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WARS AS FACTORS CAUSING STARVATION AND MALNUTRITION

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Abstract

The war is one of the heaviest anthropogenic disasters. Such disasters cause a large number of human casualties and cause heavy material loss. Starvation and insufficient nutrition are among the most serious problems that accompany all wars. In such circumstances, farming and food production can suffer huge losses: existing infrastructure such as food warehouses, shops, supply chains, etc., can be destroyed. Foodstuffs might be contaminated with pathogenic microorganisms, radioactive isotopes, chemical warfare agents, etc. Sometimes millions of people suffer and die due to such cases. The purpose of this report is to provide some examples on human and animal starvation regarding wars and to analyze the reasons behind such severe consequences with some suggestions for ensuring food safety during disaster events.

A retrospective and content analysis on scientific articles was carried out. The wars are the reasons for starvation and malnutrition. The usage of weapons of mass destruction can kill many animals and contaminate food for humans and animals with radioactive, chemical and biological substances. There are many examples from previous literature articles showing that starvation and insufficient nutrition are very serious problems during the war for both humans and animals, as for example, the wars in: Sudan, Somalia, Eritrea and Ethiopia, Angola, Afghanistan, Syria, Iraq. Many people die of hunger, but also a lot of animals used for war purposes are affected by starvation as well. The death of a large number of farm animals - cows, sheep, pigs and others is also a cause of starvation of human population.

The hunger and malnutrition are unavoidable consequences during wars. The analysis of these problems from past disasters has made it possible to develop adequate measures to overcome food shortages and reduce the number of human and animal victims.

***Key words**: Disaster, Nutrition, Starvation, Preparedness, Food safety.*

1. Introduction

Wars are the most severe anthropogenic disasters. Throughout human history there have been many wars, some of which have taken millions of lives. Violence in times of war and ethnic conflicts generates millions of refugees, startling scenes of suffering and meaningless deaths (Kalipeni and Oppong, [1]). Wars cause severe destruction of production facilities, deterioration of environmental quality indicators, poverty and social unfairness. Famine is among the most striking aspects of such disasters.

For the last few decades, the number of people who cannot meet their daily food needs without humanitarian assistance has been rising. Several factors are key determinants for their malnutrition, main of which are the intensified armed conflicts and persistent instability in the affected regions. The destructive link between these man-made disastrous situations and hunger even gets worse viewed in the perspective of the livestock sector. Main challenges that overwhelm the recovery of farms and livestock-producing households appear to be also the lack of access to fodder and

animal feed, as well as lack of veterinary services, vaccines, and medicines [2]. The latter increases the risk of animal disease outbreaks and reduces the capacity for disease eradication, for example the outbreak of Peste des Petits Ruminants (sheep and goat plague) registered in North-Kivu, the Democratic Republic of the Congo, where the livestock sector is reportedly devastated since the beginning of the conflict in 2016 [3].

The purpose of this publication is to give examples, to analyze famine related problems and to suggest measures for fighting the problem or, at least, to contribute to decreasing its negative effects.

2. Starvation and malnutrition during wars

2.1 Literature

As data on the agricultural impact of disasters is not recorded on a regional and national level in a systematic way by subsectors, we made analysis on available statistics on infrastructure damage and life loss in disaster events, such as wars and armed conflicts. The consequences of such events with continuous aftermath were also subjected to content analysis. For the purpose of the study, we investigated official documents and reports from international organizations (FAO) and scientific articles on livestock losses, food insecurity and other factors that have a direct influence on the occurrence of undernourishment among the affected population. The articles were derived from the scientific databases PUBMED and ResearchGate, filtered by key words and only topic related articles were extracted for analysis.

2.2 Discussion

2.2.1 Malnutrition and food insecurity during wars

Malnutrition appears in many forms among which are undernutrition and micronutrient deficiencies [4]. In crisis situations, people are at higher risk of undernutrition and micronutrient deficiencies. Looking at the intermittent armed conflicts globally during the last decades, it is obvious that a huge proportion of the world population is suffering from malnutrition. FAO's report on food crises shows that 74 million people in 2018, from 21 conflict-afflicted countries and territories worldwide, were in critical state of undernutrition or worse [3].

Scientific research on food supply and nutrition during war emergencies and afterwards are carried out constantly in order to identify the problems of inadequate feeding and develop programs and measures for addressing them (Dols and Van Arcken, [5]; King and Salthe, [6]; Drummond, [7]; Shillinger, [8]; and Checchi and Robinson, [9]). At the same time conflicts appear to be one of the main causes of food insecurity [3]. It is estimated that of the 815 million people worldwide who suffer from chronic hunger, 146.6 million live in areas affected by protracted crises, and 489 million live in conflict areas. Globally, the mean prevalence of undernourishment in 2016 was 30% among the population from the afflicted areas compared to 10.8% on average in the rest of the developing world [10].

A lot of evidence exists on how wars and their protracted consequences affect the ability of the local communities and migrants within the conflicted territories to maintain their proper and sufficient diet. As the most of the population from the conflict-afflicted countries are income-dependent on agricultural activities, livestock losses during disaster events are one of the main reasons for disruption of local food-supply chains and starvation.

In modern wars the threat of using weapons of mass destruction exists (and has already happened many times up till now). No matter whether accidentally or intentionally, exposure to chemical, biological, radiological or nuclear agents (CBRN agents) poses a serious threat around the world (Popzaharieva *and al.*, [11]). In such severe conditions, providing sufficient nutrition is difficult because of possible contamination of existing food in the affected region. It is a common requirement for food not to be prepared or served in CBRN contaminated environment. The foods, which have been properly packed, must be decontaminated well before opening. CBRN agents enter the food chains, so vegetables in particular, dairy and meat products from a contaminated region are not fit for consumption. Potassium iodide has protective properties, since the absorption of radioiodine in the thyroid gland can be blocked by pharmacological doses of this substance. It is most effective if taken before an explosion, but can still have a positive effect when taken within five to six hours after an explosion. Antioxidant vitamins and supplements should also be included in therapeutic diets because it is well-known that they prevent oxidative stress (Singh, [12]).

Effective use of biological weapons dates back centuries ago and is still a valid threat in military conflicts. It is possible for agricultural crops to be infected with different viruses, bacteria or fungi. Biological weapon attacks, in the form of infectious pathogens like *Burkholderia mallei* (glanders), *Bacillus anthracis* (anthrax), viral avian influenza, foot-and-mouth disease, as well as some encephalitis in horses are also possible. Many of these biological agents are commonly found in the natural environment and are also difficult to detect even by specialized modern technology (Boneva *and al.*, [13]; Gill, [14]).

Farm animals' care is not easy to provide in times of war, because it requires a lot of efforts and resourcefulness. Immediately after a disaster, the most basic needs such

as food, water, recovery and rest should be catered for. After that, the next main purpose should be for animal health to be maintained in good condition with regard to decreasing the risk of negative production results (Waggoner and Olson, [15]).

2.2.2 Examples for starvation and malnutrition during wars

In support to this statement there appear to be data from official reports and analysis of armed conflicts in different geographical regions, including territories in Europe, Africa and Asia.

In January 1943 a large number of soldiers of the Royal Hungarian Army died in Russia, near the river Don, due to lack of food (Tamas, [16]).

There are many similar examples in Africa as well. The continual civil war in Sudan has been the cause of a huge number of deaths and economic losses. Consequent infrastructural disruption in the southern part of the country has brought about famine to a large proportion of the population. UN has been trying to organize long-term supply of agricultural, farm and fish products, as well as urgent famine relieve foods even in insurgent regions (Taylor-Robinson, [17]). The famine and the civil war in Somalia have led to high level of mortality and significant displacement of people (Moore *and al.*, [18]). Military conflict between Eritrea and Ethiopia in 1998 - 2000 caused a food supply crisis, which equally affected both countries during the period (White, [19]). There is a high level of mortality as a result of the civil war in Angola as well, as in the largest proportion of cases the cause of death was famine (Grein *and al.*, [20]).

Afghanistan is currently experiencing a terrible humanitarian crisis, caused mainly by a prolonged war conflict, severe droughts and mass migration of the population. The economy has collapsed. Currently there are about five million Afghan people who are either in camps, in refugee centers in neighboring countries or displaced in different regions of the country. Most of the remaining part of the population is in dire need of basic necessities like food, water, shelter of medical care (Sharp *and al.*, [21]).

Many reports on the situation in Iraq suggest that the noticeable rise in the levels or morbidity and mortality has been due to the military activities during Gulf War in January/February 1991, as well as to the economic sanctions that followed (Garfield and Leu, [22]).

The civil war in the ex-Yugoslav republics in 1991 took more than 150,000 lives, caused about 3.5 million people to be displaced, a vast destruction of healthcare infrastructure, discontinuation of food production and supply and a hoard of other risks to human health in the region [23]. There are similar data concerning the war in the Chechen Republic in 1995 (Drysdale *and al.*, [24]).

Regarding the conflict in the territory of Kosovo in Europe it was estimated that the cattle population was reduced from 400,000 to 200,000 at the end of the war in 1999, leaving the farmers without income and causing serious disruptions in the food supply chains in the area [25].

Crucial losses in the agricultural sector were reported also in the beginning of the armed hostilities in 2006 in Lebanon. According to FAO financial losses to the livestock sector were estimated at around 19.48 million euros. Direct losses accounted to 3,050 head of dairy cattle, 1,250 bulls, 15,000 head of goats and sheep, 18,000 beehives and over 600,000 broilers, killed in the bombing [26]. Indirectly, these damages affected the food security through destroying the markets, disruption of the supply chains, and lack of stock resources for production of animal protein foodstuffs.

Analyzing the humanitarian crisis after the armed conflict in Syria in 2011, it was estimated that the damages to the livestock sector exceeded 1.77 billion € and constituted one-third of the total amount of damages to the agriculture sector [2, 27]. The significant losses affect primarily the rural farming and herding families by destroying their main source of income - live animals. Effects of the complex crisis on the animals left are even worse, as the farmers have very limited access to animal health, which lowers livestock productivity [27, 28]. This insufficient in quantity and quality animal production results inevitably in undernutrition and starvation as the crisis protracted.

For the last decades, the number of people who cannot meet their daily food needs without humanitarian assistance has been rising. Several factors are key determinants for their malnutrition, main of which are the intensified armed conflicts and persistent instability in the affected regions. The destructive link between these human-made disastrous situations and hunger even gets worse viewed in the perspective of the livestock sector. Main challenges that overwhelm the recovery of farms and livestock-producing households appear to be also the lack of access to fodder and animal feed, as well as lack of veterinary services, vaccines, and medicines [28]. The latter increase the risk of animal disease outbreaks and reduce the capacity for disease eradication, for example before mentioned outbreak of Peste des Petits Ruminants registered in North-Kivu, the Democratic Republic of the Congo [3].

2.2.3 Historical data on animals - victims of wartime

Ever since the dawn of humanity, wars have been a major mechanism for conquering new territories, establishing the rule of strong powers and increasing

their wealth. At the same time, however, wars have also caused long periods of famine, the spread of diseases, severe suffering and death of humans and large populations of animals alike, mostly food producing species and beasts of burden but not only. The number of animals which have fallen victims of military actions is stunning. Despite the fact that the main species of animals used in wars has been the horse, other species have also been used for different military purposes, among them: dogs, elephants, camels, mules, llamas, oxen, water buffalos, and pigeons.

In the literature there is enough data, which unequivocally shows how devastating an effect war campaigns can have on the well-being, health and lives of all animals which somehow get involved in them.

During the Napoleonic Wars in 19 century and the invasion on the territory of Russia, more than 300,000 soldiers died and about 30,000 military horses. The overall animal life loss of the Grande Armée was estimated to be over 150,000 cavalry horses and it is generally accepted that a large number of the cases were due to insufficient quantity and poor quality of the forage given to the horses (Dunlop and Williams, [29]).

During the First Afghan War (1838 - 1842) the animals involved in the war conflict also fell in disastrous conditions when the British forces had to cross the treacherous Bolan Pass, on their advance towards Kandahar. Due to lack of any animal food supply and availability of small, insufficient quantities of water, half of the horses and all camels died of hunger and exhaustion. The animal life loss in that military campaign was 30,000 dead camels (Dunlop and Williams, [29]).

Another striking example of bad management and bad organization of military campaigns, which has led to the death of a large number of animals is the Crimean War (1853 - 1856), between Great Britain and Russia. Due to bad planning of resources and non-inclusion of veterinary clinicians in the campaign, the British army sent their military horses by sea without sufficient medicaments and food supply. Cargo ships, carrying food supplies, experienced bad weather, which caused many of them to sink. As a result, the horses were doomed to suffer and die of hunger, gnawing at nearby wooden objects and their own manes and tails in an attempt to survive (Dunlop and Williams, [29]).

The development of technology gradually reduced the use of animals in direct military actions, and in the 1930s all cavalry units stopped using horses for military purpose except for the USSR.

Despite the tremendous technological, scientific and information progress of our time, all military and subsequent complex disasters and humanitarian crises still continue to have a devastating effect on animals around the world. The brutality of war against animals is not only expressed in harmful treatment and exploitation, but also exists in the form of structural violence at all stages of such non-peaceful activities. Scientists generally accept that customary malnutrition, keeping them in inappropriate facilities and harmful conditions, subjecting them to long, exhausting transportation should be considered as violence against animals (Hediger, [30]).

2.2.4 Recommendations for improving disaster security, including veterinary experts

Food insecurity refers to the lack of secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. Acute food insecurity is any manifestation of food insecurity found in a specified area at a specific point in time of a severity that threatens the lives, the livelihoods, or both, regardless of causes, context or duration [3].

As stated by FAO, for people to be food secure, food must consistently be available and accessible in sufficient quantities and diversity and households must be able to utilize (store, cook, prepare and share) the food in a way that has a positive nutritional impact.

Generally, regarding their administrative and legal powers, the competent veterinary authorities at national and international level could significantly contribute to the improvement of the food security provision mechanism, at wartime and after that, in refugee crises, by planning and implementation of certain activities in the following areas:

a. Healthcare and well-being of food producing animals - identifying key points and necessary resources for managing the population of farm animals in affected regions:
   - Status of the animals - information from the National Electronic Database regarding registration and health status of the animals.
   - Availability and appropriateness of animal shelters.
   - Provision of veterinary medical care - medical treatment of injured animals, slaughtering or euthanizing critically suffering animals.
   - Disposure of animal corpses.
   - Identification of animals, recording their transportation and movement.
   - Active participation of animal owners/care-givers in managing the farm animals' populations.
   - Careful planning of food, water and animal bedding availability, suitability and durability
   - Securing the fulfillment of farm activities (milking), milking equipment and facilities for storing the milk.

b. Food safety - identifying key points concerning the safety of foods intended to be used in different emergency shelters and centers (Dimitrova and al., [31]):
   - Evaluating the condition of emergency shelters - mobile kitchens and food banks.
   - Preparing and distributing educational information materials among the population and business operators - providing proper training to kitchen staff hired in emergency centers.
   - Working out a monitoring plan for food preparation and serving supervision - maintaining good hygiene practices in the kitchen, in temporary mobile shops and catering facilities.
   - Regularly taking food samples to be tested and identifying foods that are unsuitable for consumption for properly disposal.
   - Regularly testing the suitability of drinkable water.
   - Cooperation with healthcare institutions for prevention, diagnostics and control of gastro-intestinal diseases.

General framework for the management of crises in the food and feed sector and animal health and welfare is set by the relevant EU legislation [32 - 35] (Decision 2007/412/EC; Regulation (EC) 1099/2009; Regulation 178/2002; Regulation 882/2004).

3. Conclusions

- Wars cause a lot of suffering and human life loss. A large number of people die of hunger during wars. Medical care should be provided to the war-stricken communities. Political measures should be taken for discontinuation of military activities. The emergency needs of the population should be properly identified. Food provision to emergency and refugee shelters should be effectively organized. Financial donors should be approached. Different international, national and non-governmental organizations should be united in providing humanitarian relief.

- One of the many causes of famine among humans in times of war is the mass deaths of farm animals. So advance measures should be identified and actions should be taken for diminishing the cases of death among farm animals, which would alleviate human suffering in such disaster situations.

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