

Slide 6

Exploratory studies are conducted when little is known about the phenomenon of interest and a flexible rather than structured approach to data collection is useful.

Descriptive studies describe phenomena or the relationship between variables. They are scientifically more rigorous than exploratory studies because enough information is known about the relationships between the variables for hypotheses to be tested. Much epidemiologic research is this type.

Explanatory studies search for causal explanations. The researcher manipulates the variables of interest and exercises some control over the research conditions.

Slide 7

Retrospective Studies

Retrospective studies describe or examine factors after the fact or after they have occurred. The event/illness/exposure being studied has already occurred and the researcher looks into the past of the participant.

Prospective Studies

A classification for studies whose purpose is to describe phenomena, search for a cause and effect relationship or to examine change as it unfolds over time. Randomized controlled trials for studying new drugs are prospective studies.

Cross-sectional Studies

Cross-sectional studies take a 'snap-shot' at one point in time. The census is an example of a cross-sectional study.

Longitudinal Designs

A research design that repeatedly observes or examines a set of subjects over time with respect to one or more study variables. The term is confused with a new term 'panel studies' which examples of which are the 'birth cohort' studies in Great Britain. In these continuing projects every child born in England and Scotland during one week was recruited into a study and re-studied every few years. One project has continued since 1936

Slide 8

field setting, a study to examine the relationship between diarrhea and nutritional status in Peruvian children living in a peri-urban community.

Laboratory settings permit research to be conducted in controlled environments. As much as is ethically possible – these designs can be true experimental designs. For example, researchers studied short-term dietary restriction on the physical performance of physically fit men and women by bringing the participants into a research setting that included a metabolic kitchen, exercise testing laboratory and a training facility.

Clinical setting is a term used in health care research. It refers to investigating human experience within the institutions of health care. The term doesn't tell you anything about the location and the research may take place in the field or the laboratory.

Slide 11

In true experimental research designs, the researcher predicts an outcome of the research from theory and previous research findings and explains the results in the context of logical and tested relationships. The researcher hypothesizes that there is a cause (the independent variable) and an effect (the dependent variable). The dependent variable for the experimental group will change in some specific (predicted) way, but the same dependent variable for the control group will remain unchanged.

participants should be randomly assigned. The independent or experimental variable is manipulated by either having it present in the experimental group and absent in the control group. Participants should be grouped, matched, or blocked to control the effect of other sources of variation (e.g. age, sex).

Random Assignment occurs when participants are assigned by chance either to receive (the experimental group) or to not receive (the control group) the treatment condition or intervention (independent variable). The use of random assignment is a precaution taken to ensure that there is as much equivalence as possible among the groups in the study except for the experimental factor. When groups are equivalent they differ, as much as possible, only by the effect of the experimental treatment condition or intervention.

Manipulation of the independent variable is most often accomplished by exposing the experimental group to an independent variable while the control group is unexposed. Alternatively, groups of participants may receive different levels of a treatment.

control over the research environment. Control involves keeping some things constant, or directing and manipulating variables over the course of the experiment. Ideally everything except the independent variable is kept constant; in reality, extraneous variables that might influence the study are accounted for or eliminated in the design of the study. Be careful with the control group, if they do not experience all the same things (e.g., environmental factors, time spent with the data collectors) as the experimental group, then bias will be introduced into the study.

Slide 18

Independent Groups - also called between-subjects designs or completely randomized designs. They are the 'classic' research designs that have experimental and control group(s) and the research consists of measuring the differences between the group(s). We begin with designs using independent groups. "Two events are said to be independent if the occurrence of one is in no way predictable from the occurrence of the other"

single factor - there is only one independent variable and one dependent variable. The independent variable is manipulated in the experiment

Randomized Controlled Design - This is the 'gold standard' experimental design. It is also known as the before-after design, the pretest-post-test control group design or the randomized clinical trial (RCT). The RCT is considered the scientific standard in clinical research.

Multi-factor Designs - When there is more than one independent variable in a study, it is called a multi-factor design. They are much more difficult to recruit to and results from these designs are MUCH more complex to analyse than single factor designs. Note that multi-factor true experimental designs are not the same as exploratory analytical (epidemiologic) study designs which use statistics to control for multiple factors. Unfortunately, statistical control is not considered to be as powerful a tool as experimental control.

Repeated Measures Designs - are also known as within subject designs. The same participants receive all experimental conditions or are tested under all the levels of the independent variable - they are tested repeatedly. a participant acts as his/her own control and is measured repeatedly. For some factors that have enormous differences among individuals, or in cases where one wants to assess a patient's improvements over time, this is the preferred method. Repeated measures designs can be applied to more than one independent variable but much more complex analysis is required and the results are more difficult to interpret.

Slide 19

Sometimes it is not possible to randomly assign participants to groups or no comparison group may be available. it is not always possible, practical, or ethical to conduct research using true experimental designs and quasi-experimental designs are worthy alternatives in these cases

One-group Pretest-post-test Design - A study design in which there is a treatment group without a control group. This is sometimes described as "participants acting as their own control". All participants are given a pretest, receive the experimental manipulation, and are given a post-test. useful when inter-individual variability can overwhelm experimental differences. This is different from repeated measures because ...

Multigroup designs - This design is only used if it is not possible to randomly assign participants to experimental or control groups. Alternative explanations are ruled out by statistical controls rather than experimental controls. This will be discussed in the quantitative analysis module.

For Example – A researcher is studying the effect of a new treatment on patients who have a specific diagnosis. Since it may be difficult to exclude anyone from the study, he/she decides to use a group of control participants from another facility. Or if the experimental treatment requires special equipment or conditions, he/she may decide to use morning patients as experimental participants and afternoon patients as controls.

Non-equivalent Pretest-post-test Control Group Design - is the RCT without random assignment. You use this when you might get sharing of information by the participants. eg health promotion in schools

Time Series - a type of extended repeated measures design in which the dependent variable is measured several times before and after the introduction of the independent variable. That is, the researcher periodically observes or measures the participants over a period of time. There are a variety of time series designs, for example: interrupted time series, multiple time-series, regression-discontinuity designs. Before embarking on a time-series design taking a course in repeated measures designs is highly recommended

Slide 20

Exploratory-analytical (EA) designs examine relationships between variables. EA designs are descriptive research and are used to describe existing relationships between variables and to determine if there is a correlation between variables. Unlike true experimental or quasi-experimental designs, EA studies lack active manipulation of the independent variable(s). correlation does not indicate causation.

applicability to situations in which experimentation is impossible or impractical. Questions such as “Does a person’s cultural background affect perception of, and response to, pain?” are examples in which the independent variable is a characteristic of an individual and cannot be manipulated experimentally. Other types of research questions (for example, how many people practice a particular health behaviour or have certain health beliefs) are also best approached with non-experimental designs.

Bit of extra attention here because this is most of what you read. Go over the jargon

Descriptive designs - deliberately elected to NOT use the term qualitative

Research with these designs is confined to the elaboration or description of a single concept or phenomenon. Unlike the other research methods described in this module the boundaries among various qualitative designs are less clearly defined. The following are rough guidelines about the designs. In the other sections of this module you have seen that experimental research is based on the concepts of manipulation and control of phenomenon and the verification of results. In contrast, in qualitative research the individual’s interpretation of events or circumstances is more important than the interpretation made by the researcher.

Qualitative research is concerned with in-depth descriptions of people or events, and data are collected through such methods as unstructured interviews and participant observation (see qualitative analysis module). The researcher searches for patterns and themes in the data, rather than focusing on the testing of hypotheses. Most of these methods require that the researcher sets aside (brackets) his or her own beliefs and then tries to understand what he or she is studying.

Qualitative research is often used in health research to develop research hypotheses. Since this is a descriptive technique and the researcher has no control of variables cause-and-effect statements should not be made based on qualitative research.

Qualitative analysis is an iterative process whereby the analysis is concurrent with the collection of data. Imagine an iterative process that cycles between the field gathering information and data analysis. At each cycle the findings from the data analysis drive the questions asked in the next round of information gathering. The cycling is considered complete (saturated) if no new information can be found to add to the theory

Slide 23

The crossover design is a variation of the more common matched Randomized Controlled Design. The advantage of the design is that each subject serves as his/her own control in situations where it is difficult to find adequate controls. Participants are exposed to two or more treatments/interventions; after completing one treatment/intervention they are switched to another. Since the effects of the first treatment/intervention may carry-over into the second treatment/intervention participants are randomly assigned as to which treatment they receive first. Because all participants serve as their own controls, this reduces error variance, thus reducing the sample size needed. So is often random assignment to treatment or waiting list.

Slide 28

“Case-control study” is the more commonly used term in health research literature but “ex post facto”, meaning literally “after the fact” is a better descriptor of these retrospective [G] designs. Other synonyms include: case comparison study, case history study, case referent study, retrospective study (6). Within epidemiology, this is one of the cornerstone research methods. This type of correlational design begins with the disease and looks retrospectively for potential causal agents. Needs to be used more widely!

Slide 29

CCC designs are also called **surveys**. CCC designs can only be used to research “what is” and not “why”; causal inferences should not be made from CCC data