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CURRICULUM FOR MASTER OF  
SCIENCE IN PUBLIC HEALTH (MSPH)  
(REVISED 2021)

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# MASTERS OF SCIENCE IN PUBLIC HEALTH (MSPH)

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## GOAL OF MSPH PROGRAMME

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To improve the health status of the population which is to be achieved by providing public health and health care professionals with a high-quality postgraduate training programme in public health sciences.

## PROGRAM LEARNING OUTCOMES (PLOS)

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**PLO-01** Analyze public health history, philosophy and values (national and international)

**PLO-02** Assess the biological, physical, social, economic, psychological factors and political determinants of a health issue and how they contribute to population health and health inequities

**PLO-03** Analyze/ health care systems and policies, at local and international levels.

**PLO-04** Critical awareness of quantitative and qualitative research methods and ethical principles in describing and assessing a population's health.

**PLO-05** Develop the skills to plan, design, implement, analyze and interpret epidemiological studies.

**PLO-06** Comprehensive understanding into the global drivers of reform in health systems and their potential impacts on the future public health policy directions in both developed and developing nations.

**PLO-07** Exchange and communicate health information to audiences from diverse backgrounds.

## OBJECTIVES OF THE PROGRAMME

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The graduates of the MSPH programme are prepared to:

- Solve health-related problems within the financial, socio-cultural, environmental and political framework of Pakistan and its surrounding region.
- Design, conduct, analyze and interpret the results of relevant studies, projects and programmes.
- Plan, manage, monitor and evaluate interventions in the field of public health.
- Communicate public health messages to diverse audience effectively.
- Advocate sound public health policies and practices.

## ROADMAP FOR MSPH PROGRAM

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The nomenclature of Masters in Public Health (MPH) be changed to MSPH (Master of Science in Public Health)

Following Candidates will be eligible to take MSPH Program of 45 credit hours

1. MBBS (Registered with PMDC)
2. BDS (Registered with PMDC)
3. MD (Registered with PMDC)
4. BSc Nursing 4 Years (Registered with PNC)
5. DVM (Registered with Veterinary Council)
6. BSc Paramedics-4 years
7. BSPH
8. Pharm D/Equivalent (Registered with Pharmacy Council)
9. BS Physiotherapy/Equivalent

## SCHEME OF STUDIES

### LIST OF COURSES OF MSPH PROGRAM (CORE AND ELECTIVE COURSES)

Semester	Courses Code	Subject	Credits
First Semester (Credit Hours:15)	MPH-701	Basic Epidemiology	2+1
	MPH-702	Foundations of Public Health	3+0
	MPH-703	Qualitative Research Methods	2+1
	MPH-704	Health Systems Analysis and Planning	2+1
	MPH-705	Basic Biostatistics	2+1
Second Semester (Credit Hours:12)	MPH-711	Applied Epidemiology & Biostatistics	2+1
	MPH-712	Communicable and Non-Communicable diseases	2+1
	MPH-713	RMNCH	2+1
	MPH-714	Health promotion	2+1
Third Semesters (Credit Hours:12)	MPH-721	Research Process	1+2
	MPH-xxx	Elective track with 3 modules	2+1
Fourth Semesters (Credit Hours:06)	MPH-799	Research Thesis	6
Total			45
Elective Courses			
Track No.01 Epidemiology and Biostatistics	MPH-741	Advanced Epidemiology and Biostatistics	2+1
	MPH-742	Epidemiological Report Writing	2+1
	MPH-743	Epidemiology of Communicable & Non-Communicable Diseases	2+1
Track No.02 Health Policy and Management	MPH-744	Human Resource Management for Health	2+1
	MPH-745	Health Policy, Planning and Management	2+1
	MPH-746	Financial Management	2+1
Track No.03 Applied Nutrition	MPH-747	Nutrition for Children, Adolescent & Mothers	2+1
	MPH-748	Community Management of Malnutrition	2+1
	MPH-749	International Food Programs	2+1
Track No.04	MPH-750	Demography and Population Dynamics	2+1

Reproductive Health	MPH-751	Community Based RH Interventions	2+1
	MPH-752	Gender Development	2+1
Track No.05 Health Economics	MPH-753	Applied Health Economics	2+1
	MPH-754	Health Care Financing	2+1
	MPH-755	Supply Chain Management	2+1

## DETAIL OF COURSES

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The detail of the core and elective courses is given below. <sup>1</sup>

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### 1. BASIC EPIDEMIOLOGY

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#### **Course Description**

In this introductory course, students will learn and apply basic concepts of epidemiology to multiple domains of public health. This course provides a foundation of topics in epidemiology through examining infectious disease, chronic diseases, and general health. The course will cover applications of epidemiologic methods and procedures to the study of the distribution and determinants of health and diseases, morbidity, injuries, disability, and mortality in populations. Other topics include quantitative aspects of epidemiology, for example, data sources, measures of morbidity and mortality, evaluation of association and causality, study design, and screening for disease.

#### **Course Objectives**

Upon completion of the course, students will be able to:

- Understand the concept, basic principles and methods of Epidemiology, including Study designs and associated implications

#### **Learning goals:**

After studying this course, students should be able to:

- Understand the concept, basic principles and methods of Epidemiology, Epidemiological Studies and its application and uses in controlling Public Health problems
- Explain and practise some key techniques in epidemiology and their broad applicability to public health
- Identify and understand public health issues and problem in terms of context and magnitude
- Develop critical insights to understand and critique quantitative research designs used in public health research and interpret the results.

#### **Course Contents:**

1. Introduction to Epidemiology
2. Epidemiological approach
3. Measures of Disease Frequency: Prevalence and Incidence
4. Measures of Mortality

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<sup>1</sup> Note: The contents of the courses is subject to revision as and when required.



5. Descriptive Study Designs
6. Analytical Study Designs – (CT, Cohort, Case control, CS)
7. Measures of Association
8. Criteria for Causation
9. Role of Chance, Confounding and Bias in interpretations
10. Screening and public health surveillance

Textbook

1. Gordis, L. (2008). *Epidemiology*. 4<sup>th</sup> ed. Philadelphia, PA: WB Saunders Company.

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## 2. FOUNDATIONS OF PUBLIC HEALTH

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### **Course Description**

This interdisciplinary core course provides an opportunity for students to investigate the fundamental determinants and the complex set of intermediate factors that underpin health and disease status in different populations at various scales of analysis. Using public health and healthcare delivery as the overarching framework, the course will cover foundational elements of public health, including, but not limited to, its history and impact, the importance of health equity and human rights, and Population dynamics and various static and dynamic measures of populations, how social determinants manifests and is perpetuated within public health and healthcare systems. The course content highlights core competencies and crosscutting themes essential for successful public health intervention programs. These theoretical linkages, following exposure to how public health practice is organized in the world, will hopefully prepare students to explore more deeply within the curriculum organized around the core disciplines of biostatistics, epidemiology, social and behavioural sciences, and health policy and management.

### **Course Objectives**

After successfully completing the course, students will be able to:

1. Compare and critique public health and healthcare organizations, systems, and approaches.
2. Evaluate the evolution and impact of public health programs and healthcare delivery on population health outcomes.
3. Define the core functions of public health and explain how each contributes to primary, secondary, and tertiary prevention of diseases in different settings.
4. Integrate historical and social justice lenses to describe major causes and trends of population health.
5. Apply concepts of diversity, equity and inclusion to function as an effective member of an inter- professional team.

### **Course Contents**

1. Core Functions of Public Health
2. Principles of Public Health Practice
3. Healthcare Systems around the world
4. History of public health and impact of globalization
5. Determinants of Health: Frameworks, Socio-cultural, economic and environmental influences on population and individual health
6. Theoretical foundations of the transdisciplinary approach in public health research and practice – The social and behavioural sciences, Public health administration and intervention program implementation.
7. Ethics and policy in public health
8. Population Health: Past, Present and Future
9. Population dynamics and measures of populations

### **Recommended Readings**

1. Raymond L. Goldsteen, Karen Goldsteen and Terry L. Dwelle. Introduction to public health: promises and practices. 2015. New York: Springer Publishing Company.
2. Walley, J., & Wright, J. (2010). Public health: an action guide to improving health. Oxford University Press.
3. Marmot, M., Wilkinson, R. (2016) Social Determinants of Health and Equity
4. Tulchinsky, T.H., & Varavikova, E.A. (2014). *The New Public Health: An Introduction for the 21st Century*: Elsevier Science.
5. Brassington, I. (2007). *Public Health and Globalisation: Why a National Health Service is Morally Indefensible*: Imprint-academic.com.
6. Brownson, R.C., Baker, B.A., Leet, T.L., Gillespie, K.N. (2003). *Evidence-based public health*. New York, NY: Oxford University Press.
7. Detels, R., McEwen, J., Beaglehole, R., Tanaka, H., (eds). (2002). *Oxford textbook of public health: the practice of public health, 4th ed*. Oxford: Oxford University Press
8. Fidler, D. P. (2001). The globalization of public health: the first 100 years of international health diplomacy. *Bull World Health Organ*, 79(9), 842-849.

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### 3. QUALITATIVE RESEARCH METHODS

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#### **Learning Outcomes**

Through the focus on Qualitative Research Data Collection Techniques students will develop the following skills:

1. Identify and formulate appropriate qualitative research questions and interview questions.
2. Utilize different types of probes to gather more insightful qualitative data through individual interviews and focus group discussions.
3. Apply active listening skills in interviews and focus group discussions to engage in the data collection, express interest in the information, and encourage participants to provide more in-depth information.
4. Develop focus group discussion moderation skills to manage a dialogue within a group, encourage participation by all members, and discourage domination by select group members.
5. Understand how observational data can be used to inform public health programs.
6. Describe the basic steps in qualitative data analysis.
7. Develop deductive and inductive codes.
8. Apply codes to qualitative data.
9. Distinguish between a summary and an interpretation of qualitative data.
10. Understand how qualitative data analysis software programs function
11. Develop an interpretive understanding of data collected.
12. Review different styles of presenting qualitative research findings.
13. Present interpretive analysis of data collected.

#### **Course Contents**

##### **Anthropology and Medical Anthropology**

1. Introduction to Anthropology-I
2. Introduction to Medical Anthropology-II
3. Cultural understanding of the human body and its functioning
4. Concepts of disease, illness and sickness
5. Medical systems, medical pluralism and medical syncretism
6. Situating sickness and health: the role of the context

##### **Qualitative Research Methods**

7. Introduction to qualitative research methods
8. Participant-observation
9. In-depth interviews
10. Focus Groups
11. Developing and Managing Qualitative Research

12. Qualitative Data Analysis
13. Sample size, Validity and reliability
14. Transcription and data management
15. Techniques for writing qualitative research
16. Ethical issues in qualitative studies

**Recommended Readings:**

1. Ritchie, J and Lewis, J: Foundations of Qualitative Research, 2013
2. Pool, R & Geissler, W. Introduction to Medical Anthropology, 2005
3. Braun, V, Clarke, V: Successful Qualitative Research: a practical guide for beginners, 2013
4. Berg, B. L. & Lune, H. Qualitative Research Methods for the Social Sciences, 8th edition, Boston: Pearson, Allyn & Bacon. 2012
5. Creswell, J. W., Qualitative inquiry and research design, 2nd edition. Sage Publications. 2013.
6. Maxwell, J.A. Qualitative Research Design. Sage Publications, 2nd edition, 2013

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## 4. HEALTH SYSTEMS ANALYSIS AND PLANNING

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### **Learning Outcomes**

- Describe the basic concepts of health management and health planning.
- Identify the key issues in health management.
- Identify and understand how to design, measure, estimate and evaluate the health issues.
- Understand how knowledge of management can be applied in the real field.
- Define and understand the basic terms of health management and planning
- Identify different ways of district health planning.
- Differentiate between concepts of planning and management.
- Understand concepts of problem-solving

### **Course Contents**

- Health Management
- Health Planning
- Health System
- Health care delivery system
- Health System Strengthening
- District Health Management
- Healthcare Financing
- Leadership and Governance in Health

### **Recommended Readings**

1. McMahon, E. Barton, M.Piot: On Being In-Charge (OBI), World Health Organization, Geneva, 2<sup>nd</sup> edition, 1992.
2. Health Care Management, 5<sup>th</sup> Edition, Stephen M. Shortell and Arnold D. Kaluzny
3. Reinke, William A. Health Planning for Effective Management (HPEM), New York: Oxford University Press, 1988
4. Training Manual on Health Manpower Management, Introductory Module, World Health Organization, Division of Health Manpower Development, Geneva, 1988
5. Issues of Journal of Health Policy and Planning available in library.
6. Evidence Health Care: How to make Health Policy and Management Decisions, *J.A. Muir Gray*
7. World Health Report 2000, WHO

8. Kielmann AA, Siddiqi S, Mwadime RK. District health planning manual: toolkit for district health managers. Islamabad, Pakistan: Multi-donor Support Unit, Ministry of Health; 2002.
9. Newell K. The way ahead for district health systems. *World Health Forum*. 1989;10: 80-7.
10. Van Lerberge W, Lafort Y. The role of the hospital in the district. Delivering or supporting primary health care? Current concerns. *WHO SHS Paper* 1990;2: 1-36.

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## 5. BASIC BIOSTATISTICS

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### **Course Description**

This introductory course of Basic Biostatistics provides an introduction to selected important topics in biostatistical concepts and reasoning. This course represents an introduction to the field and provides a survey of data and data types. Specific topics include tools for describing central tendency and variability in data; methods for performing inference on population means and proportions via sample data; statistical hypothesis testing and its application to group comparisons; issues of power and sample size in study designs; and random sample and other study types. While there are some formulae and computational elements to the course, the emphasis is on interpretation and concepts. This discipline plays a fundamental role in preparing the public health students to apply basic statistical methods in designing the scientific studies, data collection, data analysis and draw inferences. This will introduce essential statistical tools to the students of Public Health to conduct and interpret quality research.

### **Learning Goals**

The following are the learning goals of this course:

1. Introduce important statistical concepts to the students of Public Health to solve everyday problems
2. To prepare the students to design studies/trials including the sample size, sampling techniques, data analysis, tests of significance and others.
3. To prepare the student to interpret collected data and draw inferences.

### **Course Objectives**

Upon completion of the course, students will be able to:

- Understand the concept, basic principles and methods of Biostatistics
- Understand core concepts as applied to public health
- Recognize and give examples of different types of data arising in public health and clinical studies

### **Course Contents**

The following are the contents of the course:

1. Introduction to Biostatistics
2. Types of statistical applications
3. Types of data
4. Scales of measurements
5. Descriptive Statistics
6. Measures of central tendencies
7. Measures of variability
8. Measures of shapes
9. Probability
10. Probability Distributions: Normal, Binomial (introduction to basic concept)



11. Parametric and Non-parametric tests (introduction to concept)
12. Confidence Intervals
13. Concepts of analytical statistics: Hypothesis testing: Alpha and Beta errors
14. Tests of Significance: Normal test, t test, Chi square test etc.
15. Introduction to Correlation & Regressions

### **Recommended Readings**

1. Rosner, B. Fundamentals of Biostatistics, 8th edition, 2015.
2. Rosner, B. Lecture Notes for Fundamentals of Biostatistics, 2016.

### **Computer Packages**

Excel, SPSS, (Stata and R) will be used for this class.

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## 6. APPLIED EPIDEMIOLOGY & BIOSTATISTICS

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### **Course Description**

Applied Epidemiology and Biostatistics course introduces the basic concepts of epidemiology and biostatistics as applied to public health problems. Emphasis is given to study design, data quality, statistical analysis, and causal inference. The general approach of this course is both theoretical and quantitative, focusing on the investigation of disease etiology and other cause-and-effect relations in public health and medicine. Various epidemiologic study designs for investigating associations between risk factors and disease outcomes are also introduced.

### **Course Objectives**

After completion of this course, students will be able to apply principles of epidemiology and biostatistics to the prevention of disease and the improvement of health.

- Understand the practical application of core Epi and Bio concepts in public health research
- Learn data management and basic data analysis through a data analysis software.

### **Course Contents:**

The contents of the course are as follows:

- Conducting a research study – marrying the science of Epidemiology and Biostatistics (2 to 3 sessions)
- Investigating an Outbreak
- Using prevalence and Incidence to understand disease patterns
- Designing a Cross sectional survey
- Designing a Case control study
- Designing a Cohort study
- Data management and analysis
- Introduction to a software (SPSS???) includes file types and basic commands (2-3 sessions)
- Running descriptive statistics and developing descriptive tables (2-3 sessions)
- Running inferential statistics (includes t-test, chi square, hypothesis testing, calculating measures of association, 95% CI)
- Advanced analysis (introduction)
- Critical evaluation of peer reviewed literature

### **Recommended Text**

1. Gordis, L. (2008). *Epidemiology*. 4<sup>th</sup> ed. Philadelphia, PA: WB Saunders Company.
2. Bonita, R., Beaglehole, R., Kjellström, T., & Organization, World Health. (2006). *Basic Epidemiology*: World Health Organization.
3. Greenberg, R.S., Daniels, S.R., Flanders, W.D., Eley, J.W., Boring, J.R. (2004). *Medical epidemiology*, 4<sup>th</sup> ed. New York, Lange Medical Books.

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## 7. COMMUNICABLE AND NON-COMMUNICABLE DISEASES

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### **Learning Outcomes**

By the end of this course:

- Describe the basic concepts of communicable and non-communicable disease public health perspective.
- Identify disease burden of diseases communicable and non-communicable.
- Identify and understand how to design, measure, estimate and evaluate outbreak.
- Understand the knowledge of developing public health interventions.
- Understand the clinical and public health side of CDs and NCDs and its public health response.
- Identify different ways of solving public health problems in respect to NCDs and CDs.
- Good understanding of concept of Antimicrobial resistance and its impact on daily lives and global health.
- Differentiate between concepts of medicine and public health & related factors about CDs and NCDs.

### **Course Contents**

1. Introduction of the module, communicable and non-communicable diseases.
2. Understanding diseases burden and epidemiology for CDs and NCDs
3. Monitoring of disease burden, surveillance, ICER value and Global disease burden tools.
4. Understanding use of technology in disease burden and effective coverage of population.
5. Infectious diseases and outbreak of infections and transmission and control of Epidemiology.
6. Steps of outbreak infection management, IHR, GHSA & JEE of Pakistan.
7. Prevention of vaccine preventable disease,
8. Prevention of water borne diseases,
9. Immunization
10. NCD main diseases
11. Cancer as a public health problem
12. Diabetes
13. CVS and related diseases public health burden
14. UHC NCD interventions.

### **Recommended Readings**

1. Principles of epidemiology in public health practice CDC.
2. Non-communicable and communicable diseases, Latin America
3. WHO booklets on communicable diseases
4. WHO booklets on non-communicable diseases

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## 8. REPRODUCTIVE, MATERNAL AND CHILD HEALTH (RMNCH)

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### **Course Description**

The course focus is on health problems and diseases affecting both pregnant women and children in Pakistan and globally. The impact of various common health problems at different stages of the life cycle and their functional outcomes in terms of morbidity, mortality, psychological wellbeing, reproduction and growth will be highlighted. Students will become acquainted with the epidemiology of maternal and childhood diseases in developed and developing countries. Programs and resources available to combat health and nutritional problems will be evaluated. The role of different international organizations will be discussed in the context of a community.

### **Course Objectives**

After successfully completing the course, students will be able to:

1. Understand the health disparities in maternal and child health and the influence of economic, biological and social factors that contribute to these disparities.
2. Prioritize factors that need to be considered when developing public health programs and research for women, children, and families.
3. Analyse the risk factors and outcomes of the major health problems that are present during pregnancy, infancy, childhood and adolescence.
4. Identify the purpose and projects of organizations and agencies that affect maternal and child health.

### **Course Contents**

1. MCH and Public Health: life-course theory and its role in the field of MCH
2. Trends in Women's Reproductive Health
  - a. outcome measures of women's reproductive health and predictors of those outcomes
  - b. historical trends and differentials in RH risks and outcomes for Pakistan and global populations and sub-populations.
3. Trends in Infant and Child Health
  - a. Measures of infant health and determinants of outcomes (e.g., infant mortality, low birthweight, prematurity, SGA).
  - b. Leading causes of infant and under-five mortality in developed and developing countries.
  - c. Review of historical trends and differentials in infant health risks and outcomes for Pakistan and global populations and sub-populations.
  - d. Recognize the importance of the epidemiologic shift from infectious disease causes of childhood morbidity and mortality to external causes, behavioral conditions and chronic disease in the Pakistan. and other LICs.

4. Social determinants of maternal and child health
5. Men's role in MCH
6. Global MCH:
  - a. History and evolution of international aid agenda
7. Governmental roles in MCH
  - a. Role of government: social, historical, political and economic conditions that contributed to calls for a governmental role in providing for the well-being of children and mothers.
  - b. Structure and financing of MCH programs
8. Women's and Infant's Health
  - a. Preconception Health
  - b. Prenatal Health
  - c. Perinatal Behavioral Health
  - d. Emergency Obstetric Care
  - e. Newborn Screening
  - f. Breastfeeding and Health
  - g. Vaccination
  - h. Malnutrition in Children
9. Adolescent Health
10. Contraception and Family Planning
11. Violence Against Women
  - a. Historical context and definitions of GBV
  - b. Types of GBV & its intersection with RH
  - c. IPV patterns & risk factors
12. RH and Child Health in Complex emergencies
  - a. Opportunities and challenges in addressing MCH in complex emergencies
  - b. Varied roles women and children play in complex emergencies and provide information on the special needs of girls
  - c. Limitations of various actors in complex emergencies

### **Recommended Readings**

1. Black, Robert; Laxminarayan, Ramanan; Temmerman, Marleen; Walker, Neff. 2016. Disease Control Priorities, Third Edition : Volume 2. Reproductive, Maternal, Newborn, and Child Health. Washington, DC: World Bank.
2. Kotch, J. B. (Ed.). (2013). Maternal and Child Health: Programs, Problems, and Policy in Public Health. Chapel Hill: Jones & Bartlett Learning.
3. Ehiri J. (Ed.). (2009). Maternal and Child Health: Global Challenges, Programs, and Policies. New York: Springer.
4. Lancet Maternal health Series 2016  
Link: <https://www.thelancet.com/series/maternal-health-2016>
5. Sustainable Development Goal 3  
<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

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## 9. HEALTH PROMOTION

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### **Learning Outcomes**

Upon successful completion of this course the students will have the knowledge and skills to:

1. Critically evaluate and apply dominant models and theories of public health promotion
2. Evaluate and critique health promotion activities/initiative in Pakistan
3. Identify, interpret, plan and create effective communication techniques to convey complex health information to a range of audiences including health professionals and general population.
4. Develop a grant application for a health promotion activity.

### **Course Contents**

The following areas will be covered during the course:

#### Introduction to Health Promotion and Education

- Health promotion vs Health education
- Risk transition
- Ottawa Charter
- Life course perspective

#### Health perspectives and reflections

- Health as a continuum
- Approaches to Health Education
- Orientations for health education

#### Evidence-based Health Promotion and Planning

- Principles of Health Promotion
- Hierarchy of evidence
- Outcome model of Health Promotion
- A new evidence-based paradigm

#### Health Promotion theoretical perspectives

- Ecological Models
- Health Belief Model
- Stages of Change
- Social Cognitive Theory
- Theory of Reason Action/Planned Behavior

#### Models of Health Promotion

- Aims of Health Promotion
- Towards a more integrated model
- behavioural change model



- self-empowerment model
- collective action model.

#### Models of Health Promotion Planning

- PRECEDE-PROCEDE
- Social Marketing
- Logic Model

#### Health Communication

- Principles of effective communication
- HEALTHCOMS 5 step methodology
- CDC's Health Communication Wheel
- 7 C's of effective communication
- Health Communication campaign
- Planning a comprehensive health communication campaign
- Steps of the comprehensive health communication campaign

#### Social Marketing

#### Evaluating Health Promotion Programs

- Stages of research and evaluations for Health Promotion programs
- Best practices in health promotion
- Skills for evaluation
- Steps off evaluation process

#### **Research-Led Teaching**

The course encompasses the four main aspects of research-led teaching. There is a focus on research content; the curriculum is structured around the existing body of literature in the field and the core theoretical understandings. Students are encouraged to actively critique and reflect upon the literature in their own analyses of health protection and promotion. This provides students with a sense of the research process and problems as the course examines the implementation of theory and regulations, and how the concept of 'best practice' has also evolved.

Students are further required to engage in the research process through regular problem-based learning activities.

#### **Recommended Readings**

1. Snelling, Anastasia, (ed). Introduction to health promotion. John Wiley & Sons, 2014.
2. Scriven, A., & Ewles, L. (2010). *Promoting Health: A Practical Guide*: Elsevier Health Sciences.
3. Naidoo, J., & Wills, J. (2009). *Foundations for Health Promotion*: Elsevier Health Sciences UK.
4. Elder, J.P. (2001). Behavior change and public health in the developing world. Thousand Oaks, CA: SAGE.

5. Edelman, C. L., Mandle, C. L., & Kudzma, E. C. (2017). Health promotion throughout life span-e-book. Elsevier Health Sciences.
6. Sharma, M. (2016). Theoretical foundations of health education and health promotion. Jones & Bartlett Publishers.
7. Green, L.W., & Kreuter, M.W. (1999). Health Promotion Planning: An Educational and Ecological Approach: Mayfield Publishing Company.

#### *ADDITIONAL READINGS*

1. Mettler, T., Raptis, D.A. (2012). What constitutes the field of health information systems? Fostering a systematic framework and research agenda. *Health Informatics Journal* 18 (2), 147–56.
2. World Health Organization. (1998). Education for health: a manual on health education in primary health care. Geneva: World Health Organization; 1988.
3. Thomas K, Bendtsen P, Krevers B. Towards implementing coordinated healthy lifestyle promotion in primary care: a mixed method study. *International Journal of Integrated Care*. 2015 Jul;15.
4. Calderón C, Balagué L, Cortada JM, Sánchez Á. Health promotion in primary care: how should we intervene? A qualitative study involving both physicians and patients. *BMC health services research*. 2011 Dec 1;11(1):62.
5. Grandes G, Sanchez A, Cortada JM, Balague L, Calderon C, Arrazola A, Vergara I, Millan E. Is integration of healthy lifestyle promotion into primary care feasible? Discussion and consensus sessions between clinicians and researchers. *BMC Health Services Research*. 2008 Dec 1;8(1):213.
6. McCalla JR, Juarez CL, Williams LE, Brown J, Chipungu K, Saab PG. Promoting healthy lifestyle behaviors: the Heart Smart Discussion Activity. *J Sch Health*. 2012 Nov;82(12):572-6. doi: 10.1111/j.1746-1561.2012.00738.x. PMID: 23151119; PMCID: PMC3502021.
7. Promoting a Healthy Lifestyle at the Workplace – Be the Change. World Health Organization 2017 [http://origin.searo.who.int/about/administration\\_structure/sde/be-the-change-guidelines.pdf](http://origin.searo.who.int/about/administration_structure/sde/be-the-change-guidelines.pdf)
8. Promoting Smoking Cessation <https://www.aafp.org/afp/2012/0315/p591.pdf>
9. Smoking Cessation <https://www.youtube.com/watch?v=iYCMluD6djc>

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## 10. RESEARCH PROCESS

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### **Learning Outcomes**

By the end of this course students should be able to:

1. Define research; explain and apply research terms; describe the research process and the principle activities, skills and ethics associated with the research process.
2. Explain the relationship between theory and research.
3. Describe and compare the major quantitative and qualitative research methods in public health research.
4. Propose a research study and justify the theory as well as the methodological decisions, including sampling and measurement.
5. Understand the importance of research ethics and integrate research ethics into the research process.
6. Be able to assess and critique a published journal article that uses one of the primary research methods in the field.
7. Be able to construct an effective questionnaire suitable for the research study planned to be conducted in the next semester.
8. Construct an effective research proposal that will serve as the launching point for the study to be conducted in next semester.

### **Course Contents**

#### 1: Foundations

- Introduction to Research and the Research Process
- Research Ethics and Integrity
- Critical appraisal

#### 2: Quantitative Research

- Introduction to Quantitative Research, Study Designs and Methods
- Analysis and Interpretation of Quantitative Data
- Critical Appraisal of Quantitative Research

#### 3: Qualitative Research

- Introduction to Qualitative Research, Study Designs and Methods
- Analysis and Interpretation of Qualitative Data
- Critical Appraisal of Qualitative Research

#### 4: Mixed Methods Research

- Introduction to Mixed Methods Research, Study Designs and Methods
- Analysis and Interpretation of Mixed Methods Data
- Critical Appraisal of Mixed Methods Research

#### 5: Research Design and Ethics

- Research Ethics
- Institutional Review Boards

#### 6: Getting started on research

- From topic to research question
- Proposal development
- Choice of method
- Choice and Development of instrument
- Data management

#### 7: Writing and presenting research

### **Recommended Readings**

Same as the *Basic Epidemiology*, *Basic Biostatistics*, and *Foundations of Qualitative Research* courses.

Additionally:

1. Altman, D.G. (2015). *Practical Statistics for Medical Research*: Chapman and Hall.
2. Bowling, A. (2014). *Research Methods in Health: Investigating Health And Health Services*: McGraw-Hill Education.
3. Hall, G.M. (2012). *How to Write a Paper*: Wiley.
4. Greenhalgh, T. (2010). *How to Read a Paper: The Basics of Evidence-Based Medicine*: Wiley.
5. Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and Quasi-experimental Designs for Generalized Causal Inference*: Houghton Mifflin.
6. Abramson, J.H., Abramson, Z.H. (1999). *Survey methods in community medicine, 5th ed.* Edinburgh: Churchill Livingstone.
7. Creswell, J. W. *Research design: Qualitative, quantitative and mixed methods approaches*. 5th Ed. Thousand Oaks, CA: Sage, 2018.  
ISBN: 978-1-5063-8670-6

## ELECTIVE COURSES

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### TRACK NO. 01: ADVANCED EPIDEMIOLOGY AND BIostatISTICS

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- 1.1 Advanced Epidemiology and Biostatistics
- 1.2 Epidemiological Report Writing
- 1.3 Epidemiology of Communicable & Non-communicable Disease

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#### 1.1 ADVANCED EPIDEMIOLOGY AND BIostatISTICS

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##### **Learning Goal:**

The learning goal of this particular course is to provide skills in understanding data and developing analysis which may be useful in their applications in a wider scenario and successfully using the statistical software as a form of help in analysis.

##### **Learning Outcomes:**

At the end of the course, the student should be able to:

- Apply statistical measures in the analysis of Cohort and Case control studies.
- Analyze Disease Frequency in a wider perspective keeping the population dynamics in view.
- Effectively apply statistical modeling techniques in different study Designs.
- Apply comparisons in several exposure groups.
- Describe statistical applications in survival analysis using STATA and SAS
- Apply the analysis for interaction when studying confounding etc.

##### **Course Contents:**

1. Measures of disease frequency and exposure effects
2. Rates and Risk measurements
3. Odds ratios as an estimate of Relative Risk
4. Confidence intervals for rates and rate ratio
5. Test for heterogeneity of Rate Ratios
6. Person-year Analysis : Cohort studies
7. Comparison of several exposure groups using different statistical techniques.
8. Exposed cohort compared to an external standard
9. Survival Analysis
10. Analysis of unmatched case-control studies
11. Selection Bias
12. Analysis of matched Case-control studies
13. Estimating Risk ratios and Rate Ratios in case-Control studies
14. Logistic regression I
15. Logistic Regression II
16. Likelihood Inference
17. Conditional Logistic Regression

18. Poisson Regression
19. Regression models for proportions
20. Strategies for Data Analysis
21. Proportional Hazards regression for Cohort studies.
22. Multiplicative and Additive Models
23. Clustering of cases of disease
24. Analysis of data with multiple episodes as outcome
25. Sample Surveys
26. Regression Analysis and analysis of variance
27. Laws of probability and Binomial Distribution
28. Conditional probability
29. Comparison of survivorship curves
30. Several Straight lines
31. Further analysis of Frequency data
32. Multiple comparisons and sequential trials
33. Time series
34. Non-Parametric application on data of different nature.
35. Choice of a statistical technique based on study designs.
36. ANOVA
37. Sample Size Calculation

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## 1.2 EPIDEMIOLOGICAL REPORT WRITING

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### Course Contents:

#### **Format of Epidemiological Report**

- Introduction of the Report,
- Ethical considerations (Avoiding Plagiarism),
- Purpose of Report,
- Sources of Data Collection,
- Review of Literature,
- Data collection techniques,
- Description of variables (dependent, independent),
- Manipulation of Variable,
- Reflection on ability of data to generalize target population,
- Hypothesis testing,
- Plan of analysis,
- Result presentations (tabular & graphical),
- Conclusions,
- discussions and recommendation,
- study limitations

#### **Presentations of Epidemiological Report**

- Research Papers for Medical Journals
- Survey Reports for Programs

- Reports for Donors
- Academic Research Report

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### 1.3 EPIDEMIOLOGY of Communicable & Non-Communicable Disease

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#### **Course Contents:**

1. Diarrhea
2. ARI
3. Tuberculosis
4. Hepatitis ABC
5. Meningitis
6. Malaria
7. Leshmeniasis
8. Conjunctivitis
9. Chronic Tonsillitis
10. COPD
11. Diabetes
12. Arthritis
13. IHD/Stroke
14. Hypertension
15. Alzheimer
16. Cancers
17. Accidents
18. Suicidal tendencies
19. Goiter

#### **Recommended Readings:**

1. Gordis L. Epidemiology. Philadelphia, PA: WB Saunders Company; 2008.
2. Hennekens CH, Buring JE. Epidemiology in medicine. Boston, MA: Little Brown and Company; 1987.
3. Holford TR. Multivariate methods in epidemiology. New York, NY: Oxford University Press; 2002.
4. MacMahon B, Thomas FP. Epidemiology: principles and methods, 1st ed. Boston, MA: Little, Brown and Company; 1970.
5. Olsen J, Saracci R, Trichopoulos D, (eds.). Teaching epidemiology: a guide for teachers in epidemiology, public health and clinical medicine, 2<sup>nd</sup> ed. Oxford: Oxford University Press.
6. Fletcher RH, Fletcher SW, Wagner EH. Clinical epidemiology: the essentials, 3<sup>rd</sup> ed. Philadelphia, PA: Williams & Wilkins Publishers; 1996.

7. Szklo M, Neito FJ. Epidemiology: beyond the basics. Boston, MA: Jones and Bartlett Publishers; 2000.
8. Dupont WD. Statistical Modelling for Biomedical Researchers. A simple introduction to the analysis of a complex data. 2<sup>nd</sup> edition. Cambridge University Press; 2008.

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## TRACK NO. 02: HEALTH POLICY AND MANAGEMENT

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- 2.1 Human Resource Management for Health
- 2.2 Health Policy, Planning & Management
- 2.3 Financial Management

### **Module Objectives:**

By the end of module Human Resources Management in Health Care, the candidate should be able to

- Identify the challenges confronting health care organizations in the context of managing their human resources;
- understand the role of health care professionals in the human resources management function of health care organizations;
- construct effective human resources policies for the effective management of people in health care organizations;
- discuss the impact of legal considerations on key human resources management activities and functions;
- explain the changing nature of jobs and how jobs in health care settings are being redesigned to enhance productivity and patient care quality;
- identify strategies for dealing with shortages or surpluses of human resources;
- discuss the strategic importance of the recruitment and selection function in health care organizations;
- explain the role of employee training and development and its contribution to the mission of the health care organization;
- understand the business case for diversity and inclusion in health care organizations;
- describe the characteristics of an effective performance management system;
- discuss the role of compensation and benefits management for rewarding and motivating health care employees;
- summarize the relationship between health and safety issues and human resources management; and
- describe the strategic importance of employee relations practices

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### 2.1 HUMAN RESOURCE MANAGEMENT IN HEALTH CARE

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#### **Course Content:**

1. Introduction to the Strategic Management of Health Human Resource
2. Regulation of Health Professionals
3. The Legal Environment for Managing Health Human Resources



4. Job Analysis, Job Design and Workload Measurement
5. Health Human Resources Planning
6. Recruitment, Selection and Retention
7. Employee Orientation, Training, Development and Career Planning
8. Diversity Management
9. Performance Management
10. Compensation Management, Employee Benefits and Services
11. Occupational Health and Safety
12. Employee and Labor Relations

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## 2.2 HEALTH POLICY, PLANNING & MANAGEMENT

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### **Course Contents:**

1. The health policy framework; context process and actors
2. The power and responsibility process
3. Health policy and system
4. Health system analysis
5. The role of government and health care delivery
  - Regulations
  - Financing
  - Stewardship
  - Provision
6. International models of health system
  - The Beveridge Model
  - The Bismarck model
  - The national health insurance model
  - The out-of-pocket model
7. National models of health system
  - Private sector supply
  - Public sector
  - Public private partnership
  - NGOs and charity services
  - Health services from Zakat fund
  - Family and self-spending on health
8. Government and policy process
9. Interest group and policy process
10. Policy implementation
11. Globalizing the policy process
12. Policy analysis and evaluation
13. Components of health policy of Pakistan

### **Health Policy Planning:**

#### **Course Content:**

1. Introduction to Planning Process

2. History of Planning
3. Planning Commission of Pakistan
4. ECNEC & its functions
5. Planning Types
6. Health Planning in Developing Countries
7. Planning Cycle
8. Identification of Plan options
9. Prioritizing the options
10. Budgeting & Programming
11. Monitoring & Evaluation
12. Planning Team
13. Planning for Planning
14. Planning for PHC

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## 2.3 FINANCIAL MANAGEMENT

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### **Learning Outcomes:**

After studying this course, you should be able to:

- Orient students about the standard operational procedures of finances in health sector
- Generate understanding about health planning and financing
- To enable the students to understand & prepare financial policies

### **Course Content:**

1. Overview of Advance Accounts Systems and procedures
2. Strategies for identifying sources of Health Financing
3. Zero Based & Performance Budgeting
4. Financial Statements & its interpretation
5. Strategies for Internal Audit & Control
6. Report preparation for public sector external audits & reviews
7. Instruments used for outsourcing
8. Assets Management
9. Costing of Unit wise demand & supplies
10. Control of Waste
11. Generation of Finances from Re-cycling & Disposal of waste

### **Recommended Readings:**

1. Schwind, H., Das, H. & Wagar, T. (2010). CANADIAN HUMAN RESOURCE MANAGEMENT: A STRATEGIC APPROACH (9<sup>th</sup> ed.). Toronto: McGraw-Hill Ryerson
2. Health Policy, Planning and Management
3. This module provides competencies: health management, health economics, and health policy and politics. By the end of this candidates should be able to develop the core competencies in following areas.
4. Diane McIntyre - Health Care Financing in Low & Middle-income countries

5. ECNEC & Budgeting Documents of Government of Pakistan
6. An introduction to Financial Management
7. A practitioner guide – Health Financing – World Bank
8. Health Care Financing in Pakistan, World Health Report
9. Green A. An introduction to health planning in developing countries, 2<sup>nd</sup> edition. Oxford: Oxford University Press; 1999.
10. Kielmann AA, Siddiqi S, Mwadime RK. District health planning manual: toolkit for district health managers. Islamabad, Pakistan: Multi-donor Support Unit, Ministry of Health; 2002.
11. Kielmann, AA, Janovsky K, Annett H. Assessing district health needs, services and systems: protocols for rapid data collection and analysis. London, UK: MacMillan Education Ltd and AMREF, 1995.
12. Newell K. The way ahead for district health systems. World Health Forum. 1989;10: 80-7.
13. Reinke WA. Health planning for effective management. New York, NY: Oxford University Press; 1988.
14. Van Lerberge W, Lafort Y. The role of the hospital in the district. Deliverin or supporting primary health care? Current concerns. WHO SHS Paper 1990;2: 1-36.
15. World Health Organization. Making it work: organization and management of district health systems based on primary health care. Geneva: World Health Organization; 1988. Document no. WHO/SHS/DHS/88.1.
16. World Health Organization. The challenge of implementation: district health systems for primary health care. Geneva: World Health Organization; 1988. Document no. WHO/SHS/DHS/88.1/rev 1. Available from: URL: [http://whqlibdoc.who.int/hq/1988/who\\_shs\\_DHS\\_88.1\\_Rev.1.pdf](http://whqlibdoc.who.int/hq/1988/who_shs_DHS_88.1_Rev.1.pdf)
17. World Health Organization. The health centre in district health systems. Geneva: World Health Organization; 1994. Document no. WHO/SHS/DHS/94.3.

### TRACK NO. 03: APPLIED NUTRITION

- 3.1 Nutrition for Children, Adolescent & Mothers
- 3.2 Community Management of Malnutrition
- 3.3 International Food Organizations

#### **Learning Goal:**

The goal of this module is to create a group of trainees well-equipped in handling nutritional problems at community and hospital level, enabling them to understand the fundamentals of nutrition, nutritional deficiencies, preventing and managing nutritional problems in the community and hospital.

#### **Learning Outcomes:**

At the end of the module, the trainee should be able to:

- List the types of foods and the nutritional requirements of the children, mothers and people of old age.
- Write a nutritional prescription for a child at different ages and the mothers.
- Describe the nutritional requirements of the infants and young children.
- List the nutritional requirements of Mothers during pregnancy and lactation.
- Describe the nutritional aspects of human milk.
- Define and Perform nutritional assessment of young children
- Describe the nutritional effects on growth
- Examine the development of growth charts and define their uses
- Plan and perform nutritional surveillance using various indicators.
- Define nutritional surveillance, indicators and methods.
- Analyze nutritional data using EPINUT/Nutrisurvey.
- Counsel mothers on infant feeding
- Counsel mothers with malnourished child in problem solving in the community and the hospital.
- Identify common micronutrient deficiencies, management and prevention
- Describe common nutritional problems (deficiency or excess of nutrients) and their management and their prevention.
- Carry out field visit to a restaurant and describe the food sanitation etc.
- Write a report on field work and make a presentation of their work for critical appraisal.

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### 3.1 NUTRITION FOR CHILDREN, ADOLESCENT & MOTHERS

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#### **Course Contents:**

#### **Normal Nutrition:**

1. Fundamental elements of human nutrition
2. Nutrition during growth and health
3. Nutritional requirements of neonates and infants 0-6 months
4. Nutrition requirements of infants 6-12 months
5. Nutrition requirements of children 1-5 years
6. Nutrition requirements of children 5-12 years
7. Nutrition requirements during physiological stress
8. Nutrition requirements of Adolescents

9. Nutrition requirements during Pregnancy
10. Nutrition requirements during Lactation
11. Household food safety

**Assessment of Growth and Nutritional status of children:**

1. Nutritional status: its assessment by field techniques
2. Nutritional status: Its assessment through anthropometry
3. Using Growth Charts as primary health care tool
4. Nutritional Prescription for children
5. 6-12 months of age
6. 12 months - 5 years of age
7. 5 - 12 years of age
8. Nutritional prescription of the mothers during normal health, pregnancy and lactation

**Human Milk and its importance:**

1. Optimal Breastfeeding Practices
2. Advantages of breastfeeding and dangers of bottle feeding
3. Exclusive breastfeeding
4. Complementary feeding
5. Perceived insufficiency of breast milk/Lactation failure
6. Promotion and support of breastfeeding
7. Management of lactation problems

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**3.2 COMMUNITY MANAGEMENT OF MALNUTRITION**

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**Malnutrition:**

1. Classification of Malnutrition
2. Causes of Malnutrition
3. Risk factors and their assessment
4. Management of Malnutrition
5. Clinical Assessment of Malnutrition
6. Protein energy malnutrition: Marasmus, PEM, Kwashiorkor
7. Micronutrient Deficiencies
8. Nutrition during special circumstances
9. Establishing a Lactation Management clinic

**Health Education in Nutrition:**

1. Communication skills
2. Nutritional counselling
3. Nutritional and social rehabilitation

**Monitoring and Evaluation of nutrition intervention programmes:**

1. National Nutrition Programmes
2. National Nutrition Surveys
3. Nutrition in IMCI
4. Breastfeeding Policy (International Code for Breastfeeding)
5. Expanded Programme for childhood illnesses and Nutrition
6. IDD control programme

**Nutrition for children living in special situation:**

1. Poverty
2. War
3. Natural calamities
4. HIV/AIDS
5. Food safety
6. Storage and Preservation of Foods at local and industrial level

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### 3.3 INTERNATIONAL FOOD ORGANIZATIONS

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**Course Contents:**

1. Situation for support of international food organization and donors
  - Drought
  - War
  - Strikes & Political sabotage
  - Population displacement
  - Tsunami
  - Earthquakes
  - Low production
2. Areas of Policy of international food organizations

- International cooperation
  - Capital investments
  - Developing countries
  - Farm economics
  - Coordinate systems
  - Development banks
  - Financial investments
  - Agricultural policy
  - Food economics
  - Nutrition & Food Supply
3. International food organizations involved in Research supply & food support programs
- WFP (United Nation Food Program)
  - Australian International Food Security Centre
  - Barilla Center for Food & Nutrition (BCFN) (*Italy*)
  - Alliance for Food Sovereignty in Africa
  - UNDP - United Nations Development Program
  - Asian Development Bank
  - World Bank

**Recommended Reading:**

1. Allen LH. Nutritional influences on linear growth: a general review, *Eur J Clin Nutr* 1994;48(suppl 1): 75-89.
2. Atkinson SA, Hanson LA, Channdra RK (eds.). Breastfeeding, nutrition, infection and infant growth in developed and emerging countries. Newfoundland, Canada: ARTS Biomedical Publishers and Distributors; 1990.
3. Brown KH, Black RE, Lopez de Romana G, Creed de Kanashiro H. Infant feeding practices and their relationship with diarrhoea and other diseases in Huascar (Lima), Peru. *Pediatr* 1989;83:31-40.
4. Cohen RJ, Brown KH, Canahuati J, Rivera LL, Dewey KG. Determinants of growth from birth to 12 months among breast fed Honduran infants in relation to age of introduction of complementary foods, *J Pediatr* 1995;96:504-10.
5. Dewey KG, Heinig MJ, Nommsen LA, Peerson JM, Lonnerdal B. Breastfed infants are leaner than formula-fed infants at 1 year of age: the DARLING study. *Am J Clin Nutr* 1993;57: 140-5.

6. Dewey KG. Infant nutrition in developing countries: what works [comment]? *Lancet*, 2005 28-Jun 3;365: 1832-4.
7. Gross R, Kielmann A, Korte R, Schoeneberger H, Schultink W. Guidelines for nutrition baseline surveys in communities. Jakarta: SEAMEO, TROPMED, GTZ; 1997.
8. Hanson L, Ashraf R, Zaman S, Karlberg J, Khan SR, Lindblad B, et al. Breastfeeding is a natural contraceptive and prevents disease and death in infants, linking infant mortality and birth rates. *Acta Paediatr* 1994 Jan;83:3-6.
9. Hanson LÅ, Ashraf R, Zaman S, Karlberg J, Lindblad BS, Jalil F. Breast feeding is a natural contraceptive and prevents disease and death in infants, linking infant mortality and birth rates. *Acta Paediatr* 1994;83:3-6.
10. Hanson LÅ, Carlsson B, Jalil F, Hahn-Zoric M, Karlberg J, Mellander L, Khan SR, Murtaza A, Thiringer K, Zaman S. Antiviral and antibacterial factors in human milk. In: Hanson LÅ (ed.). *The biology of human milk*, vol. 15. New York, NY: Nestlé Nutrition Workshop Series, Raven Press; 1989. p. 141-157.
11. Hanson LÅ, Carlsson B, Zaman S, Adlerberth I, MattsbyBaltzer I, Jalil F. The importance of breastfeeding in host defense: production of the milk antibodies and the anti-inflammatory function of human milk. *Pak Paed J* 1992;XV: 155-164.
12. Hanson LÅ, Silfverdal SA, Stromback L, Erling V, Zaman S, Olcen P, Telemo E. The immunological role of breast feeding. *Pediatr Allergy Immunol* 2001;12 Suppl 14:15-9.
13. Hanson LÅ. *Immunobiology of human milk: how breastfeeding protects babies*. Amarillo, TX, USA: PharmasoftPubl; 2004.
14. Karlberg J, Ashraf RN, Saleemi MA, Yaqoob M, Jalil F. Early child health in Lahore, Pakistan: XI. Growth. *Acta Paediatr* 1993;390 (suppl):119-49.
15. Karlberg J, Zaman S, Hanson LÅ, Khan SR, Lindblad BS, Jalil F. Aspects of infantile growth and the impact of breastfeeding: a case control study of the infants from four socioeconomically different areas in Pakistan. *Hum Lactat* 1990;4: 219-47.
16. Pakistan Demographic and Household Survey, 1990-1994. Pakistan Institute of Population studies and Govt of Pakistan, 1994.
17. Peltó GH, Santos I, Goncalves H, Victora CG, Martines J, Habicht JP. Nutrition counseling training changes physician behavior and improves caregiver knowledge acquisition. *J Nutr* 2004; 134: 357-362.
18. Penny ME, Creed-Kanashiro HG, Robert RC, Narro MR, Caulfield LE, Black RE. Effectiveness of an educational intervention delivered through the health services to improve nutrition in young children: a cluster-randomised controlled trial. *Lancet* 2005 28-Jun 3;365: 1863-72.
19. Saleemi MA, Ashraf RN, Mellander L, Zaman S. Determinants of stunting at 6, 12, 24 and 60 months and postnatal linear growth in Pakistani children. *Acta Paediatr* 2001;90:1304-8.
20. Tulchinsky TH, El Ebweini S, Ginsberg G, Abed Y, Montano-Cuellar D, Schoenbaum M, et al. Growth and nutrition patterns of infants associated with a nutrition education and supplementation program in Gaza, 1987-92. *Bull WHO* 1994;72:869-75.



21. Victora CG, Smith PG, Vaughan JP, Nobre LC, Lombardi C, Teixeira AM, et. al. Evidence for protection by breast-feeding against infant deaths from infectious diseases in Brazil. *Lancet* 1987 8;2:319-22.
22. Victora CG, Smith PG, Vaughan JP, Nobre LC, Lombardi C, Teixeira AMB, et. al. Evidence for protection by breastfeeding against infant deaths from infectious diseases in Brazil. *Lancet* 1987;2:319-21.
23. WHO Collaborative Study Team. Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis, *Lancet* 2000;355:451-55.
24. World Health Organization, UNICEF. Global strategy for infant and young child feeding. Geneva: World Health Organization; 2003. Available from: URL:[http://www.who.int/child-adolescent-health/New\\_Publications/NUTRITION/gsiycf.pdf](http://www.who.int/child-adolescent-health/New_Publications/NUTRITION/gsiycf.pdf)
25. World Health Organization. Effect of breastfeeding on infant and child mortality due to infectious diseases in less developed countries: a pooled analysis. WHO Collaborative Study Team on the Role of Breastfeeding on the Prevention of Infant Mortality. *Lancet* 2000 5;355:451-5.
26. World Health Organization. Management of severe malnutrition: a manual for physicians and other senior health workers. Geneva: World Health Organization; 1999. Available from: URL:  
<http://whqlibdoc.who.int/hq/1999/a57361.pdf><http://www.who.int/nutgrowthdb/en/>
27. World Health Organization. Management of the child with a serious infection or severe malnutrition: guidelines for care at the first-referral level in developing countries. Geneva: Department of child and adolescent health and development, World Health Organization;2000. WHO document WHO/FCH/CAH/00.1. Available from: URL:  
[http://www.who.int/child-adolescent-health/publications/referral\\_care/Referral\\_Care\\_en.pdf](http://www.who.int/child-adolescent-health/publications/referral_care/Referral_Care_en.pdf)
28. World Health Organization. Measuring change in nutritional impact of supplementary feeding programme for vulnerable groups. Geneva: World Health Organization; 1983.

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#### TRACK NO. 04: REPRODUCTIVE HEALTH

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- 4.1 Demography and Population Dynamics
- 4.2 Community Based RH Interventions
- 4.3 Gender Development

#### **Learning Goal:**

The overall goal of this course is to impart basic knowledge and bring a change in attitude of the participants towards major issues in population dynamics to enable them to do research on some of these issues.

#### **Learning Outcomes:**

By the end of the course, the participants must be able to:

- Define demography, its tools and vital statistics.
- Describe demographic transition and historical forces leading to the current situation
- Explain population pyramid and different profiles of population pyramids
- Interpret and compute different mortality and morbidity related measures
- Compute and interpret different fertility related measures such as Crude Birth Rate, Total Fertility Rate, Age Specific Fertility Rate, Net Reproduction Rate and Doubling Time
- Discuss the impact of population growth on development and health issues
- Demonstrate knowledge and understanding of scientific, evidence-based approaches to the study of population issues.
- Identify causes and consequences of population change and relate these to underlying population dynamics.
- Demonstrate knowledge and understanding of demographic behavior in social and policy context

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#### 4.1 DEMOGRAPHY AND POPULATION DYNAMICS

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##### **Course Contents:**

The contents of the course are:

1. Introduction to Population dynamics: Various static and dynamic measures of populations
2. Population and Health: An introduction to Epidemiology
3. Visit to Federal Bureau of Statistics
4. Demographic perspective and basic demographic equations
5. Sources of data including census
6. Salient features of population pyramids
7. Concepts and theories of demographic transition
8. World population growth patterns and population momentum
9. Mortality & measures of mortality
10. Global burden of diseases
11. Fertility, natural increase and reproduction rates
12. Characteristics of Pakistani population and other countries

13. Migration and urbanization
14. Population, Poverty and Politics
15. Islam and family planning
16. Population growth and aging
17. Population Policy

**Recommended Readings:**

1. Haupt A, Kane TT. Population handbook. Washington, DC: Population Reference Bureau; 1997. Available from: URL:[http://www.prb.org/pdf/PopHandbook\\_Eng.pdf](http://www.prb.org/pdf/PopHandbook_Eng.pdf)
2. Palmore JA, Gardner RW. Measuring mortality, fertility and natural increase: a self-teaching guide to elementary measures. Honolulu: East-West Population Institute, East-West Center; 1983.
3. Population Reference Bureau. World population: more than just numbers. Washington DC: Population Reference Bureau; 1999.

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## 4.2 COMMUNITY BASED RH INTERVENTIONS

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**Learning Goal:**

The goal of this course is to equip the participants with the skills, knowledge and principles to design and manage effective community-based reproductive health programmes at the national, provincial and district levels.

**Learning Outcomes:**

By the end of the course, the participants will be able to:

- Identify types of community-level interventions effective in improving individual and family-level health outcomes
- Describe elements of effective community-based reproductive health interventions
- Design, conduct and present a needs assessment for community-level RH interventions, working with information from the health facilities, providers and community leaders garnered through qualitative and quantitative data collection
- Critically evaluate the effectiveness of community-based interventions in producing reproductive health at the household and individual levels

**Course Contents:**

The following are the contents of the course:

1. RH at the community, household and individual levels
2. Overview of effective community-level interventions for RH

3. Planning community needs assessment to cover:
  - Significance of reproductive health needs in the community
  - Background of community
  - Specific aims
4. Selecting data collection methods, including
  - Focus group discussions
  - In-depth/key informant interviews
  - Record review
  - Facility assessment
  - Client exit interview
  - Community-level rapid assessment survey
5. Design of a community-based RH intervention to respond to identified needs
  - Rationale for expected effectiveness
  - Targeted beneficiaries
  - Types of intervention activities
  - Implementation plan and schedule, including budget
  - Expected outcomes and measures
  - Potential barriers to implementation
  - Monitoring and evaluation plans

### **Recommended Readings:**

1. Abel-Smith B. An introduction to health: policy, planning and financing. London: Longman Group Ltd; 1994.
2. Afsar HA, Younus M, Gul A. Outcome of patient referral made by the lady health workers in Karachi, Pakistan. *J Pak. Med Ass* 2005;55; 209-11.
3. Ali M, Hotta M, Kuroiwa C, Ushijima H. Emergency obstetric care in Pakistan: potential for reduced maternal mortality through basic EmOC facilities, services and access. *International Journal of Gynecology and Obstetrics* (in press).
4. Chhetry S, Clapham S, Basnett I. Community-based maternal and child health care in Nepal: self-reported performance of maternal and child health workers. *Journal of Nepal Medical Association* 1005:44; 1-7.
5. Clift E. IEC interventions for health: a 20 year retrospective on dichotomies and directions. *Journal of Health Communication* 1998;3; 367-375.
6. Douthwaite M, Ward P. Increasing contraceptive use in rural Pakistan: an evaluation of the Lady Health Worker Programme. *Health Policy Plan*. 2005;20; 117-23.

7. Jokhio AH, Winter HR, Cheng KK. An intervention involving traditional birth attendants and perinatal and maternal mortality in Pakistan. *New England Journal of Medicine* 2005;352; 2091-9.
8. Kironde S, Klaasen S. What motivates lay volunteers in high burden but resource-limited tuberculosis control programmes? Perceptions from the Northern Cape province, South Africa. *The International Journal of Tuberculosis and Lung Disease* 2002;6; 104-110.
9. Nsutebu EF, Walley JD, Mataka E, Simon CF. Scaling-up HIV/AIDS and TB home-based care: lessons from Zambia. *Health Policy Plan.* 2001;16; 240-7.
10. Nyonator FK, Awoonor-Williams JK, Phillips JF, Jones TC, Miller RA. The Ghana community-based health planning and services initiative for scaling up service delivery innovation. *Health Policy Plan.* 2005;20; 25-34.
11. Stoebenau K, Valente TW. Using network analysis to understand community-based programs: a case study from highland Madagascar. *International Family Planning Perspectives* 2003;29; 167-73.
12. Sultan M, Cleland JG, Ali MM. Assessment of a new approach to family planning services in rural Pakistan. *American Journal of Public Health* 2002;92; 1168-72.
13. Supratiko G, Wirth M, Achadi E, Cohen S, Ronsmans, C. A district-based audit of the causes and consequences of maternal deaths in South Kalimantan, Indonesia. *Bull World Health Organ.* 2002;80; 228-234.
14. Upvall MJ, Sochael S, Gonsalves A. Behind the mud walls: the role and practice of lady health visitors in Pakistan. *Health Care for Women International* 2002;23; 432-41.
15. Weisman C, Grason H, Strobina D. Quality management in public and community health: examples from Women's Health. *Quality Management in Health Care* 2001;10; 54-64.

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### 4.3 GENDER DEVELOPMENT

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#### **Course Contents:**

1. Fundamental Concepts related to Gender and Health - The social construction of gender: notions of masculinity and femininity,
2. International human rights in relation to Gender and reproductive health (Population policies and reproductive rights)
3. The connection between gender, sexuality and reproductive health in the context of women's and men's life: Birth control rights and choices for women, case studies and examples
4. Reproductive Health Inequities, Poverty and Women Empowerment (Concepts and tools for gender analysis and evidence of gender-based inequalities - gender violence, adolescence)
5. Gender Attributes of Leadership
6. Community, Community Participation and Empowerment.
7. Social and gender dimensions in health programme planning

### **Recommended Readings:**

1. Sen G, Ostlin P: Unequal, Unfair, Ineffective and Inefficient Gender Inequality in Health: Why It Exists and How We Can Change It. Final Report To The WHO Commission on Social Determinants of Health, September 2007.
2. Wang, G.-z. (2010). Reproductive health and gender equality: method, measurement, and implications. Farnham, Ashgate

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### *TRACK NO. 5: HEALTH ECONOMICS*

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- 5.1 Applied Health Economics
- 5.2 Health Care Financing
- 5.3 Supply Chain Management

### **Learning Objectives:**

The overall aim of this program is to enhance understanding of economics and its relationship to health in order to improve the health service of the country.

### **Learning Outcomes:**

After successfully completing this program the students should be able to:

1. Analyse and manage the financing problems being faced by the health managers in routine as well as in special circumstances.
2. Apply the management functions such as planning, organizing, staffing controlling and evaluating interventions in health care settings.
3. Construct budgets, undertake financial costing and cost effectiveness of healthcare services.
4. Evaluate different economic approaches for better priority setting in health care.
5. Appraise the role of effective health care financing and improved service delivery at all levels.

The course is designed to equip students with the conceptual skills from both the macro and the microeconomics perspectives. The programme incorporates the practical skills and theoretical foundations as well as most recent state-of-the-art innovations in the realm of management sciences methodology. Critical inquiry will be encouraged in study and research. As health systems impinge on the economic, social and cultural environment, the skills acquired will enable students to actively and creatively engage in the developmental agenda.

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### *5.1 APPLIED HEALTH ECONOMICS*

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### **Course Contents:**

1. Introduction to Health Economics
2. Application of economics & Marketing tactics in health system
3. Economics & health system
4. Key economic concepts & health
5. Money, health care services, behavior & health
6. Wants, Needs, Demands & Supply estimations for health

7. Economic, Cost, Choices, Benefits & Efficiency
8. Health economics of;
  - Building & infrastructure
  - Supplies & Utilities
  - Human recourses
  - Research
9. Planning for Rainy days
10. Planning for special demands
11. The health economy team
12. Health economics of Pakistan

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## 5.2 HEALTH CARE FINANCING

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### **Learning Goal:**

The goal of this course is to improve the participants' knowledge and skills to deal with health economics and financing.

### **Learning Outcomes:**

At the end of the course students will be able to:

- Describe the basic microeconomic concepts
- Apply these concepts to health and health care;
- Explain the financing flows underpinning access to and delivery of health care services.
- State the differences in financing the health care services among countries at different levels of income and development.
- Analyze health care financing options in a variety of countries and settings and making informed recommendations on how to improve health financing.

### **Course Contents:**

The following are the contents of the course:

1. Basic Economic concepts and tools.
  - Definitions: Economics, Macro & Microeconomics, economic systems,
  - Goals of an economic system,
  - Efficiency (technical, allocative)
  - Equity
  - Demand & Supply
  - Price, Market forces, Price equilibrium
  - Types of Goods, Public, Private, Externalities, Opportunity cost

- Production Theory
  - Markets, Competition, perfect, oligopoly, monopoly
2. Health & Economic Development
    - GNP, GDP;
    - Inflation,
    - Health & economic Indicators
  3. Cost Concepts
    - Unit Cost Analysis (Step down approach)
    - Costing for Intervention Package for Health Care
  4. Economic Analysis of Health Sector Projects
    - Cost Benefit,
    - Cost Utility,
    - Cost Effectiveness;
    - Summary Measures for Health
    - Average and Marginal Cost analysis
  5. Health Care Financing
    - Overview of Health Care Financing Concepts in Developing Countries
    - Equity and Financial Fairness/HCF for Poor
    - Economic development and resource allocation: Out of Pocket vs. Government: Development- Non Development; Health Sector Reforms
    - Social Health Insurance
    - Private Health Insurance
    - Community Financing
    - User fees
    - Provider Payment Method
    - Health Insurance Implementation In Pakistan
    - Health Insurance & Islam
    - National Health Accounts
  6. Health and Markets
    - Health and Markets: Application of market concepts to Health
    - Why Health is a Case of Market Failure
    - Government and Health Care
    - Managed Care
  7. Globalization of Health



- The International Health Market: Providers, Purchasers, Pharmaceuticals
- Priority Setting in Developing countries
- International Resource flows: Developing countries & Health

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### 5.3 SUPPLY CHAIN MANAGEMENT

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#### **Learning goals:**

To increase the participants' understanding of the fundamentals of Supply Chain Management and the relationship between supply chain management and commodity security. The course aims to provide students applicable knowledge and skills to improve logistics management within public health interventions and programs.

#### **Learning Outcomes:**

- Describe the concept of commodity security and the role of logistics in assuring commodity security.
- Describe the purpose of a logistics system, list the major activities and actors in logistics management, and describe the relationships among these activities/actors.
- Define the purpose of the logistics management information system (LMIS)
- Identify the basic elements of an LMIS, analyze and make recommendations for improving an LMIS.
- List the basic guidelines for proper storage to ensure health commodity quality and maximum shelf life.
- Calculate storage space requirements in a warehouse
- Conduct a visual inspection and identify steps for proper waste management
- Name elements needed to design and manage a distribution system
- Assess health commodity stock status at a local and national level.
- Determine appropriate order quantities using maximum-minimum inventory control procedures.
- Select appropriate maximum-minimum inventory control systems for a variety of situations.
- Define quantification and describe the steps in the quantification process.
- Describe a variety of methods for preparing a short-term forecast of health commodity needs.
- Identify steps in creating a Monitoring and Evaluation strategy and plan
- Describe logistics system performance indicators, as well as monitoring and evaluation tools that can be used to measure the performance of logistics systems
- Describe the objectives of a procurement system and the four most common public sector procurement methods
- Recognize the steps in the competitive bidding process and where to find resources to conduct such a process
- Execute the key activities for monitoring contract performance and for managing product delivery
- Identify the rules governing public sector procurement in Pakistan and the challenges involved.

- Apply basic logistics principles to the management of a variety of health commodities, including contraceptives, TB and malaria drugs, Essential Drugs, and HIV/AIDS products.

### **Course Contents:**

1. Introduction to the Course
2. Setting the Context of the Course: Commodity Security
3. Introduction to Health Logistics Systems
4. Logistics Management Information System
5. Health Commodity Storage and Distribution
6. Assessing Stock Status
7. Maximum-Minimum Inventory Control Systems
8. Review Game
9. Assessing Stock Status at Any Level
10. Analyzing LMIS Data (Red Flag Exercise)
11. Quantification of Health Commodities
12. Procurement
13. Monitoring and Evaluation of Supply Chains
14. Commodity Security Vignettes and Review of CS

### **Recommended Readings:**

1. *Logistics Handbook: A Practical Guide for the Supply Chain Management of Health Commodities*. Second Edition. USAID | Deliver Project, Task Order 1.
2. *Guidelines for the Storage of Essential Medicines and Other Health Commodities*. 2003. John Snow. Inc. / deliver for the U.S. Agency for the International Development
3. *Quantification of Health Commodities: A Guide to Forecasting and Supply Planning for Procurement*. Arlington, Va.: USAID | Deliver Project Task Order 1.
4. *Guidelines for Warehousing Health Commodities*. Arlington, Va.: John Snow, Inc. / DELIVER, for the U.S. Agency for International Development
5. *Contraceptive Procurement Manual*; Government of Pakistan; Published July 2011
6. PATH 2009. *Procurement Capacity Toolkit. Tools and Resources for Procurement of Reproductive Health Supplies (version 2)*. Seattle: PATH.
7. *The Strategic Pathway to Reproductive Health Commodity Security (SPARCHS) Guidelines & Tool*
8. Diallo, Abdourahmane, Claudia Allers, Yasmin Chandani, Wendy Nicodemus, Colleen McLaughlin, Lea Teclerian, and Ronald Brown. 2008. *Guide for Quantifying Laboratory Supplies*. Arlington, Va.: USAID | Deliver Project, Task Order 1.
9. Pakistan specific SOPs and System Guides (Updated Yearly)
10. Commodity Security Assessment Reports (Yearly)
11. Creese A, Parker D (eds.). *Cost analysis in primary health care: a training manual for programme managers*. Geneva: World Health Organization in collaboration with the United Nations Children's Fund and the Aga Khan Foundation; 1994.
12. Donaldson C, Gerard K. *Economics of health care financing: the visible hand*, 2<sup>nd</sup> edition. Basingstoke, UK: Palgrave Macmillan; 2004.
13. Drummond M, McGuire A. *Economic evaluation in health care: merging theory with practice*. New York, NY: Oxford University Press; 2001.
14. Drummond MF, O'Brien B, Stoddart GL, Torrance GW. *Methods for the economic evaluation of health care programmes*, 2<sup>nd</sup> edition. Oxford: Oxford University Press; 1997.
15. Feldstein PJ. *Health care economics*. New York, NY: John Wiley & Sons, Inc; 1979.

16. Gold MR, Siegel JE, Russel LB, Weinstein MC (eds.). Cost effectiveness in health and medicine. New York, NY: Oxford University Press; 1996.
17. Government of Pakistan. Economic survey of Pakistan 2005-2006. Islamabad, Pakistan: Government of Pakistan, Finance Division; 2006. Available from: URL: <http://www.finance.gov.pk/survey/home.htm>

# PROPOSAL AND DISSERTATION

## PROPOSAL FORMAT

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The proposal submitted for a thesis should follow the outline listed below. The outline corresponds to the major chapters expected in a proposal. Deviations from the content in this outline should be discussed and approved by the advisor (and committee in advance of submitting the proposal for the defense).

- i. Introduction**
  - Establish importance of topic
  - Conceptual model/relationship of independent and dependent variables
  - Summary of what is/is not known
  - What gap the study is filling
  - Statement of research purpose(s)
- ii. Significance/Importance of the study**
- iii. Aims and Objectives/Hypotheses or research questions including operational definitions**
- iv. Material and Methods**
  - Study design
  - Duration of study
  - Study population
    - Sampling methods
    - Sample size/power
    - Sample recruitment: Inclusion and Exclusion criteria
  - Data Collection Procedure: Identify the recruitment of the population to the collection of
    - Variables
    - Measurements
      - i. instruments (include copies of relevant instruments (surveys, etc) as appendices)
      - ii. standards
      - iii. reliability
      - iv. validity
  - Data analysis plan (including software to be used and tables if applicable)
  - Human Subject Protection\*
    - Informed Consent Procedures
    - Confidentiality
    - Risks
    - Benefits
    - Permission to access data (if applicable)
    - Should also attach an approval by the IRB.
- v. References listing**
  - Reference listing is to be done at the end of the proposal. (The references should consist of at least 6 references from not older than last 5 year; preferably from the published articles and only occasionally from the books).
- vi. Timeline**
  - A timeline should be attached as an annexure.

**vii. Proposed budget**

- A proposed budget should be given at the end of the proposal

## **DISSERTATION FORMAT**

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**Part I:**

Consisting of:

1. **Title page** with the name of the student and the programme they are working under, i.e. name and MSPH with year.
2. **Declaration** duly signed by the Advisors/Supervisors

3. **Abstract**
  - a. A structured summary should be the first part of the dissertation write up.
4. Introduction, objectives, material and methods, brief results and conclusions.
5. **Key words:** 3-5 words best describing the study.
6. **Acknowledgements**
7. **Table of Contents**
8. **List of Tables/Figures with page numbers**
9. **List of Abbreviations used All pages are to be given Roman numerals before the summary**

## **Part II**

1. Chapter 1 Introduction
2. Chapter 2 Literature review
3. Chapter 3 Materials and Methods
4. Chapter 4 Results
5. Chapter 5 Discussion
6. References
7. Appendix

### **Chapter 1 & 2 INTRODUCTION and Literature review**

It shall cover:

- a) Establish importance of topic
- b) Conceptual model/relationship of independent and dependent variables
- c) Summary of what is/is not known
- d) What gap the study is filling
- e) Statement of research purpose(s)

#### **1.1 Literature Review**

It shall cover:

- a) General overview
- b) Theoretical models/conceptual frameworks
- c) Relationships among variables
- d) Other relevant literature

*1.2 Aims and Objectives (or research questions)*

### **Chapter 3 Materials and Methods**

*2.1 Study design*

*2.2 Duration of study*

*2.3 Conceptual models/conceptual frameworks*

*2.4 Study population*

*2.5 Sampling techniques*

- a) Sample size/power
- b) Sample recruitment: Inclusion and Exclusion criteria

### *2.6 Data Collection Procedure\**

- a) Identify the recruitment of the population to the collection of:
  - i. Variables: how measured
  - ii. Measurements: how performed?
  - iii. instruments\*: questionnaires etc.
  - iv. reliability
  - v. validity

\*include copies of relevant instruments (surveys, etc) as appendices.

### *2.7 Data analysis plan*

- a) How was the data analyzed? Procedures for statistical application and statistical software/s used should be outlined in sufficient details

### *2.8 Ethical Considerations*

- f) Consent form must be attached as an Annexure. Ethical clearance should be attached
- g) from the IRB. Informed Consent Procedures: Consent Form.

## **Chapter 4 Results**

This chapter includes presentation of results as tables, figures etc. based on the statistical applications and not as computer outputs. The results should be described in adequate details indicating the major findings. The results should be in line with the objectives of the study. The results should be on separate pages; one table/figure on one page. Same tables cannot be replicated as figures.

## **Chapter 5 Discussion**

In this chapter a detailed discussion of the results and comparisons with other study reaching to recommendation and conclusion in accordance will be made.

### *4.1 Recommendation*

- a) Policy makers, researcher and service providers.

### *4.1 Conclusions*

- a) The conclusions should be in line with the objectives and the results.

## **References**

The reference list consists of published articles not older than 5 years unless required for the work. References from books are not the preferred method. The number of references should not be less than 30 and not more than 50. Author-Date style is the recommended method of referencing. The pages should be numbered from (Introduction to References) in Arabic numerals.

## **APPENDIX**

Type or paste your appendices here. Appendices are a place to organize and include all of the “extra” material that is important to your research work but that is too detailed for the main text. Examples can include: specific analytical methods, computer code, spreadsheets of data, details of statistical analyses, etc. But, these materials do not speak for themselves. There should be a reference to these materials from the main chapters and there should be some text at the beginning of each appendix to briefly explain what the information is and means that is included in that appendix.