in measure theory that deals with the use of numbers in the study of natural phenomena. Measuring means assigning values to characteristics or attributes of an object, using procedures that ensure the validity and reliability of measurement results.

There are several ways to assign numbers or values to the characteristics of objects. Psychometry is based on measurement as a theory and to better understand it you need an explanation of other types of measurement: fundamental and derived¹².

4.5. ETHNOGRAPHY

Main tradition of anthropological research, it provides a framework for the study of patterns, lifestyles and experiences of a specific cultural group in a holistic manner. Ethnographers often engage in extensive field work, participating often and as much as possible, in the life of the studied culture. The researchers' goal is to learn from members of a cultural group (more than studying this group), for then, to understand their world view of how they perceive and live⁴.

4.6. ETHNOMETHODOLOGY

The ethnomethodology seeks to discover how people make sense of their daily activities and interpret their social worlds in order to behave in socially acceptable ways. In this tradition, researchers try to understand rules and assumptions of a particular social group that are so deeply rooted to the point that its members no longer need to think about the reasons underlying their behavior⁴.

4.7. ETHOLOGY

The discipline of psychology has several traditions of qualitative research, focusing on behavior. The human ethology, which has been described as the biology of human behavior, studies the behavior as it stands in its natural context. The human ethologists primarily use observational methods in an attempt to discover universal behavior structures⁴.

4.8. PHENOMENOLOGY

Originally from a philosophical tradition developed by Husserl and Heidegger, it is related to experiences lived by humans. It is an approach used to think how the life experiences of people are and what they mean. The phenomenologists believe that the experience gives meaning to the perception that each person has of a given phenomenon. The goal of phenomenological research is to fully understand the experience and insights that it generates. Four aspects that matter to phenomenologists are: lived space or spatiality, lived body or corporeality, lived time or temporality, and lived human relation or relationship⁴.

4.9. Hermeneutics

It has its disciplinary roots in philosophy. It discusses the meaning of the experiences lived by humans. A closely related research tradition is hermeneutics that uses experiences as a tool to better understand the social, cultural, political or historical contexts in which they occur. The hermeneutical research emphasizes the meaning and interpretation - as individuals interpret the world in a given context⁴.

4.10. HISTORICAL RESEARCH

It is a systematic approach to understand the past through the collection, organization and critical evaluation of the facts. One of the goals for the researcher to use the historical method

is to shed light on the past so that it can guide the present and future⁴. For example, Manocchio (2008) conducted a social and historical analysis of nursing in the culturally diverse environment of the border of California in mid-1900. The author concludes that reports of primary source tended to give secondary attention to the multiple roles that midwives played in the communities where they worked⁴.

4.11. PARTICIPATORY ACTION RESEARCH

One way to study known as participatory action research (PAR) is closely associated with both feminist and critical analysis. PAR, one of several types of action research, developed in the 1940s by psychologist Kurt Lewin, is based on the finding that the production of knowledge can be political and used to exert power. The researchers of this approach typically work with minorities or vulnerable communities to control or oppression of a dominant group or culture⁴.

4.12. EVALUATION RESEARCH

Discusses the development of useful information about a program, practice, procedure or policy - key information so that the responsible person may decided upon the adoption, modification or abandonment of the practice or program. Commonly, what is being assessed is a new intervention. In the current situation, in which health costs grow more and more, the program evaluations may also include the economic analysis (cost) to determine whether the benefits outweigh the financial costs. Administrators and staff responsible for public policies to make decisions about resource allocation for health services, not only assess whether any solution "works", but also if it is economically viable. The cost analyzes are made, typically in conjunction with the assessments of impacts (or with the clinical trials of phase III), ie, when the researchers generate persuasive data regarding the effectiveness of the program⁴.

4.13. SOCIAL REPRESENTATIONS

The Theory of Social Representations, advocated by the European social psychologist Serge Moscovici, is mainly related to the study of social symbols at both macro and micro analysis, ie, the study of symbolic exchanges infinitely developed in our social environments, of our interpersonal relationships, and how it influences the construction of shared knowledge, of

culture. Social representations have as one of their purposes make familiar something unfamiliar, that is, an alternative classification, categorization and naming of new developments and ideas with which we had no previous contact, thus enabling the understanding and manipulation of these, starting from pre-existing and internalized ideas, values and theories by us and widely accepted by society. Social representations are defined as a form of socially elaborated and shared knowledge, with a practical vision and contributing to a reality in a social set¹³. Constitute a form of practical knowledge that contemplates the knowledge of common sense, and are a guide to the action which encompasses a global network that link the object to a context¹⁴.

4.14. SOCIOPOETICS

The sociopoetics is every social practice of knowledge production which asserts the importance of the body in the construction of the imaginary, basis of abstractions, the importance of dominated cultures and concepts they produce, the role of research subjects as co-responsible of the knowledge produced, the role of creativity of artistic type in learning, knowledge and research, the importance of human spiritual meaning in the forms and contents of knowledge. Upholding these principles is to ensure the occurrence of processes of deconstruction/construction since the use of multiple references¹⁵.

4.15. CONVERGENT CARE RESEARCH

It is a kind of research that, in its development, maintains a close relationship with the social situation and is intended to find solutions to problems, make changes and introduce innovations in the social situation. When used by the nursing, it includes activities of care/assistance, however it is not consolidated with the act of assisting or caring, which is merely part of the research process. This modality of research seeks to discover realities, solve problems or introduce innovations in a particular context of healthcare practice, similar to action research which discusses and implements actions with the aim of improving the real world¹⁶.

4.16. GROUNDED THEORY

Inductive approach that implements a systematic set of procedures to reach the theory about basic social processes¹.

The grounded theory has become an important method of research for research nurses and has contributed to the development of many mid-range theories about relevant phenomena to nurses. It was developed in the 1960s by two sociologists, Glaser and Strauss (1967), whose theoretical roots lie in symbolic interaction, which focuses on how people give meaning to social interactions and interpretations that they attach to social symbols (e.g. language)⁴.

DISCUSSION

There are several causes of rejection of scientific articles when submitted to journals. Many of which will not even be assigned to peer review, since they do not meet the formatting requirements of journals. In this sense, several journals such as Online Brazilian Journal of Nursing, following international trends of quality, recommend explicit description of the research design adopted by the author in the metadata, in the title and in the methods section. This guideline is based on facilitating for the reader and visibility for the article and journal.

On the other hand, the standardization of language facilitates the understanding and the teaching of methodologies. However, the reappraisal of this proposal is a continuing act in which the contribution of experts will always be welcome.

CONCLUSION

The proposed tool consists of an enabler for the authors in different sections of articles: title, methodology and metadata.

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