FRONTIER MEDICAL & DENTAL COLLEGE
ABBOTTABAD
DEPARTMENT OF MEDICAL EDUCATION

JOURNAL CLUB

MBBS

2025-26

CONTENTS

1. INTRODUCTION 2

2. EDUCATIONAL OBJECTIVES AND LEARNING OUTCOMES 2

PRIMARY OBJECTIVES 2
LEARNING OUTCOMES 3

3. MBBS RESEARCH CURRICULUM 3

OVERALL LEARNING OUTCOMES 3
YEAR 1 MBBS 4
YEAR 2 MBBS: 5
YEAR 3 MBBS: 5
YEAR 4 MBBS: 6
FINAL YEAR MBBS: 6
RESEARCH HOURS DISTRIBUTION 7

4. STUDENT GROUPS AND MENTOR ALLOCATION 7

OVERALL STRUCTURE 7
ROLES AND RESPONSIBILITIES 7

5. JOURNAL CLUB PROCESS: STEP-BY-STEP GUIDE 8

6. HOW TO FIND AND SELECT A RESEARCH ARTICLE 10

7. UNDERSTANDING RESEARCH ARTICLE COMPONENTS 11

Standard Structure: IMRAD *11*
Detailed Components *11*
1. Title *11*
2. Abstract *11*
3. Introduction *11*
4. Methodology *12*
5. Results *12*
6. Discussion *12*
7. Conclusion *13*
8. References *13*

8. PRESENTATION TEMPLATE GUIDE 13

8. DETAILED SLIDE-BY-SLIDE GUIDELINES 14
Important Reminder *14*

9. METHODOLOGY SECTION: COMPLETE CHECKLIST 15

COMPLETE METHODOLOGY CHECKLIST 15
UNDERSTANDING STUDY DESIGNS 15
UNDERSTANDING VARIABLES 15
RESEARCH ETHICS: KEY CONCEPTS 16

10. KEY POINTS TO REMEMBER 16

1. INTRODUCTION

The Journal Club at Frontier Medical & Dental College (FMDC), Abbottabad, is an integral component of the MBBS Research Curriculum designed to develop research literacy, critical appraisal skills, scientific communication, and evidence-based practice among undergraduate medical students. As an introductory research activity in the first year of MBBS, the Journal Club provides students with structured exposure to scientific literature and the fundamental principles of medical research.

Through mentor-guided small-group learning, students are introduced to the process of identifying, reading, analyzing, and presenting original research articles. The activity enables students to understand the structure of scientific publications, interpret key methodological concepts, and appreciate the role of research in advancing healthcare and improving patient outcomes. Emphasis is placed on understanding research design, study setting, ethical considerations, sampling methods, inclusion and exclusion criteria, research tools, and interpretation of findings.

The Journal Club is conducted through a collaborative learning model in which students work under the supervision of assigned Research Mentors and participate in article review, group discussions, presentations, and peer feedback sessions. This process promotes critical thinking, teamwork, self-directed learning, and professional communication skills.

Aligned with the longitudinal FMDC Research Curriculum, the Journal Club serves as the foundation for the progressive development of research competencies throughout the MBBS program. By engaging with scientific evidence early in their medical education, students develop the ability to critically evaluate research findings and apply evidence-informed principles to future clinical practice and lifelong learning.

2. EDUCATIONAL OBJECTIVES AND LEARNING OUTCOMES

Primary Objectives

The Journal Club aims to:

1. Introduce undergraduate medical students to the principles and importance of medical research and evidence-based practice.
2. Develop students' ability to identify, understand, and interpret the components of scientific research articles.
3. Familiarize students with the functions of the Research Advisory Committee (RAC) and Institutional Review Board (IRB) and the importance of research ethics.
4. Promote understanding of fundamental research methodology, including study design, research setting, sampling techniques, sample size, inclusion and exclusion criteria, ethical approval, and research tools.
5. Enhance students' skills in literature searching, scientific presentation, critical thinking, and scholarly discussion.
6. Foster collaborative learning through mentor-guided group activities, peer interaction, and constructive feedback.
7. Prepare students for progressive research activities and scholarly engagement throughout the MBBS program.

Learning Outcomes

Upon completion of the Journal Club Program, students will be able to:

1. Explain the importance of research in medical education, healthcare, and evidence-based clinical practice.
2. Describe the roles and functions of the Research Advisory Committee (RAC) and Institutional Review Board (IRB).
3. Differentiate between common types of scientific and medical research.
4. Identify and describe the major components of an original research article.
5. Interpret key elements of research methodology, including:
    - Study design
    - Study setting
    - Study duration
    - Sample size
    - Sampling technique
    - Inclusion and exclusion criteria
    - Research variables
    - Data collection tools
    - Ethical approval
6. Conduct basic literature searches using recognized scientific databases and search engines.
7. Critically review and summarize published research articles.
8. Prepare and deliver structured scientific presentations using the prescribed Journal Club format.
9. Participate effectively in scholarly discussions and provide constructive peer feedback.
10. Demonstrate professional behavior, academic integrity, and ethical conduct during Journal Club activities.
11. Apply basic principles of critical appraisal when evaluating published scientific literature.
12. Recognize the relevance of research findings in supporting evidence-informed healthcare practice.

3. MBBS RESEARCH CURRICULUM

The Research Curriculum at Frontier Medical & Dental College (FMDC) is a longitudinal, competency-based program designed to develop research literacy, critical appraisal skills, scientific communication, and evidence-based practice among undergraduate medical students. The curriculum follows a spiral approach, allowing students to progressively acquire research knowledge and skills throughout the five years of the MBBS program.

The curriculum is delivered through Large Group Interactive Sessions (LGIS), Journal Club activities, workshops, assignments, supervised group activities, self-directed learning, and research projects. The ultimate goal is to produce graduates capable of critically appraising scientific literature, applying evidence in clinical decision-making, and participating in scholarly activities.

Overall Learning Outcomes

Upon completion of the MBBS program, students will be able to:

1. Explain the principles and importance of medical research.
2. Demonstrate understanding of research ethics and regulatory requirements.

3. Critically appraise scientific literature using structured approaches.
4. Interpret research methodology and statistical findings.
5. Conduct literature searches using electronic databases.
6. Develop research questions and formulate study objectives.
7. Participate in research project planning and implementation.
8. Communicate research findings through presentations and scientific writing.
9. Apply principles of evidence-based medicine in clinical practice.

Year 1 MBBS

Research Orientation and Understanding Research Articles

Total Hours: 20

The first year focuses on introducing students to the foundations of medical research and developing familiarity with scientific literature. Students learn the importance of research, the role of institutional research committees, and the structure of scientific articles. Through Journal Club activities, students develop the ability to identify and understand key components of original research articles, particularly research methodology.

S.No	Learning Outcome	Learning Objectives	Instructional Strategies	Assessment Tools
1	Describe the importance of research in medical education and healthcare.	Explain the role of research in evidence-based practice. Discuss the importance of research for undergraduate medical students.	LGIS, Journal Club (JC), Group Discussion	MCQs, SAQs, Journal Club Presentation
2	Identify the research governance structure at FMDC.	Describe the functions of RAC and IRB. Explain ethical approval processes.	LGIS, JC	MCQs, SAQs, Journal Club Presentation
3	Differentiate between various types of research.	Classify quantitative and qualitative research designs. Recognize common research methodologies.	LGIS, JC, Assignments	MCQs, SAQs
4	Recognize the components of a scientific article.	Identify title, abstract, introduction, methodology, results, discussion, and references.	LGIS, JC, Article Review	MCQs, SAQs, Journal Club Presentation
5	Interpret key elements of research methodology.	Identify study design, setting, sample size, sampling techniques, inclusion and exclusion criteria, and ethical approval.	LGIS, JC, Workshops	MCQs, SAQs, Journal Club Presentation

Year 2 MBBS:
Critical Appraisal and Research Methodology

Total Hours: 20

The second year builds upon foundational concepts by focusing on research methodology and critical appraisal. Students learn to evaluate research designs, sampling techniques, data collection tools, and ethical considerations. Journal Club activities emphasize systematic critique of published research.

S.No	Learning Outcome	Learning Objectives	Instructional Strategies	Assessment Tools
1	Explain commonly used research designs.	Compare observational and experimental studies. Describe strengths and limitations of various study designs.	LGIS, JC, Workshops	MCQs, SAQs
2	Apply principles of sampling and data collection.	Explain sampling techniques and data collection methods. Identify sources of bias.	LGIS, JC	MCQs, SAQs
3	Evaluate research tools and instruments.	Discuss validity, reliability, and questionnaire development.	LGIS, Workshops, JC	MCQs, SAQs
4	Critically appraise published research articles.	Assess methodology, results, and conclusions of scientific studies.	JC, Group Discussions	Journal Club Presentation, SAQs
5	Understand principles of evidence-based medicine.	Interpret levels of evidence and research applicability.	LGIS, JC	MCQs, SAQs, Journal Club Presentation

Year 3 MBBS:
Project Development and Scientific Writing

Total Hours: 20

The fourth year emphasizes application of research knowledge through project development and scientific communication. Students work under faculty supervision to develop research proposals, conduct literature reviews, and gain experience in scientific writing and presentation.

S.No	Learning Outcome	Learning Objectives	Instructional Strategies	Assessment Tools
1	Formulate a research question and objectives.	Develop research questions and hypotheses. Write measurable objectives.	LGIS, Workshops	SAQs, Assignments
2	Develop a basic research protocol.	Describe essential components of a research proposal.	LGIS, Workshops, JC	SAQs, Research Proposal

3	Apply basic statistical concepts.	Explain descriptive statistics and interpretation of data.	LGIS, Computer Sessions	MCQs, SAQs
4	Manage and analyze research data.	Demonstrate data entry and interpretation using statistical software.	Workshops, Practical Sessions	Assignments
5	Present research findings effectively.	Prepare tables, graphs, and scientific presentations.	JC, Student Presentations	Presentation Assessment

Year 4 MBBS:

Research Project Development and Scientific Writing (35 Hours)

The fourth year emphasizes application of research knowledge through project development and scientific communication. Students work under faculty supervision to develop research proposals, conduct literature reviews, and gain experience in scientific writing and presentation.

S.No	Learning Outcome	Learning Objectives	Instructional Strategies	Assessment Tools
1	Develop a research proposal.	Prepare a complete research proposal including methodology and ethical considerations.	LGIS, Workshops, Faculty Mentoring	Proposal Assessment
2	Conduct literature review.	Search, retrieve, and synthesize scientific literature.	JC, Assignments, Workshops	Assignments
3	Apply principles of scientific writing.	Write abstracts, introductions, methods, and discussion sections.	LGIS, Workshops	Written Assignments
4	Demonstrate understanding of research dissemination.	Prepare posters and oral presentations.	JC, Student Presentations	Presentation Assessment
5	Interpret and communicate research findings.	Analyze results and formulate conclusions and recommendations.	LGIS, Workshops, JC	SAQs, Presentation Assessment

Final Year MBBS:

Evidence-Based Practice and Research Dissemination

Total Hours: 5

The final year consolidates research competencies and emphasizes the application of evidence in clinical decision-making. Students demonstrate their ability to critically evaluate literature and communicate research findings effectively.

S.No	Learning Outcome	Learning Objectives	Instructional Strategies	Assessment Tools
1	Apply evidence-based medicine principles in clinical practice.	Integrate research evidence into clinical decision-making.	LGIS, Clinical Journal Club	MCQs, SAQs

2	Critically evaluate literature for patient care.	Appraise clinical research and determine applicability.	Clinical JC, Case Discussions	SAQs
3	Demonstrate research communication skills.	Present and discuss research findings effectively.	Seminars, Clinical JC	Presentation Assessment
4	Recognize the role of lifelong learning and scholarship.	Discuss the importance of continuing professional development and research engagement.	LGIS, Seminars	MCQs, Reflective Assignment

Research Hours Distribution

Academic Year	**Hours**
First Year MBBS	20
Second Year MBBS	20
Third Year MBBS	20
Fourth Year MBBS	35
Final Year MBBS	5
Total	**100 Hours**

4. STUDENT GROUPS AND MENTOR ALLOCATION

Overall Structure

The 100 first-year MBBS students are divided into three main groups (A, B, and C). Each main group is further divided into three subgroups of approximately 6-8 students. Each subgroup is assigned to a faculty member who serves as their **Research Mentor**. This mentorship system ensures personalized guidance and supervision throughout the Journal Club process.

First Year MBBS (2025) Group Distribution

Main Group	**Subgroups**	**Research Mentor**	**Student Roll Numbers**
GROUP A	A1	Dr. Shireen	2901-2914
	A2	Dr. Saif ur Rehman	2915-2928
	A3	Dr. Khizar	2929-2933
GROUP B	B1	Dr. Tazeen	2934-2944
	B2	Dr. Arooba	2945-2955
	B3	Dr. Bhutto	2956-2966
GROUP C	C1	Dr. Munir	2967-2978
	C2	Ms. Nikhat	2979-2988
	C3	Dr. Kiran	2989-3000

Roles and Responsibilities

Research Mentor:

- Guides students in selecting appropriate articles
- Supervises literature search and article review
- Reviews presentations before final submission
- Provides feedback and evaluation

- Ensures understanding of research methodology
- Facilitates group discussions

Students:

- Attend all Journal Club sessions
- Select an article from their topic of interest
- Read and critically evaluate the article
- Prepare presentation as per the template
- Present to the whole class
- Provide peer feedback to other groups

5. JOURNAL CLUB PROCESS: STEP-BY-STEP GUIDE

Stage 1: First Meeting - Orientation

In the first meeting, students are introduced to the concept of research and its importance in medical and dental studies. The session covers:

- Overview of research and its various types
- Importance of research for undergraduate students
- Roles of Research Advisory Committee (RAC) and Institutional Review Board (IRB)
- Types of research articles
- Components of original research articles

Mode of Teaching: Interactive session/workshop with assignments

Outcome: Students become aware concerning research committees of FMDC, understand types of research and its importance, and identify important components of original articles.

Stage 2: Article Selection

Process:

- Each subgroup selects a topic of their interest
- Students search for a published original research article on their topic
- Students present any published original article with their topic of interest in groups under the supervision of their assigned research mentor
- The mentor approves the selected article

Article Requirements:

- Must be an original research article (NOT review articles, case reports, editorials, or opinion pieces)
- Published in a reputable peer-reviewed journal
- Clear and detailed methodology
- Full text available for reading

Where to Search:

- PubMed/MEDLINE
- Google Scholar
- Scopus
- Web of Science
- DOAJ (Directory of Open Access Journals)

Stage 3: Article Review and Analysis

What Students Do:

- Read the article thoroughly (multiple times)
- Identify all components of the article
- Understand the methodology in detail

- Pay special attention to:
    - Research design
    - Study setting
    - Ethical approval
    - Sample size
    - Sampling technique
    - Inclusion and exclusion criteria
    - Research tools
- Analyze results and conclusions
- Prepare critique points

Mentor's Role:

- Supervise the review process
- Clarify difficult concepts
- Ensure accurate understanding
- Provide guidance on presentation

Stage 4: Second Meeting:
Presentation Preparation
Requirements:

- PowerPoint presentation following the college template
- All required sections covered as per template
- Clear and logical flow
- Visual aids (tables, figures)
- Consistent formatting

Timeline:

- Students work on presentation with mentor supervision
- Mentor reviews draft presentation
- Revisions made based on feedback

Stage 5: Journal Club Presentation Day
What Happens:

- Each subgroup presents to the whole class
- Presentation duration: 10-15 minutes
- Followed by question and answer session
- Mentors and peers provide feedback
- Evaluation is conducted

Attendance:

- All students are required to attend
- Mentors attend presentations
- Feedback forms are completed

Stage 6: Feedback
Feedback Process:

- Verbal feedback during Q&A
- Written feedback from mentors
- Peer feedback from other students
- Self-reflection by presenting students
- Recommendations for improvement

6. HOW TO FIND AND SELECT A RESEARCH ARTICLE

The selection of an appropriate research article is the foundation of a successful Journal Club presentation. This section provides students with practical guidance on identifying, searching for, and selecting high-quality scientific articles for review and presentation. By following the criteria and recommendations outlined in this guide, students will be able to locate relevant original research articles, assess their suitability for academic discussion, and develop a better understanding of research methodology and evidence-based medicine. The process of article selection also helps students strengthen their literature searching skills and ensures that Journal Club presentations are based on scientifically sound and ethically conducted research.

Types of Articles to Select

For 1st year Journal Club, students must select **ORIGINAL RESEARCH ARTICLES**. These are primary sources where researchers report their own findings from a study they conducted.

DO Select:

- Original research articles with primary data
- Articles with clear methodology
- Both quantitative and qualitative studies

DO NOT Select:

- Review articles (systematic reviews, meta-analyses)
- Case reports
- Opinion pieces or editorials
- Letters to the editor
- Brief communications (unless substantial original data)

Selection Criteria Checklist

Criteria	What to Look For
Relevance	Biomedical or medical field
Clarity	Well-written and understandable
Methodology	Clear and detailed methodology
Currency	Published within last 2-3 years
Accessibility	Full text available
Peer-review	Reputable peer-reviewed journal

Recommended Databases

Database	Access	Notes
PubMed	Free	Largest biomedical database
Google Scholar	Free	Broad coverage
Scopus	Institutional	Comprehensive coverage
Web of Science	Institutional	High-quality journals
DOAJ	Free	Open access journals only

Search Tips

1. Use keywords related to your topic
2. Use Boolean operators (AND, OR, NOT)
3. Apply filters (year, article type, language)
4. Use MeSH terms in PubMed
5. Read the abstract first to check relevance

6. Look for open access articles for easy access

What to Avoid

- **Predatory journals** (not recognized or indexed)
- **Retracted articles** (check if article has been retracted)
- Articles **without proper methodology**
- Articles with **very small sample sizes** (unless justified)
- Articles with **no ethical approval statement**
- Articles from **non-peer-reviewed sources**

7. UNDERSTANDING RESEARCH ARTICLE COMPONENTS

A research article is a structured scientific document that communicates the findings of a study to the academic and healthcare community. Understanding the various components of a research article is essential for effective participation in Journal Club activities. Most original research articles follow a standard format known as IMRAD (Introduction, Methodology, Results, and Discussion), which allows readers to systematically understand the purpose, methods, findings, and significance of the research. Familiarity with these components enables students to critically evaluate published literature, interpret research findings, and appreciate the scientific process.

Standard Structure: IMRAD

- Introduction
- Methodology
- Results
- And
- Discussion

Detailed Components

1. Title

The title is the first element of a research article and provides a concise description of the study. It helps readers quickly understand the focus of the research and may also indicate the study design, population, or setting.

Key Features

- Clear and concise
- Describes the study's main focus
- May include study design

2. Abstract

The abstract is a brief summary of the entire research article. It allows readers to determine the relevance of the study before reading the full text and highlights the most important aspects of the research.

Common Components

- Background/Objectives
- Methods
- Results
- Conclusions
- Keywords

3. Introduction

The introduction provides background information about the topic and explains why the study was conducted. It identifies existing knowledge, highlights gaps in the literature, and presents the research objectives or questions.

Key Features

- Establishes research context
- Reviews relevant literature
- Identifies research gap
- States research aim/objective
- Provides rationale for the study

4. Methodology

The methodology section describes how the research was conducted. It is often considered the most important section for Journal Club presentations because it determines the validity, reliability, and scientific rigor of the study. Students should pay particular attention to this section when reviewing an article.

Key Components

- **Study Design:** Cross-sectional, case-control, cohort, randomized controlled trial (RCT), etc.
- **Study Setting:** Location where the study was conducted.
- **Study Duration:** Time period during which data were collected.
- **Sample Size:** Number of participants and method of calculation.
- **Study Population:** Characteristics of the participants.
- **Sampling Technique:** Method used to select participants.
- **Inclusion Criteria:** Characteristics required for participation.
- **Exclusion Criteria:** Characteristics leading to exclusion.
- **Study Tools:** Questionnaires, instruments, laboratory tests, or other tools used.
- **Variables:** Independent and dependent variables studied.
- **Statistical Analysis:** Statistical tests and software used.
- **Ethical Approval:** Approval obtained from an ethics review committee or institutional review board.

5. Results

The results section presents the findings of the study without interpretation. Data are usually presented through text, tables, graphs, and figures to summarize the outcomes of the research.

Key Features

- Demographic data of participants
- Key findings and outcomes
- Tables and figures
- Statistical significance (p-values and confidence intervals)

6. Discussion

The discussion section interprets the findings and explains their significance. Authors compare their results with previous studies, discuss strengths and limitations, and highlight the implications of the findings.

Key Features

- Interpretation of findings
- Comparison with previous research

- Explanation of unexpected results
- Discussion of limitations
- Implications for practice or policy
- Suggestions for future research

7. Conclusion

The conclusion provides a concise summary of the study's major findings and emphasizes their significance. It often includes recommendations for practice, policy, education, or future research.

Key Features

- Summary of main findings
- Clinical or practical implications
- Recommendations

8. References

The references section lists all sources cited in the article. It demonstrates the scientific basis of the study, acknowledges previous work, and allows readers to locate original sources for further reading.

Key Features

- Shows how the study builds upon existing knowledge
- Provides sources for verification and further reading
- Demonstrates scholarly integrity and proper citation practices

8. PRESENTATION TEMPLATE GUIDE

Template Structure

- ✓ Slide 1: Title Slide
- ✓ Slide 2: Background of the Study
- ✓ Slide 3: Significance of the Study
- ✓ Slide 4: Research Problem Identified
- ✓ Slide 5: Research Objective(s)
- ✓ Slide 6: Research Question(s)
- ✓ Slide 7: Hypothesis (if applicable)
- ✓ Slide 8-10: Methodology
- ✓ Slide 11: Results
- ✓ Slide 12: Conclusions
- ✓ Slide 13: Critique
- ✓ Slide 14: Summary
- ✓ Slide 15: Thank You

Important Template Tips

1. **Follow the sequence** exactly as provided in the template
2. **Remove slides** that are not applicable (e.g., Hypothesis if not present)
3. **Do not skip** any required sections
4. **Add extra slides** for tables and figures if needed
5. **Keep formatting consistent** with the college template
6. **Include all group members' names** with roll numbers
7. **Clearly identify the presenter**
8. **Look into ERC proposal proforma** available in download section on college website for methodology guidance

9. DETAILED SLIDE-BY-SLIDE GUIDELINES

The Journal Club presentation is designed to help students systematically analyze and communicate the key components of a scientific research article. Each slide has a specific purpose and collectively provides a structured overview of the study, from its background and objectives to its methodology, results, conclusions, and critical appraisal. Students should follow the prescribed sequence to ensure consistency across presentations and to facilitate meaningful discussion and feedback. Particular emphasis should be placed on the methodology section, as understanding research methods is one of the primary objectives of the Journal Club program.

Slide	Title	Purpose	Key Information to Include
1	Title Slide	Introduce the article and presenters	Full article title, batch/year, group number, names and roll numbers of all group members, presenter name, mentor name, designation, and presentation date
2	Background of the Study	Provide context for the research	Brief introduction to the topic, current knowledge, previous findings, and context of the problem
3	Significance of the Study	Explain why the study was conducted	Importance of the topic, knowledge gap addressed, beneficiaries of the research, and clinical/public health relevance
4	Research Problem Identified	Define the problem under investigation	Statement of the problem, supporting evidence, and rationale for addressing it
5	Research Objective(s)	Present the aims of the study	Primary and secondary objectives, written clearly and specifically
6	Research Question(s)	Highlight the questions being answered	Specific, measurable, and answerable research questions
7	Hypothesis (if applicable)	Present proposed assumptions	Null hypothesis (H_0) and alternative hypothesis (H_1), only if stated in the article
8	Study Design and Setting	Explain where and how the study was conducted	Study design, setting, and duration
9	Sample and Participants	Describe study population	Sample size, sampling technique, participant characteristics, inclusion and exclusion criteria
10	Tools and Variables	Explain data collection methods	Study tools, variables, data collection procedures, and ethical approval
11	Results	Present study findings	Demographic data, key findings, tables, figures, percentages, and statistical significance
12	Conclusions	Summarize major outcomes	Main findings, implications, and recommendations
13	Critique	Critically appraise the study	Strengths, limitations, validity, reliability, and suggestions for improvement
14	Summary	Provide concise overview	Key messages and major take-home points
15	Thank You	Conclude presentation	Thank you message, invitation for questions, complete reference citation, and presenter details

Important Reminder

Students should ensure that all information presented is derived from the selected article. Particular attention should be given to understanding the methodology, as this forms the core learning objective of the Journal Club. Presentations should be clear, concise, scientifically accurate, and delivered professionally.

10.METHODOLOGY SECTION: COMPLETE CHECKLIST

The methodology section is the most important part of the presentation for 1st year students. You must understand and explain ALL of the following:

Complete Methodology Checklist

Component	Questions to Consider
Study Design	Cross-sectional, cohort, case-control, RCT, etc.? Is it appropriate?
Study Setting	Where was it conducted? Hospital, clinic, community?
Study Duration	When was data collected? Start and end dates?
Target Population	Who is the research about?
Study Population	Who was actually studied?
Sample Size	How many participants? How was it calculated?
Sampling Technique	How were participants selected? (Random, stratified, convenience, systematic, etc.)
Inclusion Criteria	What characteristics were required?
Exclusion Criteria	What characteristics disqualified participation?
Data Collection Tools	What instruments were used? (Questionnaires, lab tests, etc.)
Data Collection Process	How was data collected?
Variables	Independent and dependent variables?
Operational Definitions	How were variables defined and measured?
Ethical Approval	Was IRB approval obtained?
Consent Process	Was informed consent obtained?
Confidentiality	How was confidentiality maintained?
Statistical Analysis	What tests used? What software?
Bias Control	How was bias minimized?

Understanding Study Designs

Study Design	Description	Key Features
Cross-sectional	Data collected at one point in time	Prevalence; no causality; quick
Case-control	Compare cases (with outcome) to controls	Retrospective; efficient for rare diseases
Cohort	Follow population over time	Prospective; can calculate risk; expensive
RCT	Random assignment to groups	Gold standard; minimizes bias; expensive
Quasi-experimental	No randomization	Practical; more bias than RCT

Understanding Variables

Type	Description	Example
Independent	What is being studied as cause	Smoking status

Dependent	What is being measured (outcome)	Lung function
Confounding	Influences both IV and DV	Age, gender
Categorical	Categories with no order	Gender, smoking status
Continuous	Numeric values	FEV1, age

Research Ethics: Key Concepts

1. **Informed Consent:** Participants must be fully informed and voluntarily agree
2. **Confidentiality:** Participant identity must be protected
3. **Ethical Approval:** Must be obtained from IRB before study begins
4. **Beneficence:** Research should benefit participants/society
5. **Non-maleficence:** Research should not harm participants
6. **Justice:** Fair selection of participants

11. KEY POINTS TO REMEMBER

1. **Methodology is the most important section** - spend extra time on this
2. **Only present information from the article** - don't add external information
3. **All group members must participate** in preparation
4. **One person presents** but everyone should be ready for questions
5. **Speak clearly** and at a reasonable pace
6. **Make eye contact** with the audience
7. **Be prepared for questions** on any part of the article
8. **Maintain professionalism** throughout the presentation