PERIODIC UPDATE ON ANEMIA

ISSUE No. 1

NEWS IN BRIEF APRIL-MAY 2019

To accelerate efforts on reducing anemia in India, the periodic upadates on amemia inform partners on recent anemia related news and events along with emerging researches and developments in global, regional, and national policies and programs pertaining to anemia.

Please feel free to share any feedback at nceara.aiims@gmail.com

NEWS AND EVENTS

1. CAPPT: Comprehensive Anemia Programme and Personalised Therapy (CAPPT)

Three days discussion on project CAPPT was organised at the Centre for Community Medicine, All India Institute of Medical Sciences from 6th-8th May, 2019. CAPPT project is a multi-centre cluster randomised control trial planned to be conducted in Nepal and India to assess the effectiveness of enhanced, tailored antenatal care to reduce the anemia in pregnancy. The interventions, theory of change, process evaluation and formative research were discussed in the workshop.

2. "Aadhiwali Zindagi Mitao, Thalassemia Test Karao" Campaign

The campaign was launched by The Wishing Factory on the World Thalassemia Day, 8th May 2019 to spread awareness about Thalassemia and premarital screening. The campaign was promoted by many celebrities. They posted a photograph of their half face to spread awareness on thalassemia.

3. "Anemia is a public health emergency that needs to be addressed immediately" - The Indian Express, 20th May 2019

India is home to the largest number of malnourished children in the world despite a significant reduction in number of people living in extreme poverty and implementation of various inventions. There has been no perceptible decline in the prevalence of anemia, and it still remains a public health emergency which needs to be addressed immediately. Some of the strategies adopted by the Government of India to tackle the problem of anemia include supplementation of IFA tablets and provision of iron fortified salt.

4. Second Anemia Mukt Bharat (AMB) partner's meeting

The second AMB partners meeting was organised on 30th May 2019 with the objective of identifying and reaching consensus on key action points in five identified domains for harmonized and coordinated action by partners at national and state level to accelerate implementation of AMB with quality. More than 40 partners participated in the meeting.

RESEARCH AND DEVELOPMENT

1. Association of age and anemia with adiponectin serum levels in normal weight Japanese women (Journal of Clinical Medicine Research).

The study reported a significant association of anemia with higher prevalence of hyperadiponectinemia and higher serum adiponectin in 65 years or older normal weight Japanese women.
Link: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6469885/

2. Association of blood donation with iron deficiency among adolescent and adult females in the United States: a nationally representative study (Transfusion).

A group of authors reported that blood donation was significantly associated with iron deficiency among adolescent and adult females in the United States. This warrants development and implementation of blood donation practices for mitigating iron deficiency anemia in the country.
Link: https://onlinelibrary.wiley.com/doi/abs/10.1111/trf.15179

3. Consumption of Dark Green Leafy Vegetables predicts Vitamin A and Iron Intake and status among female small-scale farmers in Tanzania (Nutrients).

Authors of the study reported that the amount of dark green leafy vegetables consumed could determine vitamin A and iron intake among women. Higher intake of dark green leafy vegetables corresponded to higher mean hemoglobin, serum retinol and iron status more so among those who consumed meals with wholemeal millet as opposed to maize-rice based diet lacking vegetables.
Link: https://www.mdpi.com/2072-6643/11/5/1025

4. Correlating transcranial arterial Doppler velocities with hematologic parameters indices of Nigerian children with sickle cell anemia (Ultrasound).

The authors reported that the time-average mean of maximal velocities of middle cerebral artery was negatively correlated with haematocrit and fetal hemoglobin levels. They concluded that lower prevalence of abnormal transcranial Doppler velocities was unrelated to low markers of haemolysis in their study population.
Link: https://journals.sagepub.com/doi/full/10.1177/1742271X19836264

5. Dietary iron intake and anemia are weekly associated, limiting effective iron fortification strategies in India (Journal of Nutrition).

The authors of the study concluded that, in India, provision of fortified iron alone may not result in substantial reduction of anemia among the women of reproductive age. This may have varied benefits and risks across states. Careful consideration is warranted regarding the low key dietary strategies including limited fortification and the intake of beneficial nutrients.
Link: https://academic.oup.com/jn/article-abstract/149/5/831/5485278

6. Early childhood anemia in a birth cohort in Coastal Kenya: Links to infection and nutrition (The American Journal of Tropical Medicine and Hygiene).

Authors of the study reported that higher prevalence of anemia (76%) among the children in their study sample was significantly associated with malaria infection, worm infestation and dietary insufficiency (particularly lower intake of vitamin A rich vegetables, higher consumption of milk and bread and shortage of food). They concluded that a multi directional approach is required to prevent the developmental deficits associated with anemia.
Link: https://www.ajtmh.org/content/journals/10.4269/ajtmh.17-0688

7. Greater anemia tolerance among hospitalized females compared to males (Transfusion).

The authors concluded that females may be preconditioned to tolerate anemia better than males. It was reported in the study that males had increased mortality as well as likelihood for inpatient mortality with hemoglobin < 6g/dL while females did not.
Link: https://onlinelibrary.wiley.com/doi/abs/10.1111/trf.15338

8. Low hemoglobin is associated with low bone mineral density and high risk of bone fracture in male adults: a retrospective medical record review study (The American Journal of Men's health).

It was reported that hemoglobin was positively associated with bone mineral density and inversely associated with hip and osteoporotic fracture risk. Therefore, bone mineral density should be closely monitored in patients receiving treatment for anemia.
Link:https://journals.sagepub.com/doi/full/10.1177/1557988319850378?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dpubmed

9. Maternal anemia and maternal, fetal, and neonatal outcomes in a prospective cohort study in India and Pakistan (International Journal of Obstetrics and Gynaecology).

A group of authors observed in their study that anemia was not associated with maternal mortality. However, anemia was found to be associated with fetal and

neonatal mortality, low birth weight, preterm birth and postpartum haemorrhage. Therefore, interventions should be targeted to prevent severe anemia among pregnant women in low and middle income countries.
Link: https://obgyn.onlinelibrary.wiley.com/doi/abs/10.1111/1471-0528.15585

10. Maternal and neonatal outcomes related to iron supplementation or iron status: a summary of meta-analysis (The Journal of Maternal-Fetal and Neonatal Medicine).

In a meta-analysis it was concluded that multi-micronutrient supplementation has beneficial effects on some neonatal outcomes. Higher ferritin levels were associated with increased risk of gestational diabetes mellitus while maternal anemia was associated with adverse birth/neonatal outcomes.
Link: https://www.tandfonline.com/doi/abs/10.1080/14767058.2017.1406915

11. Relationship between anemia during pregnancy and preterm delivery (The Journal of Obstetrics and Gynaecology).

A group of authors concluded that anemia during pregnancy i.e. low hemoglobin levels is associated with preterm delivery and therefore physicians should take into account anemia in pregnancy when considering the risk of preterm delivery.
Link: https://www.ncbi.nlm.nih.gov/pubmed/31064297

12. Association of early linear growth and hemoglobin concentration with later cognitive, motor and socio-emotional development in preschool age in Ghana (Maternal and Child Nutrition).

It was reported that cognitive development of children at 4-6 months was significantly associated with hemoglobin at 18 months and not at 4-6 months. Motor and socio-emotional development was not associated with hemoglobin levels at any point. It was concluded that early period of development before the age of 18 months were critical for cognitive development of children and therefore the interventions can be targeted towards this age group.
Link: https://onlinelibrary.wiley.com/doi/abs/10.1111/mcn.12834

13. Variation in hemoglobin across the life cycle between males and females (Annals of the New York Academy of Sciences).

Authors concluded that the WHO recommendations for hemoglobin cut-offs to define anemia are based on very few studies conducted in the 1960s which did not include participants for all life stages. Studies conducted between 1975 and 2018 have reported different cut-offs for different life cycles which vary form the WHO cut-offs. There is a need for further research using stringent exclusion criteria for defining new cut-offs.
Link:https://www.ncbi.nlm.nih.gov/pubmed/?term=Variation+in+hemoglobin+across+the+life+cycle+between+males+and+females

14. Vitamin C deficiency: rare cause of severe anemia with hemolysis (International Journal of Hematology)

In one of the rare cases, scurvy was associated with hemolysis in an adult alcoholic man. Four weeks treatment with vitamin C helped in restoring hemoglobin level and gradual resolution of hemolysis.
Link: https://link.springer.com/article/10.1007%2Fs12185-018-02575-w

15. Health outcomes and services in children with sickle cell trait, sickle cell anemia, and normal hemoglobin (Blood Advances)

In the study it was concluded that children with sickle cell trait may not have additional health risk. However, a need for case-control studies was urged to identify rare cases.
Link: http://www.bloodadvances.org/content/bloodoa/3/10/1574.full.pdf

16. Continuous non-invasive hemoglobin monitoring estimates timing for detecting anemia better than clinicians: a randomized controlled trial (BMC Anesthesiol).

Authors of a study published in BMC Anesthesiol demonstrated the effectiveness of SpHb in tracking changes in hemoglobin satisfactorily during surgery and more so its accuracy in estimating appropriate timing for invasive hemoglobin measurements than the clinicians.
Link: https://bmcanesthesiol.biomedcentral.com/articles/10.1186/s12871-019-0755-1

17. The effect of increased frequency of hemodialysis on vitamin C concentrations: an ancillary study of the randomized Frequent Hemodialysis Network (FHN) daily trial (BMC Nephrol).

The authors of the study published in BMC Nephrol concluded that more frequent hemodialysis affected the concentration of water soluble vitamins and affected patient's well-being. They also supported the importance of vitamin C for normal bone and mineral metabolism and management of anemia.
Link: https://bmcnephrol.biomedcentral.com/articles/10.1186/s12882-019-1311-4

18. Iron Deficiency and Iron Homeostasis in Low Birth Weight Preterm Infants: A Systematic Review (Nutrients).

In the systematic review, authors concluded that premature infants require iron supplementation in most of the cases and are susceptible to development of ID or IDA affecting their postnatal cognitive development and behaviour.
Link: https://www.mdpi.com/2072-6643/11/5/1090

19. How many women take oral supplementation in pregnancy in Austria? : Who recommended it? A cross-sectional study. (Wiener Klinische Wochenschrift)

It was observed that 67% pregnant women were taking iron supplements advised by physicians irrespective of presence of iron deficiency. There was no standard procedure in the guideline to decide whether or not supplementation should be done in case of pregnancy.
Link: https://europepmc.org/abstract/med/31098837

21. Sickle cell screening in Uganda: High burden, human immunodeficiency virus comorbidity, and genetic modifiers (Paediatric Blood and Cancer).

Authors concluded that is a high burden of sickle cell anemia and HIV comorbidities exist in Uganda. Targeted sickle cell screenings is feasible and effective in Uganda, and support development of district level comprehensive care programs.
Link: https://onlinelibrary.wiley.com/doi/full/10.1002/pbc.27807

22. Prevention and Control of Anemia Amongst Children and Adolescents: Theory and Practice in India (Indian Journal of Paediatrics)

Anemia is a major public health problem in India with prevalence of more than 50% among amongst children and adolescents. The decline of burden of anemia has been insignificant in past 5 decades. In the review, authors assessed the National Guidelines for Prevention and Control of Anemia in India, the current status of program implementation and the possible reasons for continued high prevalence.
Link: https://link.springer.com/content/pdf/10.1007%2Fs12098-019-02932-5.pdf

23. Disorders of Iron Metabolism: New Diagnostic and Treatment Approaches to Iron Deficiency (Haematology Oncology Clinics of North America).

The authors concluded that symptoms of iron deficiency are subtle. Diagnosis may be made on basis of laboratory assessment in case clinical signs are not clear. Oral iron therapy is effective in improving the hematologic parameters. Serum ferritin is the best measure of total body iron store. IV iron is indicated in who have failed oral iron therapy or complex medical conditions.
Link: https://www.hemonc.theclinics.com/article/S0889-8588(19)30022-X/abstract

24. Beta Thalassemia: Monitoring and New Treatment Approaches (Haematology Oncology Clinics of North America).

Advances in monitoring and treatment of beta thalassemia in children and adults have resulted in increased survival and decreased mortality. New therapies offer promise of improvements in current standards of care and revolutionary curative approaches.
Link: https://www.hemonc.theclinics.com/article/S0889-8588(19)30019-X/abstract

25. Transferrin Cycle and Clinical Roles of Citrate and Ascorbate in Improved Iron Metabolism (ACS Chemical Biology).

The results of the study explained increased cellular uptake of iron by ascorbate which could help in improving anemia treatment by using iron citrate and ascorbate.
Link: https://pubs.acs.org/doi/pdf/10.1021/acschembio.8b01100

26. Severe Anemia in the Newborn Nursery (Clinical Paediatrics- Phila)

In the case study, the authors discussed a rare case of splenic rupture (an uncommon, life threatening condition) with very low hemoglobin, who did not require any surgical intervention. They also suggested the use of an abdominal CT instead of an ultrasound as nearly 50% cases of splenic rupture may go unnoticed in ultra sound.
Link:https://journals.sagepub.com/doi/abs/10.1177/0009922819832639?rfr_dat=cr_pub%3Dpubmed&url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&journalCode=cpja

27. Maternal determinants of low birth weight and neonatal asphyxia in the Upper West region of Ghana (Midwifery).

According to the results of the study, the prevalence of low birth and neonatal asphyxia were 8.2% and 9.2% respectively. Prevalence of neonatal asphyxia was higher among babies whose mothers did not receive any dietary counselling during pregnancy and those who had anemia at 36 weeks of gestation.
Link: https://www.sciencedirect.com/science/article/pii/S0266613819300439

28. Preventing complications by persistence with iron replacement therapy: a comprehensive literature review (Current Medical Research and Opinion).

Proper adherence and persistence with iron supplementation can prevent the risk and complications associated with iron deficiency and iron deficiency anemia. Supplementation with oral iron (for at least 5 months) is currently recommended as the first line therapy for iron deficiency anemia. Adherence and persistence to consume oral iron can be improved by patient education, understanding social support, simple dosing and improving the perceived efficacy.
Link: https://www.tandfonline.com/doi/abs/10.1080/03007995.2018.1552850

29. Mild iron deficiency may affect female endurance and behaviour (Physiology and Behavior).

Authors of the study concluded that even mild iron deficiency warrants due attention specially among young women since it may lead to mood disorders since mild iron deficiency is somehow connected with the central nervous system and it may lead to decreased endurance (specially cognitive endurance).
Link: https://www.sciencedirect.com/science/article/abs/pii/S0031938418307972

30. Iron Status and Associated Malaria Risk Among African Children (Clinical Infectious Diseases).

Authors concluded that iron deficiency as defined using ferritin and transferrin saturation protected African children against malaria, but not when defined by hepcidin, soluble transferring and hemoglobin.
Link: http://researchonline.lshtm.ac.uk/4649402/

31. Serum iron levels and copper to zinc ratio in Sickle Cell Disease (Medicina)

Elevated copper to zinc ratio may be used as a biomarker for oxidative stress in sickle cell anemia and its related complications. Zinc supplementation may also be required in patients with sickle cell anemia having significantly low zinc levels.
Link: https://www.mdpi.com/1010-660X/55/5/180

32. Estimating the burden of α-Thalassemia in Thailand using a comprehensive prevalence database for South-East Asia (eLife Research Communication)

The authors compiled the data from geo-database of α-Thalassemia prevalence and genetic diversity surveys and generated the first continuous maps of α-Thalassemia mutations in Thailand. They also estimated the number of newborns (n=3595) with severe forms will be born in 2020.
Link: https://elifesciences.org/articles/40580

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