

# **Certificate in Fundamentals of Operational Research in Public Health (CER-FORPH)**

**Batch II**

**20<sup>th</sup> March 2024 to 16<sup>th</sup> October 2024**

**A Joint Collaboration  
of  
Foundation of Healthcare Technologies Society,  
New Delhi, India  
&  
Sudha Rustagi College of Dental Sciences & Research,  
Greater Faridabad, Haryana, India**

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## Course Curriculum and Syllabus

### Overview of Operational Research

#### Defining Operational Research

Operational Research is an interdisciplinary branch that uses systematic research techniques for decision-making to achieve specific outcomes. It aids in the design of interventions, strategies, and coverage of programs and the development of tools to improve quality and effectiveness.

#### Why the need for operational research?

There is an urgent need to develop a trained workforce proficient in Operations research planning, implementation, and evaluation. Participants will synthesize and apply the knowledge acquired from the course to address global and national public health issues.



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## About the Course

### What does the course offer?

Certificate in Fundamentals of Operational Research in Public Health (CER-FORPH) is a program covering facets of operational research. It provides the opportunity for students to gain insights into various aspects of systematic research techniques. The course objective is to develop the skills of the learners to design and strategize interventions to enhance the quality and effectiveness of a program.

The course aims to develop a trained workforce in Operations research planning, implementation, and evaluation. The program aids students in synthesizing and applying the acquired knowledge from the course to address global, national, and public health issues.

The course has a dynamic approach to teaching by using various modes of teaching such as Lecture series, providing suggested latest reading material and in-class discussion along with continuous evaluation methods to build skills amongst the students. Additionally, the program offers a platform for students to voice their opinions on the v-Inspire Public Health Discussion Board along with hands-on research experience.

**Course Duration:** 6 Months (4 months of training and 2 months of experiential learning)

**Course Delivery:** Online

### Who Can Attend?

- Any undergraduate/graduate/postgraduate/PhD
- Development or Health professionals working in health research
- Newly joined faculties in a public health discipline

### Unique Features of the Course

- Flexible, self-paced
- Asynchronous and synchronous learning
- Weekly interactive lectures
- Case studies
- Weekly discussions
- Problem-solving exercises
- Research project

- Mentorship and Experiential Learning
- Discussion Forum
- Public Health Events student participation opportunities

## Learning Objectives

The students will learn:

- To translate ideas into research questions.
- To apply theoretical knowledge in community settings.
- To identify gaps in existing research/solutions
- To analyze and interpret quantitative and qualitative data.
- To interpret data and disseminate the research findings
- To design and develop a research study

## Course Topics

Topics to be covered in Course	
1.	Introduction to Research
2.	Overview of Research Methodology
3.	Data analysis in public health
4.	Fundamentals of manuscript writing



## Course Layout

Week-wise Course Layout	
<b>Week 1</b>	Research Domains
<b>Week 2</b>	Basics of Research Methodology
<b>Week 3</b>	Formulating a Research Question
<b>Week 4</b>	Defining Research Hypothesis
<b>Week 5</b>	Study Methods
<b>Week 6</b>	Survey Methods
<b>Week 7</b>	Research Design
<b>Week 8</b>	Sampling Methods
<b>Week 9</b>	Data Analysis 1
<b>Week 10</b>	Data Analysis 2
<b>Week 11</b>	Introduction to Qualitative data
<b>Week 12</b>	Critical appraisal of scientific literature
<b>Week 13</b>	Systematic and Scoping Review
<b>Week 14</b>	Guide to scientific writing
<b>Week 15- Week 17</b>	Research Seminar
<b>Week 18</b>	Case study
<b>Week 19 – Week 26</b>	Experiential learning

## Course Syllabus & Structure

Module No.	Topic	Teaching and Activity	Assessment Type
Module 1	Research Domains	Lecture, Reading, and Class Discussion	Quiz
Module 2	Basics of Research Methodology	Lecture, Reading, and Class Discussion	Quiz
Module 3	Formulating a Research Question	Lecture, Reading and Class Discussion	Quiz
Module 4	Defining Research Hypothesis	Lecture, Reading and Class Discussion	Quiz
Module 5	Study Methods	Lecture, Reading and Class Discussion	Quiz
Module 6	Survey Methods	Lecture, Reading and Class Discussion	Assignment
Module 7	Research Design	Lecture, Reading, and Class Discussion	Assignment
Module 8	Sampling Methods	Lecture, Reading, and Class Discussion	Quiz
Module 9	Data Analysis 1	Lecture, Reading, and Class Discussion	Assignment
Module 10	Data Analysis 2	Lecture, Reading, and Class Discussion	Assignment
Module 11	Introduction to Qualitative data	Lecture, Reading and Class Discussion	Assignment
<b>Mid-Evaluation</b>			
Module 12	Critical appraisal of scientific literature	Lecture, Reading, and Class Discussion	Assignment
Module 13	Systematic and Scoping Review	Lecture, Reading, and Class Discussion	Assignment
Module 14	Guide to scientific writing	Lecture, Reading, and Class Discussion	Quiz
	Research Seminar	Reading and Class Presentation	-
	Case study	Presentation	-
<b>Experiential learning : Hands-on research experience</b>			
<b>Final-Evaluation</b>			
<b>Note: Certificate will be provided to candidates who successfully complete the course.</b>			

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## Skills the program offers to the students

The program shapes understanding and provide opportunities to the students to acquire dynamic skills by building their abilities to:

- Identify research gap
- Formulate a research study design
- Critical thinking in designing research methodology
- Implementation of a research study
- Assess and understand quantitative and qualitative data
- Interpretation of data

## Benefits of the Course

After completion of this course the students would be able to:

- Turn ideas into executable research
- Learn essential research skills by practice
- Opportunity to involve in funded research projects to gain experience
- Opportunity to be mentored by National and International experts
- Gain research experience to qualify for higher education
- Opportunity to publish research paper



## Course Curriculum

Module No.	Topic	Learning Objectives
	<b>Introduction to Research</b>	<b>To present an overview of evidence-based research in order to strengthen research in the health care system.</b>
Module 1	Research Domains	<ol style="list-style-type: none"> <li>To learn the concept of operational research, implementation research and Health system research</li> <li>To integrate different research domain for improving population health</li> <li>To compare the different research domain in different settings</li> </ol>
Module 2	Basics of Research Methodology	<ol style="list-style-type: none"> <li>To categorize the different research areas</li> <li>To describe the research methodology</li> <li>To identify various steps involved in research</li> </ol>
Module 3	Formulating a Research Question	<ol style="list-style-type: none"> <li>To understand the process of formulating a research question</li> <li>To know the FINER criteria to develop a research question</li> <li>To identify different components of research questions</li> </ol>
	<b>Overview of Research methodology</b>	<b>To comprehend the many elements of research and the step-by-step methodology involved for conduction of evidence-based research.</b>
Module 4	Defining Research Hypothesis	<ol style="list-style-type: none"> <li>To understand null and alternate hypothesis</li> <li>To develop a research hypothesis</li> <li>Identify the steps involved in hypothesis testing</li> </ol>
Module 5	Study Methods	<ol style="list-style-type: none"> <li>To analyze the research problem</li> <li>To implement the study design</li> <li>To apply the appropriate study tool</li> </ol>
Module 6	Survey Methods	<ol style="list-style-type: none"> <li>To describe the methods required to design a survey</li> <li>To describe characteristics of survey methodology</li> <li>To frame different types of survey methods</li> </ol>
Module 7	Research Design	<ol style="list-style-type: none"> <li>To understand the characteristics of mixed method research</li> <li>To design and develop research study</li> <li>Recognize the ethical considerations of research designs</li> </ol>
Module 8	Sampling Methods	<ol style="list-style-type: none"> <li>To understand different sampling methods</li> <li>To distinguish between different sampling methods</li> <li>To apply sampling methods relevant to research objectives</li> </ol>

<b>Data analysis in public health</b>		<b>To familiarize with the methods and stages employed for data collection, preparation, analysis, presentation, and interpretation to address the nation's current public health concerns.</b>
Module 9	Data Analysis 1	<ol style="list-style-type: none"> <li>To understand the significance of the data</li> <li>To learn about types of data involved in healthcare research</li> <li>To learn about steps involved in data preparation</li> </ol>
Module 10	Data analysis 2	<ol style="list-style-type: none"> <li>To understand steps and methods involved in data analysis</li> <li>To train students in presentation and interpretation of data</li> <li>To learn about future scope of healthcare data management</li> </ol>
Module 11	Introduction to Qualitative data	<ol style="list-style-type: none"> <li>To Investigate the concerns and perspectives on a specific health issue among the population.</li> <li>To describe the influencing causes of health-related behavior</li> <li>To analyze the qualitative data in health domain</li> </ol>
<b>Fundamentals of manuscript writing</b>		<b>To learn about the numerous components involved in scientific research writing for peer-reviewed journals using the relevant tools.</b>
Module 12	Critical appraisal of scientific literature	<ol style="list-style-type: none"> <li>To learn different databases for conducting literature review</li> <li>To compare different types of literature reviews</li> <li>To identify strength and weaknesses of research articles</li> </ol>
Module 13	Systematic and Scoping Review	<ol style="list-style-type: none"> <li>To learn and understand the basics of scoping reviews</li> <li>Describe the steps to follow when doing a scoping review</li> <li>Discuss a scoping review case study</li> </ol>
Module 14	Guide to scientific writing	<ol style="list-style-type: none"> <li>To know the key elements of a research paper</li> <li>To recognize the structure of key elements involved in scientific writing</li> <li>To learn about reporting guidelines for study types</li> </ol>
	Research Seminar	Students will gain hands-on experience and instruction that will help them improve their communication and presenting abilities.
	Case study	Students will develop the abilities necessary for comprehending, interpreting, and summarizing the provided case, which will help them with critical thinking, problem solving, and decision-making.

## Experiential Learning

Our experiential learning component includes our **Virtual Interactive Novel Support Program for Innovation, Research and Entrepreneurship** aims to address population health challenges of the 21st century by enhancing academic and non-academic skills of students using an Innovative and participatory experiential learning experience.

### Course Quadrants:

- **Quadrant I E-tutorial Topics**
- **Quadrant II- Weekly Reading Material** (Case studies, and Research paper readings)
- **Quadrant III- Discussion Forum** (Weekly discussion topics to facilitate knowledge exchange)
- **Quadrant IV-Assessments**

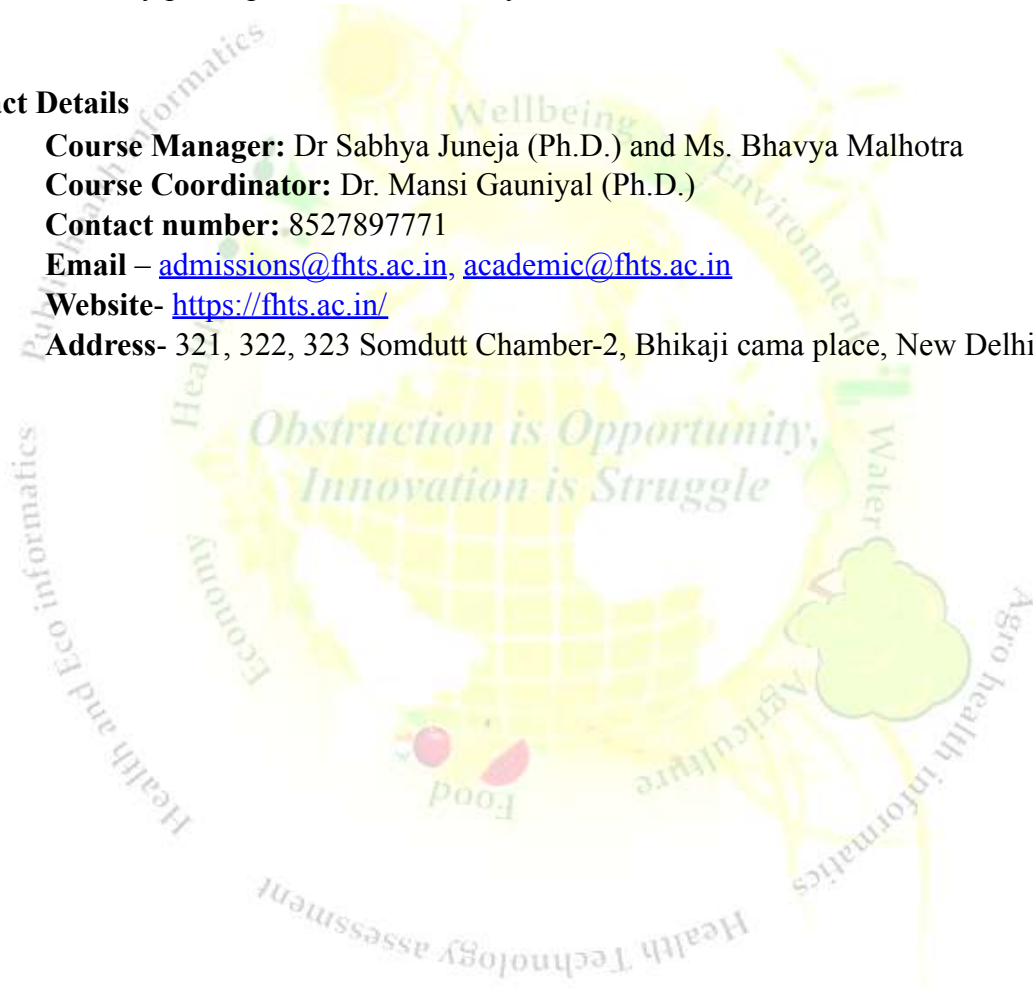
S.No.	Assessment Type	Weightage
1.	Quiz & Weekly Assessments	30%
2.	End-term Evaluation	30%
3.	Mid-term Evaluation	20%
4.	Case Studies	5%
5.	Research Seminar Presentations	5%
6.	LMS discussion forum	5%
7.	Class Participation	5%
	Total	100%

## Program Outcome

- Certificates are provided to candidates who successfully complete the course.
- Opportunity to participate in [Career and mentorship program \(CAMP\)](#)
- Opportunity to participate in [SMAART IMPACT](#)
- Voluntarily participation in Community initiatives

## Contact Details

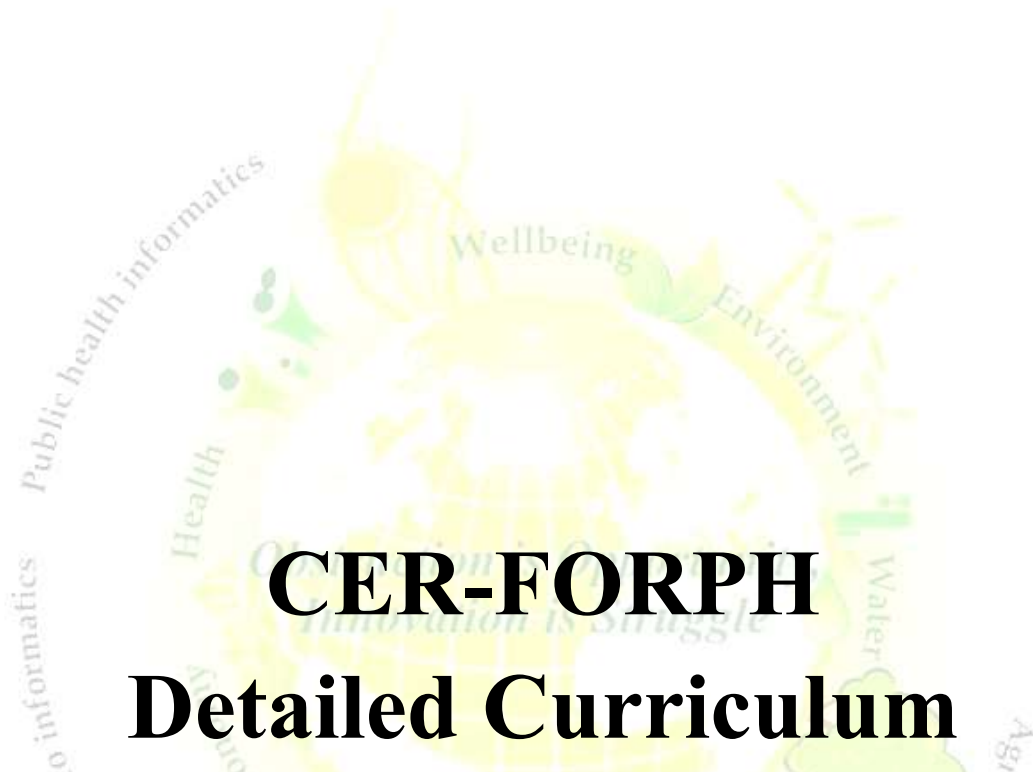
- **Course Manager:** Dr Sabhya Juneja (Ph.D.) and Ms. Bhavya Malhotra
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## Module 1

**Title: Research Domain**

**Class Duration: 60 minutes**

### Module Description:

This module will give an overview of the three research domains i.e. operational research, implementation research, and health systems research, their characteristics, importance, differences, similarities and type of research questions they address. It highlights the need for evidence-based research to strengthen health systems.

### Learning Objectives:

- To understand the concept of operational research, implementation research, and Health system research.
- To integrate different research domains for improving population health.
- To comprehend the use of research domains in different population health settings.

### Learning Outcomes:

Upon completing this module students will be able to:

- Have an overview of the operational research, implementation research, and Health system research.
- Understand the interaction of different research domains and how to integrate them effectively for a greater impact on the overall research effort.
- Apply research in their respective domains

### Contents:

- Need for Research
- Research Domains
- Operational Research
- Implementation Research
- Health system research
- Overlap of three domains

### Suggested Readings:

1. Deng, P., Liu, C., Chen, M., & Si, L. (2023). Knowledge domain and emerging trends in multimorbidity and frailty research from 2003 to 2023: a scientometric study using citespace and VOSviewer. *Health Economics Review*, 13(1), 46. <https://doi.org/10.1186/s13561-023-00460-9>
2. Thakur, Harish. (2024). TYPES OF RESEARCH. [https://www.researchgate.net/publication/377611901\\_TYPES\\_OF\\_RESEARCH](https://www.researchgate.net/publication/377611901_TYPES_OF_RESEARCH)
3. Deng, P., Liu, C., Chen, M., & Si, L. (2023). Knowledge domain and emerging trends in multimorbidity and frailty research from 2003 to 2023: a scientometric study using citespace and VOSviewer. *Health Economics Review*, 13(1), 46. <https://doi.org/10.1186/s13561-023-00460-9>
4. Nabanoba, C., & Zakumumpa, H. (2024). Experiences of membership in munno mubulwade (your friend indeed) - a novel community-based health insurance scheme in Luwero district in rural central Uganda. *BMC Health Services Research*, 24(1), 89. <https://doi.org/10.1186/s12913-023-10517-4>
5. Kumar, A., Koley, M., Yegros, A., & Rafols, I. (2024). Priorities of health research in India: evidence of misalignment between research outputs and disease burden. *Scientometrics*. <https://doi.org/10.1007/s11192-024-04980-x>



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## Module 2

**Title: Basics of Research Methodology**

**Class Duration: 60 minutes**

### Module Description:

The module on research methodology introduces students to the essential aspects of conducting research in various fields. It emphasizes the dynamic nature of research, linking the past with the present and future, and its role in generating well-informed knowledge through critical analysis. The module covers characteristics of research, including the use of scientific methods, objectivity, and empirical nature. It explores different categories of research, such as empirical and theoretical research, basic and applied research, and quantitative and qualitative research. Students will learn about the steps involved in the research process. Overall, the module provides a comprehensive understanding of research methodology and its impact on advancing knowledge across diverse domains.

### Learning objectives:

- To formulate a logical thesis that expresses a perspective on their research subject.
- The source of data in order to prove the depth, extent and validity of research.
- To identify various steps involved in research
- Practice their research skills, this includes evaluating their sources, summarizing significant information, and properly citing their sources.

### Learning outcomes:

Upon completion of this module students will be able to:

- To define the key elements of different categories of research.
- Identify the type of research required according to the research questions.
- To compare basic concepts employed in qualitative and quantitative research.

### Content:

- Introduction
- What is research?
- Research methodology
- Types of research in research methodology



- Qualitative research definition, methods, advantages, disadvantages
- Quantitative research definition, methods, advantages, disadvantage
- Empirical and Theoretical research
- Basic and Applied research
- Health research triangle
- Research process framework
- References

### Suggested Readings:

1. Nalini MS, Dr. (2023). The Basics of Dental Research Methodology. *RGUHS Journal of Dental Sciences*, 15(2). [https://doi.org/10.26463/rjds.15\\_2\\_16](https://doi.org/10.26463/rjds.15_2_16)
2. Revand, R., Kaur, S., Deepak, K. K., & Kochhar, K. P. (2023). Planning and implementation of participant-centric group activity on research methodology: perceptions of postgraduate medical students in physiology. *Advances in Physiology Education*, 47(4), 709–717. <https://doi.org/10.1152/advan.00089.2023>
3. Stickley, T., O’Caithain, A., & Homer, C. (2022). The value of qualitative methods to public health research, policy and practice. *Perspectives in Public Health*, 142(4), 237–240. <https://doi.org/10.1177/17579139221083814>
4. Leeflang, M. M. G. (2023). Responsible research: using the right methodology. *Clinical Microbiology and Infection*, 29(4), 422–423. <https://doi.org/10.1016/j.cmi.2022.10.006>
5. Kiani, A. K., Naureen, Z., Pheby, D., Henehan, G., Brown, R., Sieving, P., Sykora, P., Marks, R., Falsini, B., Capodicasa, N., Miertus, S., Lorusso, L., Dondossola, D., Tartaglia, G. M., Ergoren, M. C., Dundar, M., Michelini, S., Malacarne, D., Bonetti, G., & Donato, K. (2022). Methodology for clinical research. *Journal of Preventive Medicine and Hygiene*, 63(2 Suppl 3), E267–E278. <https://doi.org/10.15167/2421-4248/jpmh2022.63.2S3.2769>

## Module 3

### Title: Formulating Research Question

Class Duration: 60 Minutes

#### Module Description:

The course is aimed to provide graduate students with the essential skills and knowledge that is required to formulate a tangible research question. It will include a methodological approach on how to formulate a research question, identify characteristics and components of a good research question. The students will also learn the constituents of literature search and sources of literature. The course will help the students to formulate a research hypothesis and an appropriate research question that can help with the scientific investigation.

#### Learning Objectives

- To understand the process of formulating a research question.
- To know the FINER criteria to develop a research question.
- To identify the characteristics of a good research question.
- To learn about literature, search for identifying a good research question.
- To define components of a research question.

#### Learning Outcomes:

Upon completion of this module students will be able to:

- Identify and select a suitable research topic.
- Develop and write the research question, research hypotheses, and research objectives.
- Recognize the significance of a good research question in scientific research.
- Evaluate the research question as per a set of criteria.

#### Content:

- FINER criteria for research question
- Characteristics of a good research question
- Literature search – constituents and description
- Sources of literature - published literature, grey literature
- Components of research question using PICOT
- Examples of research question

#### Suggested Reading Material:

1. Hosseini, M.-S., Jahanshahloo, F., Akbarzadeh, M. A., Zarei, M., & Vaez-Gharamaleki, Y. (2024). Formulating research questions for evidence-based studies. *Journal of Medicine, Surgery, and Public Health*, 2, 100046. <https://doi.org/10.1016/j.glmedi.2023.100046>
2. Parathasarathy, S., Samantaray, A., & Jain, D. (2023). A well-formulated research question: The foundation stone of good research. *Indian Journal of Anaesthesia*, 67(4), 326. [https://doi.org/10.4103/ija.ija\\_226\\_23](https://doi.org/10.4103/ija.ija_226_23)
3. Kant Dhir, S., & Gupta, P. (2021). Formulation of Research Question and Composing Study Outcomes and Objectives RESEARCH METHODOLOGY SERIES. In *INDIAN PEDIATRICS* (Vol. 584). <https://www.indianpediatrics.net/June2021/584.pdf>
4. Younas, A., Durante, A., & Fàbregues, S. (2023). Understanding the Nature of and Identifying and Formulating “Research Problems” in Mixed Methods Research. *Journal of Mixed Methods Research*. <https://doi.org/10.1177/15586898231191441>
5. Ubeda, S. R. G. (2022). How to Build and Assess the Quality of Healthcare-Related Research Questions. *Global Journal on Quality and Safety in Healthcare*, 5(2), 39–43. <https://doi.org/10.36401/JQSH-21-17>

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## Module 4

**Title: Defining Research Hypothesis**

**Class Duration: 60 Minutes**

### Module Description:

This module gives an overview of the Research hypothesis, its importance, process involved in framing hypothesis, characteristics of hypothesis and its variables. It explains the different types of variables in research and also explains types of Hypotheses with adequate examples. It will also give a brief about the strong theory base, symbols and statements involved in hypothesis and its significance in research methods.

### Learning Objectives:

- To understand basics of research hypothesis
- To differentiate dependent and independent variables
- To learn about process involved in framing hypothesis

### Learning Outcomes:

Upon completion of this module students will be able to:

- Frame hypothesis for different research methods
- To define confounding and ways to avoid them
- To compare various symbols and statements in hypothesis
- Able to differentiate between null and alternate hypothesis

### Contents:

- Research process
- Definition of research hypothesis
- Characteristics of good hypothesis
- Types of variables
- Confounding
- Systemic relationship
- Strong theory base
- Hypothesis wording

- Types of hypotheses
- Fate of hypothesis
- Few examples on hypothesis

### **Suggested Readings:**

1. Lund, T. (2022). Research Problems and Hypotheses in Empirical Research. *Scandinavian Journal of Educational Research*, 66(7), 1183–1193. <https://doi.org/10.1080/00313831.2021.1982765>
2. Misra, D. P., Gasparyan, A. Y., Zimba, O., Yessirkepov, M., Agarwal, V., & Kitaz, G. D. (2021). Formulating Hypotheses for Different Study Designs. *Journal of Korean Medical Science*, 36(50), e338. <https://doi.org/10.3346/jkms.2021.36.e338>
3. Suvorov, A. Yu., Bulanov, N. M., Shvedova, A. N., Tao, E. A., Butnaru, D. v., Nadinskaia, M. Yu., & Zaikin, A. A. (2022). Statistical hypothesis testing: general approach in medical research. *Sechenov Medical Journal*, 13(1), 4–13. <https://doi.org/10.47093/2218-7332.2022.426.08>
4. Dwivedi, S. N. (2023). How to Formulate a Research Question, Hypothesis and Objective for a Clinical Study? *Central India Journal of Medical Research*, 2(03), 3–7. <https://doi.org/10.58999/cijmr.v2i03.133>
5. Vaidyanathan, A. (2023). Significance of hypothesis and P value. *The Journal of Indian Prosthodontic Society*, 23(2), 103–104. [https://doi.org/10.4103/jips.jips\\_131\\_23](https://doi.org/10.4103/jips.jips_131_23)



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## Module 5

**Title: Study Methods**

**Class Duration: 60 minutes**

### Module Description:

This module will help students learn about the scope and objectives of conducting surveys and their methods of administration. The students will gain an understanding of stages of survey and tools administered for collecting data in healthcare research.

### Learning Objectives:

- To define Survey methodology
- To describe purpose of survey methodology
- To identify stages of survey methodology
- To classify survey methods.
- To learn the skills for Designing effective questionnaire
- To discuss Sampling Techniques.

### Learning Outcomes:

Upon completion of this module the students will be able to:

- Discuss survey methodology.
- Explain the importance of sequencing questions logically and anticipating follow-up questions.
- To describe various sampling techniques.
- To Analyze population-related challenges.
- To Identify emerging trends, such as electronic surveys.

### Content:

- Study Method
- Introduction to Survey
- Classification
- Stages of Survey
- Data collection Tools
- Survey Method selection

### Suggested Readings:

1. Khanday, Sumbl & Khanam, Deeba. (2023). THE RESEARCH DESIGN. 06.376. [https://www.researchgate.net/publication/368257495\\_THE\\_RESEARCH\\_DESIGN](https://www.researchgate.net/publication/368257495_THE_RESEARCH_DESIGN)
2. Vandenberg, S., & Magnuson, M. (2021). A comparison of student and faculty attitudes on the use of Zoom, a video conferencing platform: A mixed-methods study. *Nurse Education in Practice*, 54, 103138. <https://doi.org/10.1016/j.nepr.2021.103138>
3. Taquet, M., Geddes, J. R., Husain, M., Luciano, S., & Harrison, P. J. (2021). 6-month neurological and psychiatric outcomes in 236 379 survivors of COVID-19: a retrospective cohort study using electronic health records. *The Lancet Psychiatry*, 8(5), 416–427. [https://doi.org/10.1016/S2215-0366\(21\)00084-5](https://doi.org/10.1016/S2215-0366(21)00084-5)
4. Andrade, C. (2022). Research Design: Case-Control Studies. *Indian Journal of Psychological Medicine*, 44(3), 307–309. <https://doi.org/10.1177/02537176221090104>
5. Kshatri, J. S., Mansingh, A., Kavitha, A. K., Bhattacharya, H., Bhuyan, D., Bhattacharya, D., Rehman, T., Swain, A., Mishra, D., Tripathy, I., Mohapatra, M. R., Nayak, M., Sahoo, U. K., & Pati, S. (2023). Odisha tribal family health survey: methods, tools, and protocols for a comprehensive health assessment survey. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1157241>

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## Module 6

**Title: Survey Methods**

**Class Duration: 60 minutes**

### Module Description:

This module explores the fundamental concepts of survey research as a powerful tool for gathering information and making informed decisions. It covers different types of surveys, including descriptive and cross-sectional research, highlighting their applications and limitations. The module delves into the various methods of data collection within surveys, such as health interview, health examination, and health records surveys, outlining their advantages and disadvantages. It emphasizes the importance of questionnaire design, language precision, and sequencing of questions for reliable results. Additionally, the module discusses the essential auxiliary activities, like pretesting, interviewer training, and data editing, that contribute to successful survey execution and data quality.

### Learning Objectives:

- To describe the methods required to design a survey.
- To describe characteristics of survey methodology.

### Learning Outcomes:

Upon completion of this module, we will be able to:

- Understand the basic terminologies associated with the survey methods.
- Learn about surveys and different types of surveys.
- Choose appropriate survey methods and evaluate it.
- Understand the limitations of different survey methods
- Learn about the different types of biases.

### Contents:

- Definition of Survey
- Types of Survey
- Uses of Survey
- Different Survey Methods – Advantages, Disadvantages & Execution
- Steps in Surveying



- Conclusion

### Suggested Readings/ Resources/ References:

1. Bidonde, J., Meneses-Echavez, J. F., Hafstad, E., Brunborg, G. S., & Bang, L. (2023). Methods, strategies, and incentives to increase response to mental health surveys among adolescents: a systematic review. *BMC Medical Research Methodology*, 23(1), 270. <https://doi.org/10.1186/s12874-023-02096-z>
2. Szwarcwald, C. L. (2023). National health surveys: overview of sampling techniques and data collected using complex designs. *Epidemiologia e Serviços de Saúde*, 32(3). <https://doi.org/10.1590/s2237-96222023000300014.en>
3. Harrison, S., Alderdice, F., & Quigley, M. A. (2023). Impact of sampling and data collection methods on maternity survey response: a randomised controlled trial of paper and push-to-web surveys and a concurrent social media survey. *BMC Medical Research Methodology*, 23(1), 10. <https://doi.org/10.1186/s12874-023-01833-8>
4. Sachathep, K., Radin, E., Hladik, W., Hakim, A., Saito, S., Burnett, J., Brown, K., Phillip, N., Jonnalagadda, S., Low, A., Williams, D., Patel, H., Herman-Roloff, A., Musuka, G., Barr, B., Wadondo-Kabonda, N., Chipungu, G., Duong, Y., Delgado, S., ... Justman, J. (2021). Population-Based HIV Impact Assessments Survey Methods, Response, and Quality in Zimbabwe, Malawi, and Zambia. *JAIDS Journal of Acquired Immune Deficiency Syndromes*, 87(1), S6–S16. <https://doi.org/10.1097/QAI.0000000000002710>
5. Sánchez-Cantalejo Garrido, C., Yucumá Conde, D., Rueda, M. del M., Olry-de-Labry-Lima, A., Martín-Ruiz, E., Higuera-Callejón, C., & Cabrera-León, A. (2023). Scoping review of the methodology of large health surveys conducted in Spain early on in the COVID-19 pandemic. *Frontiers in Public Health*, 11. <https://doi.org/10.3389/fpubh.2023.1217519>

## Module 7

**Title: Research Designs**

**Class Duration: 60 minutes**

### Module Description:

The module is designed to understand research, followed by a discussion of the different types of research designs. The ideas and procedures of study design specific to the field of public health will be thoroughly understood by students. Learn about cross-sectional, case-control, and cohort designs—quantitative research techniques frequently used in public health studies. To build a research proposal, students can use the knowledge they have received to formulate research questions, choose an appropriate design, and lay out a strategy for gathering and analysing data.

### Learning Objectives:

- Identify different research designs
- Evaluate the strengths and limitations of each research design.
- Apply appropriate research designs to real-world scenarios in public health and medicine.
- Understand how to combine multiple research designs for comprehensive investigations.

### Learning Outcomes:

Upon completion of this module, students will be able to:

- Able to understand and apply their understanding and research skills acquired in this module to research assignments they would take up in their internship and dissertation
- Acquire the knowledge and skill to independently conceptualise and develop robust study designs around specific research themes

### Content:

- Introduction to Research Design
- Experimental Designs
- Observational Designs
- Qualitative Research Designs
- Choosing the Right Design
- Real-world Examples

### Suggested Reading Materials:

1. Tittle-Ind, A., Human, J., Sci, S., Muzari, T., Goerge, N., Shava, & Shonhiwa, S. (2022). *Qualitative Research Paradigm, a Key Research Design for Educational Researchers, Processes and Procedures: A Theoretical Overview*. Indian Publication. [https://indianapublications.com/articles/IJHSS\\_3\(1\)\\_14-20\\_61f38990115064.95135470.pdf](https://indianapublications.com/articles/IJHSS_3(1)_14-20_61f38990115064.95135470.pdf)
2. Liu, L., Capaldi, C. A., & Dopko, R. L. (2021). Suicide ideation in Canada during the COVID-19 pandemic. *Health Promotion and Chronic Disease Prevention in Canada*, 41(11), 378–391. <https://doi.org/10.24095/hpcdp.41.11.06>
3. Tanioka, T., Locsin, R. C., Betriana, F., Kai, Y., Osaka, K., Baua, E., & Schoenhofer, S. (2021). Intentional Observational Clinical Research Design: Innovative Design for Complex Clinical Research Using Advanced Technology. *International Journal of Environmental Research and Public Health*, 18(21), 11184. <https://doi.org/10.3390/ijerph182111184>
4. Charli, M. S., Eshete, S. K., & Debela, K. L. (2022). Learning How Research Design Methods Work: A Review of Creswell's Research Design: Qualitative, Quantitative and Mixed Methods Approaches. *The Qualitative Report*. <https://doi.org/10.46743/2160-3715/2022.5901>
5. Andrade, C. (2022). Research Design: Cohort Studies. *Indian Journal of Psychological Medicine*, 44(2), 189–191. <https://doi.org/10.1177/02537176211073764>

## Module 8

**Title: Sampling Methods**

**Class Duration: 60 minutes**

### Module Description:

The module on research sampling methods introduces students to select samples from the population and the essential aspects of conducting research in various fields. It emphasizes the dynamic nature of research, linking the past with the present and future, and its role in generating well-informed knowledge through critical analysis. The module covers characteristics of research, including the use of scientific methods, objectivity, and outcome. It explores different categories of research, such as quantitative and qualitative research. Students learn about primary and secondary research sources, as well as the steps involved in the sampling process. Overall, the module provides a comprehensive understanding of research methodology and its impact on advancing knowledge across diverse domains.

### Learning objectives:

- To understand various sampling methods.
- To collect the desired information about the universe in less time and high degree of reliability.
- To identify various steps involved in sample recruitment.

### Learning outcomes:

Upon completion of this module students will be able to:

- Identify the relation between sample, sampling, and population.
- Define the key elements in the sampling process and advantages of sampling.
- Compare basic sampling methods involved in probability and non-probability techniques.
- Select the best possible sample size for different research methods.

### Content:

- Learning objectives and outcomes
- What is population, sampling, sample
- Types of sampling techniques
  - Probability sampling method



- o Non probability sampling method
- Recommended sample size
- References

### Suggested Readings :

1. Makwana, Dhaval & Engineer, Priti & Dabhi, Amisha & Hardik, Chudasama. (2023). Sampling Methods in Research: A Review. 7. 762-768. [https://www.researchgate.net/publication/371985656\\_Sampling\\_Methods\\_in\\_Research\\_A\\_Review/citation/download](https://www.researchgate.net/publication/371985656_Sampling_Methods_in_Research_A_Review/citation/download)
2. Zickar, M. J., & Keith, M. G. (2023). Innovations in Sampling: Improving the Appropriateness and Quality of Samples in Organizational Research. Annual Review of Organizational Psychology and Organizational Behavior, 10(1), 315–337. <https://doi.org/10.1146/annurev-orgpsych-120920-052946>
3. Raifman, S., DeVost, M. A., Digitale, J. C., Chen, Y.-H., & Morris, M. D. (2022). Respondent-Driven Sampling: a Sampling Method for Hard-to-Reach Populations and Beyond. Current Epidemiology Reports, 9(1), 38–47. <https://doi.org/10.1007/s40471-022-00287-8>
4. Stratton, S. J. (2023). Population Sampling: Probability and Non-Probability Techniques. Prehospital and Disaster Medicine, 38(2), 147–148. <https://doi.org/10.1017/S1049023X23000304>
5. Satishprakash, P., & Shukla, S. (2023). NON-PROBABILITY SAMPLING METHOD 1. ResearchGate. [https://www.researchgate.net/publication/372724527\\_NON-PROBABILITY\\_SAMPLING\\_METHOD\\_1](https://www.researchgate.net/publication/372724527_NON-PROBABILITY_SAMPLING_METHOD_1)

## Module 9

**Title: Data Analysis-1**

**Class Duration: 60 minutes**

### Module Description:

The purpose of this academic module on Descriptive Data analysis is to give students a thorough awareness of the descriptive method of data analysis. Students will learn what is data and its types. The method or steps of data preparation for analysis. The module discusses in detail the univariate analysis of descriptive data. Further the students can enhance their knowledge about use of future use and scope of statistical analysis of data by reading the attached links.

### Learning objectives:

- To understand the significance of data analysis.
- To understand the procedures and steps involved in data preparation.
- To get an understanding of descriptive univariate analysis.
- To describe data with measures of central tendencies (mean, median, mode).
- To understand presentation and interpretation of data.

### Learning outcomes:

Upon completion of this module students will be able to:

- Develop skills of Data understating.
- Demonstrate skills in data management.
- To interpret and summarize the given set of data.
- Proficiency with statistical analysis of data.
- Gaining insights about the data and applying data science concepts and methods to solve problems in community-based settings.

### Content:

- What is Data and variables
- Types of data in statistics.
- Characteristics of Quantitative and Qualitative data.
- Types of Variables.
- Data Collection, Editing, Missing data, Coding and data entry, Data transformation/conversion.
- Data cleaning, Non-Uniformity, Data duplicacy.
- Types of data analysis: Descriptive univariate analysis.

- Future and scope of statistical analysis of Healthcare data.
- References

### Suggested Reading Material:

1. Salzano, L., Narayanan, N., Tobik, E. R., Akbarzada, S., Wu, Y., Megiel, S., Choate, B., Wyllie, A. L., & Wyllie, A. (n.d.). Diagnostic testing preferences can help inform future public health response efforts: global insights from an international survey. <https://doi.org/10.1101/2023.12.13.23299858>
2. Paganelli, A. I., Mondéjar, A. G., da Silva, A. C., Silva-Calpa, G., Teixeira, M. F., Carvalho, F., Raposo, A., & Endler, M. (2022). Real-time data analysis in health monitoring systems: A comprehensive systematic literature review. *Journal of Biomedical Informatics*, 127, 104009. <https://doi.org/10.1016/j.jbi.2022.104009>
3. Ma, C., Wu, M., & Ma, S. (2022). Analysis of cancer omics data: a selective review of statistical techniques. *Briefings in Bioinformatics*, 23(2). <https://doi.org/10.1093/bib/bbab585>
4. Sheng, J., Amankwah-Amoah, J., Khan, Z., & Wang, X. (2021). COVID-19 Pandemic in the New Era of Big Data Analytics: Methodological Innovations and Future Research Directions. *British Journal of Management*, 32(4), 1164–1183. <https://doi.org/10.1111/1467-8551.12441>
5. Im, D., Pyo, J., Lee, H., Jung, H., & Ock, M. (2023). Qualitative Research in Healthcare: Data Analysis. *Journal of Preventive Medicine and Public Health*, 56(2), 100–110. <https://doi.org/10.3961/jpmp.22.471>

## Module 10

**Title: Data analysis-2**

**Class Duration: 60 minutes**

### Module Description:

This module helps to understand the importance of vital statistics. It also describes in detail about the Vital Index. It also gives information about incidence, prevalence. The module will also discuss the uses and importance of vital statistics. It will describe in detail the future and scope of healthcare data analysis.

### Learning objectives:

- To understand the significance of the data analysis
- To comprehend vital statistics and vital index
- To know and describe various measures of morbidity
- To obtain hands-on experience by solving sample data sheet

### Learning outcomes:

Upon completion of this module students will be able to:

- Develop skills of data analysis
- Proficiency in calculating various measures of morbidity
- Analyze, interpret and infer the given set of data
- Gain insights about various indicators and applying those methods to solve problems in epidemiological settings

### Content:

- Vital Statistics:
  - Types of important vital statistics
  - Vital Index
  - Crude Birth Rate
  - Gross Reproduction Rate
  - Net Reproduction Rate
  - Measures of Morbidity-Incidence Prevalence, Point Prevalence, Period Prevalence, Use of Incidence, Use of Prevalence
- Crude Death Rate



- Specific Death Rate
- Uses and importance of Vital Statistics
- Sources of Vital Statistics in India- Future and Scope of Healthcare Data analysis, Hands on analysis on Data sheet

### Suggested Readings:

1. Sigudla, J., & Maritz, J. E. (2023). Exploratory factor analysis of constructs used for investigating research uptake for public healthcare practice and policy in a resource-limited setting, South Africa. *BMC Health Services Research*, 23(1), 1423. <https://doi.org/10.1186/s12913-023-10165-8>
2. Myers, A., Ipsen, C., & Lissau, A. (2022). COVID-19 vaccination hesitancy among Americans with disabilities aged 18-65: An exploratory analysis. *Disability and Health Journal*, 15(1), 101223. <https://doi.org/10.1016/j.dhjo.2021.101223>
3. Koua, E. L., Njingang, J. R. N., Kimenyi, J. P., Williams, G. S., Okeibunor, J., Oka, S., & Gueye, A. S. (2023). Trends in public health emergencies in the WHO African Region: an analysis of the past two decades public health events from 2001 to 2022. *BMJ Global Health*, 8(10), e012015. <https://doi.org/10.1136/bmjgh-2023-012015>
4. Islam, N., Shkolnikov, V. M., Acosta, R. J., Klimkin, I., Kawachi, I., Irizarry, R. A., Alicandro, G., Khunti, K., Yates, T., Jdanov, D. A., White, M., Lewington, S., & Lacey, B. (2021). Excess deaths associated with covid-19 pandemic in 2020: age and sex disaggregated time series analysis in 29 high income countries. *BMJ*, n1137. <https://doi.org/10.1136/bmj.n1137>
5. Angoulvant, F., Ouldali, N., Yang, D. D., Filser, M., Gajdos, V., Rybak, A., Guedj, R., Soussan-Banini, V., Basmaci, R., Lefevre-Utile, A., Brun-Ney, D., Beaujouan, L., & Skurnik, D. (2021). Coronavirus Disease 2019 Pandemic: Impact Caused by School Closure and National Lockdown on Pediatric Visits and Admissions for Viral and Nonviral Infections—a Time Series Analysis. *Clinical Infectious Diseases*, 72(2), 319–322. <https://doi.org/10.1093/cid/ciaa710>

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## Module 11

**Title: Introduction to Qualitative Data**

**Class Duration: 60 minutes**

### Module Description:

Qualitative data is essential to research. In this module students will learn the importance of qualitative research. They will gain an understanding on the various methods used to conduct qualitative research.

### Learning objectives:

- To understand the need for Qualitative Research
- To interpret the use of various methods in Qualitative research
- To describe FGD'S, In-depth interviews, Case studies

### Learning outcomes:

Upon completion of this module students will be able to:

- Recognize the difference between qualitative and quantitative research
- Compare FGD'S and In-depth interviews
- Critique which method to use in qualitative research

### Content:

- Qualitative Research Introduction
- Advantages of Qualitative Research
- Qualitative Research Process
- Data visualization techniques and software used for Qualitative Research
- Overview of FGD's
- Overview of In-depth Interviews
- Observation
- Case Studies
- How to choose Qualitative Methods?

### Suggested Readings:

1. Shelton, R. C., Philbin, M. M., & Ramanadhan, S. (2022). Qualitative Research Methods in Chronic Disease: Introduction and Opportunities to Promote Health Equity. Annual

Review of Public Health, 43(1), 37–57.  
<https://doi.org/10.1146/annurev-publhealth-012420-105104>

2. Lederle, M., Tempes, J., & Bitzer, E. M. (2021). Application of Andersen’s behavioural model of health services use: a scoping review with a focus on qualitative health services research. *BMJ Open*, 11(5), e045018. <https://doi.org/10.1136/bmjopen-2020-045018>
3. Long, Q., & Jiang, H. (2023). Qualitative research in health: value and visibility. *The Lancet Regional Health - Western Pacific*, 34, 100790. <https://doi.org/10.1016/j.lanwpc.2023.100790>
4. Tremblay, D., Turcotte, A., Touati, N., Poder, T. G., Kilpatrick, K., Bilodeau, K., Roy, M., Richard, P. O., Lessard, S., & Giordano, É. (2022). Development and use of research vignettes to collect qualitative data from healthcare professionals: a scoping review. *BMJ Open*, 12(1), e057095. <https://doi.org/10.1136/bmjopen-2021-057095>
5. Stickley, T., O’Caithain, A., & Homer, C. (2022). The value of qualitative methods to public health research, policy and practice. *Perspectives in Public Health*, 142(4), 237–240. <https://doi.org/10.1177/17579139221083814>

## Module 12

**Title: Critical Appraisal of Scientific Literature**

**Class Duration: 60 minutes**

### Module Description:

Critical appraisal of scientific literature is a systematic and analytical process used to assess the validity, reliability, relevance, and applicability of research studies. This practice is crucial for ensuring that evidence-based decisions are made in various fields, including medicine, psychology, environmental science, and more. By critically appraising scientific literature, researchers, clinicians, and professionals can confidently determine the quality of studies, draw accurate conclusions, and make informed decisions. This module briefly outlines the overview of critical appraisal of scientific literature, its importance, components, strengths and weaknesses of scientific literature. It also elaborates the different databases and the tools used for the critical appraisal of scientific literature.

### Learning objectives:

- To understand the term ‘Critical Appraisal of Scientific Literature’
- To explore the importance of critical appraisal
- To know the components of scientific literature
- To identify strengths and weaknesses of critical appraisal of scientific literature
- To learn different databases for conducting a literature review
- To become familiar with the tools used for critical appraisal of scientific literature

### Learning outcomes:

Upon completion of this module students will be able to:

- Define ‘Critical Appraisal of Scientific Literature’
- Understand the importance of critical appraisal
- Know the components of scientific literature
- Identify the strengths and weaknesses of scientific literature
- Conduct literature review using different databases
- Learn about the literature appraisal tools



## Content:

- Introduction
- Importance of critical appraisal of scientific literature
- Components of critical appraisal of scientific literature
- General structure of a manuscript
- Strengths and weaknesses of scientific literature
- How to appraise a scientific literature
- Databases for critical appraisal of scientific literature
- Tools for critical appraisal of scientific literature
- References

## Suggested Readings:

1. Tomotaki, A., Sakai, I., Fukahori, H., Tsuda, Y., & Okumura-Hiroshige, A. (2023). Factors affecting the critical appraisal of research articles in Evidence-Based practices by advanced practice nurses: A descriptive qualitative study. *Nursing Open*, 10(6), 3719–3727. <https://doi.org/10.1002/nop2.1628>
2. Banach, M., & Penson, P. E. (2021). Colchicine and Cardiovascular Outcomes: a Critical Appraisal of Recent Studies. *Current Atherosclerosis Reports*, 23(7), 32. <https://doi.org/10.1007/s11883-021-00932-5>
3. Raynaud, M., Zhang, H., Louis, K., Goutaudier, V., Wang, J., Dubourg, Q., Wei, Y., Demir, Z., Debais, C., Aubert, O., Bouatou, Y., Lefaucheur, C., Jabre, P., Liu, L., Wang, C., Jouven, X., Reese, P., Empana, J.-P., & Loupy, A. (2021). COVID-19-related medical research: a meta-research and critical appraisal. *BMC Medical Research Methodology*, 21(1), 1. <https://doi.org/10.1186/s12874-020-01190-w>
4. Hülsmann, M. (2022). A critical appraisal of research methods and experimental models for studies on root canal preparation. *International Endodontic Journal*, 55(S1), 95–118. <https://doi.org/10.1111/iej.13665>
5. Haile, Z. T. (2022). Critical Appraisal Tools and Reporting Guidelines. *Journal of Human Lactation*, 38(1), 21–27. <https://doi.org/10.1177/08903344211058374>

## Module 13

**Title: Systematic and Scoping Review**

**Class Duration: 60 Minutes**

### Module Description:

This module briefly outlines the definition and key characteristics of Systematic and Scoping review. It involves purpose, benefits and steps of conducting systematic and scoping review. Hierarchy of evidence, tools and relevant case study related to scoping review in long covid are included.

### Learning objectives:

- To define systematic and scoping review
- To understand importance and benefits of systematic and scoping review
- To know the methodology of conducting systematic and scoping review

### Learning outcomes:

Upon completion of this module students will be able to:

- Understand definition of systematic and scoping review
- Understand purpose, benefits, key characteristics of systematic and scoping review
- Know the methodology of conducting systematic and scoping review

### Content:

- Definition and key characteristics of systematic review
- Purpose and benefits of systematic review
- Definition and characteristics of scoping review
- Purpose and benefits of scoping review
- Hierarchy of evidence
- Formulating research question
- Conducting thorough research of existing information
- Selection of studies
- Appraising quality of studies
- Data extraction
- Summarizing evidence
- Case study
- References

## Suggested Readings:

1. Gupta, A., Singh, A., Aneja, K., Aggarwal, V., Wadhwa, J., & Abraham, D. (2023). How to write a scoping review? – A comprehensive guide. *Endodontology*, 35(1), 9. [https://doi.org/10.4103/endo.endo\\_123\\_22](https://doi.org/10.4103/endo.endo_123_22)
2. Chauke, G. D., Nakwafila, O., Chibi, B., Sartorius, B., & Mashamba-Thompson, T. (2022). Factors influencing poor medication adherence amongst patients with chronic disease in low-and-middle-income countries: A systematic scoping review. *Heliyon*, 8(6), e09716. <https://doi.org/10.1016/j.heliyon.2022.e09716>
3. Carrillo, M. A., Kroeger, A., Cardenas Sanchez, R., Diaz Monsalve, S., & Runge-Ranzinger, S. (2021). The use of mobile phones for the prevention and control of arboviral diseases: a scoping review. *BMC Public Health*, 21(1), 110. <https://doi.org/10.1186/s12889-020-10126-4>
4. Su, Y., Wu, X. V., Ogawa, N., Yuki, M., Hu, Y., & Yang, Y. (2022). Nursing skills required across natural and man-made disasters: A scoping review. *Journal of Advanced Nursing*, 78(10), 3141–3158. <https://doi.org/10.1111/jan.15337>
5. Mitchell, E., Kelly-Hanku, A., Krentel, A., Romani, L., Robinson, L. J., Vaz Nery, S., Kaldor, J., Steer, A. C., & Bell, S. (2022). Community perceptions and acceptability of mass drug administration for the control of neglected tropical diseases in Asia-Pacific countries: A systematic scoping review of qualitative research. *PLOS Neglected Tropical Diseases*, 16(3), e0010215. <https://doi.org/10.1371/journal.pntd.0010215>

## Module 14

**Title: Manuscript Writing**

**Class Duration: 60 minutes**

### Module Description:

The Scientific Manuscript Writing module is designed to equip participants with the essential knowledge and skills required to plan, prepare, and write high-quality scientific research papers and reports. The module covers key elements of a research paper, reporting guidelines for different study types, ethical considerations in research, citation and referencing tools, authorship criteria, and awareness about predatory journals.

### Learning objective:

- To know the key elements of a research paper.
- To recognize the structure of key elements.
- To learn about reporting guidelines for study types.
- To know tools for citing and managing references.
- To identify the criteria for authorship in a scientific paper.
- To learn about predatory journals

### Learning outcomes:

Upon completion of this module students will be able to:

- To plan and prepare well-written scientific research papers and reports.
- To describe the structure of a scientific paper.
- To practice ethics and scientific integrity while reporting and writing a scientific research article
- To communicate the result using appropriate scientific terminology and formatting.

### Content:

- Introduction to Manuscript writing.
- Features of scientific writing
- Elements of scientific paper (Introduction, methods, result, discussion, conclusion, abstract) IMRAD
- Ethics in research (plagiarism, authorship)
- Citations and references as per the journal format



- Citation manager tools (Endnote, Zotero)

### **Suggested Reading Material:**

1. Castellanos-Gomez, A. (2023). Good Practices for Scientific Article Writing with ChatGPT and Other Artificial Intelligence Language Models. *Nanomanufacturing*, 3(2), 135–138. <https://doi.org/10.3390/nanomanufacturing3020009>
2. Behzadi, P., & Gajdacs, M. (2021). Writing a strong scientific paper in medicine and the biomedical sciences: a checklist and recommendations for early career researchers. *Biologia Futura*, 72(4), 395–407. <https://doi.org/10.1007/s42977-021-00095-z>
3. Aparecida Silveira, E., Maria de Sousa Romeiro, A., & Noll, M. (2022). Guide for scientific writing: how to avoid common mistakes in a scientific article. *Journal of Human Growth and Development*, 32(3), 341–352. <https://doi.org/10.36311/jhgd.v32.13791>
4. Ashique, K. T., Jayasree, P., & Kaliyadan, F. (2024). Scientific Writing: A Practitioner's Perspective. *Indian Dermatology Online Journal*, 15(2), 185–187. [https://doi.org/10.4103/idoj.idoj\\_91\\_24](https://doi.org/10.4103/idoj.idoj_91_24)
5. Kacena, M. A., Plotkin, L. I., & Fehrenbacher, J. C. (2024). The Use of Artificial Intelligence in Writing Scientific Review Articles. *Current Osteoporosis Reports*, 22(1), 115–121. <https://doi.org/10.1007/s11914-023-00852-0>

## Research Seminar

### Description:

The research seminar component is designed to engage students in aspects of research who are enrolled in the Certificate in Fundamentals of Operational Research in Public Health (CER-FORPH). Presentations are planned towards the end of the program, to allow students to showcase their knowledge and understanding through their research work. The presentations typically are aimed to last around 20 minutes. Group of students are divided into sub-group and will be assigned a research topic related to recent public health issues in India. The student's task will involve researching recent intervention studies on the assigned topic and presenting findings in a PowerPoint presentation (PPT).

### Learning Objectives:

- Students will gain hands-on experience and instruction.
- The seminar aims to improve students' communication and presentation abilities.

### Learning Outcomes:

Upon completion of this module students will be able to:

- Summarize the main conclusions drawn from the review
- Discuss the implications of the findings for public health practice, policy, or research.
- Provide recommendations for future research directions or interventions based on gaps identified in the literature.
- Highlight any limitations of the review and suggest ways to address them in future research.
- Conclude with a statement about the overall contribution of the review to the field of public health and its potential impact on health outcomes.

### Broad themes & topics under which a topic will be assigned are as follows:

1. Youth Well-Being.
2. Metabolic Syndrome
3. Dental Caries among School Children
4. Nutrition Informatics
5. Adolescent health
6. Climate change
7. Childhood Malnutrition
8. Elderly health

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## Case Study

### Description:

The case study component comprises writing a case study using a systematic and structured approach to present a detailed analysis of a specific situation, event, individual, group, or organization.

### Learning objectives:

Students will develop the abilities necessary for comprehending, interpreting, and summarizing the provided case, which will help them with critical thinking, problem solving, and decision-making.

### Learning outcomes:

Upon completion of this component students will be able to:

- Provide a comprehensive understanding of the subject
- Offer valuable insights
- Contribute to the existing body of knowledge in your field

### Broad themes & topics under which a topic will be assigned are as follows:

1. Youth Well-Being.
2. Metabolic Syndrome
3. Dental Caries among School Children
4. Nutrition Informatics
5. Adolescent health
6. Climate change
7. Childhood Malnutrition
8. Elderly health

## Experiential Learning

Our experiential learning component includes our **Virtual Interactive Novel Support Program** for **Innovation, Research and Entrepreneurship** aims to address population health challenges of the 21st century by enhancing academic and non-academic skills of students using an Innovative and participatory experiential learning experience.



## Annexure 1 Student's testimonial

*"This course on operations research has been incredibly helpful. The teachers crafted an engaging learning experience with various elements, and the Learning Management System (LMS) makes everything easily accessible — from MCQs to class recordings, it's all there. The course starts by building a strong foundation in the basics, ensuring everyone gets a solid grasp of the fundamental principles. The teachers created a supportive environment, encouraging questions and discussions right from the start. As we progressed, the course delved into the complexities of operations research. Thanks to the well-structured curriculum and expert guidance, the transition is smooth. Complex topics are broken down, and hands-on exercises within the class help in understanding and applying these concepts in real-world scenarios. I can confidently attest that this course provides a comprehensive and enjoyable learning experience. From basics to complexities, it covers all aspects of operations research, making it accessible even for beginners like me. I highly recommend this course to anyone interested in mastering operations research."*

Ms. [Shubhangi Thakur](#)

Student, CER-FORPH Batch 1 (Sept 2023 - June 2024)