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South Sudan, Infectious Diseases

## **South Sudan: Exponential solution to one of the highest maternal mortality rates and under-five mortality rates in the world.**

### **Introduction**

Founded on July 9th, 2011, South Sudan is the most recent country in the world. With a long history of war, starting with gaining independence from Egypt in 1956, internal issues started because North Sudan promised South Sudan would be included in the political system, but the promise was not kept. This led to two periods of civil war, concluding with more than 2.5 million civilian deaths due to starvation and drought.(The World Factbook [TWFB], 2022)

South Sudan has experienced almost an eternity in conflict. Human rights abuses and ethnic massacres are just examples of how people in the country have been affected over the years. As a result, there are many issues in South Sudan nowadays: poor sanitation, low incomes, food insecurity, poor access to health care and clean water, etc. All these help to increase the most worrisome problem: diseases.(TWFB, 2022)

Malaria, bacterial or protozoal diarrhea, hepatitis A and E, and dengue fever are examples of the major infectious diseases with a very high degree of risk in South Sudan. Poor access to health care and a limited number of health workers makes it more challenging to improve some of the worst health outcome indicators in the world.(The World Health Organization [WHO], 2018)

75% of all child deaths are because of preventable diseases like pneumonia and diarrhea. The high under-five mortality rate of 95 deaths per 1,000 live births reflects the access children have to basic health interventions, like vaccinations, medical treatment and adequate nutrition.(UNICEF DATA, n.d)

In 2017 South Sudan had the highest maternal mortality rate globally, which is directly related to the limited number of health workers in the country. 1,150 mothers die per 100,000 live births due to an aggravated pregnancy or its management.(TWFB, 2022)

### **Country and family**

With a population of 11.19 million, 80% of South Sudanese live in a rural environment and depend on farming. Agriculture is the main source of work for four-fifths of the population( Robert O. Collins, n.d), with an average wage per day of 1.90 USD per person (World Bank Group, 2021). Besides that, people also work in the oil and gas industry(Careers In Africa, n.d). South Sudan holds one of the richest agricultural areas in Africa, with abundant natural resources and water supplies. Nevertheless, they only have 4.4% of arable land. South Sudan also holds a part of the Nile river. The weather varies between hot and seasonal rainfall to seasonal drought, which has a bilateral effect in agriculture.(TWFB, 2022)

The majority of the population is between the ages of 0-14, and only 2.53% of the population are 65 years or older. There is a variety of ethnic groups, but the most abundant are the Dinka with an estimated 40% of the population.(TWFB, 2022)

A regular South Sudanese family has approximately 6 people. Families usually try to have as many children as possible. Most of the families are patriarchal. Men are the primary providers and women are in charge of the household duties and child rearing(AFS-USA, n.d). Families are usually very religious. Most are Christians with traditional cultural practices, but a portion of the rural population follows traditional African animist beliefs(TWFB, 2022). According to research done at the State University of New York at Buffalo, the structure of a house in South Sudan is primarily made out of natural resources. Grass thatched mud huts are where 90% of the population raise their children (C. Little & Kalyoncu, n.d). As mentioned before, families try to have as many children as possible, which may lead to the use of public spaces to congregate.(Nina Evason, 2018)

Access to education is extremely poor due to lack of schools, qualified teachers and materials. Also, teachers and students are struggling because of the switch of the official language from Arabic to English(AFS-USA, n.d). Less than a third of the population is literate and many adults missed out on their education because of warfare or displacement; therefore, it is expected to cause a delay in learning and getting used to the new official language.(TWFB, 2022)

Most of South Sudan is dependent on subsistence agriculture and humanitarian assistance. Less than 2% of the population has access to electricity and about 90% of goods and services are exported from neighboring countries. 78.4% of the population have access to a drinking water source, while only 24,6% have access to sanitation.(TWFB, 2022)

The government relies on oil for the vast majority of its budget revenue, being the most oil-dependent country in the world. The pipeline goes through Sudan, so it will be a while until both countries are completely oil-independent from each other.(Guy Blaise, 2017)

Poverty and food insecurity have risen due to the considerable debt because of increased military spending and high government corruption, consistently affecting insufficient food supplies, an economic downturn and high food prices. 76.4% of the population is below the poverty line.(World Bank Group, 2021)

### **Challenge and impact**

The highest maternal mortality rate in the world is caused by several factors. Severe acute malnutrition, TB, HIV/AIDS are the most common causes. Pregnant women with HIV/AIDS pass it through birth to their child, which is why there is a high number of young children with the disease. An estimated 4,500 children between 0 and 19 years of age have HIV.(UNICEF DATA, n.d)

There are other concerning percentages that elevate this rate too. Only 17% of the female population has antenatal care visits at least four times before birth, 19% of women in the last two or five years gave birth with a skilled health worker. If more women had access to a well-trained health professional, the mortality rate would rapidly decrease, because this kind of care can be life-saving for both mother and baby. They can recognize complications, refer mothers to emergency care or be able to perform a Cesarean section. Consistent with the previous information, only 1% of deliveries have been by C-section. In addition, there is no available data for postnatal care for mothers or babies, which is concerning due to the high rates of deliveries with no skilled personnel(UNICEF DATA,

n.d). Mothers and babies go home without postpartum care and not knowing if they have any health issues. On the other hand, because of cultural beliefs women do not seek obstetric care, so they refuse to go to a hospital and most of them give birth at home. However, if some of them wanted to seek health care, it is still difficult due to the large number of people living in remote villages, where humanitarian assistance cannot reach them as fast as they would want because of the extremely long way they have to go by foot to assist some communities. (Gloria Luka, 2018)

Most maternal deaths occur when children are still under one year old. Both maternal and under-five mortality rates are related; therefore, with the poor and insecure living of the South Sudanese, if the mother dies, the child is more than likely to die as well, which is probably what happens in many situations.

One in every ten children in South Sudan dies before their fifth birthday. 75% of under-five children deaths are because of malaria, diarrhea and pneumonia. Levels of immunization of children under one year old are improving but still just half of them are fully immunized. Not enough medical supplies, persistent flooding, bad roads, not enough health professionals, malnutrition, are some of the reasons why children in South Sudan die before they are five.(UNICEF DATA, n.d)

Diarrhea and pneumonia are diseases that could be prevented with good nutrition and a drinkable water source. Most children with diarrhea die because of dehydration. The problem is that children do not have access to basic needs. The mortality rate would decrease if they had access to vaccines, food, clean water, and sanitation, if parents had a higher income to pay for these supplies, and enough health professionals. Malaria is a preventable disease too: even though it is caused by a mosquito, it can easily be treated with an antiparasitic or antibiotic.

South Sudan implemented an alternative education system which condenses 8 years of school into 4, added programs to increase peace and reduce youth crime in small communities, and supported a safety net project by The World Bank that is fundamental for life standards, living conditions and increasing the possibility of acquiring basic needs, etc. Even though these governmental efforts are incredibly helpful, the damage is profound.(Selim et al., 2022)

### **Solutions and recommendations**

The World Health Organization and UNICEF are working on solutions for these two issues. They are educating health workers to bring services to people living in places far away from the nearest clinic. They are also working on immunization, and bringing medications and equipment to support the treatment of diseases. They support the government with different campaigns to prevent and treat mainly HIV/AIDS, tuberculosis and malaria.(WHO, 2018)

Doctors Without Borders is an organization known for helping countries in different types of conflict. In 2020 and 2021, they started campaigns all over South Sudan, providing intensive medical care in outbreaks of heavy fighting. They have treated more than 200,000 malaria cases, assisted approximately 12,000 births and performed 5,700 surgical interventions, among other types of care.(Doctors Without Borders, n.d)

Two complementary solutions would help improve these two issues. First, a temporary solution: keep training health professionals from the area and specifically from rural areas that can take care of people near them. Focus on obstetric care, pediatric skills, Cesarean sections, training people from different sectors and communities to be midwives, taking care of infections, and basic diseases, like a

cold. They would need a provider for supplies but the WHO and UNICEF can help with that. Bring skilled doctors from different countries that are able to manage complications. They would have to stay for a period of time, but there can be two groups that can switch, 6 months each. The same organizations should focus on helping the government improve sanitation to at least basic functioning, as well as the percentage of drinkable water, which would be the basis of improving the mortality rates. Nutrition mainly for children under 5 years old should be a priority. Breast milk, baby formulas, and balanced meals, especially children with lower resources and from rural areas. Children under 5 or mothers that have given birth should be taken to the hospital for at least a basic full check up. HIV/AIDS treatment should be a priority for pregnant women and younger children, and enough medication for the urgent patients. Distribution of malaria medication should be improved to increase hydration in children and urgent patients. Lastly, besides implementing and having the initiative of improving sanitation, percentage of drinkable water, food supply, etc. The government should also add in schools, tv, billboards, flyers, with the educational purpose of expanding the population's knowledge on birth control, basic sanitation, balanced nutrition, disease control, and just general information related to the subject. This is definitely needed in the situation they are in as a country and it would help build the basic care that the South Sudanese have been wanting.

Then, the exponential solution. Imagine this solution as a pyramid. At the bottom there are basic needs for the population: water, food, sanitation. Second: education. Third: jobs, employment. At the end, if all of these steps are accomplished, higher needs would develop by themselves, like health care. This solution might take time, but while it is progressing, the temporary solution takes full responsibility.

Starting with basic needs. The government should take the initiative to supply these basic needs. With the help of the WHO, UNICEF and Doctors Without Borders putting full focus on them, they can achieve this goal. With water and sanitation, the spread of disease would be partially prevented. Enough nutrients and a balanced diet would improve everyone's immune system, giving them a better defense against infections. Estimated time: 3 years. Then, education. We can start with elementary schools, teaching them how to read and write would make their lives much easier. Technical school for young people would train them to work as plumbers, technicians, electricians, paramedics, etc. This would lead to better paid jobs. After some time, more jobs would be offered and higher education opportunities would rise too. Estimated time: 6 years.

The third step is jobs and employment, as previously mentioned, with more education alternatives higher paid jobs would increase. The government should start negotiations with big enterprises that would give a large number of jobs for the population without higher education. By developing higher paid jobs, income would increase, which would expand opportunities for education and food for families. At some point when the economy and population is ready, universities would start training professionals, like health workers. Estimated time: 12 years.

Accomplishing all of the steps of the pyramid might take some time, but it will develop a basic society. Children would have the nutrition they need, education, protection, security, health care, and adults would have well paid jobs, stable houses, transportation, security, health care, and enough resources for a living. Almost every issue they are experiencing right now would be improved, especially the mortality rates. They would have their own health care professionals, enough medication supplies, immunization for small children, well-trained obstetricians, etc.

It is a long way until this solution can be achieved 100%, but it is definitely worth it to make the necessary efforts to improve the quality of life of the South Sudanese.

## Conclusion

It is heartbreaking that many children in South Sudan die because of diseases that can be easily treated or because of dehydration and malnutrition. The government should be working on a solution but with the internal issues they have, it is hard. Other organizations are doing the best that they can, but sometimes it is not enough. They should be working together to settle urgent goals.

Many children grow up without a mother because of the lack of health care personnel to assist them in labor. Qualified health workers should be taking care of the mothers before and after the birth, as well as taking care of the newborn babies.

To decrease the maternal mortality rate and under-five mortality rate, medication for malaria, pneumonia, diarrhea, HIV/AIDS, and tuberculosis have to be well distributed, and sufficient water and food supplies should be available for the population. By improving their way of life with the resources mentioned above, a lot of lives would be saved in South Sudan.

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