

Department of Epidemiology & Population Health

PBHL 310
Research Methods in Public Health
[3 credits]

Course Syllabus
Fall Semester, Academic Year 2023-2024

Class time and Venue:

Lectures: Thursdays, 3:30 to 5:10 pm in the *Auditorium*

Practical sessions: One practical session of 2 hours each

Group A: Friday, 12:00 – 14:00 (Mumtaz/Kabakian) – B-1 (Room 203)

Group B: Monday, 10:00 - 12:00 (Mumtaz/Kabakian) – B-2 (Room 203)

Group C: Monday, 18:00 – 20:00 (DeJong/Kabakian) – B-3 (Room 203)

Note that each student needs to attend one practical sessions for which they registered; these address subject matter from the Thursday lecture sessions.

Course Instructors and Contact Details:

Dr. Jocelyn DeJong

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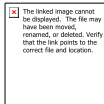
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Course Description:

This course addresses the principles of research design and the methods used in both quantitative and qualitative public health research. The course encourages students to think critically about public health evidence and how it is derived. Topics include the following: the distinct but complementary roles of quantitative and qualitative research approaches; synthesizing published literature to identify a research gap; formulating research questions; choosing appropriate methods of quantitative data collection for public health; the process of qualitative data collection and qualitative analysis using software; and ethical issues in public health research. Practical and conceptual issues are both discussed. This course is a core requirement of the MPH, the MS in Epidemiology and the MS in Environmental Studies (Environmental Health). {There is a complementary and linked workshop on literature review described below that all PBHL 310 students also need to take as noted below}.

Class participation



Engage, by participating in the discussions, asking questions, and contributing actively to classroom activities



Avoid distractions while attending a session, by silencing your phones and living them out of sight, not checking your emails, closing open browsers. It is a matter of respect for the instructor and for other colleagues who want to follow the session.

Course learning Objectives

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

- LO1.** Explain the distinct but complementary roles of quantitative and qualitative research approaches to investigate public health issues;
- LO2.** Demonstrate effective teamwork in choosing appropriate methods of public health research;
- LO3.** Synthesize the published literature using a variety of sources in order to identify a research gap;
- LO4.** Formulate a research question pertaining to public health based on the identified research gap;
- LO5.** Identify appropriate research methods for the public health research question of interest (including design, sampling and data collection);
- LO6.** Develop tools to collect data using quantitative and qualitative methods;
- LO7.** Analyze qualitative data using software as appropriate;
- LO8.** Discuss ethical principles relevant to the collection, maintenance, use and dissemination of public health data and information.

FLO3. Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population’s health

FLO6. Explain the critical importance of evidence in advancing public health knowledge

CC2. Select quantitative and qualitative data collection methods using biostatistics, informatics, computer-based programming and software, as appropriate

CC3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate

Essential Skills

- **Essential Skill 1:**
- **Essential Skill 2:**

Link to [PHEO Faculty Portal](#)

Course Learning Objectives mapped to CEPH competencies/Foundational Learning Outcomes

Table 1. Mapping of course LO to CEPH competencies

	L01	L02	L03	L04	L05	L06	L07	L08
CC2. Select quantitative and qualitative data collection methods using biostatistics, informatics, computer-based programming and software, as appropriate					X	X		
CC3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate							X	
FLO3. Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population’s health	X			X				
FLO6. Explain the critical importance of evidence in advancing public health knowledge			X	X				

Assigned Text Book and Readings (if applicable)

Required: Bryman, A. (preferably the updated 2021 edition but can also use 2016 edition) *Social Research Methods* Oxford: Oxford Univ. Press, 5th edition. Copies of this book are available in the AUB bookstore and should be obtained by all students. A copy of the book will be kept with the EPH Department (with Ms. Asma Shehab) . This is a very useful reference book to have for your research projects in the future. It has a set of online resources for students and study guide questions. [Note that the textbook is on social research not public health specifically but uses many health examples]

Optional: Bowling A. *Research Methods in Health: investigating health and health services*. 4th edition. Open University Press, Maidenhead, Philadelphia, 2014. Available at AUB Bookstore and in the EPH Department; it is optional to purchase for the course (but is a useful text to have).

Additional readings/resources will be made available on Moodle.

Additional Suggested Instructions:

The course will also use an assortment of educational resources including: publications, reports, white papers, videos and case studies. All course readings, except for book chapters, will be posted on Moodle according to the weekly topic and reading schedule. It is the responsibility of students to access the Moodle and download/ print the course readings as per the weekly schedule.

Course requirements and Student evaluation:

Pre-requisites: There are no pre-requisites for this course.

Attendance:

We encourage attendance at all synchronous sessions. Students are asked to read the assigned readings *prior* to the class sessions to maximize learning from class discussions. You need to be ready and attend classes **on time**; if you cannot attend a class, you should notify the instructor beforehand. If you miss more than one-fifth of the online sessions of any course in the first ten weeks of the semester you may be dropped from the course.

Student Evaluation:

There will be 6 graded assignments during the semester. Assignments are a combination of individual and group assignments. For the latter, students will work in assigned groups of 3 students selected by the instructors on a random basis but within departments. The assignments will require that you think critically about what kind of evidence is needed to address the public health problem chosen. You will also receive feedback during the practical sessions.

Required Online Ethics Course:

Being a graduate student at AUB, you will need to complete two online ethics courses on human subject research/responsible conduct of research and this is a requirement of this course. **Please complete both courses. You will be asked to submit your completion certificate via Moodle.**

If you DO NOT have a CITI account, please follow all the instructions below:

1. Go to the following site: www.citiprogram.org
2. Create a CITI account: Click on the “Register” button. Please be sure to
 - Choose American University of Beirut for your Organization Affiliation
 - Use your AUBnet email address so that you can be identified as having completed the course
 - Answer “NO” to receiving CEU credits
3. On the main menu, under American University of Beirut Courses, click on “Add a course”:
4. On the next page, answer the questions as follows:

- For **Question 1** choose the following option: **Students conducting no more than minimal risk research;**
 - Leave **Question 2** blank/unchecked;
 - For **Question 3** choose the following course: **Social and Behavioral Responsible Conduct of Research;**
- 5. As a result of the previous step, you will be assigned two courses:** (1) the RCR course you chose in Question 3 and (2) a course titled “Students - Class projects”.

Table-2 Summary of students' assessments mapped to course learning objectives

	Learning Objectives							
	LO1	LO2	LO3	LO4	LO5	LO6	LO7	LO8
Assignment #1: Individual Assignment	X		X	X				
Assignment #2: Group assignment on methods and ethical implications		X			X			X
Assignment #3: Group assignment on quantitative draft questionnaire						X		
Assignment #4: Group assignment on methods & qualitative topic guide	X				X	X		
Assignment #5: Individual assignment on qualitative data analysis							X	

Table -3 Description of Assessment methods, Due Dates and Corresponding Learning Objectives

Assessment method	Date (tentative)	Grade percentage
<i>Assignment #1: Individual Assignment</i>	<i>September 24, 2023 by midnight</i>	25%

Assessment method	Date (tentative)	Grade percentage
<p>Individual assignment on Research Problem: *You will work in your assigned groups to select a topic that you are all interested in. As described in the assignment guidelines, for your first assignment each of you independently will write a problem statement for the chosen topic (supported by a synthesis of the literature review) and why more evidence is needed on this particular issue. You will then write a research question on this topic that is amenable to a quantitative research approach and another one that is amenable to a qualitative research approach. You should justify the choice of approach, why further evidence is needed and provide the significance of the research for public health. The separate workshop on using electronic data-bases and literature search on September 17 and 24 will help you in preparing this assignment. Please make sure to take your topic to that workshop. Guidelines and rubric will be provided on Moodle.</p>		
Assignment #2: Group assignment on methods and ethical implications	<i>October 18, 2023 by midnight</i>	30%
<p>Taking the feedback, you individually received on your first assignment, the group should agree on a quantitative research question on the topic they chose and based on the work they did for Assignment 1. For Assignment 2, you will work together to develop the methods for a research project corresponding with the quantitative research question. This must be a project that is feasible for students to conduct and that involves human subject research. In your assignment you will need to describe and justify the research design, the study population/sampling strategy and the concepts/indicators, as well as discuss the ethical considerations in your research. Each individual will need to write a statement on their individual contribution to the collective work as will be explained in class.</p>		
Assignment #3 : Group assignment on quantitative draft questionnaire	<i>October 28, 2023</i>	5%
<p>You will develop the questionnaire corresponding to the concepts/indicators you specified in Assignment 2.</p>		
Assignment #4: Group assignment on methods & qualitative topic guide	<i>November 13</i>	25%
<p>Using the qualitative research question developed in assignment 1 (revising it as needed through discussion among the group), you will work together as a group to expand on the qualitative methods including design, sampling, data collection tools, ethical considerations and development of a qualitative topic guide. Each student will need to write a statement on their individual contribution to group work.</p>		
Assignment #5: Individual assignment on qualitative data analysis	<i>November 20 & 27</i>	15%
<p>Using Dedoose software based on data provided by the instructor, this will be an assessed analysis performed in the computer lab. Guidelines will be provided on Moodle and discussed in class.</p>		

*For the first assignment, all students will need to work in groups to select a public health topic to work on but you will write up the assignment independently as individuals. Remember that this is writing about proposed research and you would not actually do the research. Note that you do not necessarily need to focus on Lebanon – you could choose to focus on another country of the Arab or wider Eastern Mediterranean region.

The conditions for the choice of topic are that it:

- a) involves primary research collection from human subjects; and
- b) could be implemented by a group of students at FHS/AUB and
- c) is amenable to both quantitative and qualitative research approaches.

Other than that, the choice is yours. Some **examples of topics** that groups have chosen from previous years are the following:

- *Physical activity among junior high school students in urban areas in Lebanon (or the region);*
- *Oral health among 6-11 years old children in Beirut;*
- *HIV testing for displaced people in Sudan;*
- *Social determinants of Dengue Fever in Sudan*
- *Social support and perceived stress among adults aged 65 years and above living in rural areas in Lebanon (or the region);*
- *Compliance with hypertension medication within a specific population;*
- *Nutritional status among elderly nursing home residents;*
- *Reproductive health care needs of foreign domestic workers in Lebanon;*
- *Quality of care of primary care facilities in rural areas;*
- *Satisfaction with the quality of delivery care in delivery wards of hospitals in Khartoum;*
- *Male attitudes towards female genital mutilation in Sudan;*
- *Caffeine consumption among pregnant women;*
- *Public attitudes towards the new tobacco law in Lebanon;*
- *Behavioral risk factors among health professionals;*
- *Compliance with patient safety regulations in hospitals in Lebanon;*
- *Attitudes about organ donation in Lebanon*
- *Reproductive health needs of Syrian refugees in Lebanon*

A Note on Working in Groups: As a multidisciplinary field, public health research is often conducted in groups, and the combination of different perspectives and often disciplines enriches the outcome. A vital component of this course is learning to divide the work fairly among your group, being accountable to one another for commitments made in terms of the work individuals will do, and having shared ownership over the quality of the final product. We will ask you to submit in indicated assignments about each individual's contributions to the final work. We recommend that any problems in group collaboration be addressed promptly and where necessary raised with the course instructors.

Note on Rubrics: Guidelines and rubrics for each assignment will be posted on Moodle

Policies and other General Notes:

Moodle

Your lecture handouts, announcements and feedback on assignments will be posted in MOODLE, an on-line learning environment supported by AUB to which faculty and students registered on this course will have access. You can submit and instructors will provide feedback on your assignments via Moodle. We will be creating "fora" in Moodle for groups of students to work together. You will not receive messages via Moodle until you have signed into the course on Moodle, so please do that as soon as possible. Please also post your picture on your profile so instructors and students can identify you.

All assignments must be turned in on Moodle by the due date; if you do not make the deadline you will not be able to post it on Moodle and you will need to email the instructor. There will be a 5% penalty for late submissions. If your assignment is late, you will not be able to submit it on Moodle and therefore you will need to email it to your instructor with an explanation of the late submission.

Complementary Compulsory Workshops

As a complement to and to reinforce skills learned in PBHL 310, FHS also offers two introducing compulsory workshops linked to this course. The first is required for all students taking PBHL 310 - **PBHL 306A: Library and Literature Search Skills** (0 Credits) offered in the Fall semester between **September 18 and September 22**. Offered in parallel with PBHL 310, you will learn in the workshop

how to do a literature review and synthesis. It is VERY IMPORTANT that you use your topic for your first assignment in PBHL 310 for this workshop. The coordinator of the workshop is Dr. J Makhoul so kindly contact her on email jm04@aub.edu.lb if you have questions.

The second **PBHL 306 B: Proposal writing for Public Health Research and Practice** will take place during the winter session (date to be confirmed) and is a workshop on research proposal writing. These workshops are required for students on the MPH but carry zero credit.

Academic integrity:

Education is demanding and you need to properly manage your time. Do not hesitate to use the resources around you but do not cut corners. Cheating and plagiarism will not be tolerated. Review the Student Code of Conduct and familiarize yourself with definitions and penalties. Cheating might earn you a failing mark on the assignment, at the very least. You might fail the course in which you cheated, be warned, suspended or expelled from University and a permanent mention of the disciplinary action might be made in your student records. If you're in doubt about what constitutes plagiarism, ask your instructor because it is *your* responsibility to know. Remember that the American University of Beirut has a strict anti-cheating and anti-plagiarism policy. Do not become a lesson to others. For further information, kindly visit AUB's Policies and Procedures or <http://pnp.aub.edu.lb/general/conductcode>.

Students with Disabilities:

If you have a disability, for which you may request accommodation in AUB classes, consult the website for more information and make arrangements with the Coordinator (http://www.aub.edu.lb/sao/Pages/Students_20with_20Special_20Needs.aspx). Also, please see the instructor of this course privately in regard to possible support services that can be provided to you.

Non-Discrimination- Title IX- AUB

AUB is committed to facilitating a campus free of all forms of discrimination including sex/gender-based harassment prohibited by Title IX. The University's non-discrimination policy applies to, and protects, all students, faculty, and staff. If you think you have experienced discrimination or harassment, including sexual misconduct, we encourage you to tell someone promptly. If you speak to a faculty or staff member about an issue such as harassment, sexual violence, or discrimination, the information will be kept as private as possible, however, faculty and designated staff are required to bring it to the attention of the University's Title IX Coordinator. Faculty can refer you to fully confidential resources, and you can find information and contacts at www.aub.edu.lb/titleix. To report an incident, contact the University's Title IX Coordinator Trudi Hodges at 01-350000 ext. 2514, or titleix@aub.edu.lb. An anonymous report may be submitted online via EthicsPoint at www.aub.ethicspoint.com.

Accessible Education Office (AEO):

The Accessible Education Office (AEO) coordinates academic accommodations and services for all eligible AUB students with disabilities (such as ADHD, learning difficulties, mental health conditions, chronic or temporary medical conditions, and others). If you have a disability for which you wish to request accommodations at the department, faculty or university level, please contact AEO as soon as possible. Once you register with our office, we will assist you in receiving appropriate accommodations and will liaise with your instructors and any related entity to best support your needs. AEO is located in West Hall room 314, and can be reached by phone at 1-350000 ext. 3246 or by email: accessibility@aub.edu.lb. Information about our services can be found at: <https://www.aub.edu.lb/SAO/Pages/Accessible-Education.aspx>



Writing:

Written communication is essential for communication, health education and behavioral science. You are expected to proofread and spell-check any written



documents before submission. Points will be deducted from the grades for low quality writings. You are encouraged to contact AUB's Writing Center, located in Ada Dodge Hall, 2nd floor or West Hall, 3rd floor. Appointments can be booked online: aub.mywconline.com, over the phone (Ext. 4077) or by walking in. We strongly advise that you take advantage of their services. One way to do that is to take a draft of your first assignment and discuss it with them. Please do so well in advance of any deadline.

Public Health Education Office

Please refer to the Public Health Education Office Student Portal

Detailed course outline:

Schedule of Lectures, Practical Sessions, Readings and Assessments

Week	Dates of Lecture/ Practical Sessions	Topic	Readings	Relevant Assignment (Where your learning on this will be assessed)
1	Lecture: Thursday August 31 (J. DeJong) Practical sessions (in separate groups): A. Friday, September 1, 12 to 2 pm B. Monday, September 4, 10 – 12 noon C. Monday, September 4, 6:00 – 8:00 pm	Introduction to the course and the role of evidence in public health Approach and expectations of course Critical role of evidence Evidence in context How research is used Types of public health research	<i>Required reading:</i> Bryman Chapter 1	Assgt 1
2	Lecture: Thursday Sept. 7 (J. DeJong) Practical Sessions: A. Sept 8 B. Sept 11 C. Sept 11	Principles of Research and Research Strategies Research paradigms: considerations for research strategy (epistemological and ontological considerations) Differences between quantitative and qualitative research approaches	<i>Required Reading:</i> Bryman, Chap 2 [Note that Chapter 2 is a bit difficult so don't worry if you don't understand it all] Baum, "Researching Public Health:	Assgts 1 and 2

Week	Dates of Lecture/ Practical Sessions	Topic	Readings	Relevant Assignment (Where your learning on this will be assessed)
			Behind the Qualitative-Quantitative Methodological Debate” (posted on Moodle) Optional: Bowling Chapter 6	
3	Lecture: September 14 (J. DeJong) Practical Sessions: A - Sept 15 B - Sept 18 C - Sept 18	Key concepts in research Quantitative approaches: validity, reliability, sampling, measurement; associations; causality. Qualitative approaches: rigor; validity; interpretation of phenomena and realities	<i>Required reading:</i> Quant: Bryman Chap 7 Qual: Bryman Chap 17	Assgts 1, 2 and 5
4	Lecture: September 21 (J. DeJong) Practical Sessions: A – Sept 22 B - Sept 25 C - Sept 25	Public health research ethics History of public health ethics What is human research subject research? Ethical principles in public health research Preparing IRB applications	<i>Required reading:</i> Bryman Chapter 6 Please also read article by Callahan and Jennings (posted on Moodle) “Ethics and Public Health”	Assgt 2
5	Lecture: September 28 (J. DeJong) Practical Sessions: A –Sept. 29 B - Oct 2 C - Oct 2	Quantitative research designs Introduction to main research designs used in public health research (cross-sectional; longitudinal; experimental etc) and their strengths/weaknesses	<i>Required reading:</i> Bryman Chapter 3 Please also read article by Mann posted on Moodle “Observational	Assgts 2, 3 (Note Assignment 1 is due on September 30 and you should use that topic in the Workshop

Week	Dates of Lecture/ Practical Sessions	Topic	Readings	Relevant Assignment (Where your learning on this will be assessed)
			research methods”	on 17 th and 24 th)
<u>6</u>	Lecture: Oct 5 (Dr. Monique Chaaya) Practical Sessions: A- Oct 6 B- Oct 9 C -Oct 9	Quantitative methods – population sampling Review of main concepts and types of sampling including the difference between probability and non-probability sampling and main considerations in determining sample size	Bryman Chap. 8	Assgt 2
<u>7</u>	Lecture: Oct 12 (Dr. Jocelyn DeJong) Practical Sessions: A- Oct 13 B- Oct 16 C- Oct 16	Quantitative data collection approaches Summary of main approaches to collecting quantitative data (structured interview; types of questions; drafting questionnaires)	<i>Required Reading:</i> Bryman, Chap 9, 10 and 11 [you don’t need to read these in detail but do familiarize yourself with the different types of data collection] <i>Optional:</i> Bowling Chapter 13	Assgts 2 and 3 (Note Assignment 2 is due on October 22 and Assignment 3 on October 29)
	Lecture: Oct 19 (Dr. Kabakian) Practical Sessions: A- Oct 20 B- Oct 23 C- Oct 23	Qualitative methods – Design, sampling Different designs and sampling approaches in qualitative research.	<i>Required Reading:</i> Bryman, Chap 18	Assgt 4

Week	Dates of Lecture/ Practical Sessions	Topic	Readings	Relevant Assignment (Where your learning on this will be assessed)
	Lecture: Oct 26 (Dr. Kabakian) Practical Sessions: A- Oct 27 B- Oct 30 C- Oct 30	Qualitative methods – data collection Overview of data collection methods. Observations.	<i>Required Reading:</i> Bryman, Chap 19	Assgt 4
	Lecture: Nov 2 (Dr. Kabakian) Practical Sessions: A- Nov 3 B- Nov 6 C- Nov 6	Qualitative methods – interviewing in qualitative research Designing and conducting qualitative individual and group interviews	<i>Required Reading:</i> Bryman, Chap 20 & 21	Assgt 4
	Lecture: Nov 9 (Dr. Kabakian) Practical Sessions: A- Nov 10 B- Nov 13 C- Nov 13	Qualitative methods – Data analysis Steps of data analysis, coding, thematic analysis	<i>Required Reading:</i> Bryman, Chap 24	Assgt 5
	Lecture: Nov 16 (Dr. Kabakian) Practical Sessions: A- Nov 17 B- Nov 20 C- Nov 20	Qualitative data analysis Demonstration of Dedoose Qualitative Software/ exercise Coding and data management using Dedoose	<i>Required Reading:</i> Bryman, Chap 25	Assgt 5
	NO LECTURE on Nov 23. Graded assessment during practical sessions: A - Nov 24 B - Nov 27 C - Nov 27	Graded Assessment on Qualitative Data Analysis Using Dedoose to take place in the practical sessions (No lecture this week)		Assgt 5
	Nov 30	Review and summary of course		

Appendix I. Reinforced – Introduced CEPH competencies

Introduced competencies: the competency is introduced at a basic level. Instruction and learning activities focus on basic knowledge, skills and entry-level complexity. The competency is **not assessed**

Reinforced competency: The competency is reinforced with feedback; students demonstrate the outcome at an increasing level of proficiency (above the introductory stage). Instruction and learning activities concentrate on enhancing and strengthening existing knowledge and skills, as well as expanding complexity. The competency is **not assessed**

Core Competencies	Introduced	Reinforced
CC1. Apply epidemiological methods to the breadth of settings and situations in public health practice		
CC2. Select quantitative and qualitative data collection methods appropriate for a given public health context		X
CC3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate		
CC4. Interpret results of data analysis for public health research, policy or practice		
CC5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings		
CC6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels		
CC7. Assess population needs, assets and capacities that affect communities' health		
CC8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs		
CC9. Design a population-based policy, program, project or intervention		
CC10. Explain basic principles and tools of budget and resource management		
CC11. Select methods to evaluate public health program	X	
CC12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence		
CC13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes		
CC14. Advocate for political, social or economic policies and programs that will improve health in diverse populations		
CC15. Evaluate policies for their impact on public health and health equity		
CC16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making		
CC17. Apply negotiation and mediation skills to address organizational or community challenges		
CC18. Select communication strategies for different audiences and sector		
CC19. Communicate audience-appropriate public health content, both in writing and through oral presentation		

CC20. Describe the importance of cultural competence in communicating public health content		
CC21. Integrate perspectives from other sectors and/or professions to promote and advance population health		
CC22. Apply systems thinking tools to a public health issue		

HPCH competencies	Introduced	Reinforced
HPCHCC1. Demonstrate a critical understanding of multidisciplinary theories/frameworks utilized in health promotion research and practice		
HPCHCC2. Employ theoretical knowledge and methodological skills in health promotion program planning, implementation, monitoring, and evaluation		
HPCHCC3. Conduct rigorous quantitative and qualitative research for health promotion	X	
HPCHCC4. Use participatory approaches in community health programs and research		
HPCHCC5. Promote social justice and equity in health promotion research, practice, and policy		

HMPD competencies	Introduced	Reinforced
HMPCC1: Assess how the structure, organization, delivery, and financing of health care systems affect system performance in terms of efficiency, quality, equity, and effectiveness		
HMPCC2: Apply systems thinking approaches to improve healthcare organizations' performance and responsiveness		
HMPCC3: Apply quality tools and concepts to evaluate and improve performance in health care organizations		
HMPCC4: Apply the principles of planning, budgeting, management and evaluation in healthcare related programs and projects		
HMPCC5: Analyze relevant financial data for efficient management of healthcare programs and organizations		
HMPCC6: Utilize health information systems and data analytics to support evidence-based decision making at the organizational and system levels		
HMPCC7: Apply public policy principles, frameworks and tools to understand health problems and priorities		
HMPCC8: Evaluate policy options to address health challenges including economic, legal and political implications		
HMPCC9: Utilize knowledge translation strategies and tools to communicate effectively and influence health policy and system decision making		

EPHD competencies	Introduced	Reinforced
EBCC1: Discuss the extent, distribution and determinants of common and emerging communicable and non-communicable diseases, and mental health disorders of local, regional and global importance		
EBCC2: Discuss prevention and control strategies/programs for common and emerging communicable and non-communicable diseases and mental health disorders		

EBCC3: Design epidemiological studies to investigate public health research questions	X	
EBCC4: Demonstrate ability to write software codes in order to manage and analyze health data through the use of multiple statistical software		
EBCC5: Apply inferential statistics and advanced statistical approaches such as regression modelling to analyze complex health related data		
EBCC6: Interpret and communicate statistical findings in oral and written format		
EBCC7: Review, synthesize and communicate published epidemiological findings in oral and written format	X	
EBCC8: Appraise the quality of epidemiological evidence by evaluating studies for bias and other sources of systematic errors		
EBCC9: Analyze Health related data using advanced statistical techniques and software packages		