

Workforce Capacity Building in One Health: An Innovative Approach in India, 2023

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Abstract

The concept of One Health emphasizes the interconnectedness of human, animal, and environmental health and recognizes that the well-being of one is intimately linked to the others. The One Health Certificate Course is a comprehensive educational programme designed to enhance understanding and promote collaborative approaches to address the interconnectedness of triad of human, animal, and environment in the workforce. This course which was developed and conducted with funding from Dept. of Health Research, aims to provide participants with a multidisciplinary perspective on the One Health concept, emphasizing the importance of interdisciplinary collaboration to solve complex global health challenges including zoonotic diseases. In this article we explored the practical aspects of designing and conducting the first of its kind One Health Certificate Course from India, including the delivery format discussing the delivery format, duration, target audience, follow-up methodology and career prospects for sustainability.

Keywords: One Health, Zoonoses, Public health, Capacity building

Introduction

In recent decades, the world has witnessed an increasing number of global health crises, highlighting the co-ordination between human, environmental and animal health. The recognition that the well-being of humans, animals, and ecosystems is closely interconnected has given rise to the One Health approach. This holistic perspective acknowledges the interdependence of human, animal, and environmental health.¹ It highlights the importance of cooperation and integration between various disciplines, including veterinary science, medicine, ecology, and public health.² The One Health concept recognizes the interdependence of human, animal, and ecosystem health, emphasizing that addressing health concerns in one domain can yield positive effects in the others.³

Recognizing the urgent need for interdisciplinary collaboration, institutions worldwide have responded by introducing comprehensive educational programmes to equip professionals with the knowledge and skills necessary to address these complex health challenges. Approximately 60% of identified infectious diseases and as much as 75% of novel or emerging infectious diseases are believed to have originated from animals, according to estimates.⁴⁻⁶ Each year, zoonotic diseases contribute to 2.5 billion cases of human illness and result in 2.7 million human deaths globally.⁷ The Government of India through its institutional framework is taking all efforts to build capacity on One Health like National centre for Disease Control, New Delhi is having a public

health programme on One Health including an Integrated Health Information Platform (IHIP) for surveillance and response; a National Institute of One Health by Indian Council of Medical Research⁸; National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bengaluru for keeping a track on animal diseases; Forest Research Institute (FRI), Dehradun involved in training of forest rangers, and National Environmental Engineering Research Institute (NEERI), Nagpur working on leadership in environmental science and engineering for sustainable development.

This article serves as an introduction to the transformative One Health Certificate Course, a multidisciplinary programme that encompasses the fundamental principles of One Health and its practical application in safeguarding the health of our planet. The One Health Certificate Course acts as a cornerstone for individuals seeking to enhance their understanding of the interconnectedness of human, animal, and environmental health. Through an interdisciplinary approach, this course enables participants to explore the complex relationships and interactions that exist within and between these domains. By embracing the holistic One Health perspective, professionals can effectively collaborate across disciplines, bridging the gaps between medicine, veterinary science, ecology, public health, and beyond.

This article will delve into the core components of the One Health Certificate Course, highlighting the diverse range of subjects covered, including zoonotic diseases and its epidemiology, ecosystem health, antimicrobial resistance, climate change, and biodiversity conservation. By providing participants with a comprehensive overview of the challenges we face, this course fosters a deeper understanding of the interconnected nature of our global health issues, empowering individuals to develop innovative, evidence-based strategies for prevention, mitigation, and control of various diseases of public health concern. Furthermore, we will explore the practical aspects of designing and conducting the One Health Certificate Course, discussing the delivery format, duration, target audience, follow-up methodology, and career prospects.

This course is designed to generate a basic understanding of the concept of ‘One Health,’ among the learners and to develop a trained human resource for adopting One Health approach in management of emerging & re-emerging infectious diseases significant for public health and to recognize the importance of multi-sectoral approach in addressing the disease that are zoonotic in nature. The course is designed for the programme officers working at National, State, District and Sub-district levels, clinicians, policymakers, early career researchers and students can gain insight into One Health and its significance regarding emerging and re-emerging infectious diseases of public health importance.

The course modules are developed after reviewing courses offered by international universities and in consultation with national and international experts. The proposal of the course was submitted for funding under the Human Resource Development (HRD) scheme of the Department of Health Research, Ministry of Health and Family Welfare, Government of India on 10th August, 2019. The proposal underwent rigorous review proves and was finally approved for funding on

1st September, 2020 after one round of revision. The course principal investigator and coordinator then contacted National Programme on Technology Enhanced Learning (NPTEL) for hosting the course in their platform as they have a well-established mechanism of hosting various courses.

NPTEL is a collaborative initiative between the IITs and IISc, supported by the Ministry of Education (MoE) of the Government of India, and was inaugurated in 2003. Originally conceived as an endeavor to bring high-quality education to every part of the nation, NPTEL presently provides nearly 600+ certification courses each semester across approximately 22 disciplines. Massive Open Online Courses (MOOCs) fundamentally serve as an asynchronous educational platform, utilizing pre-recorded lectures, resource videos, lecture notes, assignments, and quizzes for content delivery and self-assessment at regular intervals. The learning process involves a fixed time duration for course completion, leading to synchronous engagement where teachers and a substantial number of students participate simultaneously. This model resembles a traditional physical classroom setting but operates as an online course on a larger scale.

After several rounds of discussions with the NPTEL officials, they finally accepted to host the course on their platform. However, prior to hosting, the course modules were further reviewed by experts facilitated by ICMR-National Institute of Epidemiology, Chennai and NPTEL. The course modules were peer-reviewed by four domain experts from different Institutions and the revisions were made by re-organizing the order of topics, additions of the modules, modifications of specific topics, merging of common topics together, revising the time duration of lectures as per the content. It was decided that the course will be of 12 weeks and will have 6 modules in it covering different aspects

Table 1: Basic profile of learners under online certificate course on One Health

	Total (%)	Male (%)	Female (%)	Other (%)
Age by Category	2058 (100)	986 (47.9)	1068 (51.9)	04 (0.2)
13 – 20 Years	226 (11.0)	134 (13.6)	091 (8.5)	01 (25.0)
20 – 30 Years	849 (41.3)	358 (36.3)	490 (45.9)	01 (25.0)
30 – 40 Years	676 (32.8)	331 (33.6)	343 (32.1)	02 (50.0)
40 – 50 Years	233(11.3)	118 (12.0)	115 (10.8)	00
50 Years & Above	074 (3.6)	045 (4.6)	029 (2.7)	00
Country of Residence				
India	2027 (98.5)	967 (47.7)	1056 (52.1)	04 (0.2)
Outside India	0031 (1.5)	019 (61.3)	0012 (38.7)	00
Occupational Status				
Employed	383 (18.6)	216 (56.4)	166 (43.3)	01 (0.3)
Faculty	548 (26.6)	230 (42.0)	318 (58.0)	00
Students	912 (44.3)	439 (48.1)	472 (51.8)	01 (0.1)
Others	215 (10.4)	101 (47.0)	112 (52.1)	02 (0.9)

related to One Health. The course was divided into following six modules.

Units	Name of Modules	Durations
Unit I	Introduction to One Health	2 Weeks
Unit II	Emerging Infectious Diseases and Antimicrobial Resistance	4 Weeks
Unit III	One Health Application in Management of Zoonotic Diseases	2 Weeks
Unit IV	Applied Epidemiology & Public Health in One Health Research	2 Weeks
Unit V	One Health and Health Policy	1 Week
Unit VI	Media & Community engagement for One Health	1 Week

A total of eighteen professors were invited from across the world for delivering the lectures on the various modules of the course.

The introductory video of the Course which provided an overview of the course was recorded at our campus. The lectures were recorded through both virtual and in person mode. The in-person recording was at ICMR-RMRC Bhubaneswar, IIT Delhi and IIT Kharagpur. The entire recording was completed over a period of 52 days across the mentioned locations. Editing and proof reading was completed in 6 weeks by experts at NPTEL, Chennai.

The programme was launched on the 23rd of January 2023 in presence of the programme Office from Department. of Health Research, Ministry of Health and Family Welfare, Government of India, New Delhi, Principal investigator of the course and other resource persons. NPTEL conducted the course as a self-paced online course, spread across 12 weeks wherein the students had to spend about 3 hours per week. Assignments were designed after each topic to monitor the understanding and knowledge enhancement of the participants. The course was accessible to enrolled participants. Each week content was released based on the units assigned, post which students were given an assignment based on the lecture taught. Grievances and doubts were solved via a google group accessible to students and facilitated by NPTEL. A total of 60 grievances were addressed in this semester. Weekly feedback was obtained to understand the learning concept of the participants. After completion of the

lectures and assignments, an online written test was conducted at multiple centre of the country on 30th April 2023. It was a computer-based examination wherein students had to undertake a three-hour examination at designated centres. A student had to secure minimum 40% marks (75% of Final exam and 25% from weekly assignments) to get the course completion certificate. Participations securing more than 90% will be awarded with the Achievement Award certificates.

A total of 2058 participants across the world enrolled within one month of course advertisement and undertook the course. Participants were post graduate students, research professionals, faculties, policy makers, development sector officials. About 2% of the total participants enrolled from different countries other than India, like Singapore, USA, UK, Nepal, Bangladesh, Sri Lanka, UAE, Canada, Nigeria etc. In India, the majority registrations were from Tamil Nadu, followed by Maharashtra. Majority of participants were aged between 20 to 40 years (74.1%) and about 52% of participants were female (Table 1). In view of its popularity and high enrollment, NPTEL has decided to re-run the course for the next 3 years during the January-April session. An advanced course on One Health that will provide emphasis on the components and further application of One Health in various industries and research institutes, is scheduled to be recorded and launched by 2024.

This present course is the first of its kind on One Health from India and launched online through NPTEL platform and represents a milestone in global health education, bridging the gap between human, animal, and environmental health.

In conclusion, the course will help give light to new directions for research work and studies in the area of One Health which is a growing phenomenon in the current world. Enhancing capacities and fostering One Health collaborations focused on prioritized diseases enables a country to not only address existing challenges posed by emerging diseases more effectively but also establishes robust systems to promptly detect and respond to new threats that may emerge, thus contributing to global health security.⁴ As the world faces unprecedented health challenges and ecological threats, it is imperative that we equip professionals with the necessary tools and knowledge to collaborate across disciplines. By embarking on this transformative journey, participants will not only broaden their horizons but will also contribute to a sustainable and healthier future for all living beings on our planet.

Declarations

Ethics approval

Ethical clearance was obtained from the Institutional Human Ethics Committee of ICMR-Regional Medical Research Centre, Bhubaneswar.

Conflict of Interest

No conflict of interest.

Funding

The study received funding from the Dept. of Health Research, Ministry of Health & Family Welfare, Govt. of India, [File No.R.12019/01/2020-HR dated 01.09.2020].

Acknowledgment

We thank Dept. of Health Research, Ministry of Health & Family Welfare, Govt. of India for providing the funding. We also thank all the resource persons who contributed with their valuable time for recording the informative lectures. We thank all officials of NPTEL for their continuous support and hosting the course in their platform., We are also grateful to Dr. Manickam P, Scientist F, ICMR-National Institute of Epidemiology for providing technical inputs for initiating this certificate course.

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