

Exploring the impact of GDP on Maternal Mortality

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Background

Abstract

Maternal mortality rate, often measured as the number of maternal deaths per 100,000 live births, is a critical indicator of the health and well-being of mothers during pregnancy, childbirth, and the postpartum period. Monitoring and addressing maternal mortality are essential components of global efforts to improve maternal health, reduce health disparities, and ensure access to quality healthcare for women worldwide.

Problem Statement

Globally, approximately 287,000 women died during and after pregnancy in 2020, 95% of those deaths occurred in Low and Middle - Income countries. However, most of these deaths could have been prevented [1]. This prompts us to investigate causes of these fatalities, particularly the factors contributing to their prevalence in Low- and Middle-Income countries.

These fatalities serve as a representation of disparities in access to quality healthcare services, , contributing to an higher risk of maternal mortality among women in low-income nations compared to their counterparts in high-income regions [1]. These deaths are mainly caused by:

- Complications occurring during or post childbirth
- Inadequate management throughout pregnancy and the postpartum period

The main reason women fail to get quality health care in these regions is the cost of health services. Looking at the globe at a glance, by 2020, 659 million people, of the world's population lived on less than 2.15 USD daily. More than one third of employed workers in Sub- Saharan Africa live on less than 1.90 USD daily [2]. Other factors include:

- Failure in health systems that translate to untrained medical personel and shortage of medical supplies
- Harmful gender norms that do not prioritize the rights of women and girls including their right to quality medical services during and after pregnancy [1]

Research Questions

1. What is the correlaton between maternal death rates and the GDP per capita, as an indicator of the poverty gap?
2. Which countries are most affected (by deaths) and (by poor GDP) and why?
3. What has been the trend of GDP over the years?
4. What is the trend in the maternal deaths?

Datasets Used

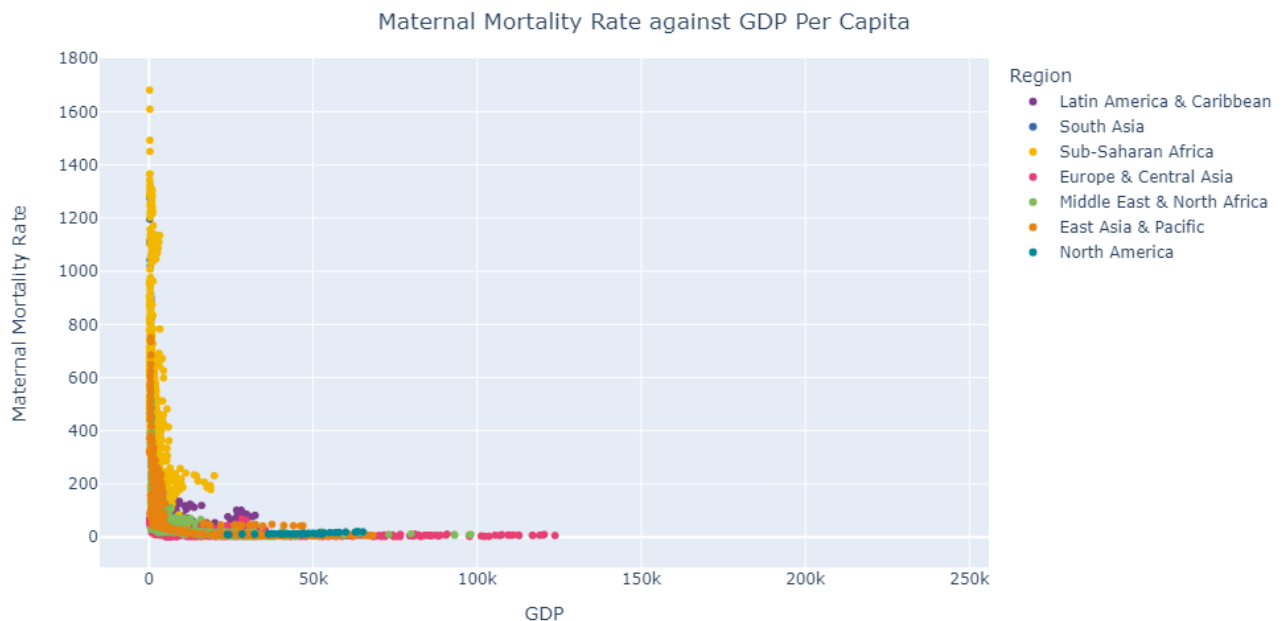
1. GDP per capita (current US\$)
2. Maternal mortality ratio (modeled estimate, per 100,000 live births)

Tools

1. Pandas - A Python library for data manipulation and analysis, used for data cleaning, exploring, and transformation
2. Plotly – A data visualization library that supports interactive plotting

Results

Relationship between Maternal Mortality Rate and GDP



1A Scatterplot showing the relationship between Maternal Mortality Rate and GDP

We observe a strong negative correlation between maternal mortality rate and GDP per capita. As GDP per capita increases, the maternal mortality rate decreases.

We also observe a large variation in maternal mortality rates between different regions of the world. Countries in Sub-Saharan Africa have the highest maternal mortality rates, while North America has the lowest. This is indicative of factors such as access to healthcare, poverty, and education, which can all be linked back to GDP.

Conclusion

Countries with lower economic levels often have higher maternal mortality rates. However, even as some countries in Sub-Saharan Africa improve economically, maternal mortality rates see only slight reductions. This suggests that economic growth alone may not be enough to significantly lower maternal mortality rates.

Therefore, efforts being made by humanitarian organizations in partnership with governments and Non-Governmental Organizations to lower the cost of maternal health care, and to equip medical facilities with supplies needed to offer quality services at a lower cost are a major factor to the lowering of maternal mortality rate. This is in line with SDG target 3.8 - "Achieve universal health coverage, including financial risk

protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all”. [3]

Other contributing factors include:

1. Training of medical personnel
2. Sensitizing women on the need to seek medical care
3. Involving communities in advocating for prioritization of women’s rights to quality health care

References

- [1] ‘Maternal mortality’. Accessed: Jan. 07, 2024. [Online]. Available: <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>
- [2] ‘— SDG Indicators’. Accessed: Jan. 07, 2024. [Online]. Available: <https://unstats.un.org/sdgs/report/2019/goal-01/>
- [3] ‘Good health & well-being | SDG 3: Good health & well-being’. Accessed: Jan. 07, 2024. [Online]. Available: <https://datatopics.worldbank.org/sdgatlas/goal-3-good-health-and-well-being/>