

Environmental Health Degree or Public Health?

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Abstract

This article explores the similarities and differences between a Bachelor of Environmental Health Science and a Bachelor of Public Health, both of which aim to equip graduates with preventive health skills. Through a five-year study involving literature review and observations, the research identifies key overlaps in academic content, job roles, and career opportunities. It highlights the evolving importance of environmental health in tackling modern challenges such as pollution and climate change, alongside the broader scope of public health in reducing healthcare disparities. The findings suggest that both degrees offer comparable skill sets and employment potential. However, misconceptions about the relevance of each degree persist, warranting further research into alumni employability.

Keywords: Environmental Health, Public Health, Preventive Medicine, Occupational Health, Curriculum Comparison, Employability, Health Systems.

Introduction

The article addresses a key debate in public health education: whether a Bachelor in Environmental Health Science or a Bachelor in Public Health better equips students for preventive medicine and the healthcare job market. As environmental hazards increase with rapid urbanization and technological advancement, the demand for graduates with specialized health skills has grown. This study seeks to analyze why universities offer both programs despite their overlapping roles and to provide insights into how these courses prepare students for professional practice.

Background

Many people across the globe continue to suffer from preventable communicable diseases such as diarrhea, scabies, and helminthic- to mention a few. According to World Health Organization (WHO), over 12 million people around the world die annually because of unhealthy work environments. That means one in every four deaths across the world can be attributed to environment-related factors. We, therefore, realize that our natural and built environment defines our life on earth and the state of our world affects our physical and mental health. The need for capacity building in the field of public health has been compounded by the continued increase in environmental hazards emanating from rapid urbanization and industrialization.

This has been fueled by modern technological advancement and hence fills the existing gaps in environmental health training. Environmental pollutants can cause health problems like respiratory diseases, heart disease, and some types of cancer. People with low incomes are more likely to live in polluted areas and have unsafe drinking water. And children and pregnant women are at higher risk of health problems related to pollution. The right to health and a clean environment is covered under article 42 of the Kenya Constitution.

As knowledge and educated people become key strategic priorities, our societies have become more dependent upon those social institutions such as colleges and universities that create these critical resources -What Wells (1925) referred to as knowledge capital replacing physical capital. Knowledge capital can successfully replace physical capital only on a firm educational foundation. John West (2000) says that large and prestigious firms can be found to subscribe enthusiastically and in a robust manner to the more advanced concepts of problem-solving, blending with originality, patent ventures, and learning to learn. The key precursor for employability skills borders on course design. The philosophy of social imagination and aesthetic education has been borrowed greatly in curriculum studies, creativity and citizenship education. In developing countries, there is a growing concern about the capacity of the existing universities

to serve these changing and growing social needs. According to, it is clear some universities need an enhanced understanding of how they can contribute to the changing technological capabilities and skills needed in organizations, particularly in relation to their professional and occupational programs [1].

The Kenya Vision 2030 policy document identifies Technical and Vocational Education and Training (TVET) as the anchor of its economic pillar through science, technology, and innovation to boost Kenya's industrialization status. There has been debate all over public health academic circles and the public in general whether Bachelor in Environmental Health Science course truly reflects the face of preventive medicine like a bachelor's degree in Public Health and/or whether skills acquired by both grand-aunts match the job market on equal footing. Students, parents, and /or guardians are at crossroads when it comes to a career choice in either of the two courses. The purpose of the five-year study was to determine the reasons why different universities across the globe offer two courses with similar outcomes in the job market: Bachelor of Environmental Health Science and Bachelor in Public Health and to provide information about the general meaning of public health. An apart from observations in the field of academia our key method included a desk review of secondary data from related articles and books and recorded words of some of the interested parties.

Literature Review

This section explores the historical evolution of public health laws and training, starting with the Black Death's quarantine policies in the 14th century and the UK's first Public Health Act of 1848. It discusses the development of public health and environmental health education, tracing their origins in Kenya to training programs for sanitary inspectors. Environmental health is described as an extension of public health, addressing risks from pollution and other environmental factors. Key studies emphasize that the academic and practical frameworks of both programs are deeply interconnected, with environmental health emerging as an interdisciplinary field that includes epidemiology, health policy, and occupational safety.

The Genesis of Public Health Laws and Training in the World

During the Black Death of the mid-fourteenth century, European cities imposed a series of quarantine controls, arguably the first recognizable public health laws. One of these was Venice, whose Great Council isolated new arrivals for a period of 40 days (said to be chosen by analogy with Christ's sufferings in the wilderness [1]. Trade and movement across the globe prompted a series of more general quarantine laws, some of them extraordinarily harsh. English laws put in place during the eighteenth century allowed persons breaching quarantine to be hanged and their vessels sunk [2]. In the nineteenth century, amid the quarantine laws, chronic diseases caused by poverty, crowding, and an unhealthy environment emerged with more severe fatalities among inhabitants in the rapidly industrializing world. Then followed a period of sanitary reform that was expressed in legislation. The first recognizable public health laws emerged. In the 1840s England had significant urban growth together with medical and social reformers willing to report on and then address the issues of chronic sickness and premature death. In 1848, The first Public Health Act was enacted in the United Kingdom (UK).

The Public Health Act of 1848 offered a legislative framework to respond to public health issues that continues to be reflected in public health laws of the countries that have inherited a British legal system and a British structure of governance.

'I have gone to heaven to teach an epidemiology course. At this point no return is planned...' these were the parting words of Phillip Brachman (1927-2016) one of the pioneer Professors of Public Health in Atlanta, Georgia, Flannery, & [3]. The history of Public Health Training dates back to 1927 in Kenya. The first titles were Sanitary Inspectors which later led to Public Health Technicians (Certificate Course in Environmental Health Science) and Public Health Officers (Diploma Course in Environmental Health Science). The Royal (Kings College) later named Kenya Medical Training College was the first college that offered training in public health and other health disciplines. Moi Referral and Teaching Hospital and Kenyatta National Hospital later were expanded. They are centers of excellence and provide complex health care requiring more complex technology and highly skilled personnel. They also support the training of health workers at both pre-service and in-service levels [4].

What is Public Health?

Public health incorporates the interdisciplinary approaches of epidemiology, biostatistics, and health services; Environmental Health, Community Health, behavioral health, health economics, public policy, insurance medicine, mental health, and occupational safety and health are other important subfields. According to, Public Health is "the science and art of preventing disease, prolonging life and promoting human health through organized efforts and informed choices of society, organizations, public and private, communities, and individuals". Public health is the discipline in science that addresses the health of populations. It is different from clinical medicine as the latter is concerned primarily with immediate health problems of individuals in society (population). For example, when commenting about a car accident-while the clinician will be concerned with the survivors, treating the broken leg, the public health officer will be glowed to answer the many questions 'why' the accident occurred and /or could have been prevented.

To understand the two programs clearly, the reader needs to isolate 'public health' as an undergraduate course or program with the specific role of disease prevention and control and public health as a service to the population. This article is about the undergraduate course in Public Health. A bachelor's graduate in Public Health and the same with Environmental Health Science all sharing the title "Public Health Officer" which may still refer to any other health worker title in the field depending on the senders' context.

The Broader Meaning of Public Health -Public Health 'Outside the Box

Means according to the Centers for Disease Control (CDC) the health of populations - analyzing the health of populations and the threats is the basis of public health. Public health professionals try to prevent problems from happening or recurring by implementing educational programs, recommending policies, administering services, and conducting research—in contrast to clinical professionals like doctors and nurses, who focus primarily on treating individuals after they become sick or injured.

This clinical work also answers public health on a wider scale when we refer to health systems management. For example, public health services in County X or Country Y. In this context, Public health works to limit health disparities-promoting health-care equity, quality, and accessibility. Science being dynamic, a 21st-century definition of Public Health says: “the totality of all evidence-based public and private efforts that preserve and promote health and prevent disease, disability and death”. The wider definition of public health incorporates environmental health among other subfields like epidemiology, biostatistics, community health, health economics, public policy, mental health, occupational health, etc.

Environmental Health

In 1999, World Health Organization (WHO) defined environmental Health as those aspects of the human health and disease that are determined by factors in the environment. It also refers to the theory and practice of assessing and controlling factors in the environment that can potentially affect health. It includes both the direct pathological effects of chemicals, radiation and some biological agents, and the effects (often indirect) on health and well-being of the broad physical, psychological, social and cultural environment, which includes housing, urban development, land use and transport [5]. The environmental health profession evolved from the sanitary and public health movement led by Sir Edwin- Chardwick of the United Kingdom. With his crusade to champion the repeal of poor laws in 1848, he became the first president of the Association of Public Sanitary Inspectors, now called the Chartered Institute of Environmental Health.

Environmental health professionals can be called Environmental Health Officers, Public Health Inspectors, Environmental Health Specialists or Environmental Health Practitioners. The action of researchers and policy-makers influences to a great deal how environmental health is practiced in the field. Environmental Health is practiced worldwide. In European countries, physicians and veterinarians are involved in environmental health work including the United Kingdom where practitioners must have a graduate degree in environmental health and be certified and registered with the Chartered Institute of Environmental Health or the Royal Environmental Health Institute of Scotland. In Canada, Environmental Health Officers are required to obtain an approved bachelor's degree in environmental health plus the national professional certificate called Certificate in Public Health Inspection (Canada), CPHI(C). California state law defines the environmental health profession as follows: a means the practice of environmental health by registered environmental health specialists in the public and private sector within the meaning of this article and includes, but is not limited to, organization, management, education, enforcement, consultation, and emergency response for the purpose of prevention of environmental health hazards and the promotion and protection of the public health and the environment in the following areas: food protection; housing; institutional environmental health; land use; community noise control; recreational swimming areas and waters; electromagnetic radiation control; solid, liquid, and hazardous materials management; underground storage tank control; onsite septic systems; vector control; drinking water quality; water sanitation; emergency preparedness; and milk and dairy sanitation pursuant to Section 33113 of the Food and Agricultural Code””, (California Health and Safety Code, section 106615(e) .

As human beings, we are interconnected with our environment. Our natural and built environment is more than just a place for us to live. The state of our world affects our physical and mental health. This vital relationship between humans and our surroundings is called environmental health. Environmental health is concerned with our environment, including pollution, access to safe drinking water, and infrastructure -issues that impact people's health. The major sub-disciplines of environmental health are: environmental science; environmental health and occupational medicine, toxicology and epidemiology. Other terms referring to or concerning environmental health are environmental public health, public health protection, and environmental health protection. https://en.wikipedia.org/wiki/Environmental_health accessed 02142023. Environmental health is the science, practice, and study of human well-being, and preventing illnesses and human injuries. Public health, therefore, is concerned with life of human beings within the natural and built environments. It is there instructive to conclude that environmental health is a subset of public health.

Environmental Health Science

Is therefore a preventive medicine that is concerned with life of human beings and their surroundings in the context of preventing disease, prolonging life, and promoting human health alongside curative medicine? In this context, it defines the term public health as a service since the latter now refers to the practice of preventing disease within a specific environment. Environmental health course is concerned with all aspects of preventive medicine and graduands with Bachelors in Environmental Health Science acquire the same skills as those who qualify with Bachelors in Public Health.

General Debate About the two Titles

Some people however tend to grade environmental health higher in academic circles as trying to answer the hows and whys of health science. “Public Health is all about making the masses healthier. This deals with access to healthcare, vaccinations, fluoride in water, and the effectiveness of different programs toward target groups. In environmental health, you can think of it as how the environment impacts the health of the masses. An example would be how does air pollution impact the health of a community, are certain air pollutants more harmful to health, what is the threshold of these contaminants, and so forth...” The public health Andrew refers in this context is the general public health as defined above and not a bachelor’s course in Public Health which also incorporates pollution and the rest. “Academically, environmental health is one of the core disciplines that make up the field of public health, along with epidemiology, health behavior, bio-statistics, and others. On a practical level, it focuses on the health risks and opportunities related to the physical environment. Public health professionals typically hold degrees in public health with specialization in one of the core areas” What is the difference between public health and environmental health? - Quora. The two references among others attempt to grade Bachelor in Environmental Health Course as more academically oriented than the Bachelor in Public Health Course.

Further to the credit of the Environmental Health Course, Environmental health aims to improve the quality of life through the prevention and treatment of disease, including mental health. This is done through the surveillance of cases and health indica-

tors, and through the promotion of healthy behaviors, especially in the wake of increasing cardiovascular diseases; carcinogenic diseases, emerging and re-emerging diseases, viral hemorrhagic fevers like Tsars and other non-communicable diseases like diabetes. Common environmental health initiatives include promoting hand-washing and breastfeeding, Community-Led Total Sanitation (CLTS) to confirm which villages and /or wards meet the Open Defecation Free (ODF) criteria; delivery of vaccinations, cancer screening, suicide prevention and distribution of condoms to control the spread of sexually transmitted diseases, and HIV and AIDS.

Adnani Mohamed, a continuing Bachelor of Science in Environmental Health at Mount Kenya University reacted during one of the mentorship sessions in my office "I now feel confident to face the world of Public Health ...and hope to give back to my community after college". Admittedly the term Environmental Health is more relevant in this era of tackling issues of climate change and promoting eco-friendly methods in the Sustainable Development Goals and Kenyas' Vision 2030.

On the other side of the coin, a larger population of students also support of Bsc. in Public Health as quoted from the University of East London: "Our students and academics are more critically engaged and socially conscious than ever before. Discover some of the positive changes our students, alumni and academics are making in the world: "It was only when I got the chance to put it all into practice on this course that it started to make sense. I never believed in myself but now I really think I can achieve something good. Public health is my passion." Marina Haque, Public Health, BSc (Hons), University of East London.

We further find that Environmental health is interdisciplinary. For example, epidemiology, biostatistics and health services are all relevant. Others like community health, behavioral health, health economics, public policy, mental health and occupational safety, gender issues in health, and sexual and reproductive health are other important subfields. Similarly, an almost equal proportion would cover Universities offering Public Health degrees at undergraduate levels worldwide.

Why the Two Courses are Similar at the Bachelor's Level?

The major divisions in health are preventive medicine and curative medicine. Preventive health is concerned with measures that cut part(s) of the disease cycle (epidemiological triangle) to block disease agents or micro-organisms from reaching the host, the agent, and /or the environment. This is done by tipping the balance of disease agents by attacking the source, protecting the host, and or interrupting the route of transmission. The word 'environment' is understood in different ways. In social science, we have the physical environment, social and cultural environment, economic environment, and biological environment. All these define the biomass that man/woman lives in and that is what constitutes public health. At the bachelor's level, therefore, the word 'environment' in environmental health courses was coined to separate health disciplines in curative and preventive medicine and to standardize the level of the courses within public health in general based on employee roles and responsibilities. The curricula of the two programs run concurrently around the following pillars of Public Health: Public Health Engineering; Built Environment; Community Health; Food Science and Tech-

nology and General Public health Practice. In both programs, Field Attachments and Research Project cover 29% of the 4077 hours needed to clear the course according to the regulatory body. The job market employs everyone in this context without discrimination because almost similar units and practicals are taught. John West (2000) says that large and prestigious firms can be found to subscribe enthusiastically and in an articulate manner to the more advanced concepts of problem-solving, autonomous functioning, and learning to learn. Moreover, the precepts of general employability skills often coincide with good teaching and course design.

The Level and Span of Supervision.

In trying to explain Authority and the Span of Management, Doctor Theo Haimann (1994) highlights the pros and cons of creating departments in an organization. He says that establishing departments in an organization is not an end in itself adding that the more they are the more difficulties will be encountered in communication and coordination. But he quickly adds "Equally important they allow an organization to incorporate what is commonly known as the principle of span of management or the span of supervision". The principle of the span of management states that there is a maximum number of subordinates a manager can effectively work within an establishment. The Organization Structure of the Ministry of Health Kenya (2022) has six Departments reporting to the Director (General) of Medical Services. The Department of Preventive and Promotive Health equally has six divisions one of which is Environmental Health. As is evident, the division of Environmental Health falls at the third level downwards in the hierarchy. <https://www.health.go.ke/about-us/organizational-structure/> Accessed 02142023. And perhaps this scenario could be one of the reasons for the misinformation and the misconception that BSc. Environmental Health course could be inferior to Bsc. Public Health course since the National Director of Public Health heads the Department of Preventive and Promotive Health and that is a Medical Officer of Health with a background in medicine at Bachelors' level (section 2 of the Public Health Act, Cap. 242 Laws of Kenya). Secondly does the structure of the Scheme of Service for Public Health Officers and Public Health Assistants add faggots to the fire? As currently constituted, coming down the hierarchy, the highest grade in the Revised Scheme of Service for Public Health Assistants and Public Health Officers (2014) is the post of Director of Public Health currently heading the division of Environmental Health. This is the room that houses all those officers employed in the civil service with either the Bsc. Public Health or the Bsc. Environmental Health.

The Job Market

Before independence, the Kenyan curriculum in universities and colleges was technically and vocationally oriented as it provided skills that aimed at fitting them as laborers on farms owned by white settlers [6]. After independence, there was therefore a mad rush to align the curricula to get managers, accountants, and teachers to take over the farms and businesses. Define employability as an individual's capability, ability, success, chance, adaptability, and competency to gain employment and be successful in their chosen occupations adding that employability is the ability of an individual to obtain and sustain a job.

For a number of years there have been concerns raised by employers about the quality and adequacy of graduates in relation

to their ability to fulfill the requirements of the posts they take up after graduation [7-9]. These concerns have been addressed in some companies by the provision of training courses in which graduates are brought 'up to speed' in specific areas required in their employment., for example, AstraZeneca has an extensive training course for new graduates which runs over one year and covers a variety of topics (Higher Education Academy Centre for Bioscience. Such courses take time and resources and smaller employers may find them difficult and uneconomic to put on, hence the desire for an 'oven-ready and self-basting graduate [10, 11]. To this end, different academic programs in different universities are adopting various strategies by, for example, offering work experience, work-related learning, and employability skills modules, and 'ready for work events, as well as involving employers in course design and delivery. Hopefully, the Competence-Based Curriculum (CBC) in Kenya may bridge the gap [12-14].

The Family of Public Health

There has been a misconception or misinformation on the broader depth and breadth of public health among some Public Health staff occasionally claiming “our jobs have been grabbed....” our jobs are going away from us...” etc. The areas majorly referred to in this context were sections hitherto managed largely by Public Health Officers at national levels like Cold Chain under Expanded Programme on Immunization, Malaria Control Programmes....and lately the enforcement of the Environmental Management and Coordination Act (EMCA) which before 1999 was still covered by the Public Health Act just to mention a few. In defining quality, the EMCA Act provides synergy in public health law enforcement so that Authorized Officers in the Public Service could now concentrate more on the remaining specific areas of disease prevention. This too does not close the window for teamwork. Did we know that the National Environmental Management Authority (NEMA) is a potential employer of Public Health Officers? The twenty-first century has its share in the bargain –the increase in world populations, globalization, the era of artificial intelligence, e-health, e-commerce, and clean energy coupled with specialization in various disciplines in health systems- Public Health Officers must brace for a competitive job market. One cannot separate public health from life. Section 2 (a) (b) of Cap.242 Laws of Kenya in defining medical officer of health includes a public health officer: ... “in relation to the area of any municipality the duly appointed medical officer of health of the municipality, a public officer seconded by the Government to hold such office;”. A Medical Officer of Health/Public Health Officer who holds a Master in Public Health (MPH) or Health Systems Management or by extension Ph.D. is equipped and capable of coordinating and managing public health services (health systems) at National and County levels (MOH, 2014; MOH, 2016). Therefore, a qualified Public Health Officer can be appointed to direct, lead and/or coordinate public health services at national or subnational levels. Public health is a wide field for all trained officers (nurses, clinical officers, medical officers, Laboratory Technologists/Technicians etc.) ready to support life. All the health workers and other cadres directly or indirectly contribute to public health. Even a motorist private or public observing traffic rules and being human contributes to public health [15-17].

Everybody is Dealing with Life! Remember that

The Regulatory body covering the implementation of the two programs is The Public Health Officers and Technicians Council

(PHOTC) - established by the Public Health Officers Act, 2013 to regulate the training, practice, and employment of Public Health Officers and Technicians in Kenya. The body has the legal mandate to protect the profession from unauthorized infiltration of persons or parties. There is also a very thin line in evaluating individual employability scale on each of the two programs and /or the level of association between higher education and employment...to the job market as quoted from Wells: “a greater emphasis on the development of personal and social skills in education is ... unlikely to gain widespread support, especially from the elite schools, colleges, and universities. This is because the credibility attached to academic credentials remains based on the ‘objective’ assessment of ‘knowledge’ epitomized by the ‘unseen’ examination paper”. In the foregoing, therefore here is a research gap/ study that may be explored to its conclusion. One area is being a retrospective or prospective study on the respective University Alumni’s performance in the Job Market. In 2007, The National Association of College and Employers (NACE) -a professional association that connects college career services to potential employers- carried out a study on what employers look at most in a worker. The following is the top 20 list in the order of importance: Analytical Skills; Communication Skills; Computer Skills; Creativity; Detail-Oriented; Risk-Taker; Flexibility/Adaptability; Friendly; Honesty/Integrity; Interpersonal Skills; Leadership and Management Skills; Motivation/ Initiative; Organizational and Time Management Skills; Real Life Experiences; Self-Confidence; Strong Work Ethic; Tactfulness; Teamwork Skills; Technical Skills; Well -Mannered/Polite. As can be seen in the list, technical skills were placed 19 out of the list of twenty. Suffice it to say, as we climb the promotion ladder at the workplace, we need more human skills than technical skills. To this end, I opine that (other factors being equal) either of the two programs is capable of producing successful public health officers [18-22].

I, therefore, wish to demystify the myth that a Bachelor of Science in Public Health is more relevant than a Bachelor of Science in Environmental Health. It’s only a perception realizing that Public Health is supreme on matters of life (Public Health Act, Cap.242 sec.10 Laws of Kenya). It’s more about the individual than the task. “Education is not the filling of a Pail but the lighting of a fire” [23-25]. Bachelors of Environmental Health and Bachelor in Public Health grandaunts (in this context) are well equipped to work without discrimination as Public Health Officers: County Health Departments; National Governments as Program officers in Health; Non- Governmental Organizations (NGOs) dealing in Health; Safety Officers at Factories/Industries; National Environment Management Authority (NEMA); National Authority for Campaign Against Drug and Alcohol Abuse (NACADA); Kenya Medical Training College; Port Health Officers, Universities and Research Institutions among others. The grandaunts also possess adequate skills for unlocking infinite possibilities in the private sector and thereby turn from job seekers to job creators [26, 28].

Discussion

The discussion highlights the academic and practical similarities between the two degrees. It argues that both programs provide essential skills for preventive health roles and suggests that distinctions between them are often based on perception rather than actual curriculum differences. The narrative also reflects on mis-

conceptions within the job market, where some view environmental health as more academically focused and public health as more practical. With the increasing relevance of environmental health in addressing climate change and urbanization, both degrees offer graduates opportunities in government, NGOs, and private sectors. The findings underscore the importance of interdisciplinary learning and teamwork in health professions.

Conclusion

Our general conclusion in the meantime is that students taking Bachelor's Course in Environmental Health and Bachelor's Course in Public Health acquire similar skills and equal opportunities during the course period and compete equally in the job market. The consumer is therefore free to choose and should worry no more about it. Further study is recommended on the employability rating of the respective alumni.

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