Dissertation Module
Research Skills Program

LECTURE 4

RESEARCH DESIGNS IN THE HEALTH SCIENCES

LEARNING OBJECTIVES

- Understand the difference between qualitative and quantitative studies.
- Understand the difference between descriptive and comparative studies.
- Understand the difference between analytic and quality control research.
- Understand the difference between experimental and observational studies.

For every research question one can find *the* ideal study design; unfortunately it may not always be feasible.

Research Designs

Quantitative

Qualitative

Descriptive

Cross-sectional study

Case Series

Ecological Study

Comparative

Analytic Research

Quality Control Research

Observer Variability

Laboratory Quality Control

Experiment

Clinical Trial

Preventive Study

Observational Study

Cohort Study

Case-Control Study

Cross Sectional Study

Quantitative versus Qualitative

Quantitative

"Objective" view of people
Measurements, statistical analysis
Representative random sample of population
Generalization of results to wider population

Qualitative

Answers the "why?", "how?", or "what?" questions
"Subjective" view of people
Experience, Interpretive analysis
Selected small groups of participants

Descriptive Studies: Person, Place, and Time

Basic assumption:

Disease does NOT occur randomly but in patterns that reflect operation of underlying factors.

Characteristics of persons

e.g. age, gender, socio-economic status, ethnicity, marital status,….

Characteristics of place

e.g. climate, cultural factors, dietary habits,…..

Characteristics of time

e.g. seasonal fluctuations, secular time trends

Descriptive versus Analytic Studies

An analytic study is

"a study conceived to examine hypothesized causal relationships and to make causal inferences. Hence, most such studies can be conceptualized as etiological studies….Contrast with descriptive studies, which do not test causal hypotheses."

(Porta M, 2014)

Analytic studies are

- **comparative** studies ("exposed" versus "non-exposed", "intervention" versus "control")
- able to **confirm or reject comparative research hypotheses**

Comparisons conducted in descriptive studies are of explorative nature only!

Quality Control Research

- **Comparative research**
- **Side-effect of conducting research – ensuring quality of research process**
- **Uses specific study designs and statistical techniques**

Examples:
Assessment of accuracy of a diagnostic test
Assessment of agreement between clinicians

Quantitative Comparative Analytic Study Designs

- **Experimental Design (Trial, Intervention Study)**

  Study factor is altered by the investigator!
  Mostly preventive or therapeutic

- **Observational Design**

  Study factor is observed only!
  Mostly aetiologic

SUMMARY

- Qualitative studies do not aim to generalize to a wider population. These studies are often used to answer a “why?”, “how?”, or “what?” question.
- Descriptive studies describe occurrences of disease or risk factors by person, place and time characteristics.
- Analytic studies can confirm or reject comparative research hypotheses.
- Experimental studies are comparative studies in which the researchers alter the study factor (e.g. therapeutic trials).
- Comparative observational studies are mostly etiologic studies; i.e. studies that aim to identify risk factors of disease. In these studies the study factor is only observed by the researchers.

“For every research question one can find *the* optimal study design.”