Original Article

A study of the community-based disaster preparedness in Kenyan rural communities

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Abstract

Background: In this article, we describe a study which is based on a project with the overall objective to contribute to the enhancement of health in Kenyan rural communities, particularly in crisis situations. The purpose of the project was to improve the capacities for crisis preparedness and the incident and emergency health care both in higher education and among the health care stakeholders. **Materials and Methods:** Disaster response and emergency management fact sheets (FSs) and evaluation material are used as research data in this study. The main research questions were as follows: (1) Based on student work, what are the main recommendations for the enhancement of crisis preparedness in Kenyan rural communities? and 2) How effective is an intensive course as a method to meet the objective to enhance crisis preparedness in Kenyan rural communities? **Results:** Research results include recommendations for the community. These are the enhancement of the awareness of safety questions, the improved availability of information, developed safety routines and the enhanced personal responsibility of each community member. The results also show that the held intensive course met its objectives fairly well. **Concoctions:** The 2-week intensive course with a few days of field work had a moderate impact in the chosen community and a good impact on the students' learning process. The students were able to give relevant recommendations in their FSs for the enhancement of disaster preparedness in the chosen geographical area. They also seemed to understand the limitation of their work and they reflected on these limitations in an ethical manner.

Key words: Disaster, education, intensive course, preparedness

Introduction

In the project Capacity Building in Crisis Preparedness in Health Care Education (CRIPS), the objective was to contribute to the enhancement of health in the Kenyan rural communities in crisis situations. The purpose was to improve the capacities of crisis preparedness and the emergency health care both in higher education and among the local health care stakeholders. The project was implemented by three collaborative universities of Diaconia and Arcada Universities of Applied Sciences (Finland) and the University of Eastern Africa, Baraton (Kenya). The project included the implementation of the Joint Master's Degree Programme in Global Health Care and establishment of global health care repository at the University of Eastern Africa, Baraton. The capacity building project was supported by the complementary Crisis

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Access this article online	
Quick Response Code:	Website: www.ijhsdm.org
	DOI: 10.4103/2347-9019.191103

How to cite this article: Karvinen I, Lejonqvist GB, Kinnunen ER, Fredriksson M, Halonen R, Koski A. A study of the community-based disaster preparedness in Kenyan rural communities. Int J Health Syst Disaster Manage 2016;4:102-7.

Preparedness Education in Health Care (PREPED) project, which provided the funding for a 2-week intensive course in Kenya. Both projects (CRIPS and PREPED) were part of the official development cooperation with funding provided by the Ministry for Foreign Affairs in Finland.

The vision of the intensive program was to secure that the local inhabitants, stakeholders, and health providers have relevant, evidence-based knowledge of disaster preparedness and management which is location-related and provides a safer environment for holistic development in the area.[1]

The intensive program uses a multicultural approach to care based on Leiningers' transcultural care theory[2] and the values of love, compassion, forgiveness, participation, and safety.[3] Cultural competence promotes the ability to think and behave in ways that enhance effective interaction between members of different cultures,[4] and enables cooperation and adopting new systems alongside the traditional ones.[5]

Literature Review

Community-based disaster preparedness is an important component of broader disaster preparedness efforts with an emphasis on local capacity building and sustainability. The aim is to reduce vulnerability to disasters and increase awareness and the community's own response and motivation to build up local recovery mechanisms and to reduce the need of external aid.[6,7] All countries are touched by crises, conflicts, safety failures, and catastrophes. According to Van Niekerk and Wisner,[8] the most prominent natural hazards are droughts, floods, epidemics, and wildfires. The consequences are affected by the age structure and the poverty issues in developing countries. The vulnerability of the population is the main driver behind the risk of disasters and catastrophes. In Kenya, people are suffering from chronic malnutrition due to the insufficient food stock, mostly because largely spread diseases affect people's productivity and ability to make a living by dealing with food production.[9,10] When the preparedness for emergencies are low, the morbidity and mortality of victims are increasing, and research is giving evidence that major incidents have increased in frequency, severity, and impact in Sub-Saharan Africa.[11]

Rural communities in developing countries are often the ones that suffer most in crisis situations. Within these communities, the most vulnerable groups are women and children. In Kenya, the lack of resources and nonintegrated emergency services cause possibilities for incidents which can easily escalate into major disasters.[11] It is found that hospital staff in some cases in lower-income countries is sensitive to disaster management, but the level of awareness can be slow. More time and resources are needed to be invested to disaster management.[12]

Natural and man-made disasters as a challenge in Kenya

Disasters can be categorized in natural disasters and man-made incidents. Natural disasters include floods, droughts, volcanic eruptions, landslides, and epidemics after these incidents. Man-made incidents include transport accidents, fires, poisoning, terrorist attacks, mass-gathering incidents, and industrial accidents.[11]

Flooding is one of the most predictable and most frequent of natural disasters. Health impacts occur during or straight after the disaster and often there are long-lasting health consequences, such as malnutrition or serious problems with mental health.[13,14] Within the chosen geographic context of Kendu Bay, Lake Victoria plays an important role for the community. The lake provides nutrition and continuity for tradition and living.[15] The ability of local people in Kenya to resist disasters, for example, flooding, has not yet received enough attention.[15] There are several areas (like the Nyanza province) which suffer frequently from floods, exposing residents to waterborne communicable diseases and losing crops leading to hunger and deprivation.[16] Increasing vulnerability is affected by low-income levels and lacking resources, poor planning and management in agriculture, high population density and communities' inexperience in handling problems in flood incidents.[17]

Diseases as cholera and malaria are common aftermaths of floods, for example, flooding in Mozambique in 2000 appeared to increase the number of malaria cases by one and a half to twice compared with the year before and the year after the flood.[18,19]

A common man-made disaster is road traffic accidents, which cause more than 1.2 million deaths worldwide annually,[20] and is a major contributor to the disease burden and deaths in Kenya. Kenya has in recent years been one of the countries with rapid increase in the number of motor vehicles. That combined with a bad traffic infrastructure and increasing speed has led to an increase of the rate of road traffic injuries.[21]

In their study Bachani *et al*. address the consequences of road traffic injuries as insecurity and poverty in communities because most often the victims are males in their active and economically productive ages. Families lose their heads and thereby their social well-being and economic sustainability. Their analysis also reveals that road traffic injuries and related fatalities are constantly increasing, and they adhere to focusing on the increasing use of helmets and reflective clothing and limiting speed.[20]

Safety failures in the health institutions

Not always are either the health-care facilities or educational institutions safe environments. Many kinds of safety issues can be a burden for health-care settings in developing countries. For example, the needlestick injuries with

exposure to HIV are the most common occupational hazards for nursing students.[22] One not so much discussed topic is the violence met in the rural health and training facilities. The forms of violence met vary from physical to psychological abuse.[23] Health-care students face violence mostly from their peers and instructors. Nurse-patient violence is mainly met by graduate nurses. Another severe safety issue is fire. Kenyan schools are poorly prepared for fire and other disasters.[24] There is a lack of equipment and know-how.

Research Questions

This article is based on the field work done by students during an intensive course in the beginning of the Joint Master's Degree Programme in Global Health Care in Kenya, Kendu Bay area. As research material fact sheets (FS) authored by Master's students and their course feedback gathered by questionnaires, the main research questions being:

1. Based on students' work, what are the main recommendations for the enhancement of the crisis preparedness in Kenyan rural communities?
2. How effective is an intensive course as a method to meet the objective of the enhancement of crisis preparedness in Kenyan rural communities?

Methodology

The principal idea for the intensive weeks and the field work was making students key actors in making recommendations for the enhancement of the crisis preparedness in Kenyan rural communities.

The theoretical background of the team-work was the strength-oriented, dialogical, reflective mutual, experimental learning, and developing. The diversity in the teams, the transcultural curriculum, the action plan in the program and the leadership made it possible for the students to learn and develop professionally,[25] and the diversity became visible enabling learning in different situations.[26]

The multi-professional and multicultural expertise individually and in the teams made a reflective practice, where the students learned about and from others, possible and helped the groups to achieve their goals in the enhancement of crisis preparedness in Kenyan rural communities.[27,28]

The authors of the article gathered the FSs and feedback questionnaires and analyzed those using inductive content analyses.[29] The study followed the ethical guidelines given by the World Medical Association Declaration of Helsinki[30] and each student was informed about the study. The challenge was the different contexts of the original data collection (schools, hospital wards, police station, and communities).

The data consisted of six FSs produced by the students ($n = 29$) and by the feedback material collected in the end of the intensive course (16/29 students). The material was analyzed independently by two of the researchers (Ikali Karvinen, Gun-Britt Lejonqvist) using the insights from two people looking at the data.[31] After that, the separate analyses were combined to get a common understanding of the data which was organized in categories. All the researchers then reviewed the analysis, discussed it and reached consensus.

Results

The results of this study are presented according to the two research questions.

Recommendations for enhancement of the crisis preparedness in Kenyan rural communities

Safety hazards in the communities could be found concerning the implementation of general safety plans and national recommendations, safe structures as guidelines, traffic arrangements and evacuation plans, safety arrangements and regulations, and personal safety.

In the content analysis four main categories surfaced concerning recommendations to enhance crisis preparedness and managing them; (1) better awareness, (2) improved availability, (3) developed routines, and (4) personal responsibility.

A better awareness consists of getting to know national recommendations and guidelines for safe actions and to learn safe ways to act. This was especially stressed at the hospital where personal hygiene and hand washing directives and safe disposal of sharp and polluted material should be placed on visible places. Warning by fire alarms and evacuation plans in case of fire, knowledge about safe driving routines and general causes of accidents and preparation for floods and other catastrophes were also stressed in both the institutions and in the community. Continuous education for staff and information to the citizens is needed.

An improved availability means having the equipment to fight against and possibilities to escape in case of disasters. Having fire extinguishers placed well in sight and easy to reach, and securing that fire exits are open and freely reached is important. If possible avoiding grids on windows and locked doors helps in the evacuation as does having the equipment to move people that have problems moving themselves (the elderly and the physically challenged). There needs to be space between beds in hospitals and institutions, so these helping devices fit in. Doors opening outward being wide enough even for a bed are recommended.

In case of flooding permanent toilets should be placed near the risk area and in preventing diseases also possibilities

to uphold good hygiene such as storage of mosquito nets would be important.

Developed routines mean, for example, practicing fire drills and constituting a safety/emergency rescue team. It includes personal safety, as example right-hand washing routines, the right disposal of sharp and polluted material and action plans to prevent the spreading of infectious diseases.

Routines in how to encounter violent and aggressive patients, such as developing a safety culture within the educational organizations, makes the work in hospitals and studies safer and more satisfactory.

Safe routines and checklists for patients in the hospitals and good documentation as a functioning teamwork enhance patient safety.

Regular traffic controls securing the existence of driving licenses, the status of the vehicle as well as the driver make traffic safer and together with the avoidance of overload they become important factors preventing fatal accidents. Maintaining the conditions of the roads and placing road bumps and speed regulations on hazardous places contributes to safety.

Since the same areas yearly have flooded it is important to develop routines to manage them. Digging barriers against the water, planting trees to avoid landslides and in general to have the routines for migration are stressed.

No recommendations, protocols or regulations are enough to enhance safety unless they are followed. The main cause of traffic accidents is careless driving, lack of driving licenses, overloading, and drunk driving. Infections spread due to bad hygiene and fires become disastrous when fire drills have not been undertaken, and evacuation plans are not known.

Intensive course as a method to meet the need of enhancement of the crisis preparedness in Kenyan rural communities

The objective of the intensive course was the enhancement of disaster preparedness in Kenyan rural communities. According to the participants, this objective was met fairly well. On a scale from 1 to 5, whereas one is poor and five is excellent, the mean was 4.25. The participants were also asked how well the intensive course met the areas of emphasis and cross-cutting objectives of the Finnish development policy, and again the results were fairly good. The mean was 3.56.

In the questionnaire, the students were encouraged to reflect on their personal learning process concerning the crisis preparedness and safety issues. From the responses, three different main categories were found. First, the open, encouraging and welcoming attitude of people living in the area and working in the chosen institutions were enhancing the learning possibilities. As one of the participants said:

"The community was quite receptive and welcoming. The community culturally thrives in hospitality and so everybody was willing to assist us as much as possible…"

Second, according to the students, 2 weeks of the intensive course and a couple of days spent in the field is not enough time to get deep in the area of crisis preparedness in the community where the challenges are so demanding. It was said by one respondent as following:

"It was quite hard for me that we had so little time to do the field work. I wanted really to go deeper, because sometimes I felt we cannot give to the people the information they needed."

Third, the students recognized the importance of understanding the local way of living and the local culture. They understood that to be able to have an impact you need to know the culture well and meet the people living in the area with respect and dignity. This was reflected on, for example, in the following manner in the data:

"This was a really good learning experience – I learned a lot about the culture, how to act in this culture (a bit), and felt comfortable when discussing with the locals."

"I also learned that to be able to really understand the community, you have to spend quite a lot of time there. And learn the language. I knew that also before, but now during the field work I really felt it is important."

The students recognized that an ethical reflection is an important part of disaster preparedness work. Witnessing suffering and seeing the lack of interventions from local authorities as not having the power to bring about any important changes.

Discussion

In our research, we found evidence of safety hazards and contributed with recommendations on how to avoid some of them. The produced FSs were left in the communities and disseminated in a seminar, and they show that in this particular rural community in Kenya several obstacles for disaster risk mitigation can be found. The lack of education on the individual level or the lack of understanding of safety procedures on the community level is factors that complicate disaster preparedness. Poor human capacity and the lack of investments in safety procedures result in poor emergency response. Results of this unpreparedness cause direct and indirect losses with short- and long-term effects on the community. Several types of intentional and structural hazards in the institutions were found. Violence met in the institutions, building and construction habits and the lack of safety plans put people in danger.

By a participatory approach enhanced disaster preparedness and management is possible. By paying attention to community awareness, by building human capacity and by focusing on environmental safety many challenges could be tackled.

During the intensive course and the fieldwork ethical reflections were part of the students' processes. The ethics and best practice guidelines were followed and specifically the student themselves raised the importance of the cultural competence.

The field experiences have a long-lasting effect on the student's life. Research done by Haq *et al*.[32] suggests that knowledge, attitudes, and skills gained through international experience have a positive impact on the way students will practice later. Cultural sensitivity, communication skills, and the world view were similar to those in this research.

Conclusions and Recommendations

It is a fact that academic global health programs send out growing numbers of students for field work. Crump and Sugarman[33] have been drafting the ethics and best practice guidelines for training experiences in global health. Programs should be well-structured so that mutual and equitable benefits between all stakeholders are possible. The focus should be on local needs, and the experience should aspire to maintain long-term partnerships. Goals and expectations should be explicit, and norms of professionalism, standards of practice, and effective dealing with cultural differences should be the practice.

According to this study, a 2-week intensive course with a few days of field work had a moderate impact on the chosen community but a good impact on the students' learning process. The students were able to give relevant recommendations in their FSs for the enhancement of disaster preparedness in the area. According to this study, a production of FSs and the dissemination of the results based can be recommended. The study also had limitations. The field work period should be longer. The students should have possibilities to environmental and a cultural orientation before the course including basic language training. This study is our involvement in the paradigm shift, which most of the governments of African countries have to face today; the change from the traditional disaster management and preparedness toward risk reduction as part of community work and development planning.[7]

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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