



Mediscope



The Journal of GMC

**REVIEW ARTICLE**doi: <http://dx.doi.org/10.3329/mediscope.v6i1.38941>

## A curriculum perspective for Bachelor of Science in Public Health 4-years honors degree program at public and private universities in Bangladesh

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### Abstract

A comprehensive Bachelor of Science in Public Health (BScPH) curriculum containing multidisciplinary modules was seemed to be appropriate for 4-years undergraduate (honors) for public and private universities of Bangladesh exploring to start the program and to flourish public health education. It was explored and developed one reviewing well-established learning objectives of public health education and curriculum development by different universities around the world. Focusing on multidisciplinary courses, several study topics were derived for this BScPH curriculum such as basic biological subjects, mathematics and other core courses integrating the contribution of arts and sciences disciplines into public health, developing critical thinking and quantitative literacy skills, acquiring personal and social responsibility through incorporation of experiential learning, and providing integrative learning for global health challenges. English is the preferable language medium of instruction. The curriculum contains 156 credit points, which are to be completed by the students for graduation. The curriculum might contribute to establish public health undergraduate (honors) program at public and private universities, which would make more students to come forward to be graduates in the field and serve to build a healthy nation. An evaluation at any point while conducting the BScPH degree program will help to modify or update the curriculum taking into consideration the current situation and information to enhance achieved learning outcome. **Key words:** public health, undergraduate program, Bachelor of Science in Public Health, curriculum, Bangladesh.

*Received: 1 November 2018**Accepted: 30 November 2018*

### Global background

Currently public health spans several disciplines dedicated to the improvement of the health and well-being of populations across the globe.<sup>1</sup> This mission broadly focuses on prevention of illness, disease, and injury; utilization of appropriate health care services; and addressing of health care disparities. The pursuit of social justice underlies this goal. Core disciplines include

epidemiology, environmental and occupational health sciences, public health nutrition, maternal and child health, health education, public health management and administration, health informatics, social and behavioral sciences, biostatistics, etc. These disciplines are drawn on a fundamental knowledge of biology, a basic familiarity with social sciences, and an appreciation of socioeconomic and cultural variance among people.

An undergraduate program of public health gives students a unique opportunity to enter into the world of public health. In the past decade, there has been a dramatic growth in the number and size of Bachelor of Science in Public Health (BScPH) programs worldwide: somewhere public health only or in other, in combination with information and communication technology.<sup>2,3</sup> While the degree programs are housed within schools and colleges of public health, many are located in colleges of arts and science, allied health, medicine, and many other academic homes. It is found by searching the Internet that there are 1030 universities and institutions available worldwide, where Bachelor of Public Health degree is conducted.<sup>4</sup>

According to an American survey by the Association of Schools of Public Health in 2005, many universities in reported that they offered undergraduate program in public health. These included University of Washington, University of Minnesota, University of Pittsburgh, Arizona State University, Ohio State University, Rutgers University, Pennsylvania State University, University of Florida, University of Maryland, University of Wisconsin, University of North Carolina, University of Illinois, Massachusetts Institute of Technology, University of Texas, Stanford University, University of California-Los Angeles, University of California-Berkeley, University of Pennsylvania, University of Arizona,

Johns Hopkins University, Princeton University, University of California-San Diego, University of California-Davis, Yale University, Vanderbilt University, Michigan State University, University of Michigan-Ann Arbor, Washington University, Duke University, Cornell University, New York University, Emory University, Northwestern University, Boston University, University of Southern California, etc.<sup>5</sup>

Table 1 shows the 2018 world ranking of the universities of the world having undergraduate degree in public health, 7 universities from the United States of America (USA) and 3 from the United Kingdom (UK) are the top 10 world ranked universities based on having undergraduate degree in public health.<sup>4</sup>

### Bangladesh background

During recent years and at present, Master of Public Health (MPH) has been very common in Bangladesh offered at many public and private universities. The students come from different backgrounds: from medical or general education.

Very recently, some public and private universities in Bangladesh have started bachelor degree program in public health and some are currently exploring to start (Table 2); although the curriculum was not publicly available for the conducted programs to have an image of the program

**Table 1. 2018 World Ranked Universities based on Public Health<sup>4</sup>**

University	Location	Ranking
Harvard University	Cambridge, USA	1
Johns Hopkins University	Baltimore, USA	2
Stanford University	Stanford, USA	3
University of Oxford	Oxford, UK	4
University College London	London, UK	5
London School of Hygiene and Tropical Medicine	London, UK	6
University of Michigan	Ann Arbor, USA	7
University of Washington	Seattle, USA	8
Columbia University	New York City, USA	9
University of California-Los Angeles	Los Angeles, USA	10

**Table 2. Situation of undergraduate public health degree program in Bangladesh**

University	Location	Degree title
Jahangirnagar University	Dhaka	BSc in Public Health and Informatics
Asian University for Woman	Chittagong	BS in Public Health
Bangladesh University of Health Sciences	Dhaka	BPH in Community Nutrition (Hons) BPH in Health Promotion & Health Education (Hons) BPH in Reproductive & Child Health (Hons) BPH in Occupational Health & Safety (Hons) BPH in Environmental Health & Safety (Hons) BPH in Epidemiology and Biostatistics (Hons)
German University Bangladesh	Dhaka	BSc in Human Health (similar to Public Health)
North South University	Dhaka	Exploring to start

BSc & BS, bachelor of science; BPH, bachelor of public health; Hons, honors.

structures, aim and scopes. A comprehensive Bachelor of Science in Public Health (BScPH) curriculum containing multidisciplinary modules was seemed to be appropriate for 4-years undergraduate (honors) for public and private universities of Bangladesh exploring to start the program and to flourish public health education.

Once the program has gone through the hard work of looking at the market for graduates and the forces exerted by competitors, it is time to think about the nuts and bolts of the curriculum. The BScPH curriculum should be in keeping with trends in Europe and the USA to broaden public health education, to reduce inequality of career opportunity, to expand the workforce, and to promote public health.<sup>6</sup>

In low- and medium-income regions or countries, undergraduate public health education is especially crucial for training of the public health workforce to address longstanding and emerging public health problems and the real needs of public health programs in developed as well as developing countries.<sup>7,8</sup>

### **BScPH curriculum**

Several study topics for a 4-years duration were derived for this BScPH curriculum developed reviewing well-established learning objectives of public health education conducted around the world and focusing on multidisciplinary courses such as basic biological subjects, mathematics and other core courses integrating the contribution of art and science disciplines into public health, developing critical thinking and quantitative literacy skills, acquiring personal and social responsibility through incorporation of experiential learning, and providing integrative learning for global health challenges.<sup>9-19</sup> However, as sufficient staffing will be needed for academic and research guidance. Lack of senior staffs with Doctor of Philosophy (PhD) level degree in public health seems to be a big challenge for the program, who will need to interact and work with all stakeholders so that the various academic and research activities will be in line with the current and future health policy in Bangladesh.

The contents of the developed curriculum are given below year by year and listed with

the specific course titles and corresponding credits in the respective years of study (Table 3, 4, 5, and 6). The details of the courses are beyond the capacity of this article, and therefore not shown.

### First year of study (Table 3)

The first year of study aims to introduce the science of public health and provision of solid theoretical basis required for the next

years of study. Most of the courses are from the area of health and others for that the students acquire the necessary background knowledge. English is the preferable language medium of instruction. The first year courses result in 39 credit points.

### Second year of study (Table 4)

The second year of study is aimed to give knowledge about epidemiology, medical

**Table 3. Courses in the first year of study with the respective credit points**

Course title	Credit points
<b>Semester 1</b>	
Basic Human Anatomy	4
Basic Human Physiology	4
Basic Medical Biochemistry	4
Introduction to Public Health	3
Introduction to Computer Applications I	2
Basic English	3
<b>Semester 2</b>	
Basic Medical Microbiology	4
Mathematics and Biostatistics	3
Composition and Communication Skills	3
Bangladesh and Global Studies	3
Sociology, Anthropology and Health	3
Human Resource Management for Health	3
<b>Total</b>	<b>39</b>

**Table 4. Courses in the second year of study with the respective credit points**

Course title	Credit points
<b>Semester 3</b>	
Epidemiology	3
Medical Entomology	3
Bioethics	3
Epidemiology of Non-communicable Diseases	3
First Aid	3
Disease and Injury Prevention and Modes of Intervention	3
School Health	3
<b>Semester 4</b>	
Behavioral Science and Mental Health	3
International Health	3
Epidemiology of Communicable Diseases	3
Project Planning and Management	3
Primary Health Care and Public Health Administration	3
Health Communication	3
<b>Total</b>	<b>39</b>

**Table 5. Courses in the third year of study with the respective credit points**

Course title	Credit points
<b>Semester 5</b>	
Media Review for Public Health News	3
Environmental Health	3
Climate Change and Health	3
Occupational Health and Safety	3
Health Care Delivery System in Bangladesh	2
Health and Social Problems in Bangladesh	2
Health Informatics	3
<b>Semester 6</b>	
Food, Food Quality and Food Hygiene	3
Public Health Nutrition	3
Promoting the Health of Special Groups	3
Demography and Population Dynamics	3
Introduction to Computer Applications II	3
Management and Evaluation of Health Programs	3
Dental Public Health	2
<b>Total</b>	<b>39</b>

**Table 6. Courses of the fourth year of study with the respective credit points**

Course title	Credit points
<b>Semester 7</b>	
Maternal and Child Health	3
Family Planning and Health	3
Health in Transition and Humanitarian Situations	3
Disaster and Health	3
Introduction to Health Economics	3
National Health Policy and Plan	3
Public Health Lab Practices	3
<b>Semester 8</b>	
Field Visits and Report Submission	3
Public Health Seminar and Journal Club Activity	3
Public Health Research Methodology	3
SPSS for Data Analysis	3
Graduate Project Data Collection and Data Analysis	3
Graduate Thesis Preparation and Presentation	3
<b>Total</b>	<b>39</b>

entomology, bioethics, epidemiology of non-communicable diseases, epidemiology of communicable diseases, first aid, disease prevention, school health, behavioral science and mental health, international health, etc. The second year courses result in 39 credit points.

### Third year of study (Table 5)

The third year of study is aimed at giving knowledge on media review for public health

news, environmental health, climate change and health, occupational health and safety, health care delivery system in Bangladesh, health and social problems in Bangladesh, public health nutrition, demography and population dynamics, dental public health, etc. For this, 39 credit points are planned.

### Fourth year of study (Table 6)

The fourth year of study, with a total of 39

credit points, is planned for maternal and child health, family planning and health, health in humanitarian and emergency situations, introduction to health economics, field visits and report submission, public health research methodology, graduate project data collection and data analysis, graduate thesis preparation and presentation, etc.

One credit is defined as the equivalent of 15 one-hour lectures spread over one semester. For this purpose, three hours of practical or two hours of tutorials are equivalent to one-hour lecture. The developed curriculum contains 156 credit points in 4-years duration are to be completed by the students for graduation.

### Goal

The goal of the training in BScPH is to contribute to the improvement of health of the people in Bangladesh, and humanity in general, through the pursuit of relevant and competent training in public health, and provision of high quality public health services.

### Objectives

The objectives of the BScPH are to develop institutional capacity to train public health professionals in public health, to enhance the provision and management of public health and primary health care services to the public at national and community levels, to strengthen national and regional capacities to respond to public health emergencies including disease epidemics and natural calamities, to improve inspection, hygiene and sanitation practices among public food retail vendors, and to improve environmental health care aspects and contribute to research activities on priority public health problems at national and community levels.

### Program outcome perspective

Bangladesh and many other developing countries are adversely affected by a wide range of public health problems. These problems result in an unnecessarily high rate of mortality and morbidity due to preventable causes. Generally, there is low awareness and practice of public and primary health

care. Health care delivery systems are focused mainly on curative, rather than primary health care. Such services are offered after illness and deterioration in health has set in. Curative services are therefore relatively expensive, as they have to address the cure, rehabilitation and management of those who are ill. On the other hand, public health services focus mainly on primary health care, which involves the prevention of disease at individual and community level in the first place. Primary health care is much cheaper to implement.

Whereas there is a great demand for public health services, there are limited opportunities for training Public Health Professionals in the country. The BScPH program is designed to enhance the national capacity for public and primary health care systems. The BScPH will provide training that will equip students with the knowledge and skills to address relevant public health concerns in the community. Graduates from the program will be equipped with appropriate skills and knowledge to identify public health problems, design solutions to those problems, and plan and execute appropriate public health interventions.

Because of current socioeconomic, technological and job market situation, the curriculum includes topics from multidisciplinary aspects, which may be influenced by university undergraduate requirements and the outcome of market demand, competency decisions, programmatic strengths/ weaknesses, and value determination for producing well versant graduates.

There are a number of other important attributes to a highly effective BScPH curriculum.<sup>2</sup> Students need the opportunity to develop their skills as professionals. What are the professional norms in the field and how are these transmitted to students? While some of these professional norms are organization dependent, others are crosscutting across public health including respect for others, dignity, enhancing diversity, and building cultural competence. The faculties may serve as role models for the students

and if it is wanted that the students to behave in a professional manner, the faculties need to do the same thing.

Leadership is another critical skill for BScPH students to develop.<sup>2</sup> Leadership is not confined to persons holding executive management positions and should be part of the educational preparation of all public health students. It is not enough to attend a lecture about leadership or to read the latest leadership book. Students must get out and practice being a leader, and along with this learn what it is like to fail. Student led clubs and organizations are an ideal way for students to begin to hone their skill and talent in leadership. For this reason, public health journal club activity has been added to this curriculum. Faculty mentoring will be a critical part of any student led activity.

Public health is a team sport and BScPH students need to be given the opportunity to work in teams throughout the curriculum.<sup>2</sup> Most students dread this experience but it is vital that they learn how to work effectively with diverse team members who possess differential skills and varying levels of motivation and commitment. Through group work, perhaps most importantly, students learn how to deal with group conflict. This curriculum may create an ample opportunity for team work. Finally, identify alumni and other local public health leaders who are willing to come in, and talk with students about the breadth of opportunities in the field and provide an insider's perspective on their work.<sup>2</sup>

It is believed that the demand for this degree will only get stronger in the years to come. Given this level of confidence, it is important to recognize that this curriculum may simultaneously provide flexibility, rigor, and practical value to the students, and the students may pursue multiple pathways after graduation.

### **Career perspective for the graduates**

Because the BScPH program is new in Bangladesh, presently it is not possible to guarantee defined positions in the health and

other sectors for the graduates. However, it is assumed that the graduates would be strong applicants for positions at entry levels in various services in the health field. In addition, people with work experience would be eligible for career advancement including salary increase based on acquiring a BScPH. They can continue their study for MPH, MPhil (Master of Philosophy) and PhD degrees in the country or abroad.

Public health jobs cover a broad variety of areas, including epidemiology, environmental health, biostatistics, health services administration, and more. Here are just some of the public health careers to pursue with a public health degree: Community Health Worker, Disease Investigator, Environmental Health Specialist, Epidemiologist, Global Health Professional, Health Officer, Health Policy Advisor, Occupational Health and Safety Specialist, Public Health Analyst, Public Health Educator, Public Health Researcher, Public Health Emergency Preparedness and Response Coordinator, Public Health Information Officer, Public Health Policy Coordinator, Research Analyst, etc.

The graduates may be recruited to suitable entry-level positions in public health, research, health providers, and possibly in health industries: private, government and international. They can also try for Bangladesh Civil Service General Cadres, Family Planning Cadres and non-cadres jobs.<sup>20</sup>

### **Conclusion**

A comprehensive BScPH curriculum containing multidisciplinary modules was seemed to be appropriate for 4-years undergraduate (honors) for public and private universities of Bangladesh exploring to start the program and to flourish public health education. It was explored and developed one taking into consideration the curriculum development by different universities around the world, and several study topics were derived for this BScPH curriculum focusing on the main well-established learning objectives of public health education such as basic biological subjects, mathematics and other core courses integrating the contribution of art

and science disciplines into public health, developing critical thinking and quantitative literacy skills, acquiring personal and social responsibility through incorporation of experiential learning, and providing integrative learning for global health challenges. English is the preferable language medium of instruction. The curriculum contains 156 credit points in 4-years duration, which are to be completed by the students for graduation. The curriculum might contribute to establish public health undergraduate (honors) program at public and private universities, which would make more students to come forward to be graduates in the field and serve to build a healthy nation. An evaluation at any point while conducting the BScPH degree program will help to modify or update the curriculum taking into consideration the current situation and information to enhance achieved learning outcome.

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**Suggestion for citation of the above:**

*Laskar MS. A curriculum perspective for Bachelor of Science in Public Health 4-years honors degree program at public and private universities in Bangladesh. Mediscope 2019;6(1):31-9.*