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Promoting ‘One Health and biosecurity’ community practice and resilience programs and strategies in Africa: Case study of UdM and its partners

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Background

Although significant progress has been made in improving health and safety of vulnerable population in low and middle-income countries (LMICs), there is growing public health emergencies crises due to natural disasters such as (disease outbreaks (Ebola, cholera) and floods, climate change, droughts and mud-/land-sliding) and man-made disasters including armed conflict and resulting forced displacement and refugee crises in LMICs and mainly in Africa (Cameroon, Central Africa Republic, DR Congo, Nigeria, Kenya, South Sudan, Angola, Sierra Leone) .[1] In 2012, 172 million people were affected by armed conflict worldwide and more than 65 million people are forcibly displaced. These have been resulting in significant direct and indirect health impacts including limited access to food, clean water, medicines, pre-existing mental health and other health services). Conflict-affected countries have not achieved a single Millennium Development Goal and have significantly higher maternal and infant mortality rates compared to stable and peaceful countries. Natural disasters affect nearly 160 million people each year, with a disproportionate effect on people and five times than 2 decades ago in LMICs.[2] African countries public health emergency and/or humanitarian crises response has been much slower due to lack of security, deteriorated living conditions, disrupted health systems, and reduced availability of financial and technical resources across Africa.[2]

Very little public health research has been conducted to address in the context of public health emergencies in fragile zones and humanitarian crises situations in reducing catastrophic biological risks. [1,2,3] There is also limited quantity of high-quality research to build evidence around for humanitarian responses. Humanitarian health responses, in some cases, are based more on anecdotal experience rather than accurate research in fostering the elucidation of ‘biosecurity and One Health’ community practice Human-Animal-Environment interface and adaptability to emergency settings. [3,4]

There is an urgent need to promote increase in multi-sectoral professionals collaboration from institutions, researchers, organizations in strengthening community, national and regional evidence-based partnerships emergency preparedness and response specific activities integration and technical assistance in line with the Maputo Declaration, 2008 (in strengthening public health laboratory and Africa CDC centers implementation efforts) and Next Generation for Biosecurity in GHSA Competition (October 25-27, 2017, Uganda)

the Freetown Declaration, 2015 (global health security alliance in strengthening health systems, safety and security education and training innovations).[1,5,6]

Strengthening evidence-based, consistent and reliable community, national and regional ‘One Health’ and biosecurity partnerships, leadership, road maps commitment, approaches and strategies is a crucial for zoonotic diseases threats and outbreaks public health emergencies and other disasters risks humanitarian crises [6,7]. It is also important to note that there are significant gaps in academic and non-academic inter-institutions and others stakeholders collaboration and communication to increase cross-sectional/longitudinal operational research evidence capacity and translation implementation in pre, during and post natural (Ebola) and man-made disaster crises [8,9]. UDM/CUM and community partners have established relationships with the local communities that may benefit from research essential for quality evidence-decision making policy and practice integration strategies in transforming contextual positive knowledge, behavioural and attitudes changes [9].

Robust and sustainable leadership commitment and investment is needed in integration of ‘One Health’ and global health security community advocacy and mitigation programs through students, staff and community/public capacity development and knowledge transfer, community engagement and mentorships and effective risk communication and indicators metrics in grooming next generation public health safety and biosecurity professionals. One Health and safety systems research projects development and implementation are also urgently needed in improving training and educational programs, guiding human-animal health and environment (agricultural and wildlife protection) programming and technical assistance is urgently needed in addressing existing and unprecedented public health emergencies or disaster risk reduction pitfalls for cost effectiveness ‘One Health and biosecurity’ surveillance and communication interventions in African institutions and global partners.

Specific objectives:

- 1) To assess contextual evidence ‘One Health’ and security community practice and resilience policy and practice strategies amongst students, professionals and diverse communities from public health infectious disease and disasters threats in Cameroon
- 2) To promote global health security through ‘One health’ approach local and national priority and advocacy, awareness and vigilance, counselling on existing and emerging public health threat reduction indices, prevention and control programs sustainable commitment and resources mobilization.
- 3) To implement integrated ‘One Health’ and security’ academic learning and laboratory practical programs and activities at UDM and partnership clinical and veterinary and agro farms settings in responding to health system needs, enhanced access to water, sanitation and hygiene which should be constantly reinforced based on sound understanding and freedom of choice.

- 4) To reliable support health research collaborative priorities integration of the best available evidence community and national policy programming and actions plans coupled with technical skills development and training empowerment.
- 5) To optimize 'One Health and biosecurity' targets uptake, indicators metrics effectiveness monitoring and benefits in routine public health programs and humanitarian emergencies crises response contextual guidelines towards future safer and secure generations.

Materials and Methods

Study site and population

Existing structures, students and staff, community partners UdM/CUM(Clinique Universitaire Montagnes) and related hospitals, farmers and Agro-farms population will be used in assessing public health emergencies needs, risk factors and determinants in understanding the perception, knowledge, attitude and practice in evidence-based promotion of integrated One Health approach and biosecurity decision-making approach, priority and targets, methodologies and programs effectiveness indicators surveillance and monitoring in UdM and partners communities in Cameroon. The University benefits from students and teaching staff across the region and providing the most suitable and sustainable diversified environment to mix and switch approach for better One Health approach and Biosecurity programs, regulations and guidelines in Cameroon.

Data collection and analysis

Data and information from students, UdM/CM teaching staff and community partners across the region will be collected. Data will be entered into an Excel spreadsheet. Quality checks will be performed prior analysis using IBM® SPSS® Statistics version 20 (IBM, USA). Frequency tables will be used the general 'One Health and biosecurity' perception, knowledge and practice characteristics to public health emergencies events. Correlation analyses will be performed to measure indices association between groups and Pearson's chi-square test will be used to compare group proportions. P value less than 0.05 will be considered as statistically significant.

Expected outcomes

- (a) Promoting 'One Health' and biosecurity culture, engagement and resilience integration education programs and activities amongst students across field and communities and governments for better and sustainable health and socio-economic development and transformation.
- (b) Mitigate public health emergencies risk factors of infectious disease or disaster threat emergence and spread from conflict/civil unrest events, cross-borders migration, regional/global trade and close human-animal-environment.

- (c) Exploring students and community ‘One Health’ and security’ practice acceptance, adherence (knowledge-based cultural and behavioural changes) amongst groups/professionals and effective adaptations in Africa humanitarian context and interventions or drill scenarios in sustainable community-based partnerships and ownership.
- (d) Strengthening real-time and sustained public health emergencies and disaster risk reduction surveillance, data sharing and information communication in fostering community engagement and education, and shared values
- (e) Evidence-based and integrated ‘One Health and biosecurity’ agenda integration in provincial, national and regional public health (human-animal-environment) surveillance, preparedness, prevention and timely collective response to threats and crises.

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Chart of field and *communication activities*

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<i>Public engagement</i>	█	█	█	█	█								█	█									█	█
<i>Field and schools activities and Deliverable</i>			█	█	█	█	█	█	█	█	█				█	█	█	█	█	█	█	█		
<i>Data quality and analysis</i>					█	█						█	█	█							█	█	█	
<i>Conference, Workshop and seminar</i>	█	█	█										█										█	█
<i>M&E</i>							█						█						█					█
<i>Reporting</i>					█					█					█					█				█
<i>Milestone</i>						█	█	█								█	█	█					█	█