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Providing the basics for life in humanitarian aid – science education knowledge

Introduction

Humanitarian aid has some basic requirements, initially to support life, but then to promote good health, including mental health. Different groups may need different levels of humanitarian aid but there are fundamental requirements for survival, leading on to care for a healthy life. These are: shelter; water; food; agricultural crisis; sanitation, medical care, children's aid; and refugee aid.

Shelter

Shelter is one of the most important aspects of humanitarian aid. It is often needed when helping people displaced by events such as natural disasters and war. The UN Refugee Agency (<https://www.unhcr.org/uk/>) is a major distributor of shelters such as tents and plastic sheeting, though their official stance is that they want to avoid camps unless necessary. When creating camps, they have to consider how to keep the environment safe from fires and disease. A major need in conflict areas is the need for shelter from rain, cold weather and excessive sun. In the present Ukrainian war, for example, systematic devastating damage to residential buildings is designed to remove the possibilities for shelter, particularly for civilians. Soldiers are generally younger and fitter than the general population, so humanitarian aid can focus on the more vulnerable, the older and very young people, those with underlying medical conditions, those with acute illnesses, and the wounded. Insulation of buildings in the first place to keep the environment warm is a major concern. However, insulation of individuals, such as wearing appropriate clothing to reduce heat loss, is also very important, not least because those fleeing their home are unlikely to have taken care to pick up the best clothing. This aspect is related to science education of heat flows. Being wet through being exposed to the weather increases heat loss driven by evaporation on the body surface. Clothing that is water repellent rather

than water absorbent can keep the body dry although internal sweating can also cause many problems for survival. Additionally, how heat loss is increased by wind on wet clothes is a feature of evaporation.

Water

It doesn't take people long to get sick or die due to a lack of clean water, two to three days from some estimates (e.g. Medical News Today, 2019). According to a 2019 WHO report, a staggering 1 in 3 people cannot access safe water. Women are the most affected by water crises. They are usually the ones responsible for collecting water for the community, which ends up taking up all their time. This keeps women (and their families) caught in the cycle of poverty. Humanitarian aid includes funds for water systems, filters, and more. This is an example of how meeting an immediate need – safe water – can create better conditions for long-term improvements.

Humans (Medical News Today, 2019) can only survive a short amount of time without water because the body needs it for almost every process, including:

- regulating body temperature through sweating and breathing
- aiding in digestion by forming saliva and breaking down food
- moistening mucous membranes
- helping to balance the pH of the body, especially blood
- lubricating joints and the spinal cord
- helping the brain make and use certain hormones
- helping transport toxins out of the cells
- eliminating waste through the urine and breath
- delivering oxygen throughout the body

Food

Food insecurity is a global issue. Issues like population displacement, climate change, and armed conflict contribute to the problem. In fact, people from conflict-affected countries are three times more likely to suffer from undernourishment. Survival without food and water is unlikely to be more than 3 days, while adequately hydrated fit people can last two to three months without food. None of this data comes from planned experiments, which would be unethical of course, but it comes from famine situations which sadly abound throughout the world.

Evidence from the liberation of concentration camps at the end of The Second World War suggests that grossly undernourished humans cannot immediately be given a normal diet (Daly S, 2020)

“They were put on a rich diet and began to recover and put weight on but then they died suddenly.” – Laurie Pettit

Refeeding syndrome for many centuries was an unknown entity and remained somewhat of a myth until the liberation of the Nazi concentration camps in 1945; it is also possibly the least talked about cause of fatality in the Second World War. Soviet soldiers upon the liberation of WWII camps were met by thousands of men, women and children who had been in a state of medical starvation for months on end. The well-meaning soldiers – met at the gates of the camps by POWs with their ribs and sternum protruding from their bodies and chests and obviously in need of medical care – took food such as biscuits and chocolate bars from their own government-issued ration supplies and gave them to the prisoners, not knowing that it would lead to their almost immediate death. It is estimated that 500 POWs from Auschwitz concentration camp and as many as 14,000 from the Belsen concentration camp – most famously known as the site where Anne Frank’s family died upon capture – died of refeeding syndrome.’

Mehanna *et al.* (2008) note that refeeding can cause serious and often fatal shifts in electrolyte and hormonal balances in malnourished patients. Many syllabuses deal with types of food but I have not seen any inclusion of this information in biology curricula.

Agricultural crisis

Problems with agriculture are closely linked to food insecurity, though aid looks different when it is focused on the farmers themselves. Famines are a big cause of dysfunctionality as well as disruptions due to conflict, and diseases that affect crops. Using a 2010 FAO project in Sri Lanka as an example, humanitarian aid for farmers can include vegetable seed kits, home garden kits, barbed wire, water pumps, and livestock. In the Ukraine, which has historically been a great producer of what and cooking oils, the conflict is damaging agriculture, as much from preventing farmers from looking after their crops, as from crop damage by artillery blasts. The Food and Agricultural Organisation of the United Nations (2021) provides more detail.

Sanitation

Access to safe water and sanitation are closely linked. WASH – which stands for “water, sanitation, and hygiene” is an essential public health issue in the Sustainable Development Goals (European Commission n.d.). According to the WHO report mentioned above, 2 billion people do not have access to basic sanitation. This matters because inadequate sanitation is linked to diseases like intestinal worms and diarrhoeal deaths. Good sanitation systems, toilets, and hygiene education are a few examples of sanitation-focused humanitarian aid. The place of disease is covered in many syllabuses.

Medical care

Medical care includes a wide variety of activities, such as pledging funds, materials, and personnel. The Covid-19 pandemic triggered a wave of promises and programs, such as a \$2 billion coordinated response plan from the UN. The success of humanitarian aid in the face of such a severe emergency remains to be seen. Organisations such as Médecins Sans Frontières provide humanitarian aid in a non-partisan way.

Children's aid

In times of trouble, children are extremely vulnerable. Their human rights are often ignored or outright violated. Because of their lack of influence and power, they need adults to speak up for them. In Yemen, which has been suffering one of the world's worst humanitarian crises for years, almost 2.3 million children younger than 5 are at risk of acute malnutrition. Organizations like UNICEF, the largest children's aid organization, focus on providing children with shelter, meals, medicine, and more. UNICEF provide much more information. Providing this information can give hope rather than hopelessness.

Refugee care

Refugees are vulnerable to just about every humanitarian issue on this list, making them a high priority for aid organizations. The International Rescue Committee has been responding to crises for 80 years. They assist in healthcare, education, and economic well-being. Because women and girls are especially vulnerable, many programs focus on them.

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Abstract

Humanitarian aid is essential to preserve life and maintain healthy living. In this article, I focus on aspects of humanitarian aid and link them to the common features of science education in the secondary school. These features are: shelter; water, food, agricultural crisis, sanitation, medical care, children's aid; and refugee aid. How these essentials for survival link to the science curriculum (11–18 years) is described.

Key words: humanitarian aid, science education, knowledge

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