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Promotion of one health concept : Iraq Clinician Engagement Program (ICEP)/ The Biological Threat Reduction Program an example

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Abstract

Vast interactions occur between ecosystems-plants- animals and humans, which are considered a risk of increasing emerging, re-emerging, and spreading of diseases. The concept of one Health is a challenging issue to avoid, and we are ready to respond to these complicated circumstances. Promoting the One Health concept among health workers is a critical attempt to encourage a holistic and collaborative approach to healthcare. One Health emphasizes the need for interdisciplinary cooperation to address complex health challenges and empower them to recognize and respond to the interdependencies between human, animal, and environmental health factors. This approach enhances the capacity to prevent and control the spread of diseases, ensuring a more comprehensive and effective healthcare strategy. This study intends to promote One Health Concept between Iraqi Clinicians via a creative Iraq Clinician Engagement Program (CEP) under the Biological Threat Reduction Program, which serves as a noteworthy example. Intensive training and education programs, interdisciplinary workshops, and seminars were provided for clinicians in different areas in the Al Muthanna governorate to enhance their understanding of the linkage of human, animal, and environmental Health. The results of this study showed that employing a combination of Clinician Engagement Programs can effectively promote the One Health concept, fostering collaboration and improving overall health outcomes across disciplines. In conclusion, this study approved the synergistic effects of training and promotion of the One Health concept to propels the workers in the health sector toward a future where Health is viewed comprehensively- a lot where professionals are practiced at navigating the complicated interconnections between humans, animals, and the environment.

Keywords: Iraq CEP, One health concept, zoonotic diseases.

Introduction

The one health concept (OHC) is a multidisciplinary, interactive, and integrative attitude to Health that functions locally, regionally, and internationally. It aims at achieving good



health outcomes for plants, animals, humans, and the environment. The OHC tends to enhance the Health of all organisms and produce a productive effect on health security (1, 2). The OHC is not new; its history and progression are established from the Greek age and continue to the present (3, 4, 5). Nevertheless, the OHC was generated to interface the Health, animal, plant, and ecology (6). This use explains the interconnection between the Health of organisms, humans, plants, animals, and the ecosystem. Therefore, if one of these elements is impaired, the Health of others will suffer. This means the Health of the plants is requested to give rise to the Health of animals that will ameliorate and maintain human Health, consequently producing a healthy ecosystem, which is the heart of the OHC. The primary goal of the One Health concept is to ensure and achieve the best possible Health of humans, animals, plants, and the environment by fostering collaboration among professionals from diverse fields such as medicine, public Health, veterinary science, ecology, dentists, pharmacists, nurses, biology/biotechnology researchers (7). The OHC aims to create a holistic and resilient framework for understanding and managing health issues on a global scale. Ultimately, the goal is to attain a balanced and harmonious coexistence in which the Health of humans, animals, and the environment is considered collectively to benefit the entire planet. The re-emergence of species-to-species and animal-to-human disease transmission has highlighted the significance of OHC (8, 9, 10). Additionally, antimicrobial resistance illustrates the OH approach to a global health issue. The OHC conceptualizes human, animal, and environmental Health, and antimicrobial resistance is strongly related to these three groups via the heavy use of antimicrobial drugs in diverse fields such as agriculture, farm animals, and human therapeutics (11, 12). It is worth to mention the threat of zoonotic diseases on public Health. For example, during the last decades, the emergence of three novel coronaviruses the SARS-CoV-1 severe acute respiratory syndrome), MERS-CoV (Middle East respiratory syndrome coronavirus), and COVID-19 (severe acute respiratory syndrome coronavirus 2) (13, 14). A literature review regarding the application of OHC in the health sector in Iraq revealed scarce publications. Consequently, this study is designed to investigate the application of semi-one health concepts by promoting various features such as training and workshops for clinicians.

Methods

This study was approved by the ethical committee/ministry of Health, and all health workers' written consent was obtained. The study was conducted in the Al Muthanna province, where many Crimean-Congo Haemorrhagic Fever (CCHF) and cutaneous Leishmania were reported. Thirty-nine health professionals (nurses, Pharmacists, physicians, and veterinarians were invited to participate in this program). A Cascade training- Biothreat pathogens including 5-10 modules was conducted in January 2023 and followed by individual interviews to choose and rank outreach activities of the training. Group discussion on CCHF, Leishmania, Anthrax, Q Fever, Plaque, Brucellosis, Tularemia, MERS, and Dengue Fever, their intermediate host and prevention-related procedures were reviewed. Data were collected and analysed.

Results

Thirty-nine health professionals participated in this program, comprising 19 (48.71%) and 20 (51.28%) male and female, respectively. All Participants were interested in the program and attended 5-10 modules, including the training program and seminars (Figure. 1). All participants answered the interview questions, including the demographic

factors (Age, Sex, Profession, Educational level, Place of work), the training level / the focus of training regarding Anthrax, CCHF, Brucellosis, Dengue, Infection prevention, and control, Q Fever, Tularemia, and MERS, in addition to others open questions (Table.1). The participant's attitude and expression were positive in answering the questions.

**CEP/ Training Report
CCHF, ANTHRAX AND IPC
January/ 31/ 2023**

Brief Overview:

This is one of the trainings under the CEP. It is directed to train the staff from DOH in AlMuthanaa on CCHF, ANTHRAX AND IPC to make them aware about the importance of this diseases.

Governorate:

Almuthanaa

Venue:

Forensic medicine

Language(s) of the Training:

Arabic and English

Training Objectives:

Develop knowledge about CCHF, ANTHRAX AND IPC

Training Agenda

Time	Session
9:00-10:00	CCHF
10:00-11:00	ANTHRAX
11:00 -11:30	IPC
11:30-12:00	Group discussion

Figure. 1: Shows an example of the ICEP training program for health professions

Table. 1: Shows an example of the interview report of participant attending the ICE

Criteria	Responder Answer
Name	
Age	year s
Sex	
Profession	
Educational level	
Place of work:	
Training level	Level two
If L2 respondent – please ask to check what was the focus of training	
<input type="radio"/> Anthrax	yes
<input type="radio"/> CCHF	yes
<input type="radio"/> Brucellosis	
<input type="radio"/> Dengue	
<input type="radio"/> Infection prevention and control	
<input type="radio"/> Q Fever,	
<input type="radio"/> Tularemia	
<input type="radio"/> MERS	
1. How useful was the CEP training?	Developing skills and gaining experience
a. Please explain specifics areas of usefulness	Knowledge about Anthrax and CCHF infections
2. What specific areas of zoonotic disease and emerging infectious disease prevention and control have been improved through the training:	
a. Increased knowledge about the zoonotic/emerging infectious diseases	yes
b. Detection using differential diagnosis	yes
c. Diagnosis using laboratory system	yes

d. Treatment (following Iraq CDC guidelines for treatment for each disease)	yes
e. Response – to reduce onward transmission	yes
f. Specimen collection and transportation	yes
g. Case notification and surveillance	yes
h. One Health Approach	yes
i. Risk communication	yes
j. Infection prevention and control	yes
3. How are you using the newly gained skills in your practice?	
a. Please tell us specific areas:	
i. Detection	yes
ii. Diagnosis	yes
iii. Treatment	yes
iv. Prevention	yes
4. What is/are the main challenge(s) in detecting, diagnosing and treating zoonotic/emerging infectious diseases in your area? Please explain	Difficulties in discovering infected animals
- Use probes to see the role of skills gaps, lab access, or other areas	
5. Do you think your colleagues prescribe antibiotics to cases of zoonotic diseases without laboratory results?	In case of Anthrax treated by antibiotic
6. How supportive is the district health management or provincial health department to improve management of zoonotic or emerging infectious diseases?	
7. Do you think your facility and district area actively supporting the implementation of IHR? Are there any specific challenges in its implementation?	
8. Do you think implementing One Health approach in your district is feasible? What are the challenges in ensuring its implementation?	The steps can be applied and adhere to the instructions
9. Since your training have you attempting to coordinate response to the zoonotic threats (anthrax, CCHF, brucellosis) in your district? If not what are the main challenges or bottlenecks?	No case of anthrax or CCHF detected in our district
10. How well is the case notification of the zoonotic diseases working in your districts? What are the main bottlenecks in case notification or zoonotic disease surveillance?	Dealing with carrier models of the disease
11. How well is specimen collection and transportation system working in your district including your facility? Any bottlenecks? Did you make any specific changes after the training?	Compliance with the instructions provided in the training regarding collection and handling of forms
12. Do you have any specific suggestions to improve the clinicians training program (CEP) or any other strategy to improve programmatic response to the zoonotic or other emerging infectious diseases?	The strategy is good and the training is very good

Discussions

The One Health approach accepts the interconnectedness of human, animal, and environmental health and emphasizes collaboration across disciplines to address complex health challenges. Applying the One Health program in health professions involves integrating the expertise of professionals in human health, animal health, and environmental health to achieve holistic and sustainable solutions (2, 3). The current study shows that the application of the OH concept provided a basis for facing major global public health threats for significant zoonotic disease spread with a training program on important pathogens comprising Anthrax, CCHF, Brucellosis, Dengue, Infection prevention and control, Q Fever, Tularemia, and MERS. Although there were previous reports on the occurrence of various zoonotic diseases in Iraq that threatened public health and caused multiple outbreaks, such as Crimean-Congo hemorrhagic fever (15, 16), no previous reports or publications were found in the literature regarding the application of one health concept in promotion of one health concept accompanied with application of particular program the Iraq Clinician Engagement Program (ICEP) for reduction the biological threat. These observations are compatible with previous publications (17), which mentioned the absence of the One Health concept application and research on One

Health in Iraq and other Middle Eastern countries such as Kuwait, Bahrain, Jordan, and Egypt. However, other countries in the Middle East, such as Saudi Arabia and Qatar, have revealed distinct developments in improving public health by employing the OHC in many regions and through different appliances in the medical and veterinary fields. Successful experiences applying OHC require special efforts to expand the population's awareness of the idea and its benefits. Furthermore, these processes must be improved on the public globe and in administrations one step at a time. Predictably, the number of OHC applications and linked programs will rise in Iraq, increasing the quality of public, veterinary, and environmental health.

In conclusion, this study revealed the training and workshops for the promotion of One Health concept among Iraqi health professionals within a unique program called the Iraq Clinician Engagement Program (ICEP). The participants demonstrated a positive attitude and interest in applying the concept. The One Health concept, although new and not yet practiced in Iraq, holds significant potential. By understanding and applying the One Health concept, we can improve human health by enhancing the conditions, medications, and environments of plants and animals. This could lead to a significant improvement in general human health by ensuring the safe extraction of therapeutics and food resources.

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Competing interests statement

All authors state that no conflict of interest arose from publishing this article.

Ethics statement

All authors endorsed that this research follows the journal's ethical guidelines as appeared on the journal's author guidelines page.

Author contributions

KAA: Offered the concepts, wrote, and review the final draft of the manuscript. **MHY:** Established the training and workshops and promoted the One Health concept among Iraqi health professionals within a unique program called the Iraq Clinician Engagement program (ICEP) training and Data collection. **NAN:** Collection of previously published article and wrote the first draft of the manuscript.

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