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RESEARCH METHODOLOGY LECTURE-III
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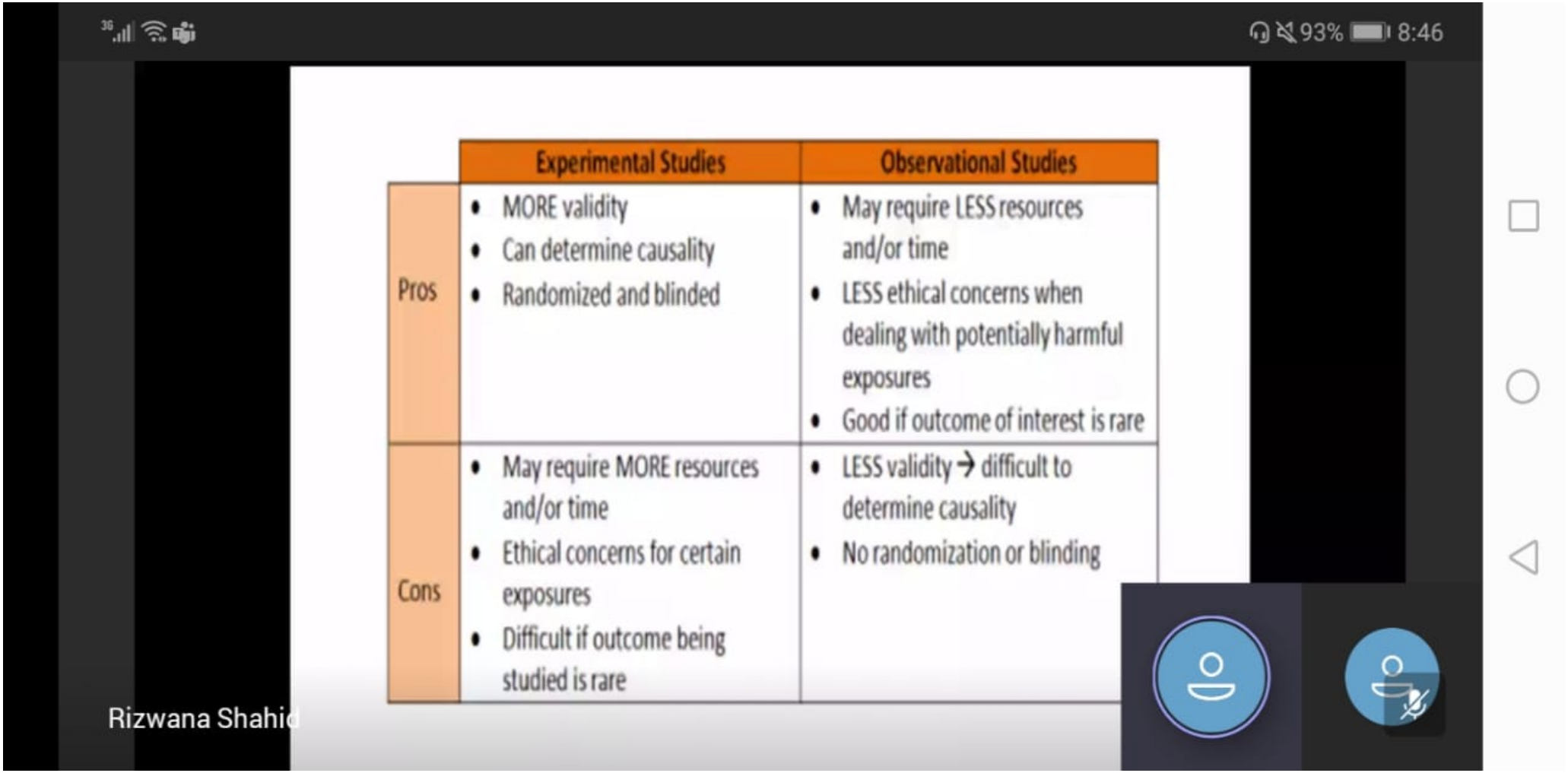
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Experimental Studies
Observational Studies
Pros
• MORE validity
• Can determine causality
• Randomized and blinded
• May require LESS resources and/or time
• LESS ethical concerns when dealing with potentially harmful exposures
• Good if outcome of interest is rare
Cons
• May require MORE resources and/or time
• Ethical concerns for certain exposures
• Difficult if outcome being studied is rare
• LESS validity → difficult to determine causality
• No randomization or blinding
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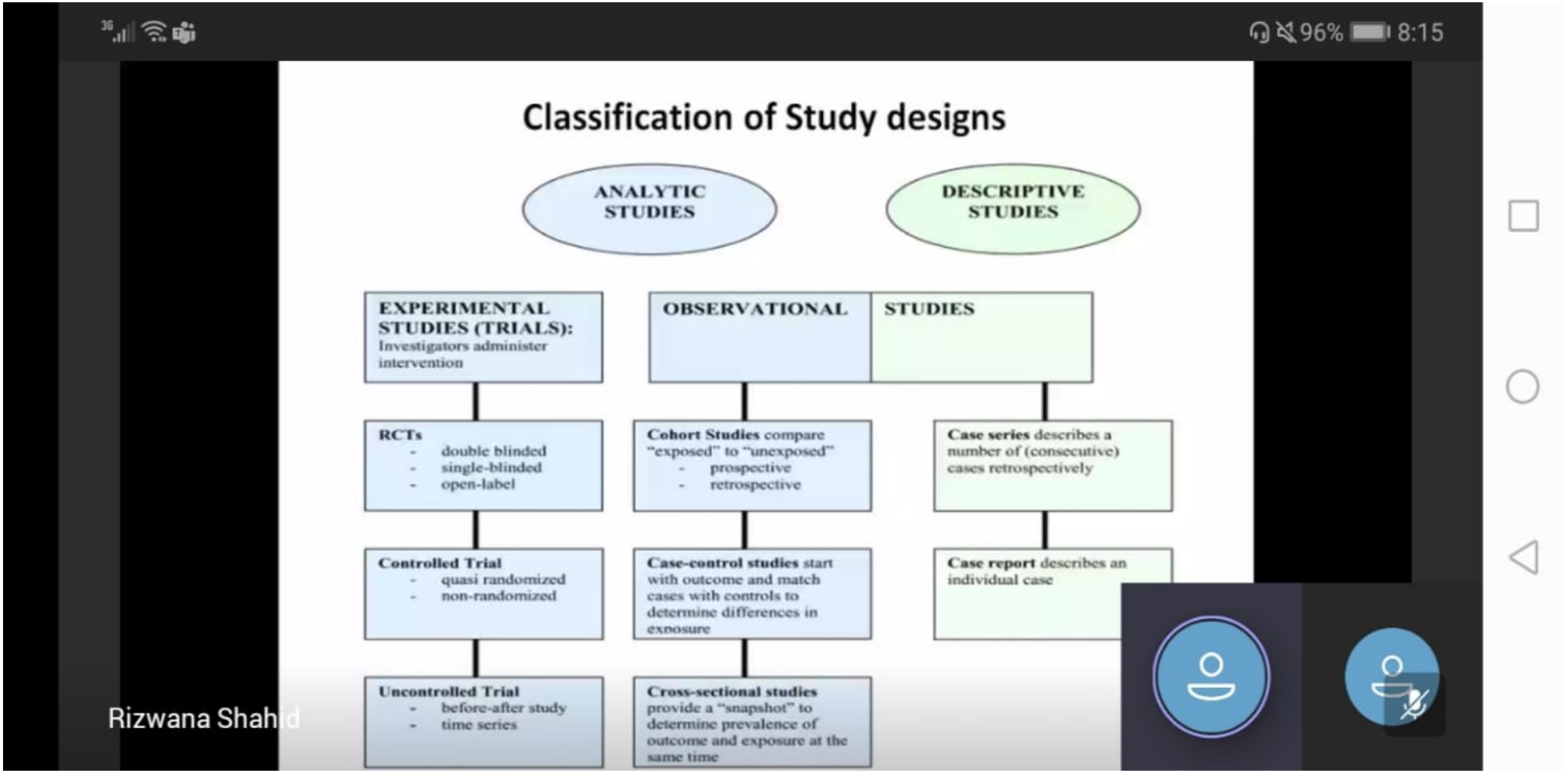
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Classification of Study designs
ANALYTIC STUDIES
DESCRIPTIVE STUDIES
EXPERIMENTAL STUDIES (TRIALS): Investigators administer intervention
OBSERVATIONAL
STUDIES
RCTs
- double blinded
- single-blinded
- open-label
Cohort Studies compare "exposed" to "unexposed"
- prospective
- retrospective
Case series describes a number of (consecutive) cases retrospectively
Controlled Trial
- quasi randomized
- non-randomized
Case-control studies start with outcome and match cases with controls to determine differences in exposure
Case report describes an individual case
Uncontrolled Trial
- before-after study
- time series
Cross-sectional studies provide a "snapshot" to determine prevalence of outcome and exposure at the same time
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Cross-sectional Study

- Data collected at a single point in time
- Describes associations

- Prevalence

A "Snapshot"

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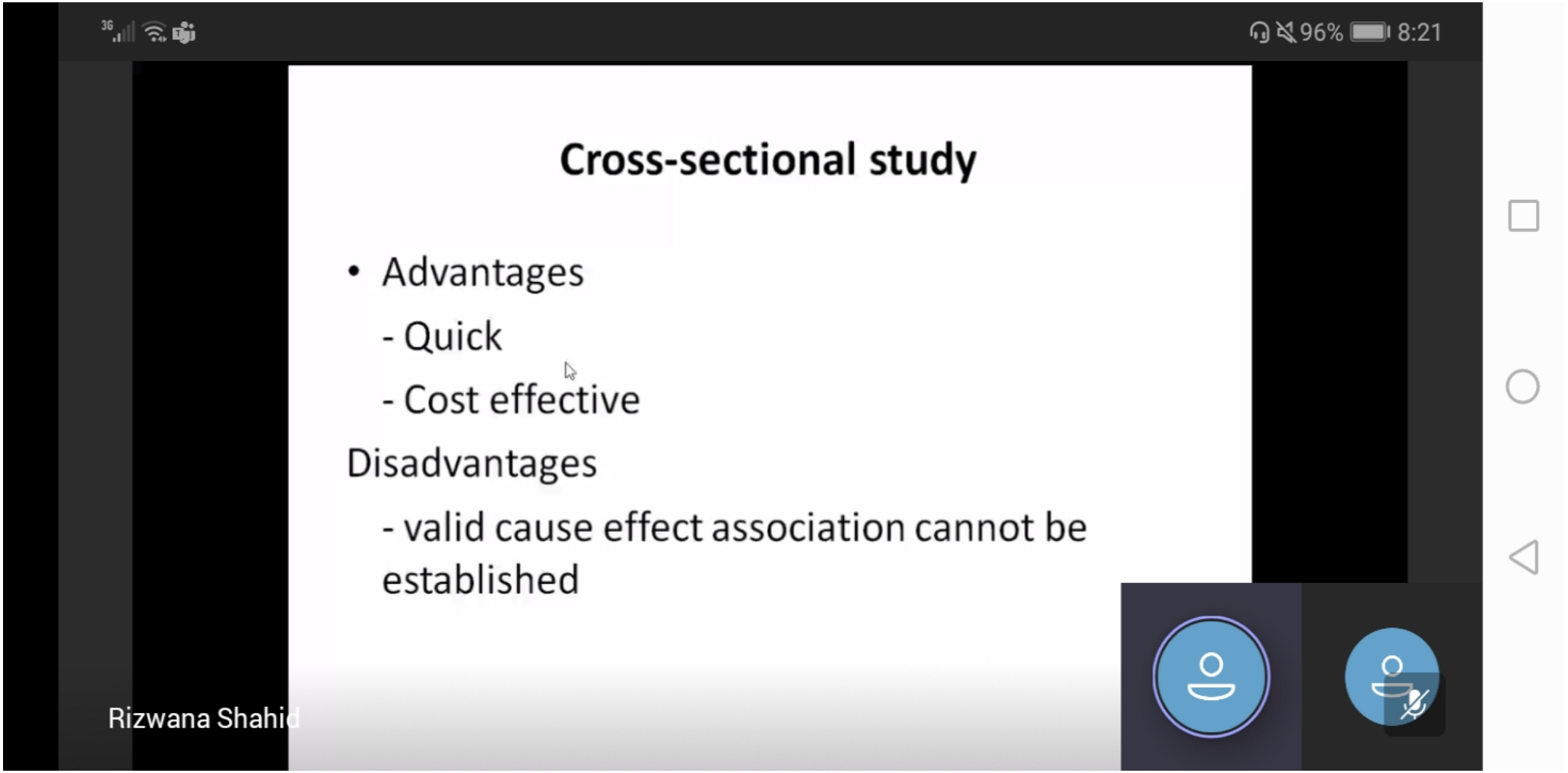
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Cross-sectional study
• Advantages
- Quick
- Cost effective
Disadvantages
- valid cause effect association cannot be established
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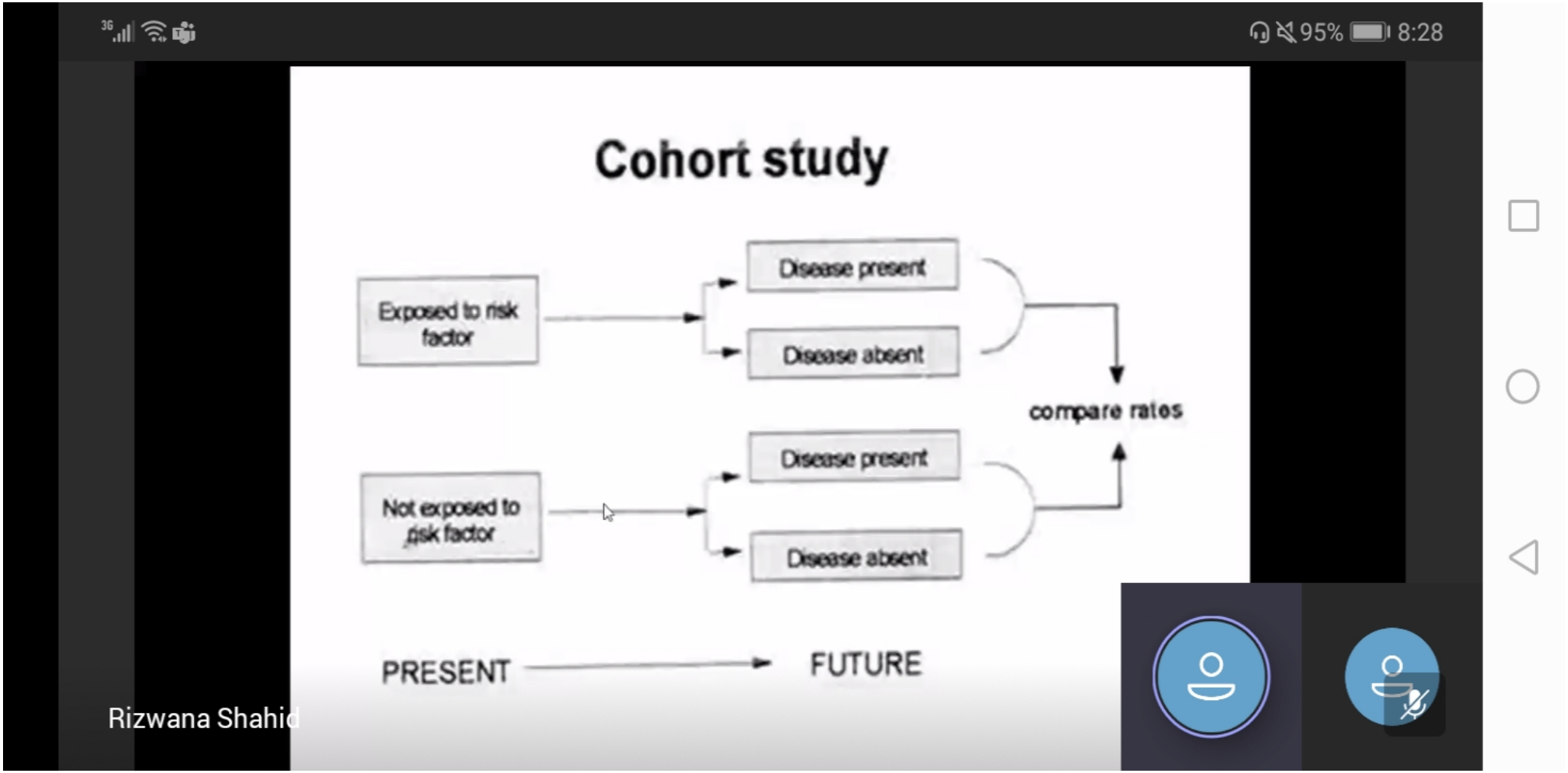
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Cohort study
Exposed to risk factor
Disease present
Disease absent
Not exposed to risk factor
Disease present
Disease absent
compare rates
PRESENT
FUTURE
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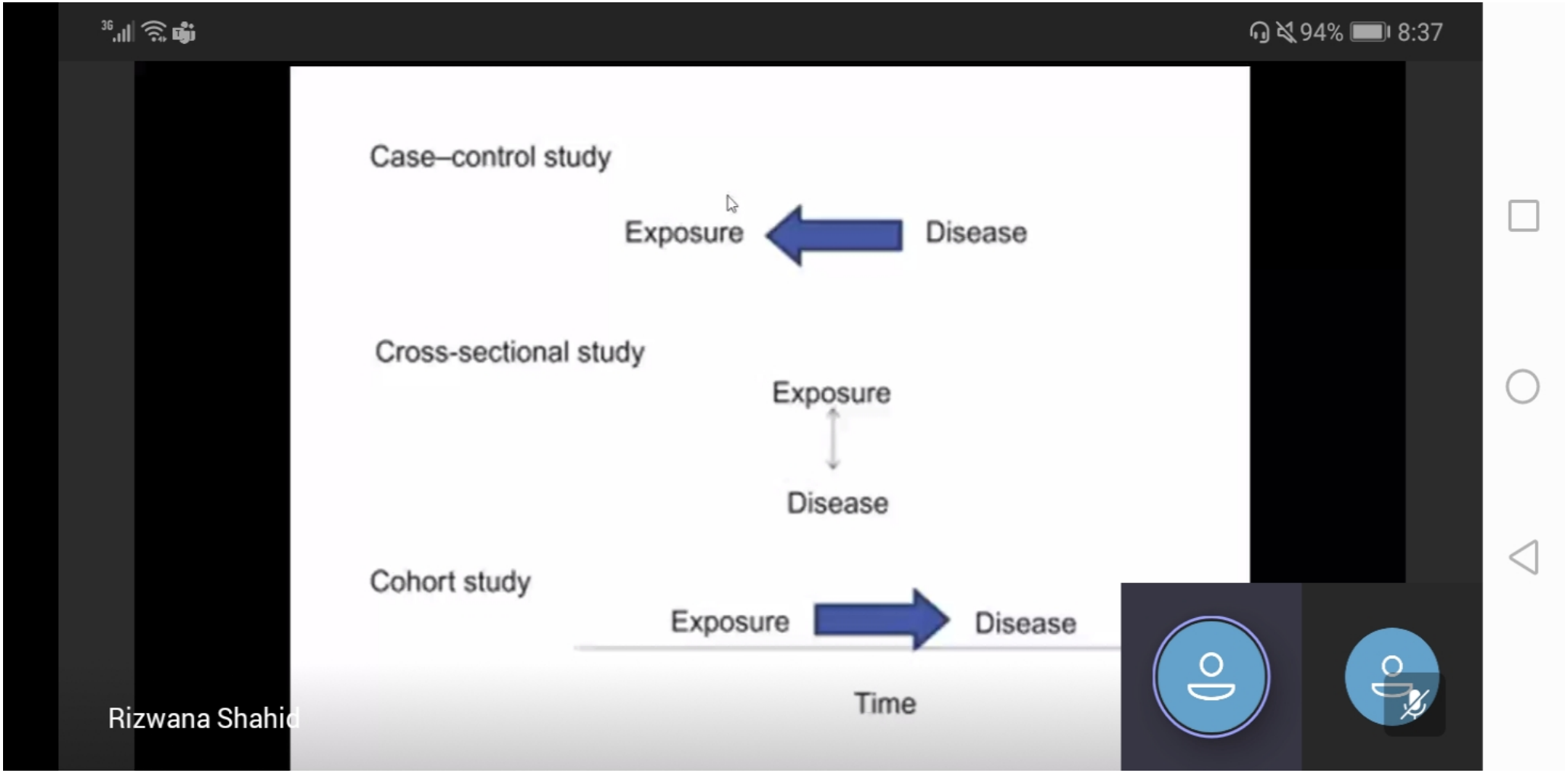
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Case–control study
Exposure
Disease
Cross-sectional study
Exposure
Disease
Cohort study
Exposure
Disease
Time
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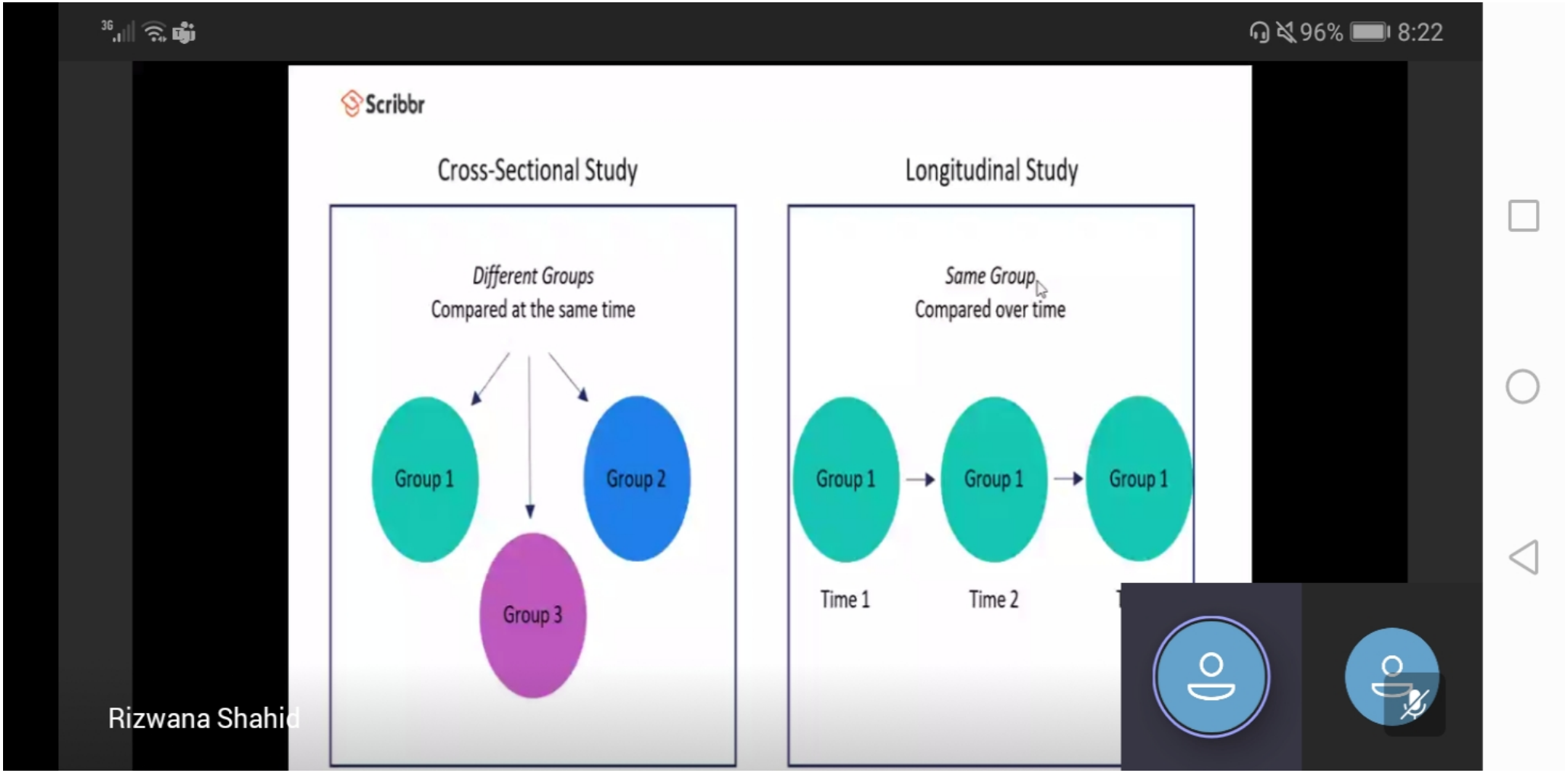
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Scribbr
Cross-Sectional Study
Different Groups
Compared at the same time
Group 1
Group 2
Group 3
Longitudinal Study
Same Group
Compared over time
Group 1
Group 1
Group 1
Time 1
Time 2
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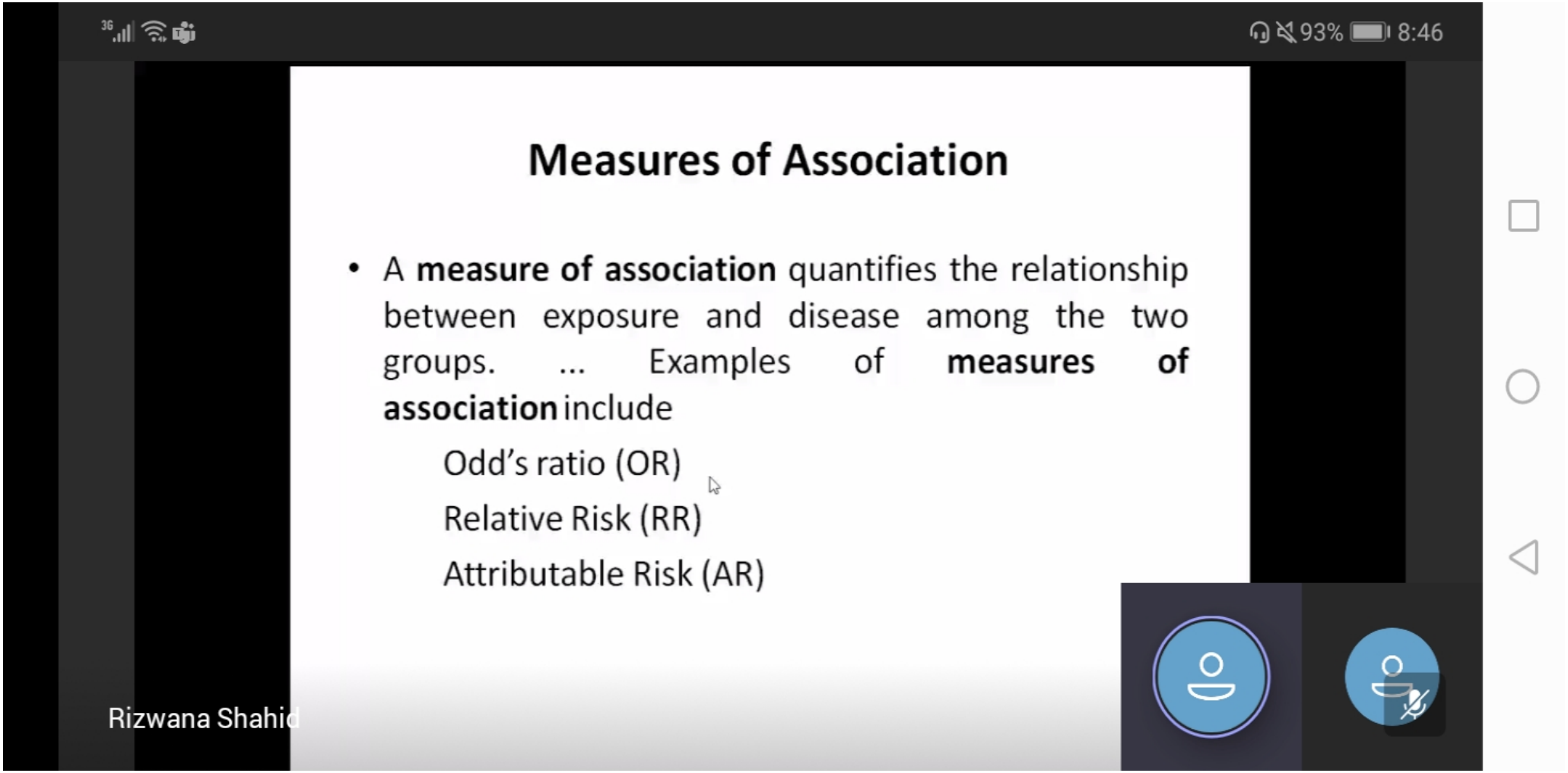
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Measures of Association
• A measure of association quantifies the relationship between exposure and disease among the two groups. ... Examples of measures of association include
Odd's ratio (OR)
Relative Risk (RR)
Attributable Risk (AR)
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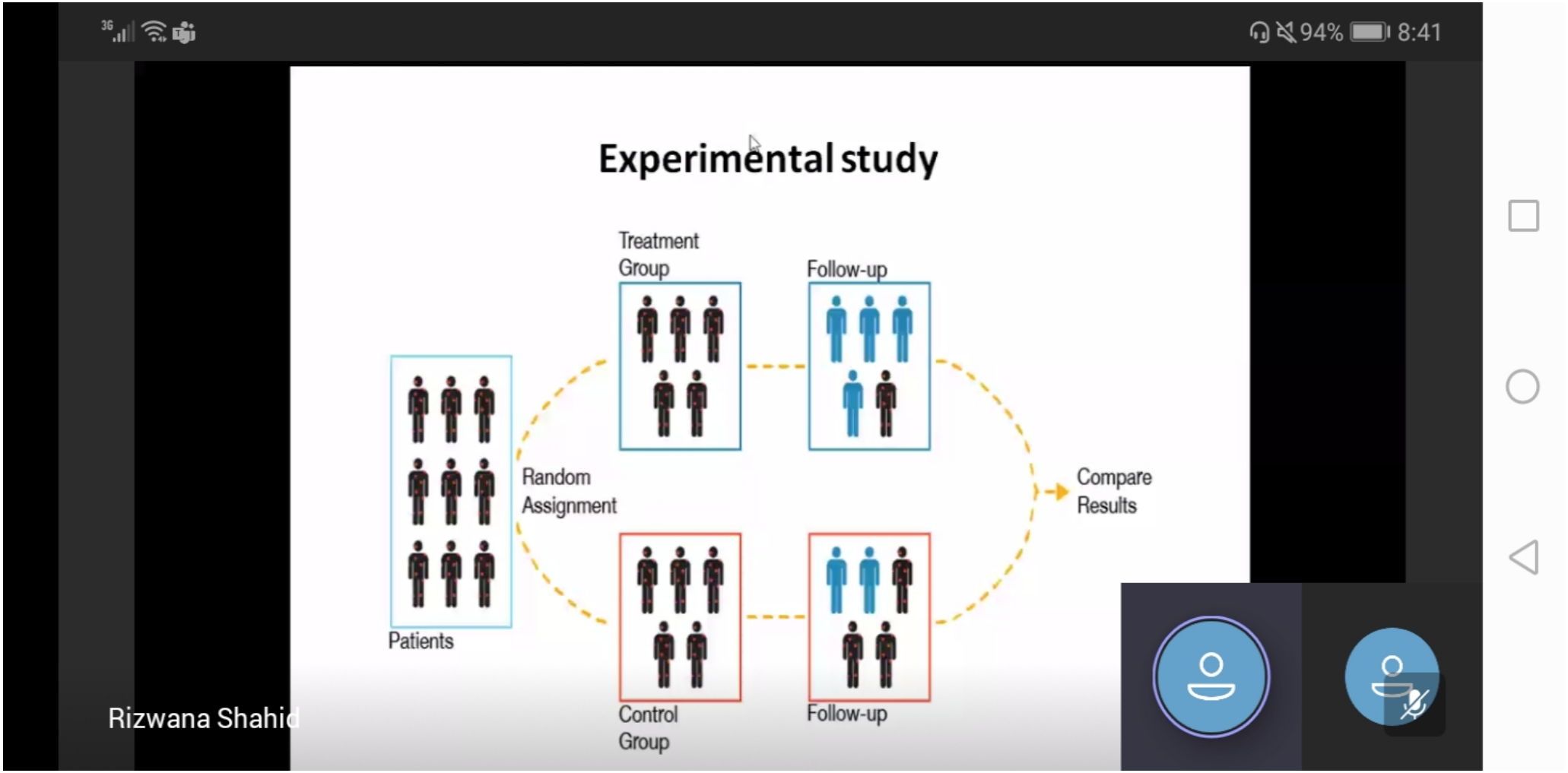
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Experimental study
Treatment
Group
Follow-up
Random
Assignment
Compare
Results
Patients
Control
Group
Follow-up
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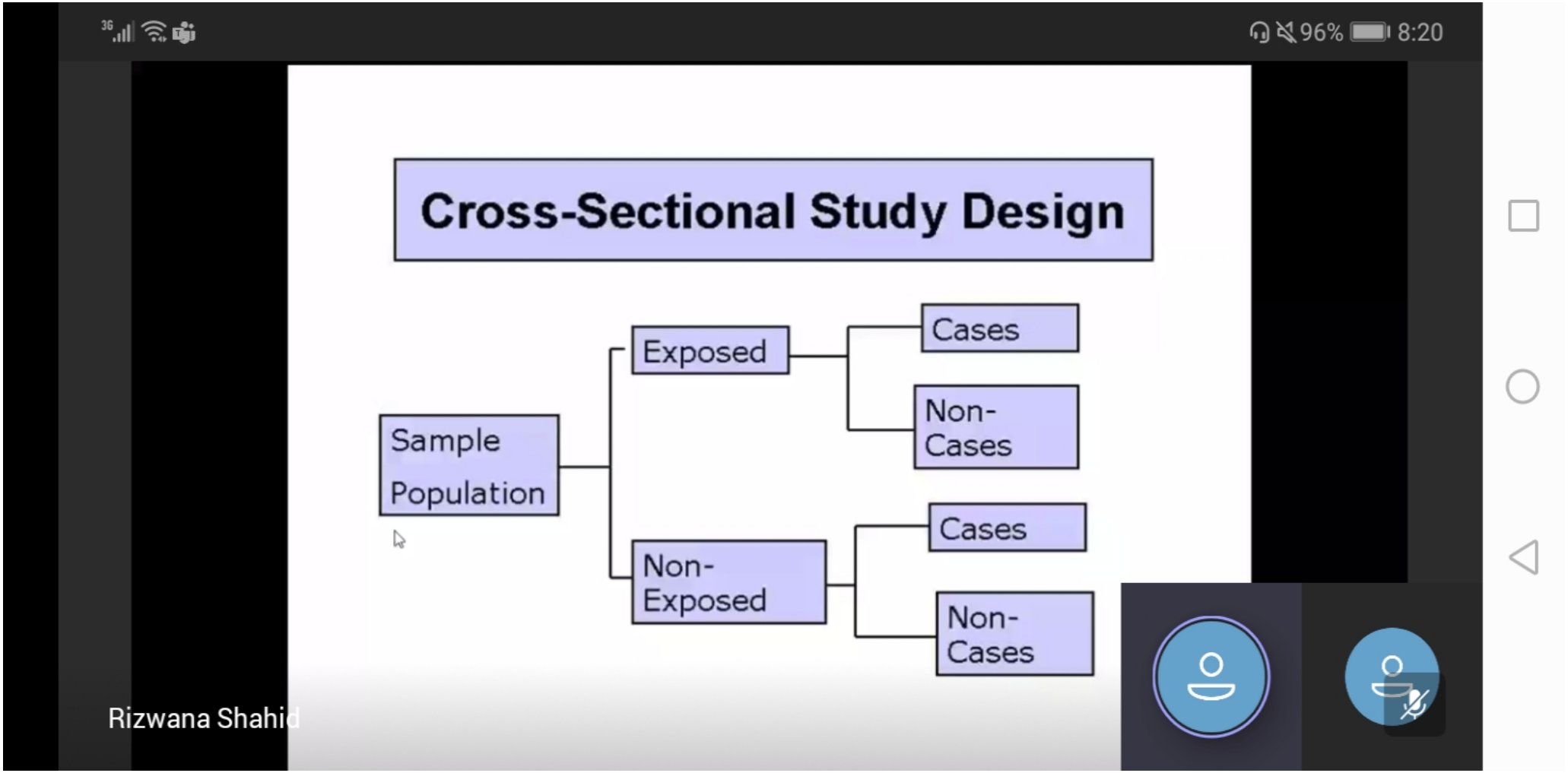
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Cross-Sectional Study Design
Sample Population
Exposed
Non-Exposed
Cases
Non-Cases
Cases
Non-Cases
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