Savitribai Phule Pune University

School of Health Sciences

PROGRAMME: MASTER OF PUBLIC HEALTH (MPH)

Revised as per NEP 2020

Implemented from the ACADEMIC YEAR: 2023 – 24

(for affiliated colleges also)

Savitribai Phule Pune University
Department of Health Sciences
Programme: Master of Public Health (MPH)
Cumulative Credits for One Year Post-Graduate Diploma = 44
Cumulative Credits for Two Years Post-Graduate Degree = 88
Total Number of Credits: 88

Semester I		
Course Code	**Course Title**	**Number of Credits**
Semester I: Major Core Courses (MPH501MJ to MPH505MJP)		
MPH501MJ	Introduction to Public health (T)	2 T
MPH502MJ	Introductory Human Physiology (T)	4 T
MPH503MJ	Epidemiology (T)	2 T
MPH504MJ	Public Health Nutrition (T)	4 T
MPH505MJP	Applied Epidemiology (P)	2 P
Semester I: Major Core Courses Credits		**14 (12 T + 2 P)**
Semester I: Major Elective Courses (MPH506OE to MPH511OEP		
MPH506OEP	Health Promotion (P)	2 P
MPH507OE	Population and Health (T)	2 T
MPH508OE	The Basics of Yogasanas - I (T)	2 T
MPH509OEP	The Basics of Yogasanas - II (P)	2 P
MPH510OE	Environmental Health (T)	2 T
MPH511OE	Occupational Health (T)	2 T
Semester I: Major Elective Courses Credits		**4 T/P**
Research Methodology (MPH512RM)		
MPH541RM	Research Methodology for Public Health	**4 P**
Semester I: Cumulative Credits required in Sem I		**22**
Semester II		
Semester II: Major Core Courses (MPH551MJ to MPH554MJP)		
MPH551MJ	Infectious Disease Epidemiology (T)	4 T
MPH552MJ	International Healthcare Delivery Systems (T)	4 T
MPH553MJ	National Health Programmes (T)	2 T
MPH554MJP	Epi Methods Survey (P)	4 P
Semester II: Major Core Courses Credits		**14 (10 T + 4 P)**
Semester II: Major Elective Courses (MPH555OE to MPH560OE)		
MPH555OE	Integrative Health and AYUSH (T)	2 T
MPH556OE	Urban Health – I (T)	2 T
MPH557OEP	Urban Health – II (P)	2 P
MPH558OEP	Advanced Epidemiology(P)	2 P
MPH559OE	Disaster Management (T)	2 T
MPH560OE	Social Epidemiology (T)	2 T
Semester II: Major Elective Courses Credits		**4 T/P**
Semester II: Internship /On-Job Training (MPH561OJT)		
MPH581OJT	Public Health Internship	**4 P**
Semester II: Cumulative Credits required in Sem II		**22**
Total One-Year Cumulative Credits required		**44**
Exit option: Award PG Diploma in Public Health on completion of 44 credits after Three Years UG Degree OR continue with MPH Second Year		

Semester III		
Course Code	**Course Title**	**Number of Credits**
Semester III: Major Core Courses (MPH601MJ to MPH605MJ)		
MPH601MJ	Non-communicable Diseases & Injuries (T)	4 T
MPH602MJP	Research Proposal Development (P)	2 P
MPH603MJ	Maternal Health (T)	2 T
MPH604MJP	Qualitative Research Methods (P)	4 P
MPH605MJ	Child Health and Nutrition (T)	2 T
Semester III: Major Core Courses Credits		**14 (8 T + 6 P)**
Semester III: Major Elective Courses (MPH606OEP to MPH609OE)		
MPH606OEP	Nutrition Practicum (P)	4 P
MPH607OE	Tribal Health (T)	2T
MPH608OE	Mental Health (T)	2 T
MPH609OE	Implementation Research (T)	2T
Semester III: Major Elective Courses Credits		**4 T/P**
Research Project (MPH610RP)		
MPH631RP	Research Project for Public Health (P)	**4 P**
Semester III: Cumulative Credits		**22**
Semester IV		
Semester IV: Major Core Courses (MPH651MJ to MPH653MJP)		
MPH651MJ	Bioethics and Clinical Studies (T)	4 T
MPH652MJ	Health Planning and Management (T)	4 T
MPH653MJP	Data Science for Health Research (P)	4 P
Semester IV: Major Core Courses Credits		**12 (8 T + 4 P)**
Semester IV: Major Elective Courses (MPH654OE to MPH660OE)		
MPH654OE	Aging and Health (T)	2T
MPH655OE	Disability and Health (T)	2 T
MPH656OE	One Health (T)	2 T
MPH657OEP	Health Research Communication (P)	2 P
MPH658OE	Health Economics (T)	2T
MPH659OE	Monitoring and Evaluation (T)	2 T
Semester IV: Major Elective Courses Credits		**4T**
Semester IV: Research Project (MPH660RP)		
MPH681RP	Research Project for Public Health (P)	**6P**
Semester IV: Cumulative Credits		**22**
Total Second-Year Cumulative Credits		**44**
Two Years- 4 Semesters Award MPH Degree on completion of 88 credits		

SEMESTER-I: MAJOR CORE COURSES

MPH501MJ: Introduction to Public Health (T): 2 Credits

Course Objectives:

- To introduce students to the discipline of public health
- To understand determinants of health
- To understand the status of health and disease at global and national levels

Course outline:

1. The Science and Practice of public health
2. History of public health
3. Determinants of Health
4. Measures of disease in population
5. Sources of global health data
6. Functional organisation of the public health system in India
7. Evolution of global public health initiatives: primary health care, selective primary health care, MDGs, SDGs

Suggested Reading:

1) Class handouts
2) Oxford textbook of Public Health Ed. Roger Detels, James Mcewen, Robert Beaglehole, and Heizo Tanaka Oxford University Press (OUP) 4thEdition: 2002.
3) Public Health at the Crossroads – Achievements and Prospects. Robert Beaglehole and Ruth Bonita 2nd Edition Cambridge University Press
4) Maxcy-Rosenau-Last Public Health & Preventive Medicine, Fourteenth Edition Ed Robert Wallace, MD, et al.
5) Epidemiology and Management for Health Care: Sathe, et al. Popular Prakashan, Mumbai,
6) International Public Health: Diseases, Programs, Systems, and Policies by Michael Merson, Robert E Black, Anne J Mills - Jones and Bartlett Publishers.
7) Preventive and Social Medicine, K Park, BansaridasBhanot Publishing House.

MPH502MJ Introductory Human Physiology(T): 4 credits

Course objectives:

- To provide an understanding of the structure and function of the human body
- To discuss applications of physiology in health promotion and disease prevention

Course outline

1. Human life cycle: conception, growth and development
2. Homeostasis and health
3. Cells and tissues of the human body
4. Structure and function of organs and systems; musculoskeletal, cardiovascular, respiratory, digestive, urinary, reproductive, lymphatic, nervous system and sense organs
5. Lifestyle and human physiology
6. Applied Physiology for health promotion and disease prevention

Suggested reading:

1) Guyton and Hall Textbook of Medical Physiology (Guyton Physiology). International Edition, 2020
2) K Sembulingam. Essentials of Medical Physiology. 2022
3) David L. Nelson and Michael Cox. Lehninger Principles of Biochemistry: International Edition. 2021
4) Chatterjee C. Human Physiology 12th Edition. 2018
5) J. Tortora G J. Tortora's Principles of Anatomy and Physiology Paperback – 26 May 2017

MPH503MJ: Epidemiology: 2 Credits

Course Objectives

- To familiarise students on science and methods of epidemiology

Course Outline

1. Historical aspects, definition, aim and uses
2. Descriptive epidemiology
3. Risk measurement, Measurement of morbidity and mortality: Incidence, Prevalence,
4. Age-adjustment and survival analysis, use of morbidity and mortality

Suggested reading:

1) Gordis Leon. Epidemiology (Fifth edition), Elsevier Saunders, 2013.
2) Dona Schneider and David E. Lilienfeld. Lilienfeld's Foundations of Epidemiology, Fourth Edition, Oxford University Press, USA, 2015.
3) Porta Miquel. A Dictionary of Epidemiology, Oxford University Press, USA, 2014
4) Somerville Margaret, et al., Public Health and Epidemiology at a Glance, Second Edition, Wiley-Blackwell, 2016
5) Beaglehole. R. Bonita, et. al Basic Epidemiology, 2nd Edition, WHO Publication, Geneva, 2006.

MPH504MJ: Public Health Nutrition (T) : 4 Credits

Course objectives

- To understand the global and national burden of nutritional deficiencies
- To identify public health nutrition interventions
- To study the impact of nutritional policies and programmes and the nutritional status of the population

Course outline

1. Introduction to public health nutrition: Introduction to nutrition, inter relationship between food, nutrients & health. Nutritional Status and its assessment. Common terms related to nutrition. Food group classification, Concept of food pyramid. Balance diet.

2. Undernutrition: global and Indian prevalence of undernutrition, risk factors consequences

- Undernutrition in children: Main forms of undernutrition Stunting, Wasting, Underweight, and Micronutrient Deficiencies definition, assessment techniques, Growth chart, National and international growth references.
- Undernutrition in adult: BMI WHO and Asian cut offs.
- Energy: Introduction, Physiological fuel value, Basal Metabolic Rate, Total Energy Expenditure, Components of TDEE (BMR, physical activity, thermic effect of food), Methods of estimating TDEE, Understanding the concept of energy balance (i.e., when energy intake equals energy expenditure). Macronutrients (carbohydrates, proteins, fats) as sources of energy and their caloric values. Consequences of energy imbalance on health, including obesity, undernutrition, and related chronic diseases.
- Protein: Introduction, function, RDA, sources, quality of protein (Protein efficiency Ratio, Biological values, Net protein utilization, The Protein Digestibility Corrected Amino Acid Score, The Digestible Indispensable Amino Acid Score. Essential amino acid, Limiting amino acid and ways to improve quality of protein intake.
- Protein energy malnutrition (PEM) –Kwashiorkor, Marasmus, cause, sign symptoms and role of Energy and protein and difference between Kwashiorkor Marasmus.
- Global Hunger Index (GHI)
- Lifecycle Approach to Undernutrition:
  - Maternal nutrition and its impact on fetal development
  - Infant and young child feeding practices
  - Nutrition during adolescence
  - Nutrition in the elderly
- Interventions for Undernutrition:
  - Food supplementation programs (e.g., school feeding, maternal and child health programs)
  - Micronutrient supplementation and fortification
  - Behavior change communication and education
  - Agricultural and food security interventions

3. Micronutrient deficiency disorders: Introduction to micronutrients (Vitamin A, Vitamin D, Vitamin B_{12}, Folate, Iron, Iodine, Calcium, Zinc), functions, dietary sources, RDA, deficiency- sign and symptoms. Risk Factors, Consequences of each micronutrient deficiency.

4. Over nutrition: Evolutionary principle, screening of those at nutritional risk,

- Carbohydrate: Introduction, types, function, Sources, RDA, deficiency and excess intake Concept of Glycaemic Index.
- Fiber types soluble, insoluble fiber, role in health and diseases
- Fat: Classification of fatty acids, Function, sources, RDA, & deficiency. Saturated fat, MUFA, PUFA, essential fatty acids. Cholesterol – introduction, sources, requirement.

Role of carbohydrate and fat in overweight and obesity.

5. Nutrition Transition: Demographic, economic transition, lifestyle and dietary consumption patterns leading to NCDs, nutrition transition model

6. Food Security and nutrition: issues of food security in the context of urbanization, emergencies, its relation to sustainable development goals, sustainable agriculture development, Food security bill in India

Suggested readings

1) Vir S.C., (2015), Public health nutrition in developing countries (Part I and II), Woodhead Publishing India Pvt, Ltd.
2) Mann, J. and Truswell, S. eds., 2017. Essentials of human nutrition. Oxford University Press.
3) Eastwood, M.A., 2013. Principles of human nutrition. Springer.
4) Bender, D., 2014. An introduction to nutrition and metabolism. CRC Press.
5) WHO and Chan, M., 2011. 'Haemoglobin concentrations for the diagnosis of anemia and assessment of severity', Geneva, Switzerland: World Health Organization, Geneva pp. 1–6.
6) Cashman, K. D., Sheehy, T., & O'Neill, C. M. 2018. Is vitamin D deficiency a public health concern for low middle income countries? A systematic literature review. European journal of nutrition, 1-21.

MPH505MJP: Applied Epidemiology: 2 Credits (P)

Course Objectives:

- To understand the applications of epidemiology in public health decision making

Course outline:

1. Epidemiological study designs
2. Bias, confounding and interaction
3. Causal association
4. Outbreak Investigation
5. Disease Surveillance

Suggested Reading:

1. Gordis Leon. Epidemiology (Fifth edition), Elsevier Saunders, 2013.
2. Dona Schneider and David E. Lilienfeld. Lilienfeld's Foundations of Epidemiology, Fourth Edition, Oxford University Press, USA, 2015.
3. Porta Miquel. A Dictionary of Epidemiology, Oxford University Press, USA, 2014
4. Somerville Margaret, et al., Public Health and Epidemiology at a Glance, Second Edition, Wiley-Blackwell, 2016
5. Beaglehole. R. Bonita, et. al Basic Epidemiology, 2nd Edition, WHO Publication, Geneva, 2006.
6. Spassoff R.A. Epidemiologic Methods for Health Policy, Oxford University Press, 1999
7. Barkar, D.J.P., Practical Epidemiology: Churchill pub, Livingstone, 1991.
8. Knox E. G. Epidemiology in health care planning: A Guide to the Uses of a Scientific Method, Oxford University Press, USA.

SEMESTER-I: MAJOR ELECTIVE COURSES

MPH506OEP: Health Promotion: 2 Credits (P)

Course Objectives:

- To understand concept of health promotion, health-related behaviour change theories
- To impart skills to design health education messages for public health problems.

Course Outline:

1. Scope and Evolution of Health Promotion:Principles of health Promotion, Need assessment for health promotion
2. Health behaviour: Theories, concepts and models used in behavioural and social science applied in Public Health
3. Health communication and Health Literacy: Information-education-communication, social and behaviour change communication
4. Health education: approaches, methods and materials, use of technology in health education, designing of messages and pretesting.

Suggested readings:

1) Marks D, Murray M, Brian Evans, Estacio EV, Health Psychology.Delhi: sage publication, 2011
2) Scott Kahan, Andrea C. Gielen, Peter J. Fagan, Lawrence W. (eds)Green Health Behavior Change in Populations. USA: JHU Press, 09-Oct-2014
3) Karen Glanz, Barbara Rimerand K.Viswanath (eds) Health Behaviour : Theory Research and Practice. Jossey-Bass, July 2015
4) 4.Prestwich,A. Jared Kenworthy , Mark Conner Health Behavior Change: Theories, Methods and Interventions. London and Newyork: Routledge, 6 October 2017, ISBN-13: 978-1138694811
5) Baranowski, T., Perry, C.L., Parcel, G.S. 2002. How Individuals, Environments, and Health Behavior Interact. In: Glanz, K., Rimer, B.K., Lewis, F.M., editors. Health Behavior and Health Education: Theory, Research, and Practice. 3rd Edition. San Francisco, CA: Jossey-Bass. p. 165-184.
6) Gitlin L., Sara Czaja. Behavioral Intervention Research: Designing, Evaluating, and Implementing. New York: Springer Publishing Company, 2015ISBN 13 9780826126580

MPH507OE: Population and Health: 2 Credits (T)

Course objectives

- To familiarize students to the fundamentals of population studies and its links with health
- To impart practical knowledge and skills of demographic and health data sources and practical use of data

Course outline

1. Introduction to population and health: definition, scope, Concept of Demography, Population components, Demographic transition theory
2. Sources of demographic and Health data: Population census, Vital registration system, Sample Registration System, National Family Health Survey (NFHS), District Level Health Survey (DLHS), Annual Health Survey(AHS), National Sample Survey Organization (NSSO) (demonstrate the practical use of the data and its advantages and limitations.)
3. Population composition: Levels and trends in the sex and age structure of the population of world and developed and developing countries
4. Concepts, definition, determinants and measurement of fertility, mortality and migration, population projection
5. Life tables: Concept, importance and methods
6. Population policy: Population policy linkages with health issues

Suggested reading:

1) The Springer Series on Demographic Methods and Population Analysis: Ed.: Land, Kenneth C. "The Plenum Series on Demographic Methods and Population Analysis" Durham, NC 27708-0088, USA, 2014
2) Population Studies and Development from Theory to Fieldwork: Petit, Véronique (Ed.) Springer International Publication AG 2018
3) Handbook of Population: Ed. Dudley Poston and Michael Micklin. Springer publication, Edition one, 2006
4) Principles of population Studies: Asha Bhende and Tara Kanitkar, Himalaya Pub, Houses, Mumbai, 2011
5) The Methods and Materials of Demography (Second edition): Siegel, Jacob S., and David A. Swanson, Elsevier Academic Press, San Diego, 2004

MPH508OE: The Basics of Yogasanas - I (Theory): 2 Credits

Course Objectives:

- To introduce Yoga and discuss effects of Yogasana on various body systems

Course Outline:

1 Concepts of Yoga: Introduction to Yoga, Concept of Pancha Kosha :Yogic Concept of Human Body, Benefits of Yoga
2 Yogasana and anatomy: Importance of Anatomy & Physiology, Concept of Ashtang Yoga, Integrated personality development through Yoga, Yoga and Biological Clock.
3 Preparation for Yogasanas: Preparations for Yoga, body movements required for Asana, loosening Techniques, loosening techniques for all systems, stretching & relaxing
4 Musculoskeletal System: Introduction to Musculoskeletal System, Anatomy & Physiology of the system, Yogasanas as per Musculoskeletal System, preventive and therapeutic benefits of Yogasanas
5 Respiratory & Cardiovascular Systems: Introduction to Respiratory & Cardiovascular Systems, Yogasanas as per Respiratory & Cardiovascular Systems, preventive and therapeutic benefits of Yogasanas
6 Nervous System & Endocrine System: Introduction to Nervous System & Endocrine System, Yogasanas as per Nervous & Endocrine System, preventive and therapeutic benefits of Yogasanas
7 Digestive System: Introduction to Digestive System, Yogasanas as per Digestive System, preventive and therapeutic benefits of Yogasanas
8 Urinary & Reproductive System: Introduction to Urinary & Reproductive System, Yogasanas as per Urinary & Reproductive System, preventive and therapeutic benefits of Yogasanas
9 Mind Body Connection: Mind Body Connection through Yogasana
10 Yoga as way of life: Benefits of Yoga for health and happiness

Suggested Reading:

1) Hansaji Yogendra. Yoga For All: Discovering the true essence of yoga. Rupa Publications, New Delhi-11000. 2019
2) Shirley Telles. A Glimpse of The Human Body. Swami Vivekananda yoga Prakashana, Bangalore-560019. 2018
3) H R Nagendra. Yoga Its Basis and Applications. Swami Vivekananda Yoga Prakashana, Bangalore-560019. ISBN:81873133188. 2016
4) Online Publications by Ministry of Ayush, Govt of India: https://yoga.ayush.gov.in/Publications

MPH509OEP: The Basics of Yogasanas - II (Practical): 2 Credits

Course Objectives:

- To experience physical and mental effects of Yoga practices

Course Outline:

1. Preparatory practices: warm up and loosing, relaxing organs
2. Yogasana for body systems
    a. Musculoskeletal System
    b. Respiratory & Cardiovascular Systems
    c. Nervous System & Endocrine System
    d. Digestive System
    e. Urinary & Reproductive System
3. Breathing techniques
4. Deep relaxation techniques
5. Yoga based activities and games

Suggested Reading:

1) Hansaji Yogendra. Yoga For All: Discovering the true essence of yoga. Rupa Publications, New Delhi-11000. 2019
2) Shirley Telles. A Glimpse of The Human Body. Swami Vivekananda yoga Prakashana, Bangalore-560019. 2018
3) H R Nagendra. Yoga Its Basis and Applications. Swami Vivekananda Yoga Prakashana, Bangalore-560019. ISBN:81873133188. 2016
4) Online Publications by Ministry of Ayush, Govt of India: https://yoga.ayush.gov.in/Publications

MPH510OE: Environmental Health: 2 Credits

Course objective:

- To enable the students to identify the various sources of environmental threats to health and the ways to manage these threats and hazards to prevent related diseases

Course Outline

1. Principles of environment health and human ecology
2. Food sanitation and safety
3. Vector and rodent control
4. Waste disposal
5. Environmental pollution: Environment health policy, Current and emerging issues in the environment, including global warming
6. Climate change: Global warming, ozone depletion, pollution, etc.
7. Climate change and its adverse effects – health

Suggested Readings

1. Class Handouts
2. Relevant research papers and articles published from authentic sources

MPH511OE: Occupational Health (T): 2 Credits

Course objective:

- To enable the students to identify the various occupational hazards to health and the ways to manage these hazards so as to prevent related diseases

Course outline:

1. Occupational health: Hazards at the workplace
2. Diagnostic criteria of various occupational diseases
3. Workplace safety: Prevention of occupational hazards (including accident prevention)
4. Legislations related to occupational health,
5. Employees State Insurance Scheme and other employee benefits schemes
6. State and Central Government policies for the welfare of employees

Suggested Readings

1. Class Handouts
2. Relevant research papers and articles published from authentic sources

SEMESTER-I: RESEARCH METHODOLOGY (RM)

MPH541RM: Research Methodology for Public Health: 4 Credits (Practical)

Course Objectives:

- To introduce students to research methodology in public health
- To understand the role of biostatistics as a supportive discipline of public health and epidemiology

Course Outline:

1. Introduction to research
2. Introduction to biostatistics: Descriptive and Inductive statistics
3. Describing data: Variables: Nominal, Ordinal and Interval scale variables. Measures of central tendency: Mean (arithmetic, geometric, harmonic) Median, Mode; Merits and demerits of different measures. Measures of dispersion: Range, Variance, Standard Deviation; Merits and demerits of different measures of dispersion. Measures of Skewness and Kurtosis; Graphical presentation of data
4. Introduction to the concept of probability, events; exhaustive, mutually exclusive events; laws of probability, additive and multiplicative laws of probability and its properties
5. Discrete probability distributions: Binomial probability distribution and Poisson distribution and their properties. Continuous probability distribution. Introduction to normal distribution and its properties
6. Sampling methods: Type of sampling, Probability sampling, Non-probability sampling, sample size determination
7. Correlation: Concept of correlation, Pearson correlation coefficient, and its properties; Spearman ranks correlation coefficient
8. Concepts in Inductive statistics: Population, sample parameter, and statistic. Sampling distribution of mean and standard error. Statistical hypothesis, critical region, level of significance, and two types of errors.
9. Test of Significance: T-test for small samples and tests based on normal distribution for large samples. Testing the association of attributes and Chi-square goodness of fit
10. Nonparametric tests: One sample test, two sample tests, linear regression, multiple linear regressions, one-way ANOVA and two-way ANOVA
11. Introduction to statistical software
12. Working with data: Computing variables, recoding variables, sorting data, grouping data, ensuring quality of data
13. Exploring data: Descriptive statistics, Frequencies, compare means, frequency tables and crosstabs, multiple response analysis
14. Analysing data: Pearson correlation, The Chi-Square Test of Independence, comparing means: One sample t tests, Paired t tests, Independent samples t tests, and One-way ANOVA, Multivariate analysis: Linear regression, logistic Regression analysis

Suggested reading:

1) Health research methodology: A Guide for Training in Research Methods, Second Edition, World Health Organization, 2001
2) Kothari, C.R. (2019) Research Methodology: Methods and Techniques. 4th Edition, New Age International Publishers, New Delhi.

3) Statistics for Social sciences: T. Rajaretnam, Sage publication. New Delhi 2016
4) Fundamentals of Statistics (Seventh Edition): S.G. Gupta. Himalaya Publication, Mumbai, 2017
5) Introduction to Biostatistics and Research Methods (Fifth Edition): P.S.S. Sundar Rao, J. Richard, Prentice Hall, New Delhi, 2012
6) Scott Menard 2009 Logistic Regression: From Introductory to Advanced Concepts and Applications 1st Edition Sage Publications
7) J. Martin Bland 2003. An Introduction to Medical Statistics (Oxford Medical Publications) Paperback – Illustrated
8) Daniel, Wayne W., Cross, Chad Lee. 2013. Biostatistics: a foundation for analysis in the health sciences. Wiley.

SEMESTER II: MAJOR CORE COURSES

MPH551MJ: Infectious Disease Epidemiology: 4 Credits (T)

Course objectives:

- To understand the biology of pathogens and the mechanism of action of antibiotics and antivirals
- To understand the pathology, pathogenesis, clinical manifestation, mode of transmission, prevention and control of diseases of bacterial and viral etiology

Course outline

1. General overview of infectious diseases and their impact in developing countries
2. Epidemiology of infectious diseases
3. Structure of prokaryotic cell, pathogenic modifications
4. Anti-microbial agents, drug resistance
5. Antimicrobial Resistance (AMR) and AMR Stewardship approaches and Illustrative Examples
6. AMR Stewardship Interventions in hospital settings in India and globally
7. Infectious diseases including agent biology, epidemiology, pathogenesis and pathology, clinical presentation and management
    a. Vaccine preventable diseases: TB, polio, diphtheria, tetanus, measles.
    b. Respiratory diseases: Tuberculosis, leprosy, ARI's
    c. Intestinal: Diarrhoea, typhoid, worm infestations
    d. Contact: STIs and AIDS
    e. Vector borne: malaria and filaria, JE, dengue, leptospirosis,
    f. zoonotic: plague and rabies
8. Neglected tropical diseases

Suggested readings:

1) Duguid et al. Textbook of Medical microbiology
2) Javetz and Melnick :Adelbergs Medical Microbiology
3) World Health Organization: Report on infectious diseases, and Report on Multidrug resistance, World Health Organization, Geneva
4) Principles and Practice of Medicine: Davidson, Edward, Bouchier et. Al., Pearson Professional Ltd. London
5) Biology of Disease : Jonathan Phillips, Paul Murray, Blackwell Science Ltd. Australia,
6) Human Virology : A textbook of Students of Medicine and Microbiology, Dentistry, Leslie collier, John Oxford, Oxford University Press, Tokyo
7) Textbook of Medicine : Cecil, Bennett, et al., Harcourt Brace Joanvich Inc. U.S.A.
8) Nelson K E : Infectious disease epidemiology : theory and practice
9) GrieseckeJ : Modern infectious disease epidemiology
10) National Disease Control Programmes websites and class handouts
11) Expert Committee Report on Public Health Systems in India 1996

MPH552MJ: International Healthcare Delivery Systems: 4 Credits (T)

Course objectives:

- To familiarize students with international health care systems
- To appraise pros and cons of various health care delivery systems

Course outline:

1. International Health Care Systems: Introduction
2. Health care in the USA : Private insurance, Federal insurance, Publicly funded insurance (Medicare, Medicaid) Obamacare
3. UK healthcare system: National Health System, public, private profit and nonprofit hospitals
4. Healthcare in the European Union: discussion on three models at work within the EU: single-payer, socialized, and privatized-regulated.
5. Healthcare systems in Asia: Singapore, China, India
6. Healthcare systems in Australia : Australia has a tax-funded universal free public health insurance program, called Medicare. All citizens get free care for public and many physician services and drugs at public hospitals.
7. Healthcare systems in South America : Columbia, Costa Rica
8. Health Care systems in Africa: Ghana, Kenya

Suggested Readings:

1) Tikkanen, R. et al. (2021). U.S. Health Care from a Global Perspective, 2019: Higher Spending, Worse Outcomes? https://www.commonwealthfund.org/publications/issue-briefs/2020/jan/us-health-care-global-perspective-2019
2) Medical.mit.edu (2021). Healthcare in the United States: The top five things you need to know. https://medical.mit.edu/my-mit/internationals/healthcare-united-states
3) Healthmanagement.org. (2006). Facts & Figures: The UK Healthcare System. https://healthmanagement.org/c/it/issuearticle/facts-figures-the-uk-healthcare-system
4) Great Britain: The National Health Service. https://sites.psu.edu/smithcivicblog/2016/01/16/great-britain-the-national-health-service/
5) Ec.europa.eu (2017). European semester thematic factsheet: Health systems.
6) Thorlby, R. (2021). International Health Care System Profiles England. https://www.commonwealthfund.org/international-health-policy-center/countries/england
7) Earn, L. C. (2021). International Health Care System Profiles Singapore. https://www.commonwealthfund.org/international-health-policy-center/countries/singapore
8) Gupta, I. (2021). International Health Care System Profiles India. https://www.commonwealthfund.org/international-health-policy-center/countries/singapore
9) Earn, L. C. (2021). International Health Care System Profiles Singapore. https://www.commonwealthfund.org/international-health-policy-center/countries/singapore
10) World Health Organization. Regional Office for Europe, European Observatory on Health Systems and Policies, Miguel Á González Block, Hortensia Reyes Morales, Lucero Cahuana Hurtado. et al. (2020). Mexico: health system review. World Health Organization. Regional Office for Europe. https://apps.who.int/iris/handle/10665/334334
11) Kim, S. Universal Healthcare Systems and Fragmentation in Latin America. https://sites.google.com/macalester.edu/phla/key-concepts/universal-healthcare-systems-and-fragmentation-in-latin-america

MPH553MJ: National Health Programmes: 2 Credits (T)

Course objectives:

- To understand the principles of infectious disease control programmes
- To orient students about the national disease control programmes,
- Critical evaluation of various disease control programmes

Course outline

1. Infectious disease control programmes (including agent biology, epidemiology, pathogenesis and pathology, clinical presentation and management; public health strategies and mechanisms)
2. Universal Immunization Programme in India: TB, Polio, Diphtheria, Tetanus, Measles.
3. Elimination Programmes: Tuberculosis, Leprosy, Malaria
4. Emerging and Newly Emerging Diseases: Influenza (H1N1, H5N1), COVID-19
5. Intestinal: Diarrhoea, Typhoid, Worm infestations
6. Sexually Transmitted Infections including HIV and AIDS
7. Vector-borne Diseases Control Programmes: Malaria, Dengue, Japanese Encephalitis, Chikungunya, Leptospirosis,
8. Zoonotic: Rabies, Monkeypox
9. Neglected tropical diseases: Scabies, Filiarisis, Leishmaniasis (Kala Ajar)

Suggested reading:

1) Textbook of Medicine : Cecil, Bennett, et al., Harcourt Brace Joanvich Inc. U.S.A.
2) Nelson K E : Infectious disease epidemiology : theory and practice
3) GrieseckeJ : Modern infectious disease epidemiology
4) National Disease Control Programmes websites and class handouts
5) Expert Committee Report on Public Health Systems in India 1996

MPH554MJP: Epi Methods Survey (Practical): 4 Credits

Course objectives:

- To introduce students to quantitative research methods in public health including issues of ethics and biosafety
- To train students in the method of analysis of data and report writing. The information from this course will be subsequently used for planning health interventions

Course outline:

1. Types of research; steps in conducting research
2. Sampling methods in field epidemiology
3. Ethics in research
4. Survey methods and their application to public health research
5. Survey design and planning, sampling, construction of questionnaire,
6. Data collection, analysis
7. Report writing

Suggested reading:

2) Health Research Methodology: A guide for training in research methods. Second
3) Edition. WHO, 2001.
4) Kothari, C.R., 1990. Research Methodology: Methods and Techniques. New Age
5) International. 418p.
6) John Creswell (2013). Research Design: Qualitative, Quantitative, and mixed methods
7) approaches. Fourth edition, Sage Publications
8) ICMR, 2018 Ethical Guidelines for Biomedical Research on Human Participants, ICMR,
9) New Delhi.

SEMESTER II: MAJOR ELECTIVE COURSES

MPH555OE: Integrative Health and AYUSH: 2 Credits (T)

Course objectives:

- To provide overview of the Traditional, Complementary and Integrative Medicine (TCIM)
- To examine the current status of practitioners in India and their interactions with the health system
- To identify potentials and challenges about TCIM in public health context

Course outline:

1. Definitions, plural systems of medicine, Traditional Medicine, Complementary &Integrative Medicine, Global trends and policy framework
2. Introduction to Traditional Medicine: Chinese, Arabic, Greek, Korean, Japanese, African and Ethno-medicine from different parts of the world
3. Indian traditional medicine - AYUSH Systems: Ayurveda, Yoga, Unani, Siddha, Sowa Rigpa, Naturaopathy, Homeopathy, Herbal medicine and health traditions
4. Concept of Integrative Health, holistic health, whole systems approaches, personalized health, predictive, preventive, personalized approaches, curative to preventive health care, global initiatives in Integrative Medicine, WHO traditionalmedicine strategy
5. Historical evolution of integrative medicine in India and key committee reports (e.g. Udupa, Chopra)
6. Current status of practitioners of TCIM in public health in India, national AYUSHmission and other initiatives
7. TCIM: potential and challenges in disease prevention, health promotion, surveillance and care; public health competencies

Suggested reading:

2) Patwardhan B Et al. Integrative Approaches for Health: Biomedical Research, Ayurveda and Yoga. Elsevier, USA, 2015
3) Patwardhan B. Traditional Medicine for Affordable Global Health, A report of CIPIH, World Health Organization, Geneva, 2005.
4) Chandra S. Status report on Indian medicine and folk healing. Report submitted toGovt. of India. 2011
5) Valiathan MS. Introduction to Ayurveda, Oriental Black Swan, India, 2013
6) Valiathan MS. Ayurvedic Inheritance of India, NPTEL Online Lecture Series, IIT Madras, 2013.
7) WHO Traditional Medicine Strategy: 2014-2023, World Health Organization, Geneva, 2014.

MPH556OE: Urban Health – I (Theory): 2 Credits

Course Objectives:

- To impart knowledge on urbanization, determinants of urban health, health care in urban areas, health of vulnerable sections in cities, and occupational health challenges
- To make students aware of emerging challenges of human development, such as health equity, sustainability, safety and urban environment

Course outline:

1. Human development and urbanization: urban demography, epidemiology, changes in urban physical and social environment and their health consequences
2. 'Urban' as determinant of health: defining health disparities and health equity; the determinants of urban health; locating and understanding health disparities using data, housing, built environment and health; urban mobility; water, sanitation and environmental health aspects; food insecurity, waste management; violence and crime
3. Urbanization and health outcome: emerging public health issues associated with rapid growth of urban population overcoming health inequities in urban settings,
4. Health issues of urban population: vulnerable population in urban areas; occupational health challenges
5. Health services in urban areas: health services in urban areas, public health care access and other issues, inadequacy of public health services, various schemes for urban poor
6. Urban Health planning: design and implementation of cost-effective health care system, case studies on development, innovations in urban resilience, and urban regeneration projects; urban local bodies and inter-sectoral collaboration

Suggested reading:

1) Galea Sandro, David Vlahov. Handbook of urban health. Populations, methods and practice. USA: Springer publication 2008
2) Cecilia Tacoli Urbanization, gender and urban poverty: paid work and unpaid carework in the city, Published by UNFPA, March 2012
3) World Health Organization. Hidden cities: unmasking and overcoming health inequities in urban settings. WHO and United Nations Human Settlements Programme. 2010.ISBN 978 92 4 154803 8 (WHO)
4) Umar Benna, Urbanization and its impact on socio-economic growth in developing regions. Published by IGI Global. 2017
5) The Centre on Housing Rights and Evictions (COHRE), Women, Slums and Urbanisation: Examining the Causes and Consequences. Published by COHRE, Geneva, Switzerland 2008. ISBN: 978-92-95004-42-9.
6) Peter Ellis and Mark Roberts. Leveraging Urbanization in South Asia Managing Spatial Transformation for Prosperity and Livability. Published by World Bank Group. Washington 2016. ISBN (paper): 978-1-4648-0662-9 ISBN (electronic): 978-1-4648-0663-6 DOI: 10.1596/978-1-4648-0662-9
7) Gusmano MK, Rodwin VG, Weisz D. Health care in the world cities: New York, Paris, and London. Baltimore, MD: The Johns Hopkins University Press, 2010.

MPH557OEP: Urban Health – II (Practical): 2 Credits

Course Objectives:

- To experience and analyse determinants of urban health
- To apply knowledge and skills of public health in urban scenario

Course outline:

The practical course will include the following components.

1. Visit to urban health facilities; and public health engineer projects
2. Study of data pertaining to urban health programs (swacch bharat, urban health and wellness centres, schemes for urban poor etc)
3. Case studies on challenges and innovative implementation of urban health projects
4. Development of a fact sheet or a status report on relevant aspects of urban health

Suggested reading:

1) World Health Organization. Global report on urban health: equitable, healthier cities for sustainable development. 2016. ISBN 978-92-4-156527-1
2) World Health Organization. WHO Housing and health guidelines. 2018. ISBN 978-92-4-155037-6
3) National Institute of Urban Affairs, Ministry of Housing and Urban Affairs, Govt of India. A Guide for Inclusive, Accessible, Safe and Resilient Urban Development. 2022
4) National Institute of Urban Affairs. Compendium of Smart and Innovative Solutions for an Inclusive & Accessible Urban Future. 2022
5) National Institute of Urban Affairs. Compendium of Pilot Projects: India Smart Cities Fellowship Program March 2023. 2022
6) Publications and online resources:
    a. World Health Organization: https://www.who.int/health-topics/urban-health
    b. National Institute of Urban Affairs: https://niua.in/publication

MPH558OEP: Advanced Epidemiology (Practical): 2 Credits

Course Objectives

- To understand the applications of epidemiology in public health surveillance
- To apply principles of epidemiology in public health practice

Course Outline

Course Outline

1. Models in Epidemiology: SIR Model – the study of the population of susceptible (S), infectious (I) and recovered (R) or removed
2. Global Burden of Diseases and Disability Adjusted Life Year (DALY): Methodology, Estimates and Application
3. Purpose and Characteristics of Public Health Surveillance
4. Identifying Health Problems for Surveillance
5. Identifying or Collecting Data for Surveillance
6. Analyzing and Interpreting
7. Disseminating Data and Interpretations
8. Evaluating and Improving Surveillance
9. Integrated Disease Surveillance and Integrated Health Information Platform in India

Suggested reading:

1) Blanchard J; Washington R; Becker M; Vasanthakumar N; Madangopal K; Sarwal R. et al. Vision 2035: Public Health Surveillance in India. A White Paper. NITI Aayog. December 2020

2) Detels, Roger and others (eds), 'Public health surveillance', in Roger Detels and others (eds), Oxford Textbook of Global Public Health, 7 edn, Oxford Textbooks in Public Health (Oxford, 2021; online edn, Oxford Academic, 1 Nov. 2021), https://doi.org/10.1093/med/9780198816805.003.0042, accessed 12 July 2023.

3) Gordis Leon. Epidemiology (Fifth edition), Elsevier Saunders, 2013.

4) Dona Schneider and David E. Lilienfeld. Lilienfeld's Foundations of Epidemiology, Fourth Edition, Oxford University Press, USA, 2015.

5) Porta Miquel. A Dictionary of Epidemiology, Oxford University Press, USA, 2014

6) Spassoff R.A. Epidemiologic Methods for Health Policy, Oxford University Press, 1999

7) Barkar, D.J.P., Practical Epidemiology: Churchill pub, Livingstone, 1991.

8) Knox E. G. Epidemiology in health care planning: A Guide to the Uses of a Scientific Method, Oxford University Press, USA.

MPH559OE: Disaster Management: 2 Credits

Course objectives

To introduce students to natural and man-made disasters and mitigation principles

Course outline

1. Introduction to Natural & Man-made Disasters

2. Disaster Preparedness: Disaster Preparedness Plan, Disaster Preparedness for People and Infrastructure, Role of Technology in Disaster Preparedness

3. Disaster management: Hazard, Risk and Vulnerability, Concept and Relationship, disaster Risk Reduction, risk Analysis Techniques, People Participation in Risk Assessment

4. Disaster Mitigation: Disaster Mitigation Strategies, Emerging Trends in Disaster Mitigation, Role of Team and Coordination,

5. Rehabilitation, Reconstruction & Recovery post disaster

6. Disaster Response: role and responsibilities of different governmental organizations at local, district, state and central level

Suggested reading:

1) Taori, K (2005) Disaster Management through Panchayati Raj, Concept Publishing Company, New Delhi.

2) Roy, P.S. (2000): Space Technology for Disaster management: A Remote Sensing & GIS Perspective, Indian Institute of Remote Sensing (NRSA) Dehradun.

3) Sharma, R.K. & Sharma, G. (2005) (ed) Natural Disaster, APH Publishing Corporation, New Delhi.

MPH560OE: Social Epidemiology: 2 Credits (T)

Course objectives:

- To explore both theories explaining the relationship between the social phenomena and health as well as methodological tools for studying this relationship

Course outline:

1. Theories, models and constructs: Approaches in social epidemiology, Population perspective,
2. Theory building perspective, (1) Bio-Psychosocial paradigm (2) social production of disease, political economy of health, (3) eco-social theory and related multi-level frameworks, (4) Life course approach Explanatory models in Cultural epidemiology
3. Methods of social epidemiology: different methodological consideration and approaches within social epidemiology
4. Multilevel Approaches :Discussion on approached for research in social epidemiology
   a) Neighbourhood effect studies , compositional and contextual effects of neighborhoods on health; and describe how multi-level study designs help us to distinguish between them.
   b)Psycho-social environment, stress and health studies, Causal associations between job stressors and health, Work/life balance and gender differences in job strain
   c)Social support, Social network and its impact on health, social network analysis
   d)Lifecourse approach,
5. Income inequality and health : Absolute income effect, Social comparisons and relative deprivation, Contextual effect of income inequality
   Causal Explanations in social epidemiology
6. Social epidemiology and policy

Suggested reading:

1) Bartley Mel. Health inequality : an introduction to theories, concepts, and methods Cambridge : Polity Press : 2004
2) Oakes &Kaufman ,Methods in Social Epidemiology. Jossey-Bass Pub, 2006
3) Berkman LF, Kawachi I &Glymour MM. (2nd eds). Social Epidemiology. New York: Oxford University Press, 2014.
4) Dorling D. Injustice: why social inequality persists. Portland, OR: The Policy Press, 2010.
5) Lisa F. Berkman, Ichiro Kawachi, Social Epidemiology, Oxford University Press, 2000
6) Kawachi I, S.V. Subramanian, Daniel KimSocial Capital and Health, Springer 2007
7) Kawachi& L. F. Berkman ,Neighborhoods and Health . Oxford University Press 2003
8) Krieger N. Embodying inequality: epidemiologic perspectives, Baywood Pub, 2005

SEMESTER II: INTERNSHIP/ ON JOB TRAINING (OJT)

MPH581OJT: Public Health Internship: 4 Credits (Practical)

Course objective:
To provide an understanding of day-to-day activities and functions of professionals working in the public health system

Course outline

- Four-weeks internship at a public health facility, or with a disease control programme.
- Assessment through activity diary, journal and report submission and presentation.

SEMESTER III: MAJOR CORE COURSES

MPH601MJ: Non-communicable Diseases & Injuries (T): 4 Credits

Course Objectives:

- To give an understanding of the pathophysiology of major NCDs. Classification, clinical manifestations, diagnosis and, treatment.
- To understand the risk factors for common NCDs, and methods of disease control and health promotion
- To give an understanding of the pathophysiology of some common mental health problems

Course outline:

1. Epidemiology of NCDs, risk factors, global status, prevention and control, global initiatives
2. National strategies for control of NCDs (epidemiology, pathophysiology including biochemical and genetic parameters, cardinal signs, clinical and diagnostic features (with particular emphasis on biochemical parameters), treatment (emphasize pharmacological component), prevention and control
   a. Diabetes
   b. Cardiovascular diseases
   c. Asthma and COPD
   d. Cancer
   e. Musculoskeletal conditions
3. Tobacco, obesity and other risk factors for NCDs
4. Unintentional Injuries- prevention and control; global and national strategies

Suggested reading:

1) Class handouts
2) World Health Organization (2016). Global Report on Diabetes. WHO Press, Switzerland
3) National Centre for Disease Control Director General of Health Services Ministry of Health and Family Welfare, GOI 2017. Training Module for Medical Officers for Prevention, Control and Population Level Screening of Hypertension, Diabetes and Common Cancer (Oral, Breast and Cervical). National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke
4) World Health Organization 2014: GLOBAL STATUS REPORT on Non-Communicable Diseases
5) World Health Organization 2013: Global Action Plan for the Prevention and Control of Non-Communicable Diseases, 2013-2020, WHO, Geneva, Switzerland
6) Standard Treatment Guidelines: Hypertension Screening, Diagnosis, Assessment, and Management of Primary Hypertension in Adults in India- Quick Reference Guide May 2016 Ministry of Health and Family Welfare, Government of India
7) Prevention of cardiovascular disease: guidelines for assessment and management of total cardiovascular risk: World Health Organization. ISBN 978 92 4 154717 8 (NLM classification: WG 120) © World Health Organization 2007

MPH602MJ: Research Proposal Development (P): 2 Credits

Course objectives:

To impart training in the methodology of developing a research proposal and scientific writing

Course outline:

Students will write a research grant or fellowship application including ethical guidelines and other regulatory requirements. Students are expected to select a topic, conduct a literature review, identify a research gap, frame research questions, develop objectives, study hypothesis, select a study design, write the detailed methodology, develop the analysis format including statistical tests to be applied

MPH603MJ: Maternal Health (T): 2 Credits

Course objectives

- To orient students to the physiological changes, health problems, health needs of women during pregnancy, labour and postpartum period
- To describe and critically analyse public health programmes, services, and initiatives to reduce maternal mortality and improve maternal health

Course outline

1. Introduction and concept of reproductive health
2. National RCH program, NHM, RMNCH strategy, HR training, skill lab, NFHS 5 indicators maternal health, FP.
3. Antenatal care Coverage, quality, Govt schemes, ANC screening, interventions
4. Intrapartum care, SBA, Partograph, safe childbirth checklist, LaQshya program
5. Complications during pregnancy, measures to prevent
6. Complications during labour
7. Postnatal care, Complications and pevention
8. Maternal Mortality, MDSR, Emergency Obst & newborn care
9. Abortion, MTP, Family Planning

Suggested Readings

1. Dutta D C. Textbook of Obstetrics: Including Perinatology and Contraception. Jaypee Brothers Medical Publisher Ltd. New Delhi. 8th Edition 2016
2. Dutta D C Textbook of Gynaecology. JAYPEE BROTHERS MEDICAL PUBLISHERS (P) LTD New Delhi 6th edition 2013

MPH604MJP: Qualitative Research Methods(P): 2 Credits

Course objectives:

- To orient students about various qualitative data collection methods
- To introduce various interpretive analytic approaches to data analysis
- To introduce computer software for qualitative data analysis

Course outline

1. Foundation of qualitative research and epistemology
2. Approaches in qualitative research: Substantive theory, Grounded theory approach, interpretivist approach, Role of theory in qualitative health research
3. Research Designs: Conceptual framework, Pure designs, mix-methods designs
4. Introduction to Qualitative data collection methods
   - 4.1 Interview
   - 4.2 Focus Group Discussion
   - 4.3 Observation
   - 4.4 Case Study
   - 4.5 Participatory methods
5. Sampling in qualitative research: Sample size, sample selection techniques,
6. Quality Control of qualitative data: setting standards, judging quality, validity and credibility
7. Analytic approaches, methods, and techniques: Principles of analysis, Steps in analysis; thematic analysis, content analysis, narrative analysis,
8. Computer assisted applications for qualitative analysis and Presenting, report writing and paper writing using qualitative data

Suggested reading:

1) Ulin P, Robinson E, Tolley E. Qualitative Methods in Public Health: A field guide for Applied Research, Jossey Bass Pub, 2005
2) Russell BernardH., Gery W. RyanAnalyzing Qualitative Data: Systematic Approaches, SAGE Publications, 2010.
3) Green J, Thorogood J, Qualitative methods for Health research, Sage Pub, 2004
4) Catherine Pope, Nicholas Mays, Qualitative Research in Health Care, John Wiley & Sons, 2008
5) David Silverman Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction SAGE Publications, 2006
6) Carol Grbich Sage Pub, Qualitative Research in Health 1999
7) Matthew B. Miles, A. Michael Huberman, Qualitative Data Analysis Sage Pub, 1994

MPH605MJ:Child Health and Nutrition(T): 2 Credits

Course objectives:

- To introduce students to the science of child growth& development
- To orient students about the issues related to neonatal and child health, nutrition and mortality

Course Outline

1. Growth and development: Growth and development; physical, motor, cognitive, psycho-social and language development.
2. Neonatal Health: major causes of neonatal mortality; Preterm births, low birth weight and public health interventions; birth defects
3. Early infant nutrition:
   Colostrum, Breastfeeding- Importance, benefits, human milk vs animal milk
   Formula Feeding.
4. Immunization; coverage, factors
5. Infant Nutrition:
   Nutrient Requirement
   Complementary feeding.
   Introduction of liquid to solid to table food.
6. Levels and trends in child mortality, major causes of infant and child mortality and public health interventions
7. Policy and programmes: the main national and international interventions for prevention of reproductive and childhood/adolescent morbidity and mortality, including RMNCHA+, JSSK, RBSK, IYCF, IMNCI, maternity benefit schemes

Suggested reading:

1. Vinod K Paul and Arvind Bagga**:** GHAI Essential Pediatrics. CBS Publisher and Distributors, 10th Ed. 25 March 2023
2. Class handout

SEMESTER III: MAJOR ELECTIVE COURSES

MPH606OEP: Nutrition Practicum (P): 4 Credits

Course objective:

- To orient students to the research methods in the field of public health nutrition.
- To develop their skills in nutrition research methods and to update them with the current techniques in nutrition research.

Course outline:

1. Principles of nutritional epidemiology
2. Nutritional Survey, Surveillance, Monitoring and Evaluation
3. Tools and Techniques: Anthropometry
   a) Height and weight measurements
   b) BMI, Z score, WHO software's: Anthro, Anthroplus
   c) Circumference measurements- MUAC cut offs: SAM , MAM , Old classification in comparison with new. Other circumferential measurements
   d) Skinfold measurement
   e) Comparison to standards
   f) Technical error of measurement
   g) Growth charts- growth monitoring, Types of charts, target height, percentiles, deriving third percentile.
4. Dietary and Nutrient intake analysis – Energy expenditure, energy balance, Diet recall, Food frequency, Weighment method, comparison with standards; Units of measurement in foods, Standardisation of foods for portion sizes, Nutritional questionnaires
5. Nutritional screens - Physical examinations for clinical signs and symptoms, Biochemical assessment methods, cut offs.
6. Standards for comparison – RDA, NCHS standards, ICMR standards

Suggested reading:

1. Willett, W. (2012). Nutritional epidemiology. Oxford University Press.
2. Margetts, B. M., & Nelson, M. (Eds.). (1997). Design concepts in nutritional epidemiology. OUP Oxford.
3. Frisancho, A. R. (1990). Anthropometric standards for the assessment of growth and nutritional status. University of Michigan Press.
4. Cohen, B. E. (2002). Community food security assessment toolkit (pp. 02-013). Washington, DC: US Department of Agriculture, Economic Research Service.
5. Billig, P., Bendahmane, D., & Swindale, A. (1999). Water and sanitation indicators measurement guide. Food and Nutrition Technical Assistance Project, Academy for Educational Development.
6. World Health Organization. (1995). The use and interpretation of anthropometry: report of a WHO expert committee. World Health Organ Tech Rep Ser., 854, 312-409.

MPH607OE: Tribal Health (T): 2 Credits

Course objectives:

- To orient students with health issues of tribal population of India

Course outline

1) Meaning and concept of tribe: Overview of territorial distribution and classification of tribal groups in India , features/ tribal culture & identity
2) Contemporary tribal health issues: tribal health indicators, trends and patterns
3) Nutrition and Food Security in tribal regions
4) Tribal development, displacement, rehabilitation and its impact on health
5) Ethno-medicine, forest resources and tribal health
6) Tribal health programmes, strategies, initiatives and schemes

Suggested reading

1. Tribal health report: First Comprehensive Report on Tribal Health in India: Report of the expert committee on tribal health
2. National Family Health Survey (NFHS) – 1, 2, 3, 4, 5
3. Lancet: Maternal and Child Health series – 2018
4. Lancet: Indigenous Health series: 2010
5. R. K. Mutatkar. Tribal Health and Malnutrition.2018. Concept Publishing Company Private Ltd, New Delhi, India
6. Salil Basu. Dimensions of Tribal Health in India. Health and Population- Perspectives and Issues 23(2): 61-70, 2000
7. National Health Mission Programmes on Tribal Health Issues (Tribal RNTCP action plans, AIDS control programmes, NVBDCP, RCH-II)

MPH608OE: Mental Health (T): 2 Credits

Course Objectives:

- Understanding the burden of mental health disorders in India
- To give an understanding of the pathophysiology of some common mental health problems

Course Outline

1) Epidemiology of major mental disorders in India with reference to GBD studies.
2) Major Depressive Disorders, Anxiety Disorders, Idiopathic developmental intellectual disability (IDID), Schizophrenia, Bipolar disorder, Conduct disorder (CD), Eating Disorders: Anorexia nervosa, Bulimia nervosa, Autism spectrum disorders (ASD), Attention-deficit/hyperactivity disorder (ADHD), Personality Disorders

Suggested Readings

1. The burden of mental disorders across the states of India: the Global Burden of Disease Study 1990–2017. The Lancet Psychiatry. Volume 7 Issue 2 Pages 148-161 (February 2020). DOI: 10.1016/S2215-0366(19)30475-4
2. American Psychiatric Association (2013) Diagnostic and statistical manual of mental disorders: DSM-5. 5th Edition. Washington, D.C.: American Psychiatric Publishing

MPH609OE: Implementation Research (P): 2 Credits

Course objective

- To increase understanding and develop implementation research (IR) capacity among students

Course outline

1) Introduction to Implementation Research (IR), How IR works, Stakeholder analysis and community engagement
2) How to write IR proposal and ethical issues: Formulating IR problem statement, Components of IR Proposal, Ethical issues in IR
3) Planning and conducting IR: Planning an IR, Monitoring IR
4) Research methods and data management: Study design and selection, Data management
5) IR communications and integration into health systems: IR communications, Integrating IR into health systems

Suggested Readings

1. Damschroder LJ, Aron DC, Keith RE, Kirsh SR, Alexander JA, Lowery JC. Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science. Implementation Sci [Internet]. 2009 Dec [cited 2023 Aug 9];4(1):50. Available from: http://implementationscience.biomedcentral.com/articles/10.1186/1748-5908-4-50
2. Damschroder LJ, Lowery JC. Evaluation of a large-scale weight management program using the consolidated framework for implementation research (CFIR). Implementation Sci 2013;8:51.
3. Damschroder LJ, Reardon CM, Widerquist MAO et al. The updated Consolidated Framework for Implementation Research based on user feedback. Implementation Sci 2022;17:75.
4. Kegler MC, Liang S, Weiner BJ et al. Measuring Constructs of the Consolidated Framework for Implementation Research in the Context of Increasing Colorectal Cancer Screening in Federally Qualified Health Center. Health Serv Res 2018;53:4178–203.
5. Kislov R, Pope C, Martin GP et al. Harnessing the power of theorising in implementation science. Implementation Sci 2019;14:103, s13012-019-0957–4.
6. Moore GF, Audrey S, Barker M et al. Process evaluation of complex interventions: Medical Research Council guidance. BMJ 2015;350:h1258–h1258.
7. Proctor E, Silmere H, Raghavan R et al. Outcomes for Implementation Research: Conceptual Distinctions, Measurement Challenges, and Research Agenda. Adm Policy Ment Health 2011;38:65–76.

SEMESTER III: Research Project for Public Health (RP)

MPH631RP: Research Project for Public Health (P): 4 Credits

Course objective:

The purpose of research project is to encourage students to undertake independent research and to foster research-related skills, which should benefit future study and employment.

Each candidate for the Masters of Public Health (MPH) is required to undertake a research project in Semester III and completes it by end of Sem IV. The research project must exhibit original investigation, analysis and interpretation. The research project is to be done with research supervisor.

- Initiate research and formulate feasible research questions
- Design, develop tools and conduct original research
- Synthesize literature and write review
- Present research findings and argument in a suitably structured and sequenced manner

SEMESTER IV: MAJOR CORE COURSES

MPH651MJ: Bioethics and Clinical Studies (T): 4 Credits

Course objectives:

- To introduce students to the ethical principles and practices in public health research
- To introduce students to the existing guidelines

Course outline:

Unit 1

1) Introduction to Bioethics – principles and history
2) National Ethical Guidelines for biomedical and health research
3) Regulations for medical devices, drug and biological material regulations
4) Publication ethics and regulations – introduction; fabrication, falsification, or plagiarism; ethics in scientific publications, guidelines and best practices of publications, committee of publication ethics

Unit 2

5) Introduction to Clinical research: clinical research designs, clinical trial, conduct and regulation
6) History of the development of the clinical trials research process
7) Introduction to the phases of clinical trials research
8) Designing trials: Trial size, Field organization and ensuring data of high quality, Trial design, Single and multicentre trials
9) Techniques for randomization
10) Challenges in conducting clinical trials: Data collection, management and monitoring endpoints, Recruitment and retention of trial participants, community engagement, preparing and implementing Standard Operating Procedures (SOP's), recording of Adverse events and serious adverse events (SAE's), Interim monitoring
11) Introduction to field trials of health interventions and Phase IV studies
12) Quality Control

Suggested reading

1. National Ethical Guidelines for biomedical and health research involving human participants. ICMR, 2017
2. Guidelines and e-learning tools of Committee of Publication Ethics
3. CDSCO, 2013. Regulations and Guidelines Specific to Ethics Schedule Y & CDSCO-GCP.,
4. Available on www.cdsaindia.in/sites/default/files/02_Regulations_Dr.Bangaruranjan.pdf
5. CONSORT Checklist-CONSORT statement. 2010. Available on www.consortstatement.
6. org/media/default/downloads/consort2010
7. The University of Illinois at Chicago. Evidence Based Medicine: PICO. Available on
8. http://researchguides.uic.edu.

MPH652MJ: Health Planning and Management (T): 4 Credits

Course objectives

- To understand health planning from the perspective of national and global developments concerning the health sector.
- To familiarize students with the challenges of management of the health care system in India
- To familiarize students with the principles and techniques of management

Course outline:

1) Definition of Planning, Health Planning Models
2) History of Planning in India
3) Health Care Systems in India: The health care system includes many sectors or subsystems, types of service providers, sources and financing methods, and regulations. Model of health care system in India.
4) Challenges in Public health delivery system: with ref to delivery, performance, effectiveness, efficiency, and equity, discussion about the sources of problems and potential solutions
5) Human resource management in public health (HRM): nature of human resource management, limitations
6) Health management information system (HMIS): health information sources, challenges in HMIS, advantages and lacunas in current system, recommendations to improve utilization of current HMIS.
7) A brief overview of the evolution of management theories and tools and techniques used in management: SWOT, Log Frame, PERT, CPM
8) Development of National Health Policy: Evolution of Indian National Health Policies 1981-83, 2001 and 2017
9) Global agendas
    a. Health for all- Millennium Development Goals- Sustainable Development Goals
    b. Primary Health Care - Universal health coverage

Suggested reading:

1) Class handouts
2) National Health and Research Policy Documents
3) Expert Committee Report on Public Health Systems in India
4) Fallon L F., Eric J Zgodzinski. Public health management. Sundbury, MA: Jones and Barlett.2009.
5) LieberJ.G. , C. McConnel. Management principles for health professionals. Sundbury, MA: Jones and Barlett. 2010.
6) Buchbinder, SB, n.H.Shanks. Introduction to health care management. Sundbury, MA: Jones and Barlett. 2007.
7) Fallon L F., C.McConnell.Human Resource Management in Health care .Sundbury, MA: Jones and Barlett. 2007.

MPH653MJP: Data Science for Health Research (P): 4 Credits

Course Objectives

- To introduce to the advances in data science and its application for health research
- To provide a hands on experience of handling software for data management and analysis

Course outline

1) Introduction to Data Science – types of data, data management (data capture, data cleaning, data processing), revision of data analysis software (SPS)
2) Data analysis – exploratory data analysis, handling missing data, data modelling, bias in data analysis; advance analysis - predictive analysis, data mining, causal analysis,
3) Data visualization and reporting – data arrangement and visualizing techniques
4) Data science tools – introduction to R Studio and Python, online applications for data science
5) Artificial Intelligence – introduction to AI, introduction and applications of machine learning, deep learning, natural language processing
6) Generative AI and case studies in health research
7) Ethics in advancing data science – data ethics, ethics and artificial intelligence, guidelines and standards for data science applications
8) Data science and health research – role of a data scientist in health research, case studies on data science project

Suggested reading:

1. Papers and class handouts

SEMESTER IV: MAJOR ELECTIVE COURSES

MPH654OE: Healthy Aging (T): 2 Credits

Course Objectives:

- To provide an overview of demographic, social, psychological and health issues related to population ageing
- To expose students to the health status of older adults, burden of diseases and disability and challenges to public health

Course outline:

1) Demographic trends and issues related to population ageing: implications for public health
2) Healthy ageing: normal and pathological ageing, wellbeing during old age, strategies to promote health during old age
3) Functionality and Disability in older adults: functionality, fall, frailty, sarcopenia, trajectories of functional decline, implications for public health,
4) Nutrition of older adults: undernutrition, obesity, nutritional efficiencies in old age, dietary recommendations
5) Cognitive ageing: MCI, Dementia, Alzheimers, implications for individuals, families and society, and Caregiving
6) Health and social care needs of older adults: Historical shifts in position, family care giving, current social care giving needs of ageing adults, long term care, role of hospice& institutions in providing care
7) Policy and programmes for welfare of older adults: Policies and programs from India and around the world that support healthy ageing will be examined.

Suggested reading:

1. Albert S.M.2014. Public Health and Aging: An Introduction to Maximizing Function and Well-being. USA: Springer publication
2. Schweda,M. Larissa Pfaller, Kai Brauer, Frank Adloff, Silke Schocktanz. 2017. Planning later life: bioethics and public health in ageing societies: Routledge

MPH655OE: Disability and Public Health (T): 2 Credits

Course objectives

- To introduce students to disability as a public health issue
- To identify needs of the disabled and find ways to address the issues that the disabled face in developing countries

Course outline:

1) Defining disability: evolving concept of disability, medical model, social model and human rights perspective of disability, UNCRPD and ethics
2) Data sources and estimating disability: global and national level data sources, trends in developed and developing countries, epidemiological data on types of disabilities
3) Disability across life course: birth defects, children with disabilities, preventable disability, developing preventative strategies
4) Disability in society: Stigma and discrimination, identify and analyze societal barriers and supports that affect the lives of people with disabilities.
5) Barriers to care: physical and environmental barriers, health and social care needs , accessibility, availability and affordability of health services
6) Assistive Technology: innovation, interventions, rehabilitation, reablement
7) Public health programmes and policy: overview of policy, programmes,

Suggested reading:

1) Drum C.E. Krahn G.L., Hank Bersani Jr. Disability and Public Health. Washington, USA: American Public Health Association. Washington USA. 2016 Print ISSN: 0090-0036 | Electronic ISSN: 1541-0048
2) Lollar D.J, Anderson, ElenaM (eds) Public Health Perspectives on Disability: Epidemiology to Ethics and Beyond. USA: Springer Publication, 2011. ISBN 978-1-4419-73412
3) Berghs M, Atkin K, Graham H, Hatton C, Thomas C. Implications for public health research of models and theories of disability: a scoping study and evidence synthesis. Published by Public Health Res div of National Institute for Health research. 2016.
4) Beyrer C, and Pizer HF, (eds). Public health and human rights; evidence-based approaches. Baltimore, MD: The Johns Hopkins University Press, 2007.
5) Jean O'Hara Jane McCarthy Nick Bouras. Intellectual Disability and Ill Health - A Review of the Evidence .Cambridge University Press India Pvt Ltd, 2010. ISBN: 9780521728898, 0521728894

MPH656OE: One Health (T): 2 Credits

Course Objectives:

- To orient students with the fundamentals of the One Health concept and approach towards human, animal, and environmental health.

Course outline:

1. Introduction to the One Health Concept, National and International health/public health agencies initiatives and action agendas
2. Principles of One Health, significance and need for One Health Approach
3. One Health Approach and Initiatives in India
4. Importance of zoonoses, spillage of infections to humans.
5. Integrated animal and human diseases surveillance systems and One Health Joint Plan of Action. Examples: Nipah Virus Disease
6. Emerging infectious diseases: process of disease emergence and assessment of the risk factors
7. Mechanism of pathogen cross over across species boundaries and emerging infectious disease transmission and its relevance.
8. Introduction to disease vectors and basics of Medical Entomology
9. The factors influencing an emerging disease (whether it is controlled or becomes endemic/epidemic as illustrated by different emerging diseases -STDs, HIV/AIDS, avian influenza, SARS, Ebola)-
10. One Health Application in the Management of Zoonotic Diseases: The integration of human, animal and ecosystem health in the control and prevention of these diseases

Suggested reading:

1. Mackenzie JS, Jeggo M, Daszak P, Richt JA, editors. One Health: The Human-Animal-Environmental Interfaces in Emerging Infectious Diseases: The Concept and Examples of a One Health Approach (Current Topics in Microbiology and Immunology). Springer; 2013
2. One Health The Theory and Practice of Integrated Health Approaches 2020 Edition by Jakob Zinsstag, Esther Schelling, CABI Publishing
3. One Health from AIDS to Zika by Richard Riegelman and Brenda Kirkwood
4. One Health: People, Animals, and the Environment (ASM Books) by Ronald M. Atlas and Stanley Maloy.
5. Bhattacharya D, Kshatri JS, Choudhary HR, Parai D, Shandilya J, Mansingh A, et al. (2021) One Health approach for elimination of human anthrax in a tribal district of Odisha: Study protocol. PLoS ONE 16(5): e0251041. https://doi.org/10.1371/journal.pone.0251041
6. Kock R, Haider N, Mboera LE, Zumla A. A One-Health lens for anthrax. The Lancet. Planetary Health. 2019 Jul;3(7):e285.
7. Mansingh A, Choudhary HR, Shandilya J, Bhattacharya D, Kshatri JS, Parai D, Pattanaik M, Padhi AK, Jain HK, Mohanty P, Kanungo S. A qualitative exploratory study using One Health approach for developing an intervention package for elimination of human anthrax in an endemic district of Odisha, India. The Indian journal of medical research. 2021 Mar;153(3):394.
8. Mazet JA, Clifford DL, Coppolillo PB, Deolalikar AB, Erickson JD, Kazwala RR. A “one health” approach to address emerging zoonoses: the HALI project in Tanzania. PLoS medicine. 2009 Dec 15;6(12):e1000190.

MPH657OEP: Health Research Communication (P): 2 Credits

Course Objectives:

- To orient students to scientific communication of health research expected on various media and platforms
- To introduce best practices, standards, and guidelines of scientific communication
- To impart communication skills for various types of verbal and written communications

Course Outline:

1. Introduction to Scientific Communication: Communication theories, knowing target audience, levels of communication, scientific communication platforms, processes, dynamics, principles, skills, and output of science communication
2. Conference presentations: techniques and skills of oral and poster presentations, predatory conferences
3. Science communication through social media: science bogs, social media posts, writing for websites, dos and don'ts while facing media as health care professionals
4. Business communication: drafting press releases, business communications, parent-child communication, patient-provider communication, communication development
5. Verbal communication: elevator speech, podcasts, radio talks
6. Writing for scientific journals: types of research papers, journal selection, predatory journals and predatory publishers, best practices
7. Writing reports and assignments: writing dissertations, doctoral thesis, project reports, reports on clinical trials and observations studies, writing regulatory reports such as FDA submissions
8. Standards and guidelines for scientific publications: Guidelines for various types of research reports and study designs, Equator Network, ICMJE guidelines, standards for scientific publications

References:

1. Online material: Equator Network (www.equator-network.org), World Association of Medical Journal Editors (www.wame.org), Committee of Publication Ethics (https://publicationethics.org)
2. Relevant ICH and FDA guidelines

MPH658OE: Health Economics (T): 2 Credits

Course Objectives

- To impart knowledge on health care financing and health economics, including cost-benefit and cost-utility analysis.

Course Outline

1) Health financing, budgeting and economics
2) Overview of Health Financing in Developing Countries
3) Health financing concepts such as cost and cost classification
4) Budget management
5) Cost-effective analysis, Cost-benefit analysis and Cost-Utility analysis;
6) Economic analysis reporting for projects
7) Health insurance in India: Private insurance, community-based insurance schemes

Suggested Reading

1. Essentials of Health Economics: Diane M. Dewar, series editor: Richard Rigelman, United states, 2010
2. Health Economics: Peter Zweifel and Friedrich Breyer, Oxford University Press, New York, 1997
3. Health Program planning and evaluation A practical, Systematic approach for community Health; L. Michele Issel Jones and Bartlett Publishers, Canada,2009
4. Health economics, an International Perspective; BarbaraMcpake, LilaniKumaranayake and Charles Normand, Routledge, Taylor & Francis Group, New York, 2006
5. Health Economics in India (Edited), Prashant Panda and Himanshu Rout, New Century Pubns, 2007

MPH659OE: Monitoring and Evaluation (T): 2 Credits

Course objective

- To expose students to the methods of monitoring and evaluation in the broader framework of health and nutrition programmes.
- To build students capacity to develop framework for monitoring and evaluation independently

Course outline:

1) Introduction to monitoring and evaluation: difference between monitoring and evaluation
2) Programme Logic models and Theory of change
3) Deciding on key aspects of the program to monitor, identifying data sources, designing sound data collection and collation tools
4) Evaluation principles and approaches for field-based programs, identifying evaluation questions and developing a learning agenda, selecting an appropriate evaluation design, Collecting evaluation data
5) Developing Objectives and indicators for M&E : quantitative and qualitative indicators
6) Evaluation: types, evaluation question,
7) Identifying program stakeholders and their information needs
8) Selecting appropriate communication tools for different audiences

Suggested readings:

1) Gertler, P.J., Martinez, S., Premand, P., Rawlings, L.B., Vermeersch, C.M.J., 2016. Impact Evaluation in Practice, Second Edition. The World Bank. https://doi.org/10.1596/978-1-4648-0779-4
2) Martin Kellermann 2019. Monitoring and Evaluation: Performance and Impact of the QI Reforms. https://doi.org/10.1596/978-1-4648-1372-6_ch12
3) Janus, S.S., 2016. Monitoring and Evaluation, in: Becoming a Knowledge-Sharing Organization: A Handbook for Scaling Up Solutions through Knowledge Capturing and Sharing. The World Bank, pp. 111–125. https://doi.org/10.1596/978-1-4648-0943-9_ch8
4) Goergens, M., Kusek, J.Z., 2010. Making Monitoring and Evaluation Systems Work. The World Bank. https://doi.org/10.1596/978-0-8213-8186-1
5) Class handouts

SEMESTER IV: RESEARCH PROJECT (RP)

MPH681RP: Research Project for Public Health (P): 6 Credits

Course objective:

The purpose of research project is to encourage students to undertake independent research and to foster research-related skills, which should benefit future study and employment.

Each candidate for the Masters of Public Health (MPH) is required to undertake a research project in Semester III and completes it by end of Sem IV. The research project must exhibit original investigation, analysis and interpretation. The research project is to be done with research supervisor.

- Initiate research and formulate feasible research questions
- Design, develop tools and conduct original research
- Synthesize literature and write review
- Present research findings and argument in a suitably structured and sequenced manner