



**UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
„VICTOR BABEȘ” DIN TIMIȘOARA**

**PREPARATION OF BACHELOR DEGREE
PRACTICAL COURSES**

Șef.lucr.dr. Ruxandra SAVA-ROȘIANU

TYPES OF RESEARCH

The research can be classified from four perspectives:

➤ *after the applicability of the research:*

- fundamental research;
- applied research.

➤ *according to the research objectives:*

- descriptive research;
- correlational research;
- explanatory research;
- exploratory research.

➤ *by type of information:*

- qualitative research;
- quantitative research.

➤ *according to the nature of the investigation:*

- experimental research;
- non-experimental research;
- quasi-experimental research.

A clinical trial is defined as research that tests the efficacy and / or safety of diagnostic or treatment methods on human subjects.

To design a clinical trial, we need to follow several steps:

- I. Preparation of the study
- II. Elaboration of the study project
- III. Data collection and processing
- IV. Presentation of the first results (preliminary results)
- V. Analysis and interpretation of results
- VI. Writing the study

For epidemiological studies data collection is the main stage of the research. The design of a questionnaire and its completion with the data obtained from the field is called epidemiological investigation.

For these reasons, epidemiological studies are classified according to the type of investigation (eg longitudinal, transverse, prospective, retrospective, etc.).

TYPES OF CLINICAL STUDIES

There are three models of epidemiological studies classified according to the following criteria:

1. Time:

- transverse;
- longitudinal;
- semi-longitudinal.

2. Fluctuation of the subjects within the study groups:

- pure studies;
- mixed studies.

3. Pursued objective:

- descriptive studies;
- analytical studies;
- prospective (cohort);
- retrospective (case - control);
- intervention / experimental studies.

Epidemiological studies can be classified into:

1. ***Observational studies*** that use existing phenomena in an attempt to understand aspects of health or disease. In these studies, the investigator controls neither the population nor the factors to which it is exposed.

Observational studies include:

a. descriptive studies

b. analytical studies, in which the following are differentiated:

- cohort surveys (follow-up);
- case-control investigations (case reference);
- section surveys (prevalence);
- ecological (correlational).

2. Experimental studies test the effect of interventions on a particular aspect of health or disease. In these studies, the investigator controls both the population and the factors to which it is exposed.

Experimental studies (operational, interventionist) include:

- a. controlled clinical trial (randomized clinical trial);
- b. intervention studies (operational):
 - the trial in the field;
 - community trial.

1. Applicability

From the point of view of applicability, we have two types of research: fundamental research and applied research.

In medical and social sciences, fundamental research involves the development and testing of intellectually challenging theories and hypotheses for the researcher, but without immediate practical applicability or at a future time (Bailey, 1978). Such research involves testing hypotheses that are expressed in abstract terms or in which specialized concepts are used.

In addition, fundamental research aims at developing, examining, verifying and refining the methods, procedures, techniques and tools that make up the research methodology.

Examples:

- development of sampling techniques;
- developing a methodology for evaluating the validity of a procedure;
- development of specific tools for evaluating risk factors for different pathologies;
- finding the best opportunity to measure attitudes.

Most research in the medical and social sciences are applied. In other words, the research methods, procedures and techniques are applied to a particular set of information about different aspects of situations, problems or phenomena, so that the resulting information has direct applications in the prevention, maintenance or improvement of the patients' health or for the elaboration. of a health policy, or even to improve the understanding of the phenomenon studied, etc.

2. Pursuide objectives

If we look at the research from the perspective of the objectives pursued, we can classify it as: descriptive, correlational, explanatory and exploratory.

A study classified as descriptive aims to either systematically describe a situation, a problem, a phenomenon or a system, or to provide information about a certain context, or to describe as broad an attitude as possible. For example: "Description of living conditions in a particular area", or "Characteristics of a campaign to promote an oral hygiene product".

In correlational studies, the focus is on discovering or establishing a relationship / association / interdependence between two or more aspects of a situation.

For example: "What is the relationship between a stressful life and the incidence of diseases?" or "What will be the impact of a promotional campaign on the sales of an oral hygiene product?".

Explanatory research aims to clarify why and how a relationship between two aspects of a situation or a phenomenon manifests itself. Such research will try to find out, for example, "Why does a cariogenic diet generalize an increase in the incidence of caries disease?".

Exploratory studies are conducted to discover the possibilities of action, research, in an area in which the researcher has little information or who does not know much. Such research takes the form of pilot studies, in which the researcher conducts a small-scale study and then decides how to conduct the detailed investigation.

Although theoretically we can differentiate the four types of research, in practice the research is a combination of the first three, ie they contain elements specific to descriptive, correlational and explanatory research.

3. Type of information

From the point of view of the information sought during the conduct of the research, the studies can be qualitative or quantitative.

The quantitative or qualitative character of a study depends on three elements:

- the purpose of the research;
- how variables are evaluated / measured;
- how to process information.

Research is qualitative if the main purpose is to describe a situation, phenomenon, problems or event. The information is obtained using variables measured on nominal or ordinal scales (qualitative measures), and the analysis is done to determine variations of the situation, phenomenon or problem without quantifying them. The description of an observed situation, the historical enumeration of events, the collection of different opinions on a specific problem in a group of people are examples of qualitative research.

On the other hand, if we want to quantify the variations of a phenomenon, a situation or a problem and collect information using predominantly quantitative variables, and the analysis aims to specify the magnitude of these variations, we can say that we are conducting a quantitative study.

The use of statistics is not the most important part of a quantitative study. The main reason for using the statistics is to confirm or deny the conclusions drawn, based on a certain understanding of the data / information collected. Statistics helps us to quantify the magnitude of an association or relationship, gives us clues as to the extent to which we can trust certain conclusions, and helps us to identify and isolate the specific effects of the various variables we are pursuing. It is advisable not to get stuck in a certain perspective, that is, we do not want to be exclusively "quantitative" or exclusively "qualitative". Both perspectives have their own advantages and limitations and it is important that in the concrete research we seek to achieve the best quantitative-qualitative combination, so that we can achieve the objectives we have set.

To complete the picture, Kumar (1999) also added a fourth criterion for classifying research, namely: the nature of the research or the type of research design.

4. Nature of investigation (research design)

From the point of view of the research design we have:

- Experimental studies;
- nonexperimental studies;
- Almost experimental studies.

Most often, in the case of a research, the existence of a cause-effect relationship is assumed. We can study this relationship from two perspectives. On the one hand, the researcher produces the intervention he assumes as a cause and waits until a change (effect) occurs. On the other hand, the researcher can investigate what caused an event / situation (effect) to occur, trying to discover the causes and to prove the causal relationship. The first design is an experimental one, while the second one is a non-experimental one (Kumar, 1999).

In experimental studies, the independent variable can be observed, introduced, controlled or manipulated, while in nonexperimental studies this is not possible because we cannot modify a cause of the present condition, but the researcher establishes and demonstrates the connection between causes and results. The nonexperimental studies highlight the covariate link between two or more variables.

Quasi-experimental studies have characteristics of both experimental and non-experimental studies. The selection of subjects in the experimental studies is random, and in the quasi-experimental studies the selection of the subjects is made according to certain criteria, usually according to the tag type variables: sex, age, level of preparation, level of anxiety, associated pathology, etc.

Experimental studies can be carried out under natural or laboratory conditions (controlled environment). For an experiment in a controlled environment, the studied population must be under controlled conditions, while in the experiments carried out in a natural environment the studied population is in its own environment.

In practice, these types of research are often found in combined formulas, a research can be characterized by several criteria. For example, a research can be either nonexperimental, quantitative, correlational and applied, or nonexperimental, qualitative, descriptive, applied, etc.

❖ **What is qualitative research?**

A qualitative study starts from open questions, some hypotheses being generated during the research. Unlike quantitative research, which involves testing hypotheses and using deductive reasoning, qualitative research starts with inductive reasoning, a situation in which hypotheses and conclusions are based on information and facts gathered.

The preferred method of gathering data in qualitative research is the interview, as opposed to quantitative research, in which the experiment is used. Statistical data analysis is indispensable in quantitative research, while qualitative research, which is mainly descriptive, data analysis is based on interpretation (Băban, 2002). The two paradigms, although apparently so different, are especially complementary in the study of psycho-educational phenomena. The new methodological current in psychology emphasizes the methodological mix, which combines quantitative and qualitative research methods, both in data collection and interpretation. This research paradigm aims to have a richer understanding, a greater nuance and an increase of authenticity in studying psycho-educational and social phenomena. Qualitative research involves direct interaction with the participants, gathering data from the natural environment. Qualitative research is based on exploring participants' perceptions, being useful in investigating complex phenomena. This type of research gathers verbal and non-verbal data, in a flexible way, which we can quantify and analyze statistically. The qualitative research uses a wide range of research strategies and methods, such as: anamnesis, case study, participatory observation, field study, phenomenological study, research through educational actions. On the other hand, the quality of qualitative research depends on the degree of cooperation of the participants, and the data can be interpreted in several ways. To carry out relevant qualitative research, a rigorous specialized training of research is required, and the data can be influenced by the researcher.

❖ **The principles of the methodology in qualitative research**

The success of the empirical research of human behaviors, at the individual and group level, depends on respecting some fundamental principles.

Also in the qualitative research methodological principles were formulated:

The principle of openness: qualitative research does not have a predetermined structure, in the sense that hypotheses are a purpose of research, not a condition.

The principle of communication: qualitative studies involve the direct interaction between participants and the researcher, to obtain maximum information about reality. The participants define, explain and interpret the reality, while the researcher selects what is essential, common, defining for the research.

The principle of reality as a process: the purpose of qualitative research is to discover the way of constituting the behavioral models and to define the meaning of human actions.

The principle of reflexivity and analysis: the analysis of each symbol or sign is done by flexible methods, which will surprise the contextual changes.

Explanation principle: on the one hand, the researcher explains to the participants what is expected of them and what is the working procedure, on the other hand, the data analysis aims to write and to theorize a psycho-educational and social process.

Qualitative research must demonstrate rigor throughout the entire research endeavor, which involves going through general research stages, such as: the reflection stage, the planning stage, the pilot stage, the data collection stage, the analysis and interpretation of the data, the drafting of the research report, which implies narrative transposition of research results.

The research, even if it is qualitative, must include the list of bibliographic references, it may also contain annexes which include details that could not be included in the actual text, such as the structure of the interview, questionnaires or details about the pilot study. The writing style of the bachelor's degree which is a research paper must be clear, with academic expression and cursiveness. In qualitative research, there must be a flexible relationship between the theoretical paradigm, the strategies of approach, the data collection and the manner of writing the text. The combination of multiple methods, sources and perspectives in one study adds rigor and depth to an investigation, recognizing the complexity and diversity of the reality of the psycho-educational and socio-cultural level.