

Editorial

Redefining the burden of anaemia in Sri Lanka

LS Basnayake¹

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The world health organization (WHO) defines anaemia as a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal that is required to meet physiological needs by age, sex, elevation of residence, smoking habits and pregnancy status¹. Anaemia is the commonest haematological disorder worldwide affecting one fourth of its population².

Estimation of global burden of diseases is crucial for developing appropriate interventions to meet international targets for disease mitigation³. The global burden of diseases (GBD), injuries and risk factors study is a systematic analysis and calculation of causes and risk factors of death and disability due to diseases³. It provides a comprehensive framework to quantify the prevalence, years lived with disability and trends of disease burden across all geographies, demographics, and causes³. According to GBD 2021 the global prevalence of anaemia was around 24.3% as the third leading cause of disability worldwide². This study describes prevalence, years lived with disability (YLD) and trends of anaemia and its underlying causes in 204 countries and territories³.

Large variation has been observed in the burden of anaemia by age, sex, and geography; children under 5 years, women in reproductive age and low and middle income countries (sub-Saharan Africa and south Asia) being most affected². Anaemia caused 52.0 million years lived in disability (YLD)

in 2021³. Anaemia is caused by conditions that result in blood loss, reduce the lifespan of red blood cells and reduce the synthesis of haemoglobin or red blood cells³. The most common causes of anaemia identified in 2021 were dietary iron deficiency (YLD rate per 100,000 population-422.4) followed by haemoglobinopathies and haemolytic anaemias (89.0) and other neglected tropical diseases (36.3)³.

Anaemia is a widespread global health problem associated with poor health outcomes, increased morbidity and mortality, and substantial health and economic costs, leading to a wide range of health problems, such as fatigue, weakness, impaired cognitive and motor development and susceptibility to infections in young children^{2,3}. In pregnant women, it is linked to increased maternal and neonatal morbidity and mortality with increased rates of preterm labour, postpartum haemorrhage, low birthweight, short gestation, stillbirth and infections in both child and mother^{2,3}. Particularly in adults anaemia will lead to weakness, fatigue, difficulty in concentrating and challenges with work and activities of daily life. In older adults (>65 years) anaemia is an identified risk factor for hospitalisation, poorer surgical outcomes and increased mortality³.

The WHO global target is to reduce anaemia by 50% in women of reproductive age by 2025⁴. But the high global prevalence of anaemia persists despite recognition of this major health problem, clear global targets for its reduction and the presence of known interventions to tackle the issue². There are many reasons for this.

¹Consultant Haematologist, Base Hospital, Tangalle, Sri Lanka.

E-mail: seuwandib@gmail.com



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Though anaemia can be caused by a complex list of underlying causes, most anaemia reduction strategies have focused only on iron replacement. The reason for this could be that iron deficiency is a common manifestation of anaemia and dietary interventions are comparatively simple⁵. However iron replacement will only be one of the measures to correct iron deficiency that occurs due to many reasons such as blood loss, inhibitors to oral iron etc.

The well-established WHO thresholds for anaemia are the values used widely in defining anaemia including GBD study. A fundamental issue of whether haemoglobin cutoffs to define anaemia are appropriate is now of concern. However, they are currently being revised and the planned revised WHO cutoffs may help reducing anaemia in key populations².

Many studies on anaemia have been carried out in Sri Lanka, earliest found in this literature search dating back to late 1960's and early 1970's where De Mel and Sood found that haemoglobin was <11g/dL in 73.7% of the examined 2794 pregnant women in all health districts of Sri Lanka. An island-wide study in 1978 revealed that the prevalence of iron deficiency was 39% in men, 68% in women, 70% in primary school girls and 52% in pre-school children¹⁰. In 1988 Silva and Atukorala indicated that, women in late stage of pregnancy had significantly lower haemoglobin than women in early stages of pregnancy and non-pregnant women¹⁰. Liyanage KDEC (1992) studied a population of 400 children in villages of Galle district and found that 54.5% of them were clearly anaemic and out of those who were not anaemic 42.9% had evidence of iron depletion as indicated by serum ferritin values¹⁰. A cross-sectional survey performed by Hettiarachchi et al in 2003 on 945 school children of ages 12-16 years in Galle district revealed that the prevalence of anaemia (Hb <120.0 g/L) was 49.5% in males and 58.1% in females and among anaemic children 30.2% of males and 47.8% of females were iron deficient (serum ferritin <30.0 µg/L)¹¹. Rates of anaemia was 16.6% and iron deficiency was 36.9% in 350 pregnant women (between 12-20 weeks of gestation), presenting to an obstetric unit, teaching hospital Mahamodera, Galle in 2017 were at levels of mild to moderate public health significance respectively¹².

It is clear that most of these studies are small, regional and carried out among small targeted populations such as school children, pregnant women and certain vulnerable socioeconomic communities. They have mainly studied the prevalence of anaemia only. Studies that have attempted to identify causes for anaemia have concentrated more on nutritional factors, mainly iron deficiency, ignoring many other non-nutritional causes such as haemoglobinopathies and other red cell disorders, non-communicable disease and drugs contributing to anaemia⁹. Thus, the true disease burden across the population is not reflected in the published data.

The most recently published national data on anaemia in Sri Lanka as available in the National Nutrition and Micronutrient Survey in Sri Lanka: 2022, published by the Department of Nutrition, Medical Research Institute the prevalence of anaemia in Sri Lanka is reported 14.6% showing a wide variation according to age sex and geographical area⁶. This too was based on a study carried out in a representative sample of 2936 households from the 25 districts of Sri Lanka identified using a multistage cluster sampling procedure. Haemoglobin estimations were done among 1210 children and 1086 pregnant women included from the antenatal clinics conducted within the clusters⁶. The prevalence of anaemia was highest among children between 6 to 11 years (30%) and reduced gradually with age. North-central province recorded the highest prevalence of anaemia (20.6%). The age related prevalence of iron deficiency too showed a similar pattern to overall anaemia prevalence. The highest prevalence of iron deficiency was recorded from the central province (8.6%) and the estate sector (12.1%). Urban and rural sectors had much less prevalence, 5% and 4.4% respectively⁶.

In the National Nutrition and Micronutrient survey (MRI/UNICEF) 2014 factors contributing to anaemia were studied and 52.3% of anaemic children had iron deficiency, while 12.8% had haemoglobinopathies and 4.3% had acute infections⁷⁰. This order is comparable to the GBD study. National Nutrition Policy of Sri Lanka 2021-2030 have implemented strategies to reduce the prevalence of all micronutrient deficiencies among children under five years, adolescents, adults and pregnant women to less than 10% by 2030⁸.

Despite all international and national data on the burden and prevalence of anaemia and strategies to overcome, anaemia is one of the commonest problems encountered by a haematologist. But the effort that has been made to study this common clinical manifestation is limited.

Iron deficiency being the commonest cause for anaemia worldwide and island wide and hypochromic microcytic anaemia being a commonest morphological finding in the blood films reported minimum attempt has been taken to address these areas in haematology research. Other than iron deficiency, haemoglobinopathies and many other causes contribute to hypochromic microcytic anaemia. Haemoglobinopathy screening is carried out in many centers island wide. A haemoglobinopathy registry is now under implementation and once completed will be of benefit in compiling data to assess the accurate burden of this condition.

Considering the recent economic crisis the country has faced and the shattering of the socioeconomic lifestyle of its people, the true disease burden of anaemia which is directly influenced by the socioeconomic status of the population may have changed from the values described before.

Therefore it is timely that haematologists make serious attempts in developing research capabilities to understand the true burden of anaemia in the community, starting from defining true cut off values to define anaemia in our population and studying its prevalence and causes, its consequences and disabilities i.e. the true burden of anaemia in Sri Lanka and implementing strategies for treatment and prevention.

The global impression on anaemia is that efforts should continue to identify and correct it, for people affected to feel the difference that addressing untreated anaemia will bring to their quality of life².

Redefining the burden of anaemia in Sri Lanka and implementation of strategies to overcome it will be the pathway to major changes in the quality of life of its people and hence their intellectual and socioeconomic status.

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References

1. https://www.who.int/health-topics/anaemia#tab=tab_1
2. Tackling the enormous global burden of anaemia: www.thelancet.com/haematology Vol 10 September 2023: 695.
3. Prevalence, years lived with disability, and trends in anaemia burden by severity and cause, 1990-2021: www.thelancet.com/haematology [https://doi.org/10.1016/S2352-3026\(23\)00160-6](https://doi.org/10.1016/S2352-3026(23)00160-6)
4. <https://www.who.int/teams/nutrition-and-food-safety/global-targets-2025>
5. Vos T, Lim SS, Abbafati C, et al. Global burden of 369 diseases and injuries in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. *Lancet* 2020; **396**: 1204-22.
6. National Nutrition and Micronutrient survey (MRI/ UNICEF, 2022).
7. National Nutrition and Micronutrient survey (MRI/ UNICEF, 2014).
8. National Nutrition Policy of Sri Lanka 2021-2030.
9. Premawardhena A. Anaemia in Sri Lanka: the missing pieces. *Ceylon Medical Journal* 2018; **63**: 105-7. <http://doi.org/10.4038/cmj.v63i3.8728>
10. Liyanage KDCE, Iron deficiency anaemia in Sri Lanka, https://inis.iaea.org/collection/NCLCollectionStore/_Public/25/061/25061726.pdf
11. Hettiarachchi M, Liyanage C, Wickremasinghe R, Hilmers DC, Abrahams SA. Prevalence and severity of micronutrient deficiency: a cross-sectional study among adolescents in Sri Lanka. *Asia Pac J Clin Nutr*. 2006; **15**(1): 56-63.
12. Senadheera D, Goonewardene M, Mampitiya I. Anaemia and iron deficiency in pregnant women attending an antenatal clinic in a Teaching Hospital in Southern Sri Lanka. *Ceylon Med J*. 2017; **62**(3): 175-83.