

Forum: Science, Technology and Innovation Committee

Issue: Science and health care

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Introduction

2000 years ago, the Earth was home to just 300 million humans, roughly the population of the United States today. Two hundred years ago, 1 billion humans lived on our planet Earth. The world population is now at over 7 billion and growing rapidly. If current trends continue, we will add another 1 billion to the world population every 13 or 14 years. This explosive growth was possible because of the availability of antibiotics, immunizations, clean water, and increased food production, yielding tremendous improvements in infant and child mortality.

Due to radically different population structures, Less Economically Developed Countries (LEDCs, defined below) and More Economically Developed Countries (MEDCs, defined below) have different situations that are in need of handling. Improved sewerage system, increased access to clean water and public healthcare is indispensable in augmenting the quality of life of people in LEDCs. Meanwhile, most MEDCs already provide their population with a heightened quality of life. MEDCs may want to concentrate on improving healthcare for the elderly population; the sector of the population that has steadily been increasing.

Science can be related to healthcare in many ways. Enhancing access to internet may provide the population with more information and not only leads to a healthier life style but inform the population on which symptoms are dangerous, where they can receive treatment and how to avoid catching diseases. Developing educational courses for doctors and nurses so that they are able to master new equipment may also be beneficial. Sharing of information between hospitals and countries and encouraging people to develop new machines, medicines and treatment are more ways of reinforcing healthcare.

Definition of Key Terms

Healthcare

The prevention and treatment of illness and the preservation of mental and physical well-being through the services offered by the licensed professionals.

MEDCs

More Economically Developed Countries; these countries commonly have more resources, active trades and a higher quality of life (stage 4 or 5 in the demographic transition model). Most of the working population in MEDCs work

in the tertiary sector of industry and very little of the population work in agriculture business since the primary sector of industry is highly mechanized. Typically, MEDCs have lower birth rates and high life expectancies due to advanced medical technology and its accessibility. Advanced sewerage system, balanced diet and access to clean water has significantly decreased the number of death before the age of 60. Nonetheless, new healthcare plans for old dependent population (population over the age of 65) are in need. MEDCs include countries such as USA, UK, France and Germany.

LEDCs

Less Economically Developed Countries; these countries typically have limited resources, low trade and a low quality of life. Much of the working population in LEDCs work in the primary and the secondary sector of industry and underage labour is still employed in many LEDCs. A large percent of the population has not been educated and illiteracy rate is often quite high. LEDCs usually have a high birthrate (due to high infant mortality rate (IMR), high death rate and a low life expectancy. Enhanced sewerage system and general medical access is crucial in improving healthcare in LEDCs. LEDCs include countries such as Ghana, Nigeria and Congo.

Millennium Development Goals

The Millennium Development Goals (MDGs) are eight international development goals that were officially established following the Millennium Summit of the United Nations in 2000, following the adoption of the United Nations Millennium Declaration. All 193 United Nations member states and at least 23 international organizations have agreed to achieve these goals by the year 2015. The goals are:

1. Eradicating extreme poverty and hunger,
2. Achieving universal primary education,
3. Promoting gender equality and empowering women,
4. Reducing child mortality rates,
5. Improving maternal health,
6. Combating HIV/AIDS, malaria, and other diseases,
7. Ensuring environmental sustainability,
8. Developing a global partnership for development.

Vaccination

A preparation of a weakened or killed pathogen, such as a bacterium or virus, or of a portion of the pathogen's structure that upon administration stimulates antibody production or cellular immunity against the pathogen but is incapable of causing severe infection. Smallpox was eradicated mainly due to vaccination. Opponents of vaccination argue that mandatory vaccinations violate individual rights or religious freedom. These arguments have reduced vaccination rates in certain communities, resulting in outbreaks of preventable, and sometimes fatal, childhood illnesses.

Current Healthcare Situation

Cholera still kills thousands of people in areas without basic sanitation and clean water supply each year. 33 million people worldwide are living with AIDs and 20 million have died; no cure is yet found. One third of the world's population carries TB bacteria inside their bodies and 1 in 10 will develop TB. Lack of clean water, basic sanitation system and access to medical care are the three main reasons for high death rates in LEDCs.

While the diseases above are prevalent in LEDCs, they are not so prevalent in MEDCs. Currently, MEDCs have a steadily increasing old dependent population and new healthcare programs to aid the retired population are in need.

Major Organizations and Countries Involved

World Health Organization

WHO is the directing and coordinating authority for health within the United Nations. It is responsible for providing leadership on global health matters, shaping the health research agenda, setting norms and standards, articulating evidence-based policy options, providing technical support to countries and monitoring and assessing health trends.

WHO also takes part in enhancing public health by:

- providing leadership on matters critical to health and engaging in partnerships where joint action is needed;
- shaping the research agenda and stimulating the generation, translation and dissemination of valuable knowledge;
- setting norms and standards and promoting and monitoring their implementation;
- articulating ethical and evidence-based policy options;
- monitoring the health situation and assessing health trends.

United Nations Development Program

UNDP partners with people at all levels of society to help build nations that can withstand crisis, and drive and sustain the kind of growth that improves the quality of life for everyone. On the ground in 177 countries and territories, UNDP offer global perspective and local insight to help empower lives and build resilient nations. UNDP has taken leadership in the MDGs.

United Nations Children's Fund

UNICEF is taking an active part in reducing child mortality rate (following the MDGs); UNICEF is chiefly responsible for the progress made in 13 indicators concerning child mortality rate. UNICEF began its mission in 1946 as a relief organization for children after World War II. Its mandate soon expanded to helping children whose lives were at risk in developing countries. UNICEF bases its actions on up-to-date substantial research and experience on what

works to help give children the best start in life, to survive and thrive, especially in emergencies, and to go to school.

United Nations Acquired Immunodeficiency Disease

A UN organization whose mission is to lead and inspire the world in achieving universal access to HIV prevention, treatment, care and support.

Timeline of Events

1000 BC: Chinese doctors practiced variolation (an older version of vaccination)

1347: Black Death (plague) sweeps through Europe and kills one third of its population

1600s: People start to think about where diseases come from (wearing costumes to prevent the catching of plagues)

1656: Discovery of blood transfusion

Early 1700: 400,000 people die every year from smallpox in Europe

1718: Lady Mary Wortley carries out variolation (placing dried smallpox scabs under the skin of people) in Britain. Dramatic decrease in death from smallpox

1747: Cause of scurvy discovered and the importance of a balanced diet becomes better known

1810-1830: Compulsory vaccination laws adopted in Northern Europe

1830s: Worldwide epidemic of cholera

1840s: Widespread use of anesthetics

1840-1880: Protests against vaccination in Britain

1858: Contaminated source of water found to be the source of cholera

1873: Improved sanitation leads to significant drop of outbreaks of cholera in USA.

1879: First vaccine for cholera

1897: First vaccine for plague

1926: Vaccination against tuberculosis is developed

1930s: First evidence of the existence of HIV/AIDs

1975: Last case of smallpox

1983: AIDs identified

1900s: Surgery is now common and doctors are no longer expected to provide free healthcare to all the hospital's patients

1990s: Tuberculosis reemerges, no cure

2000: Millennium Development Goals established

2000s: Healthcare cost steadily rising

2015: Deadline for the MDGs

Previous Attempts to Solve the Issue

Millennium Development Goals

Out of the eight goals mentioned above, only three are directly relevant to the subject of this research report.

1.Reduce child mortality

Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

- Child deaths are falling, but not quickly enough to reach the target
- Revitalizing efforts against pneumonia and diarrhea, while bolstering nutrition, could save millions of children
- Recent success in controlling measles may be short-lived if funding gaps are not bridged

Results

- Globally, deaths within the first month of life fell from 32 per 1,000 live births in 1990 to 23 in 2010.
- Since 1990, in the developing regions, the mortality rate of under-five years old has declined by 35 percent, from 97 deaths per 1,000 births to 63.
- Sub-Saharan Africa suffers though a higher neonatal mortality rate (35 deaths per 1,000 live births in 2010) than any other region, and has recorded the least improvement over the last two decades.
- Children in the developing regions as a whole are twice as likely to die before their fifth birthday as children in the richest 20 percent of households.

2. Improve maternal health

Reduce by three quarters the maternal mortality ratio

- Most maternal deaths could be avoided
- Giving birth is especially risky in Southern Asia and sub-Saharan Africa, where most women deliver without skilled care

Achieve universal access to reproductive health

- Inequalities in care during pregnancy are striking

- Only one in three rural women in developing regions receive the recommended care during pregnancy
- Progress has stalled in reducing the number of teenage pregnancies, putting more young mothers at risk
- Poverty and lack of education perpetuate high adolescent birth rates
- Progress in expanding the use of contraceptives by women has slowed
- Use of contraception is lowest among the poorest women and those with no education
- Inadequate funding for family planning is a major failure in fulfilling commitments to improving women's reproductive health

Results

- An estimated 287,000 maternal deaths occurred in 2010 worldwide, a decline of 47 percent from 1990.
- More than half of all women aged 15 to 49 who were married or in a union were using some form of contraception in 2010 in all regions except sub-Saharan Africa and Oceania
- The use of contraception is lowest among the poorest women and those with no education.
- While Southern Africa reported almost universal coverage in 2010, in West Africa about one-third of women did not receive antenatal care visits.

3. Combat HIV/AIDs, malaria and other diseases

Have halted by 2015 and begun to reverse the spread of HIV/AIDS

- The spread of HIV appears to have stabilized in most regions, and more people are surviving longer
- Many young people still lack the knowledge to protect themselves against HIV
- In sub-Saharan Africa, knowledge of HIV increases with wealth and among those living in urban areas
- Children orphaned by AIDS suffer more than the loss of parents

Achieve, by 2010, universal access to treatment for HIV/AIDS for all those who need it

- The rate of new HIV infections continues to outstrip the expansion of treatment
- Expanded treatment for HIV-positive women also safeguards their newborns

Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases

- Across Africa, expanded use of insecticide-treated bed nets is protecting communities from malaria
- Poverty continues to limit use of mosquito nets
- Children from the poorest households are least likely to receive treatment for malaria
- Progress on tuberculosis inches forward

- Tuberculosis prevalence is falling in most regions
- Tuberculosis remains the second leading killer after HIV

Results

- In sub-Saharan Africa, annual new infections in 2011 reached 1.7 million people, including 300,000 children. This is 21 percent lower than the 1997 peak and 15 percent lower than in 2001
- The number of people dying of AIDS- related causes fell to 1.7 million in 2011, a decline of 24% since the peak in 2005
- HIV incidence and prevalence is substantially lower in Asia than in some other regions. But the absolute size of the Asia population means it has the second largest number of people living with HIV

The three MDGs aforementioned have led to substantial success in upgrading healthcare all around the world, especially in LEDCs. Nonetheless there still exists disparities in healthcare and new goals are needed in order to avoid stagnating the existing medical system. Furthermore, there have been no goals referring to the aging population.

Possible Solutions

- Educating people (especially women) on how to avoid catching prevalent diseases
- Educating people on how to use recent technology to improve sanitation
- Making new technology (computers with access to the internet for example) more accessible, notably in LEDCs and among elder population
- Considering many MEDCs' population structure and trying to build a retirement plan that would handle the current aging population
- Making vaccination against certain diseases obligatory
- Increase clean water supply all around the world
- Develop indigenous knowledge on traditional ways of treating illnesses

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