

Andante Study Days “A Vulnerable World Calls for Creative Women”,
Lizari, Latvia, June 2022

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Creation and Medicine

When I was asked to give this talk I thought there should be some reference to theology, but as a practicing doctor and not a theologian, my sources are some scripture, to be precise the New Testament - but also mainly from my experience and current understandings of the health of the planet and its people.

The first recorded surgical operation must be said to be when God removed one of Adam’s ribs to create a co-worker Eve. Since then in Scripture there are many accounts of healing by divine intervention.

The apostles were able to perform miracles even the shadow of an apostle (Act 5:15) or a piece of cloth they touched (Acts 19.12) could heal someone. Paul however told Timothy to take some wine for his stomach ailment (1 Timothy 5.23) which was a natural treatment and James prescribed prayer and oil for someone who was ill (James 5.14) –a common medical intervention in those days.

There are many accounts of Jesus healing every kind of disease and sickness, but note the word used is “healing” not “curing”.

Healing and curing are inherently different. Curing means eliminating all evidence of disease, whereas healing means “becoming whole”. It involves not just the body but the mind and the spirit.

In this talk about Creation and Medicine I am reflecting on the description in the title of this Summer School “A Vulnerable World calls for creative Women” I am taking the vulnerable world to be our planet, our world, our ecosystem, our environment and the people who live in it.

The creative women are all of you.

I am first going to talk about Global health, on the basis of starting big and then working down to individual health.

1. Global health

Global Health is focussing on people across the whole planet rather than the concerns of particular nations. Global health recognises that health is determined by problems, issues and concerns that transcend national boundaries.

Global health is about worldwide health improvement (including mental health), reduction of disparities and protection against global threats that disregard national borders.

In 1978 the International Conference on Primary Health Care in Kazakhstan adopted the Alma-Ata Declaration which defined health as

“a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity”

United Nations Sustainable Development Goals SDGs 2015 Agenda 2030)

Sustainable development Goal 3

Good health and well-being

Targets

1. Reduce maternal mortality
2. End preventable deaths in children under 5 years of age
3. Fight communicable diseases
4. Reduce mortality from non-communicable diseases
5. Promote mental health
6. Prevent and treat substance abuse
7. Reduce road injuries and deaths
8. Universal access to sexual and reproductive care and family planning
9. Universal health coverage
10. Reduce illnesses and deaths from hazardous chemicals and pollutants.
11. Implement WHO framework convention on tobacco control
12. Research, development and access to affordable vaccines and medicines
13. Increase health financing and support health workforce in developing countries
14. Improve early warning systems for global health risks.

The predominant agency concerned with global health is the World Health Organisation, formed in 1948.

2. World Health Authority report April 2022

Overall increases in life expectancy and HLE healthy life expectancy over the last 20 years, as a result of reductions in maternal and child mortality, and in premature mortality from non-communicable diseases (eg Diabetes, heart disease, cancers)

This report also looks at two main indicators for universal health coverage, the extent to which people have access to essential health services; and the extent to which they face financial hardship as a result of having to pay for those services out of their own pockets. Whilst universal health coverage has improved since 2000, catastrophic health expenditure has worsened, which means that increasing numbers of families face financial ruin because of bills for health care.

3. COVID.

The COVID-19 pandemic has posed a major threat to global health and the functioning of health systems. Essential health services experienced widespread disruption due to pandemic-related social restrictions, high patient caseloads, under-resourced health facility infrastructures and shortages of medical equipment, medicines, diagnostics and staff, with health care workers put under severe strain.

Vaccine rollout was predominantly in High income countries, but by early 2022, the global vaccine supply was enough to protect every adult and adolescent with three doses. Research shows that vaccine hesitancy is not the main challenge holding back vaccination in low and lower income countries.

As of April 22. 50.4 million cases (including 6.2 million deaths) were directly attributed to COVID. However many countries have limited testing facilities and registration systems, meaning this is likely to be underreported.

COVID 19 has disproportionately affected vulnerable populations, including those economically disadvantaged, the elderly, people with underlying health conditions and the unvaccinated.

In the UK, there were higher case rates and deaths in the black and ethnic minority communities, which reflects complex factors including, poverty, higher preponderance in jobs which could not be done by remote working, and higher density living, again related to economic issues and culture.

COVID -19 is the latest example of a disease spread across species to humans. Initially thought to have come from bats, it is now thought likely that the source was a pangolin (a scaly ant-eater) the meat of this wild animal is often found in the wet markets of China.

4. Relationships between Humans and the animal world.

There are two types of illnesses which cross from animals to humans and cause diseases. The first are

Vector-borne and parasitic diseases

These include well know mosquito-borne parasitic illnesses such as malaria, dengue fever, Zika virus, west-Nile virus. Travellers to countries where these are endemic are advised to take precautions to prevent infection (for example with insect repellents and mosquito nets. Some like malaria can often be treated, but others have no specific treatments.

The campaign to make Europe Malaria-free started in 1995 when there were 90,000 case per year, by 2015 this had dropped to zero. Climate change and global warming will result in longer breeding seasons and increased hatch-rate for mosquitoes and the enlarged populations will move to the warmer territories. This will expose those regions to mosquito-borne infections not previously seen.

Mosquito-borne disease can be carried from one part of the world to another, as international travel can allow these insects to relocate. West Nile virus was predominantly found in North Africa and the Middle East before it arrived in New York in 1999. It has now established itself with birds as hosts and spread up to Canada, with a few hundred confirmed cases each year.

Zika virus had first been identified in 1947 in samples taken from a rhesus monkey in the Zika forest of Uganda. Between 1969 and 1983 it expanded to equatorial Africa, Indonesia Malaysia and Pakistan, with sporadic human cases. Between 2013-2016 there were outbreaks in the Pacific Islands and in 2015-16 there was an epidemic of Zika virus in Brasil, with an estimated 1.5 million people infected, and 3,500 cases of infant microcephaly. Although the epidemic has ended, it still remains a significant long-term problem.

Zoonoses

Encroachment into and destruction of habitats has brought humans into closer contact with animal species which can lead to the transmission of disease not previously seen in humans.

Diseases transmitted from vertebrate animal to humans are called “Zoonoses”. The pathogen might be a bacteria, a virus or a parasite.

Some cause recurring disease outbreaks such as the Ebola virus, Rift Valley fever and Avian Influenza. Each year, nearly 60,000 people worldwide die of Rabies.

Zoonotic pathogens can spread to humans through any contact point with domestic, agricultural or wild animals. Markets selling meat or by-products of wild animals are particularly high risk due to the large number of new or undocumented pathogens known to exist in some wild animal populations. Urbanisation and the destruction of natural habitats increase the risk of zoonotic diseases by increasing contact between humans and wild animals.

Zoonotic disease cause millions of deaths and economic losses every year.

In countries where land is scarce, or affected by drought or flooding, people can be driven to migrate to previously remote regions bringing them into contact with potential pathogens.

Standards for clean water and waste removal as well as protections for surface water in the natural environment are also important and effective.

5. Biodiversity

Health benefits from animals

I have outlined how animals can be a source of illness for humans, but we must also be aware of the potential for treatments and cures that are found in the animal world.

Animals have long been exploited for their medicinal properties.

Farm animals (pigs and cows) have been sources of insulin, for diabetes; heparin, to reduce blood clotting; sources of pancreatic enzymes and in the development of vaccines.

Use of wild animal species has been less well known in western medicine. However, traditional Chinese medicine uses ingredients from 36 species, and this has led to the endangerment of many animals including rhinos, black bears and seahorses.

Ayurvedic medicine, from India, recommends snake venom for arthritis.

Venoms are amongst the most powerful naturally occurring chemical and much research is on-going to assess potential medical uses.

Peptides (mini proteins) derived from snake venom are being studied for their use in many auto-immune diseases such as rheumatoid arthritis and multiple sclerosis. Venom-derived medicines could potentially reduce the severity of brain damage after a stroke, and a peptide derived from spider venom shows promise for the treatment of epilepsy.

In addition numerous drugs already in the pharmacy are derived from animals

Such as from the saliva of the Gila monster, for diabetes; from cone snake venom to prevent heart attacks; from south American pit vipers to affect blood clotting.

The horseshoe crab, a creature older than dinosaurs, has bright blue blood, which contains immune cells exceptionally sensitive to toxic bacteria. A laboratory test (the LAL test) using these cells is an excellent screening tool to detect contamination in new vaccines and in biological fluids. There are 4 species of horseshoe crab, three in Asia, on the coasts of Vietnam, Borneo and Southern Japan and one on the northeast coast of the USA. These creatures are a critical link to coastal diversity as their eggs feed shore birds and other wild life. They are being harmed by over fishing, coastal building, by pollution and by rising sea levels. The horseshoe crab is now classed as “vulnerable” and is locally extinct in Taiwan.

Despite the many potential applications of animals and animal peptides, however, the time to find new solutions may be running out. Every year thousands of species become extinct, often before we have the chance to discover them.

The next ten years are important for us to slow down this loss and to restore, protect and learn from the biodiversity we have on this planet.

Importance of plants

The ancient Egyptian papyrus – The Ebers Papyrus mentions the uses of herbs for medicinal purposes. Mint and sandalwood for breathing problems, aloe vera for rashes and willow bark for arthritis.

Chinese and Indian medicine also have a long history of the use of plants and herbs to treat disease.

Digitalis, from foxgloves, and aspirin, from the bark of the willow tree have been used for centuries as have the derivatives from the opium poppy, morphine and cocaine from the coca plant.

11% of drugs considered basic and essential by the World Health Authority originate from flowering plants.

One of the most recent anti-malarials, Artemisinin, derived from the plant Artemisia was discovered in 1972 by Tu Youyou, who shared the 2015 Nobel prize for this discovery.

New drugs are being researched all the time. The Madagascan periwinkle “*Catharanthus roseus*” has been found to have anti-cancer properties and drugs derived from it “vincristine” and “vinblastine” are used to treat leukaemia in children. Synthetic derivatives are being developed, which is important to protect these plants, which are in limited supply, from extinction. 500 kgs of the dried leaves yields only 1 gm of vinblastine.

In 2018 genome sequencing has led to the development of a synthetic version of vinblastine. Genome sequencing and genetic engineering can protect rare and vulnerable species. Tobacco plants are easily altered by genetic manipulation. A high volume, inexpensive crop can replace the exploitation of a rare species for drug production.

We are losing species before we are even aware of them, Pollution, over-exploitation of natural resources, introduction of invasive species, change of land use through urbanisation and agriculture are as great a threat as climate change. The rate of extinction of species is accelerating.

6. Environment and Health

Health and wellbeing are influenced by the wider physical environment. 24% of all global deaths, and 20% of deaths in the WHO European region are linked to the environment. Healthier environments could prevent almost one quarter of the global burden of disease. Clean air, stable climate, adequate water, sanitation and hygiene, safe use of chemicals, protection from radiation, healthy and safe work places, health-supportive cities and built environments and a preserved nature are all prerequisites for good health.

In 2021 the World Health Organisation together with UNDP, UNEP, and UNICEF launched a compendium of 500 actions aimed at reducing death and diseases driven by environmental factors. This is available on the WHO website www.who.int.

Air pollution alone leads to 7 million deaths per year, whilst climate change is expected to contribute increasingly to a broad range of health impacts both directly and through its effects on biodiversity.

Young children are especially vulnerable to environmental risks which can affect their survival and life-long health and wellbeing.

Two thirds of deaths attributed to environmental risk factors are from non-communicable diseases such as heart disease, stroke and cancer. Low and middle income countries bear the greatest environmental burden in all types of diseases and injuries.

Socioeconomic inequalities, related to income, employment, education as well as demographic differences such as age or gender are associated with unequal exposure to environmental risk factors. They contribute to health inequities and most often put disadvantaged groups at significantly higher risk of environmental health effects. In the European Union alone about 96 million people are living at risk of poverty. Many of these live in inadequate homes, are exposed to polluted environments and have less access to basic services such as clean water, sanitation of clean energy.

The triple planetary crises of climate change, biodiversity loss and pollution have profound implications for health.

7. Migration

The effects of climate change leading to droughts, rising sea levels and flooding, are contributing to the global phenomenon of migration with close to 272 million international migrants and 740 million internal migrants.

Mobility not only impacts on an individual's physical vulnerability, but also on mental and social wellbeing. Migrants face many obstacles in accessing essential health care services due to a number of factors including irregular immigration status, language barriers, lack of migrant-inclusive health policies and inaccessibility of services. Such disparities impact on the wellbeing of migrants and undermine the realisation of global health goals such as preventing, treating and eliminating HIV, Tuberculosis, malaria. Women and girls are vulnerable to sexual violence and early marriage.

High mortality and morbidity amongst migrants, especially in irregular, forced or exploitative migration situations is an underestimated critical health concern.

8. Individual Health Issues in the context of global Health

Obesity

Our duty, to our creator, is to take responsible care of the body we have been given and to keep as healthy as possible. This should be done with an equally responsible attitude to the care of the planet.

The biggest threat to health in the west, is obesity, which increases the likelihood of development of type 2 diabetes, heart disease, obstructive sleep apnoea, osteoarthritis, and certain types of cancer.

60% of adults and nearly one in three children in the WHO European region are overweight or obese.

Factors involved in this include unhealthy diets including fast foods, lack of exercise.

Swathes of rain forest have been destroyed to provide agricultural land for growing of Palm – for Palm Oil, and for rearing of cattle. Torching of these biodiverse rain forests destroys the habitats of native wild animals and the forest fires contribute to atmospheric pollution in those regions.

Raw Palm Oil not problematic but after refining and hydrogenation it becomes a Trans-fat is high in saturated fat and is widespread in processed foods such as cakes and biscuits.

Another ingredient used in processed and fast foods is High-Fructose Corn Syrup. This is an artificial sugar made from corn. Fructose, unlike glucose, cannot be immediately utilised and has to be converted by the liver into stored carbohydrates (glycogen) or fat.. High fructose intake increases the risks of fatty liver disease, as well as obesity and type 2 diabetes.

Climate change and health

Increasing global temperatures is leading to the frequent episodes of flooding, wild fires and drought all of which bring the health issues previously covered.

On an individual level, it is known that increasing night time temperatures reduce the amount of sleep that a person gets. Studies suggest that the average global citizen is already losing 44 hours of sleep each year, leading to 11 nights with less than 7 hours sleep (a standard benchmark for sufficient sleep)

Previous studies shown that rising temperatures lead to increased rates of heart attacks, suicides, mental health crises and accidents and injuries, as well as reduced ability to work.

Poor sleep may also have these impacts, and worryingly, there is no sign that humans are adapting to hotter nights.

Engaging with Nature

One of the few gains from the periods of lockdown during the COVID19 pandemic has been a realisation of how important nature became. People walked outside for exercise but became more aware of their green surroundings and local wildlife.

The world became quieter, cleaner and more obviously full of nature.

Walking in nature is not just beneficial for physical health, it also has impact on mental health,

A study by the university of Chicago on the health effect of planting trees showed that planting 10 additional trees in an area improved the health outcomes of people living in that area.

Just think what a walk in the forest might do?

Forest air is healthy, forest walking improves immune function, increases metabolism, and lowers stress hormones.

In Japan there is a practice called “Shinrin-yoku” “Forest-bathing” which can be prescribed by doctors. It is a way of immersing yourself in nature in a mindful way, using your senses to derive a whole range of benefits for your physical, mental, emotional and social health.

In the UK there is an increasing interest in the health benefits of “wild-swimming” even through the winter. This is swimming outdoors in lakes, rivers and the sea (this might not be unusual for many of you) but in UK it is rare because the water is cold.

Cold immersion soothes muscles aches, relieves depression and boosts the immune system. Over a 12 week period repeated cold swimming leads to “cold adaptation” with reduction in blood pressure and cholesterol, reduced fat deposition, inhibited blood clotting

Did Lockdown help nature heal?

There are numerous reports of the beneficial effects of lockdown on nature. Improved air quality, lower noise levels, but the most important outcome might be the increased understanding of the interdependence between human beings and creation and mutual health benefits that could come from the increased awareness.