



Burden of Protein Energy Malnutrition: National and Regional level analysis

Protein energy malnutrition (PEM) is the commonest malnutrition in resource limited countries causing far-reaching public health and economic impact.

The rate of malnutrition among under-five children in the country is among the highest in the world and Sub-Saharan Africa.

Despite its significance, little is known about the burden of PEM, the changing trend across regional states and across ages. Using GBD 2019 study, this evidence brief presents trend and burden of PEM at national and regional state level as an input for policy directives.

Key Finding

Death attributed to PEM

Age standardized death rate due to PEM was 83.0 per 100,000 population in 1990 and 12.9 per 100,000 in 2019 (Table 1).

DALYs

The DALYs rate of PEM in Ethiopia has shown 85% decline between 1990 and 2019. Compared to burden of nutritional deficiencies for all ages in 2019, the burden of PEM, was found to be the first at national and sub-national level like Amhara, Benshangul Gumuz, Oromia, Somali and SNNP (Table 3)

Table 1: Age standardized death rate and DALYs rate of PEM in Ethiopia from GBD 1990 to 2019

| Measures | 1990 | | 2019 | |
|--------------|--------------------------|--------|--------------------------|-------|
| | Nutritional Deficiency % | PEM % | Nutritional Deficiency % | PEM % |
| DALYs | 5103.4 | 4003.0 | 1083.1 | 492.1 |
| Death | 92.6 | 83.0 | 13.9 | 12.9 |

- There was a variation among regions in the age standardized death rate of PEM where Afar, Benshangul Gumuz and Somali region held the first three highest positions with the values of (35,33 and 27) per 100k in 2019 respectively.

Prevalence rate of PEM

- Age standardized prevalence rate of PEM was 1671 per 100,000 population in 2019 (Table 2).
- The reduction of prevalence rate of PEM from 1990 to 2019 in under five children compared to all age was very low (Table 2).

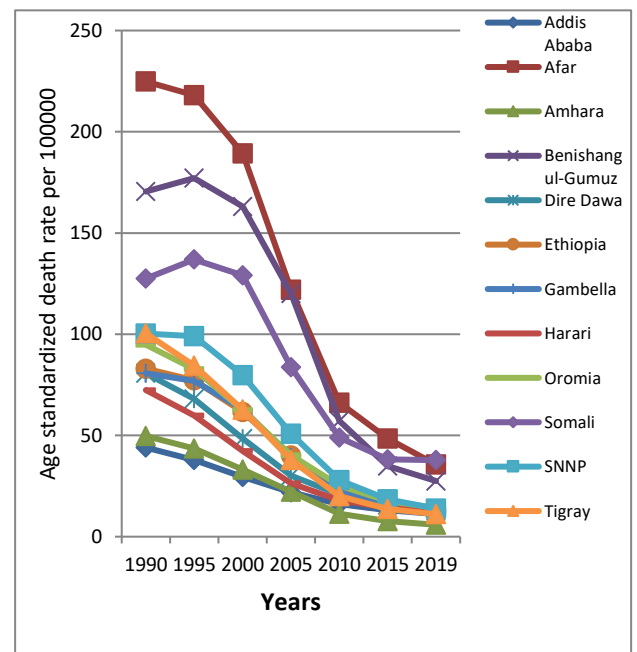


Figure 1: Trend of death rate of PEM per 100,000 populations at National and subnational level 1990 to 2019

Table 1: Prevalence rate of PEM in Ethiopia GBD 1990-2019 per 100k population?

| Age group | Prevalence of PEM | | Change 1990 to 2019 |
|------------------|-------------------|------|---------------------|
| | 1990 | 2019 | |
| Age standardized | 2025 | 1671 | -17.5 |
| All age | 1525 | 956 | -37.3 |
| <5 | 13.2 | 12.4 | -6.1 |





Rate of change in Prevalence of protein energy malnutrition over period

There was a continuous reduction of prevalence rate of PEM from 2000 to 2015, but an increase of the rate after 2015(Figure 2)

Figure 2: Change of age standardized prevalence rate of PEM across different periods, GBD 1990 to 2019

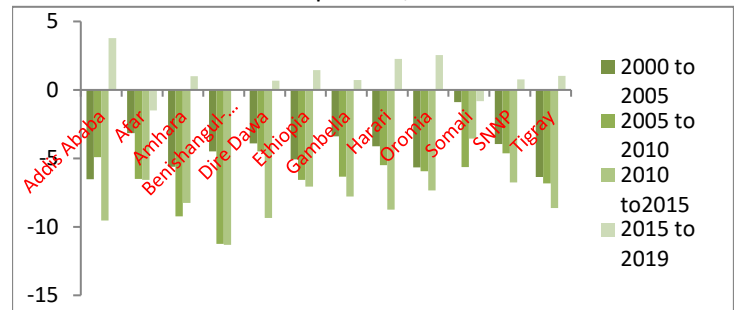


Table 2: Rank of DALYs rate of PEM among all nutritional deficiencies at National and subnational regional states level GBD 2019

| Types of deficiencies | Ethiopia | Addis Ababa | Afar | Amhara | BG | DD | Gambella | Harari | Oromia | Somalia | SNNP | Tigray |
|-----------------------|----------|-------------|------|--------|----|----|----------|--------|--------|---------|------|--------|
| PEM | 1 | 2 | 2 | 1 | 1 | 2 | 2 | 2 | 1 | 1 | 1 | 2 |
| Dietary Iron | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 1 | 2 | 2 | 2 | 1 |
| Vitamin A | 4 | 5 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 4 | 4 |
| Other nutritional | 5 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Iodine | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 |

Conclusion:

- PEM has shown dramatic decline in prevalence rate between 1990 2015.
- However, it has been reversed since 2015 at national and regional level.
- Highest proportion of death caused by nutritional deficiency was attributed to PEM.
- Therefore, the government should take concrete steps to closely follow on the implementation of programs such as National Nutrition Program, the Food and Nutrition Policy, the Seqota Declaration and strategies to reduce the burden of PEM.
- There should be strong collaborations of health, agricultural, educational and other directly involved sectors in the implementation of the programs.

Acknowledgment

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