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Creating a platform to enable collaborative learning in One Health: The Joint Initiative for Teaching and Learning on Global Health Challenges and One Health experience

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ABSTRACT

The "Joint Initiative for Teaching and Learning on Global Health Challenges and One Health" targets education and training in Global Health Challenges and One Health, focusing on surpassing issues that affect One Health training programs. The present work describes the planning, implementation, and challenges to develop an international educational initiative among six partner institutions from four different countries, to build a collaborative teaching and learning environment. The course applies collaborative online international learning principles and is addressed to graduate students of universities from Brazil, Germany, Mozambique, and Kosovo. A pilot curriculum was developed with modules on intercultural competence, interprofessional and collaborative practice in One Health; One Health; healthcare, surveillance, and One Health; bioethics in One Health and careers in Global Health. The course combines synchronous and asynchronous activities developed in groups by mixing students from different institutions and countries. Forty-four experts from 22 institutions of the Americas, Africa, Europe, and Asia collaborated with the course content. Some challenges to implementing the course were the different criteria to assign credits across institutions, the lack of bibliographic material across all partners, limited overlap hours and periods for synchronous activities, and short semester overlap across institutions. Despite the challenges for implementation, the entire process of planning and delivering the course involves intense international collaboration, contributing to the curriculum internationalization, benefiting all institutions involved, promoting exchange even in the challenging scenario of the pandemic of coronavirus disease 2019 (COVID-19).

1. Introduction

One Health is an approach that involves multiple disciplines and sectors aiming to improve health for people, animals, and the environment, with promising impacts in responding to Global Health challenges, such as preventing future pandemics [1]. Nevertheless, disciplinary and cultural silo thinking and lack of trained personnel are some factors that can hamper the implementation of One Health initiatives [2]. Against this background, lecturers from six higher education institutions from Brazil (Federal University of Espírito Santo and Federal University of Paraná), Germany (Ludwig Maximilian University of Munich and Technical University of Munich), Mozambique (Catholic University of Mozambique), and Kosovo (Kolegji AAB) recognizing human resources as a vital capacity for strengthening the health systems locally and globally [3], and the necessity of students learn about the One Health concept [4], have implemented the "Joint Initiative for Teaching and Learning on Global Health Challenges and One Health" (JITOHealth).

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JITOHealth emphasizes Global Health aspects, approaching transnational health issues, their determinants, and solutions essential to reach equitable health for the world population [5]. The initiative discusses how One Health contributes to Global Health Security and the Sustainable Development Goals (SGD) by promoting coordinated responses [6]. The integration of different disciplines is still a challenge for Global Health [7]. Therefore, capacity building among students in this direction should be promoted [8]. We created a teaching and learning platform for the international online course "Global Health Challenges and One Health" for graduate students from the institutions mentioned above. JITOHealth targets education and training, focusing on surpassing challenges previously identified as affecting the effectiveness of One Health training programs: lack of collaborative approach, absence of cross-cultural experiences, insufficient managerial and interpersonal skills, and unequal distribution of scholarly resources, concentrated in developed countries [2].

The present work describes the planning, implementation, and challenges of JITOHealth as an example for other institutions aiming to develop international educational initiatives to promote the One Health approach to students and professionals. Initially, this collaboration was grounded on the network of the Center for International Health at Ludwig Maximilian University of Munich (CIH^{LMU}), Germany. Since 2009, the CIH^{LMU} aims to improve low and middle-income countries' health conditions by promoting medical education and research.

2. Methods

To enable a successful collaborative online learning, we first mapped the local settings regarding resources, needs, and regulations and the previous experience of partners and their institutions in online learning. Training in collaborative online international learning was provided to the partners before project initiation using the Center for Collaborative Online International Learning guideline [9].

Fixed group-meetings with all members took place biweekly, and additional meetings were scheduled based on needs. After searching relevant topics and competence frameworks (knowledge, skills, and attributes) in Global Health and One Health in peer-review manuscripts, books, and online instructional training, we designed the modules and their contents based on a standard curriculum for all partners. Relevance was defined by the consensus of different experts, evidenced by the number of mentions in the specialized scientific literature or instructional materials.

In this process, the learning objectives, course content, and evaluation process were defined considering directions presented by Guilbert [10] and Biggs [11]. A strong focus was placed on selecting the various available teaching and learning methods to stimulate students' active participation and interaction with peers from partner universities. Two coordinators were assigned for each module.

Subsequently, we identified, contacted, and invited experts from different Global Health and One Health fields to collaborate on our initiative. Collaboration from experts took place in different forms: developing course material, holding a session, providing case studies. Therefore, new learning material was developed, taking into account the setting and needs of partners. In addition, up-to-date literature was selected to support the learning process, including papers published in recent years and last editions of classical books on One Health and Global Health. All learning material developed was uploaded on the Moodle platform of the Center for International Health at Ludwig-Maximilians-Universität München (CIH^{LMU}): https://cih-moodle.med.lmu.de/. The platform is being used as the learning environment for the entire course.

Each partner submitted the course proposal to the respective institutions. Thus, the students can earn credits after successful completion of the course. Differences in the semester calendar and time-zones were settled to enable the course's implementation simultaneously among the institutions.

3. Results and discussion

3.1. Course objective

After the identification of relevant topics on Global Health and One Health, we defined the following learning objectives for our course: at the end of the course, the student should be able to 1) understand the importance of collaborative skills in interprofessional action in One Health; 2) describe the role of each professional in the One Health teams; 3) define the importance of One Health in addressing communicable and non-communicable diseases; 4) recognize aspects of human, animal and environmental interconnection in One Health; 5) describe the importance of universal health coverage, health surveillance services and the International Health Regulations in the application of One Health in public health policies; 6) recognize the bioethical aspects in One Health and its paradigms; 7) apply the principles of One Health in projects that address specific situations 8) experience multicultural learning and working in a diverse team of students from different backgrounds.

3.2. Course delivery

JITOHealth implementation considered building collaboration using existing academic resources of the graduate programs involved [12]. The course applies international collaborative learning principles and dimensions: collaboration between teachers and students, integration of online technology, and international dimension to the learning process [9]. Other courses using collaborative online international learning found positive results in developing intercultural competencies [13]. The course standard curriculum for all partners combines synchronous and asynchronous activities. It applies problem-based learning as one of the pedagogical methods to explore the contents, building the necessary interdisciplinary foundation [12]. All activities are developed in groups, mixing students from different countries' institutions, providing contact with other cultures, experiences, and views. The workload of 90 hours was divided into nine weeks, half of them dedicated to project development in international groups of students. The reminiscent workload is addressed for the studies of online content, self-study, and tutoring. Biweekly, two hours are reserved for synchronous activities with the entire group.

3.3. Course structure

The course is comprised of six interconnected modules, one introductory, four delivering core concepts in One Health (Interprofessional and Collaborative Practice in One Health; One Health; Healthcare, Surveillance, and One Health; Bioethics in One Health; Careers in Global Health), and a final module on career perspectives (Fig. 1, Appendix A).

The introductory module (Icebreaker) is designed to enable the students' interaction from the institutions involved, facilitating the group work's development, which unfolds over the entire course. It also covers intercultural competence and communication. In addition to the content on interprofessional and collaborative practice, explored in the second module (Interprofessional and Collaborative Practice in One Health), relevant skills for working in the One Health team are approached, such as interprofessional communication, collaborative leadership, and clarity of professional roles [2].

The module "One Health" includes One Health's principles, focusing on recognizing the interconnection of human, animal, and environmental health and defining One Health's extent in addressing communicable and non-communicable diseases. Therefore, essential subjects covering One Health's breadth are discussed [12] and illustrated with real examples provided by experts from three continents.

The fifth module (Healthcare, Surveillance, and One Health) covers universal health coverage, surveillance systems, and the International Health Regulations and encourages discussions on how health policy may include One Health. This topic considers that the One Health

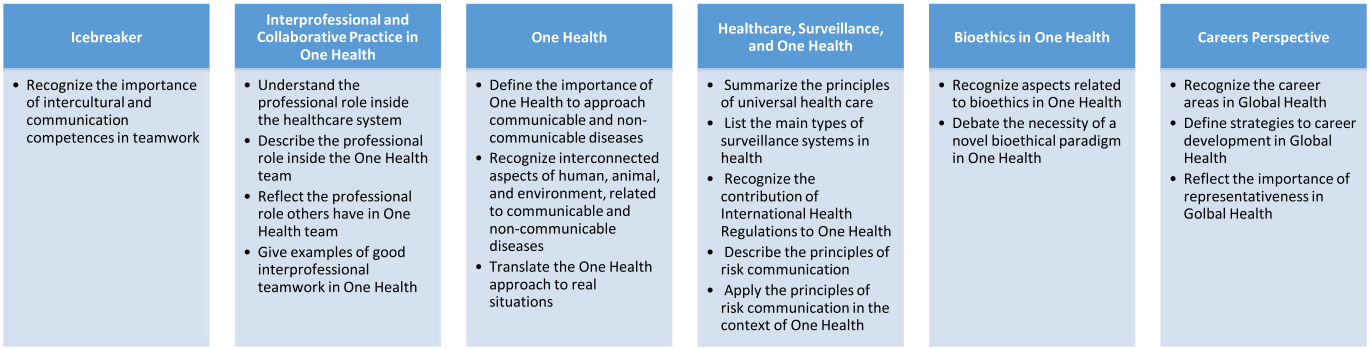

Fig. 1. Modules and their learning objectives: "Global Health Challenges and One Health - JITOHealth".

approach should be integrated into all policy development stages, optimizing the governance and coordination [14].

The module Bioethics in One Health addresses the bioethical paradigms in One Health, including the fair distribution of health between humans, animals, and the environment, promoting reflections on the proper implementation of One Health initiatives. The content raises the reflection on values, conceptions, and priorities orienting professionals to apply the One Health approach ethically [15].

In the last module (careers in Global Health), challenges in the field's job market and career perspectives are discussed, including gender representativeness and early career opportunities. Therefore, the students can reflect on their professions' multiple roles in Global Health and One Health, broadening their career insertion prospects.

3.4. Exams for the evaluation of students

The evaluation of the students is formative, with higher weight for the project development and final presentation. The students will develop a collaborative international project during the study, enabling applying knowledge and core competencies to a "real" health problem. They must consider all dimensions presented in the modules, from interprofessional teamwork, One Health approach application, policies-related, and bioethical aspects. Each group will comprise students of the different partner institutions and be assigned a supervisor (one of the course organizers), who will monitor the project's development over the semester and provide instructions and timely feedback. Other exercises are provided in each module to evaluate the effectiveness of content delivery.

3.5. Contributions from experts

Forty-four experts from 22 institutions of the Americas (Brazil, United States of America), Africa (Mozambique, South Africa), Europe (Germany, Ireland, Portugal, Spain, Sweden, Kosovo), and Asia (Singapore, Philippines) collaborated in developing the course content. Therefore, this myriad of perspectives and experiences can induce a new mindset for the participants, sensitizing them about the role of different professions in One Health teams, considering local, cultural, technical, political, and bioethical aspects that drive responses in specific scenarios and local setups of participating institutions. It also creates an opportunity to establish and develop a network for further research and educational initiatives.

3.6. Involvement of students in the course design

Recognizing the importance of student involvement starting at the course design, students from the partner institutions assisted course development, providing their perspectives and contributions to all modules by searching contents, suggesting activities, and evaluating the workload necessary to complete each module. They were also interviewers of some invited experts.

3.7. Expected course outcome

Training in One Health can facilitate behavioral change of professionals, who will be more prepared to share, exchange, collaborate, and learn from each other to apply One Health [16,17]. The course's outcome is a Webinar with the project presentations, which students will hold at the end of the course.

3.8. Challenges and solutions

Several challenges emerged during the planning and implementation of the course and were identified in the meetings by the coordinators. The organizational challenges include the different criteria to assign credits across institutions, the lack of bibliographic material available across all partners, limited overlap hours for synchronous activities. Education initiatives applying blended learning in international classes faced similar challenges (Global Health, in Australia and Indonesia [18] and Tropical Animal Health, in Belgium and South Africa [19]). It reinforces the necessity of robust logistical support, curriculum alignment [18], and a merged academic calendar [19].

In JITOHealth, the credit assignment was defined according to the institution's criteria, and the number of credits varies by partner. The bibliography was selected according to availability, giving preference to open-source material and eBooks. The synchronous activities were planned biweekly within a 3-month window when semesters in all institutions overlap. A common Moodle platform from the CIH^{LMU} (https://cih-moodle.med.lmu.de), accessible for registered students from all the partner institutions, facilitates student interaction and course management. Another challenge was finding experts on the subjects covered by this course. A list of prominent professors and researchers in each topic was created, and they were contacted via e-mail, telephone, or social media by the modules' coordinators. Therefore, despite a few refusals, it was possible to involve collaborators from different countries and expertise. The technology coordinator recorded the classes and interviews using Zoom© (Zoom Video Communications®) to ensure optimal image and sound quality. Some lecturers opted to provide self-recorded videos. In this case, the technology coordinator provided instructions for recording so that minimum requirements were met.

The solutions provided to address the challenges that arose during the course planning have been sufficient to pilot the course. Nevertheless, a constant qualitative evaluation involving the enrolled students, the student assistants, and the course coordination is planned to identify additional challenges to improve this initiative in a long-term implementation.

4. Conclusion

International collaborative training initiatives, such as JITOHealth, can improve the health systems' performance by empowering professionals from developed and developing countries due to South-South and North-South cooperation. Despite the challenges for implementation, the entire process of planning and delivering the course involves intense international collaboration, contributing to the curriculum's internationalization, benefiting all institutions involved. The initiative also enables exchange opportunities, even in the challenging scenario of the pandemic of coronavirus disease 2019 (COVID-19), overcoming other barriers, such as costs with transportation, lodging, and fees, that impose inequities in the accessibility of such opportunities for low-income students.

Unfortunately, the language barrier may prevent some students from enrolling in the course since sufficient English knowledge is required. Additionally, attendees are primarily from health-related disciplines since all graduate programs involved are health-related. For a long-term implementation, both limitations may be addressed, respectively, by involving institutions from countries with similar language and translating the learning material, and offering places to external students from other areas (e.g., social sciences, economics, law, among others).

Limitations of educational initiatives in One Health pointed previously were addressed in the course [2]. The lack of collaborative approach and the absence of cross-cultural experiences were resolved by developing a collaborative international project, mixing students from different institutions, nationalities, and backgrounds. The managerial and interpersonal skills were approached in the course content, and the skills must be applied in the joint project. The unequal distribution of scholarly resources, concentrated in developed countries, was addressed by involving institutions from developing countries and providing them accessible learning material and platform.

The scenario of Global Health in the XXI century, marked by the emergence and re-emergence of infectious diseases coexisting with non-transmissible chronic diseases in a globalized world, and the necessity of health systems to respond to it adequately, make education initiatives focused on Global Health and One Health promising. These initiatives should promote interdisciplinarity, the development of intercultural competencies, and contact with multiple experiences. A single-discipline and a single sector are not enough to address the complexity of Global Health security. The interdisciplinary and multi-national teamwork with professionals linked to human, animal, and environmental health is emphasized in the course to operationalize the One Health initiatives focusing on the interconnection of these three areas.

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Declarations of interest

None.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.onehlt.2021.100245.

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