GLHLTH 641K
Non-Communicable Diseases in Low- and Middle-Income Countries: Trends, Causes, and Prevention Strategies

Dates / contact hours: Seven-week session, 300 minutes per week contact time
Academic Credit: 3-credit course
Tags for the Duke Undergraduate System:
   Areas of Knowledge: Recommended NS, SS (Natural Sciences, Social Sciences)
   Modes of Inquiry: Recommended STS (science technology)
This course is designed for the Master of Science in Global Health (DKU) program but is also open to advanced undergraduate students.

Instructor’s Information and Office Hour

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Office hours (by appointments): Wednesday 8-9am and 5-7pm
Office: Room 1057 in the Conference Center

Prerequisite(s), if applicable

None.

Course Description

Global health attention has historically been focused on acute and infectious diseases. With economic development and shifts in population, environments, and lifestyles, infections and diseases of under-nutrition no longer account for most of the disease burden in high-income countries. The same patterns are starting to emerge in many low- and middle-income countries (LMICs), at a much faster rate, however, than ever seen before in history. This course provides a global overview of the recent trends in non-communicable disease (NCD) epidemiology and strategies for prevention and control of these diseases with a particular emphasis on China and comparisons between China and other countries.

The course focuses on four major NCD categories: cardiovascular, diabetic, oncologic, and pulmonary diseases. Case studies are used to highlight selected geographic differences. Regional differences
within China will be considered, in addition to the comparison of China to other countries. By using lectures, videos, assigned readings, and classroom discussions as well as various assignments, the course aims to provide the students with a firm understanding of the shifting disease burden, stakeholders, and interventions to address NCDs in LMICs.

Course Goals / Objectives

At the end of the course, each student will be able to:

1. Define and articulate the concept of NCDs in the context of global public health.
2. Compare and contrast trends among regions of China as well as between China and other countries.
3. Describe recent trends in NCD epidemiology with special attention to differences between high-income and LMICs.
4. Analyze and articulate the upstream determinants and burden of NCDs in economic, social, environmental, and political terms.
5. Identify key risk factors for NCDs and main stakeholders in NCD prevention and management, and review various strategies to address NCDs by these stakeholders.
6. Apply the above objectives to the case of cardiovascular, diabetic, oncologic, and pulmonary diseases.

In this course – an adventurous journey we embark on together, I hope that we (re)-discover the real, large, and rising threat of NCDs to personal, national, and global health; (re)-ignite the passion to do something about it; and to cultivate learning, critical thinking, creative skills that will enable us to do so.

Required Text(s)/Resources

No required textbook. Required readings (mostly in electronic formats) will provided by the instructor or available through Duke on-line library resources and the course Sakai site.

Recommended Text(s)/Resources


A limited number of relevant books will be available in the DKU library. The library website also contains a course page for online resources.

Students will be encouraged to take advantage of the DKU Writing Studio and/or the Duke Writing Studio (http://twp.duke.edu/writing-studio/resources).
Course Requirements / Key Assignments

Grading for this course is based on four requirements with differentiation for undergraduate and graduate students when appropriate: Student Evaluations will be based:

1. Attendance and Participation (25%, including 5% for a presentation on the field trip)
2. Student teaching (presentation) (10%)
3. Academic debate (25%, 10% group rating, 5% individual rating, 10% individual paper)
4. Manuscript Development Participation (40%, 10% literature search and review, 20% writing, 10% presentation on literature and interviews)

Attendance and Participation (25%): Students will be expected to participate in class discussions. This participation may be in the form of question and answers, open discussions, role-playing, mock debates, or sharing of class summaries or opinions. Students should come to class having read the assigned materials so that they are well prepared to participate. Particular attention will be paid to any difficulties the EFL students may have with oral communication in English or with the US-style of classroom discussions. The instructor will also communicate with the DKU professors who will be teaching the writing and oral communications classes and helping students through the DKU Writing Studio. The instructor will clearly explain the expectations for classroom engagement during the first class meeting and will provide feedback to the students on subsequent class meetings. The students have the opportunity to go on two field trips (co-organized with other courses) with one field trip being required. Grading for this part will be based on attendance (10%) and participation (rating based on level of engagement and relevance of comments, 10%) and a field trip presentation (5%).

Student teaching (presentation) (10%): Each student will choose or be assigned a session in the syllabus to present the main content of one key required reading to the whole class as a basis for further discussion. The presentation will be 10 minutes long. Graduate students are expected to include other relevant materials in this presentation beyond the one reading and can make the presentation up to 15 minutes long. Each presentation will be graded using the following five categories:

- **Organization** (15%) – Assessment of physical organization (Does the presentation flow? Is it coordinated, matched with visual aids? Does it keep on time?)
- **Content** (40%) – Assessment of whether contents are relevant and scientifically presented? Does it pose meaningful questions on population health improvements?
- **Clarity** (15%) – Assessment of whether the presentation is understandable with appropriate language?
- **Use of audio visual materials** (10%) – Assessment of suitability of the audiovisual media used; are visual aids addressed, used well?
- **Overall quality of the presentation** (20%) – It would look for good language, eye contact, style, structure, use of tone and volume, impact of the message and overall standard of the presentation.
**Academic Debates (25%)**: Students will form two groups with each group divided into the affirmative vs. the negative party. Each group will choose or be assigned a controversial topic related to NCD prevention and control. Each party in the group will prepare for the debate ahead of time and engage in an hour-long Lincoln-Douglas style debate later in the course (to be explained during the first session). Each student will speak between 5-15 minutes in each debate. Each party will receive a group rating (10 points) and an individual rating (5 points). In addition, each student will turn in a short paper (<500 words) on their proposition before the debate (up to 10 points). The two resolutions are:

- Universal sodium reduction is a beneficial global health policy.
- Polypill is useful for primary prevention of cardiovascular diseases.

**Manuscript Development Participation (40%)**: The course will produce a manuscript to be submitted by the end of the semester. Participation in the development of the manuscript will be graded based upon: 1) eagerness to participate 2) finishing assigned portion of work by the deadlines 3) quality of work performed 4) ability to work as a team. The portions of the manuscript will be split into four different parts on the first day of class and we will come up with a manuscript idea and methodology as a group. The instructor will discuss methods and tips for writing the manuscript throughout the course. After the class, the manuscript will be submitted with all class members as authors and Dr. Yan as the corresponding author. Students will also conduct interviews and make a presentation on their section and interviews.

**Technology Considerations, if applicable**

Students should have laptop computers. Students will need internet access for library resources and for the course Sakai site.

**Assessment Information / Grading Procedures**

The grading scale for the course is as follows:

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<th>Grade</th>
<th>Percentage Range</th>
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<tr>
<td>A+</td>
<td>98-100</td>
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<tr>
<td>A</td>
<td>93-97</td>
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<tr>
<td>A-</td>
<td>90-92</td>
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<tr>
<td>B+</td>
<td>87-89</td>
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<td>B</td>
<td>83-86</td>
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<tr>
<td>B-</td>
<td>80-82</td>
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<tr>
<td>C+</td>
<td>77-79</td>
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<td>C</td>
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<tr>
<td>C-</td>
<td>70-72</td>
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<tr>
<td>D+</td>
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Diversity and Intercultural Learning (see Principles of DKU Liberal Arts Education)

Readings and cases will be drawn from thinkers and situations spanning the globe. Attention in readings and class time will be devoted to the challenges and principles of creating a productive learning environment for all participants. Grades for the students’ assignments and classroom participation will reflect their effort and ability to work successfully in an intercultural setting. Guidance on group work and class participation will be provided for students not accustomed to open discussion style of pedagogy.

Course Policies and Guidelines

• **Community Standards:** Students are expected to abide by the DKU community standards of **respect, excellence, and integrity**, which are based on the Duke University standards (http://studentaffairs.duke.edu/conduct/about-us/duke-community-standard) at all times. If a questionable circumstance arises, please seek the instructor’s guidance sooner rather than later. In particular, all assignments are to be written in the students own words. Any citing of numbers should be referenced appropriately. All references used should be listed on the paper. If an assignment is late, the student may hand it in at any time but will receive no more than 50% of the possible grade. Any student who commits plagiarism will be reported to DGHI Masters Program leadership. The penalty for plagiarism is severe and can be expulsion from the program.

• **Attendance:** Students are expected to attend each class session unless they have a legitimate excuse for missing a class. If possible, students should let the instructor know about missing classes ahead of time. Attendance will be taken at the beginning of class. Any unexcused absence from class or tardiness will factor into the final Participation and Attendance grading. It is the student’s responsibility to be familiar with the topics and material from any missed class.

• **Assignment due dates:** Written assignments will be due by 5pm on the due date. Assigned work that is turned in late on the due date will be penalized 5% of the total grade for that assignment. Work that is turned in after the due date will be penalized 10% of the total grade points per day that it is late. Emailing assignments is preferable. The email date and time stamp will be used to judge if the assignment has been turned in on time.

• **Electronic devices in the classroom:** Telephones, pagers, and other communication devices are to be turned off or silenced and are not to be visible during class. Sending or receiving electronic communication of any type (e.g., SMS, email, voicemail) is not allowed including passively monitoring communication. When in class, you are expected to be engaged in the class session. Therefore, use of laptops, tablets and other computers for purposes other than providing a digital copy of the assigned reading material or taking notes is generally disallowed.
• **Email communication**: Discussion of issues and topics covered in the course should be reserved for class time or office hours as much as possible. Email communication will not be used as a substitute in this regard. The instructor will not review via email any material or lectures that a student might have missed. The instructor will strive to answer appropriate email messages in a timely and thorough manner. Email messages should include an appropriate salutation and closing and should follow spelling, usage, and grammar rules.

**Course Outline and Reading List by Week and Session**

Read each article/chapter before the start of class on the dates listed below. Additional readings will be assigned throughout the semester. The determination of a rigorous yet manageable reading load will be made according to consultation with other DKU professors and feedback from the students, as well as the standards of a Duke University course of this level. Readings marked with “(for undergraduate students)” or “(for graduate students)” are for the specific groups and those without are for everyone.

**Week 1 Session 1**

1.1.a *Getting to know each other and NCDs*

1.1.b *Making choices about what you will do in the course*


**Week 1 Session 2**

1.2.a *The Global Burden of Diseases and United Nations NCD Declaration*


1.2.b *Determinants of health and NCDs*

David Stuckler et al. *Sick individuals, sick populations: The societal determinants of chronic diseases*. In Stuckler D and Siegel K (eds.), *Sick societies: Responding to the global challenge of chronic disease*. Oxford University Press. 2011. (For graduate students)

**Week 2 Session 1**

2.1.a *Cardiovascular diseases: Burden, trends, fundamental strategies*


2.1.b *Hypertension and dyslipidemia: Silent killers and polypills*


**Week 2 Session 2**

2.2.a *From Framingham, USA to North Karelia, Finland*


Gérald Baril. The North Karelia Project in Finland: A societal shift favouring healthy lifestyles. The Institut national de santé publique du Québec (available at: [http://www.inspq.qc.ca](http://www.inspq.qc.ca)).

2.2.a *Health promotion: Examples of sodium reduction in rural China and Peru*


Antonio Bernabe-Ortiz, Francisco Diez-Canseco, Robert H Gilman, María K Cárdenas, Katherine A Sacksteder and J Jaime Miranda. Launching a salt substitute to reduce blood pressure at the population level: a cluster randomized stepped wedge trial in Peru. Trials. 2014; 15:93 (for graduate students).
### Week 3 Session 1

**3.1.a Tobacco control** *(Guest lecture by Prof. Abu Abdullah)*

Chap 14. Curbing tobacco use in Poland.

**3.1.b Strengthening primary care: Examples from Asia and Africa**


### Week 3 Session 2

**3.2.a M-health and NCDs: Examples from China & South America**


Pao-Hwa Lin, Yanfang Wang, Erica Levine, Sandy Askew, Shenting Lin, Cuiqing Chang, Jiani Sun, Perry Foley, Haijun Wang, Xu Li and Gary G Bennett. A Text Messaging-Assisted Randomized Lifestyle Weight Loss Clinical Trial Among Overweight Adults in Beijing. Obesity; 2014 (22): E29-E37

**3.2.b SMS for secondary prevention among NCD patients**


### Week 4 Session 1

**4.1.a You are what you eat?**


4.1.b Exercise as Prevention and Medicine

2008 Physical Activity Guidelines for Americans. Pages vi – 14 only.


Week 4 Session 2

Overweight & obesity: Trends, measures, consequences, & frontiers


Pre-diabetes and diabetes in China: Tip of the iceberg


Week 5 Session 1

Cancer: Global transition and cancer care


Respiratory diseases: Air pollution, cooking stove, and microbiome


Week 5 Session 2

Patient-centered care

Self-management, and peer support


Week 6 Session 1

Private sector and NCDs: industry, innovation, and inspiration


Whole of government, whole of society


Week 6 Session 2

Class Debate

Week 7 Session 1

Student Presentations on field trip and their paper sections and interviews

Week 7 Session 2

Group work on compiling the draft sections into an academic paper