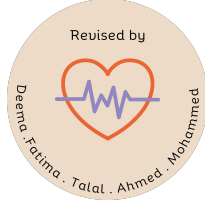


Research
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How to select the appropriate study design?

Tutorial No. 3

Objectives

~ This lecture was presented by **Dr. Leena Baghdadi**

~ It is included in the **Midterm Exam**

~ We highly recommended reading the **Ayah** in the first page

Slides

Color code

Original text

Dr. Notes

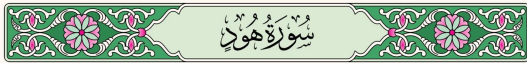
Important

Golden note

Extra



Editing file



وَكَلَّا نَقْصُ

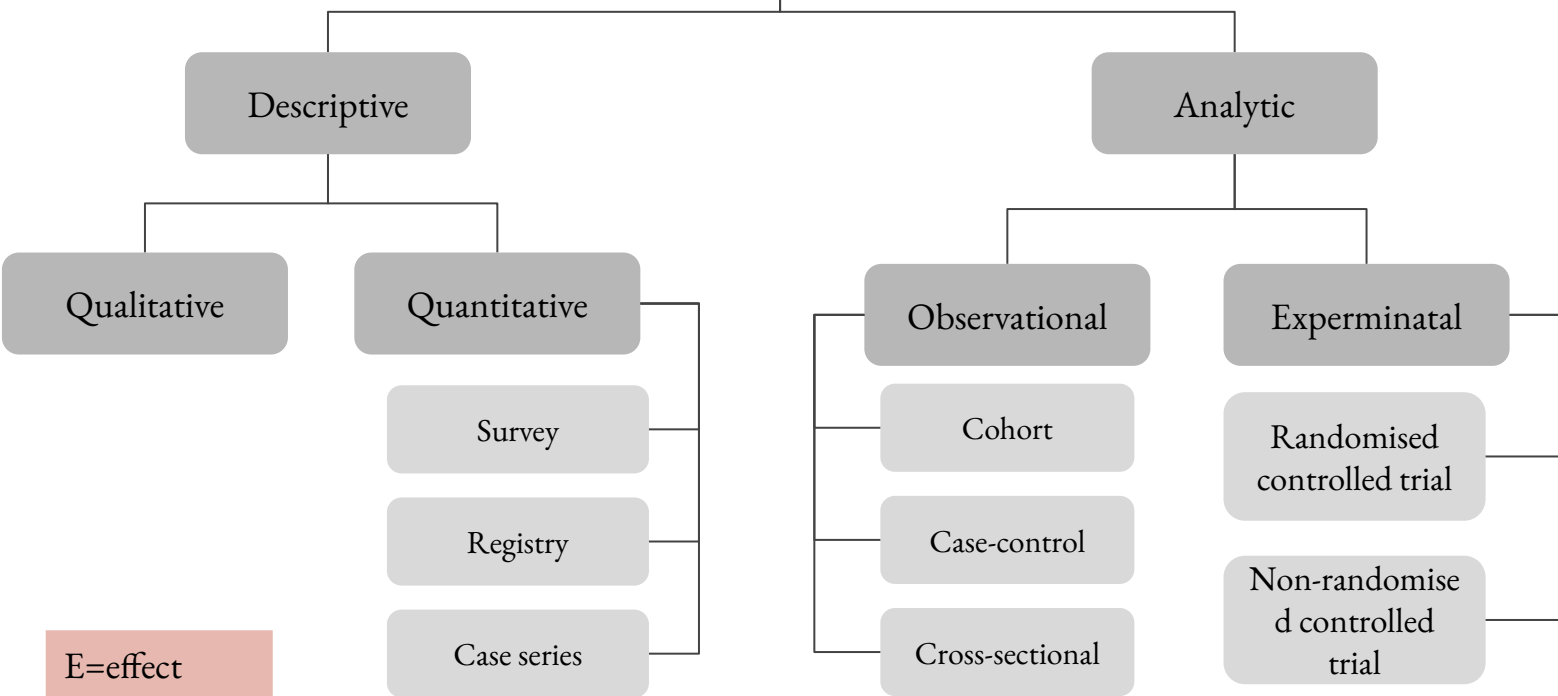
عَلَيْكَ مِنْ أَنْبَاءِ الرُّسُلِ مَا نُنشِئُ بِهِ فُؤَادَكَ وَجَاءَكَ فِي هَذِهِ

الْحَقُّ وَمَوْعِظَةٌ وَذِكْرٌ لِلْمُؤْمِنِينَ

المختصر في التفسير

وكل خبر ناقصه عليك - أيها الرسول - من أخبار الرسل من قبلك ناقصه لتثبت به قلبك على الحق ونقويه، وجاءك في هذه السورة الحق الذي لا شك فيه، وجاءتك فيها موعظة للكافرين، وذكرى للمؤمنين الذين ينتفعون بالذكرى.

Taxonomy of study designs



E=effect
O=outcome

Observational Study design	Feature	Example
Cohort	$E \rightarrow O$	Do mobiles increase risk of brain cancer? Measure mobile phone use \rightarrow brain cancer Need large population (rare events), can get accurate real-time exposure history, expensive, potential confounding +
Case-control	$E \leftarrow O$	Do mobiles increase risk of brain cancer? Population = Brain cancer cases, matched controls Efficient use of controls, rely on recalled history of mobile use, time and resource efficient, potential confounding +
Cross-sectional	E and O	Does having a mobile phone improve kids verbal skills? Measure mobile phone use and verbal skills at same time. Causality? Confounding factors ++

Thus, we need to understand the different study designs. The students are now made to identify the study designs for the given scenarios.

1- Give an accurate terminology for the study design for the following scenario:

- A. A case of a 34-year-old woman who underwent medical abortion with mifepristone and gemeprost and received codeine as pain-relief during the induction of abortion. She was non alcoholic and never had previous bad obstetric history. After 7 hours of ingestion of gemeprost she developed a severe acute necrotizing pancreatitis which required 14 days of intensive care. All other possible etiological factors, i.e. gallstone, alcohol intake and hyperlipidemia, were excluded. This was a classical case of drug induced acute pancreatitis.

Answer: Case-report (Keyword: One case only and there are unique characteristics)

- B. We present the case of a 12-year-old Asian girl with an ovarian mixed germ cell tumor containing a rhabdomyosarcomatous component. She was treated with a germ cell tumor chemotherapy regimen and rhabdomyosarcoma-specific chemotherapy. Towards the end of her treatment, she developed a retroperitoneal mass that was increasing in size. It was completely resected, revealing a mature teratoma, consistent with growing teratoma syndrome. She was in complete remission approximately three years after presentation.

Answer: Case-report (If it says: another 3 cases and described them → case series)

2- Identify the study type in the following scenario:

- A. Data were collected on group of 10 patients who had bone marrow depression at a single hospital. The potential risk factor included drugs that induced bone marrow while treating an underlying disease. The investigators assessed if there was depression even after one year.

Answer: Case-series (In this question, there is no follow up and no exposure. Just an accident that happened in a hospital for 10 patients.)

- B. A subset of hospitalized patients with E coli induced hemolytic uremic syndrome (HUS) developed neurologic symptoms during their stay. All the demographic and clinical characters of the patient subset were studied in detail to identify the cause of HUS.

Answer: Case-Series

3. What is the name of the study?

- A. The prevalence of hypertension was increasing in a town. The government decided to determine the **prevalence** of hypertension and ordered the health department to carry out the survey.

Answer: Descriptive cross-sectional (Keyword: Prevalence. Deceptive → prevalence. Also they didn't study the association between the exposure and the outcome so it is not analytical)

- B. Smoking had become a menace in both upper and lower class of the society. The health department instructed to carry out the survey for smoking prevalence and assess all the factors favoring smoking and develop methods to curb smoking.

Answer: Descriptive cross-sectional (Keyword: Prevalence. Deceptive → prevalence. Also they didn't study the association between the exposure and the outcome so it is not analytical)

4- Two Questions regarding A and B

Identify the type of study design for question **A**

- A. The Japanese government proposed to initiate a study after the Fukushima nuclear disaster in 2011 to determine the effect nuclear radiation on the individuals who were present at the time of disaster and follow up long term. They took up control group with similar characteristics of other factory located in distant province in Japan.

Answer: Cohort study (This one is prospective because we are moving forward in the follow up. In the question they mentioned the effect so it is causality. Keywords: Exposure and we are looking for the outcome and there is **follow up**. Also we are looking for the effect which is the causality)

What is this study design? (question **B**)

- B. A tumor among employees of tire factory was investigated. The details of employees as special exposure group were obtained from past employment registry records and later followed up. Control group were same factory workers who were not in direct contact with the tire chemical.

Answer: Cohort study (retrospective)

5- Two Questions regarding A and B

What is the type of study design for question A?

- A. An outbreak investigation was carried out for **E.coli** dysentery where patients were being treated at a hospital. They found that most of cases ate particular type of meal at a restaurant. Hence the researchers took as controls those who had other meals from the same restaurant and carried out the investigation.

Answer: Case control (In the question the mentioned the E.coli which is the outcome so the outcome is already there. Also they mentioned that there is an **Outbreak**)

Name and describe the study for question B:

- B. The proximity of acoustic nerve to the mobile phone has raised fears among medical community for the development of **acoustic neuroma**. Hence all cases of acoustic neuroma were registered and a study was performed with other brain tumor as control group.

Answer: Case control (In the question they mentioned the acoustic neuroma which is the outcome so the outcome is already there)

6- Two Questions regarding A and B

Name the design of the study for question A:

- A. In children with common cold, oral Zinc was given as supplement **effective** in reducing the duration of symptoms, as compared to **placebo** in other group.

Answer: Experimental (Clinical trial) (In the question they mentioned the word effective which means that efficacy points out the experimental)

Identify the study type for question B:

- B. The efficacy of Innovative form of bariatric surgery was being studied over conventional type on mortality risk, weight reduction and period of recovery.

Answer: Experimental (Control trial)



7- Two Questions regarding A and B

Can you suggest the name of the design of the study?

- A. The entire town of Chernobyl which was exposed to the radiation in 1986 was evacuated and its impact was assessed over a period of time on the population.

Answer: Ecological (Entire town).

What is the name of this study design?

- B. Multiple countries level comparison of effect of pollution on respiratory health of citizens was carried out by WHO.

Answer: Ecological study.

القارة:
عبدالله الشهري وهي المتحمي

نواف التركي

ريان الفنامي

الأعضاء:

رغد النظيف	عبدالله المياح	عبدالله التركي
ريمها الجربية	عبدالله النجريس	محمد الزبير
شهد البخاري	تركي العتيبي	عثمان الدريهم
نوف الضلعان	عبدالله القرني	عبدالعزیز القحطاني
أمير الاحمري	عامر الفامدي	ناصر الفيت
وعد ابونخاع	سعد الاحمري	سعد السهلي
براء الهويش	معاذ آل سلام	رائد الماضي
في الروسري	محمد الحصيني	سعود الشعلان
منار الزهراني		
منى السباني		

شكر خاص لئاله شاهين على الملاحظات