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LETTER TO THE EDITOR

Iron Deficiency in Young Australian Children: A Hidden Health Crisis Demanding Urgent Action

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Dear Editor,

Iron deficiency remains a determinant of child health in Australia and is the leading risk factor for burden of disease in children under 5 years old [1]. Despite this, there is still a lack of urgency in addressing the problem. We present this paper, which highlights current iron deficiency data from The ORIGINS Project (ORIGINS), a large study of children in Perth, Western Australia, and call for increased attention to this widespread concern.

Iron deficiency is especially common in young children due to their increased iron needs during rapid growth and development [1], combined with often limited intake of iron-rich foods. This is particularly evident during the transition from milk-based diets to family meals, which are frequently low in iron. Untreated iron deficiency can lead to anaemia, impaired growth and developmental issues, including neurodevelopmental and social–emotional problems such as anxiety, depression and attention difficulties [2]. These issues may persist into adulthood, even without anaemia. While iron deficiency can often be corrected through supplementation, it is crucial to address this issue early, as some effects may be irreversible.

The criteria for iron deficiency in well young children varies, and while serum ferritin values $< 20\,\mu g/L$ is a common clinical cut-off, WHO guidelines from 2020 define $< 12\,\mu g/L$ as the cut-off value for iron deficiency in children up to 5 years of age [3]. Similarly, normative values are not well defined and may vary between individuals and differ between different conditions such as sleep, behaviour and immune abnormalities. The understanding of iron deficiency and sufficiency would benefit from large-scale population investigations such as ORIGINS [4].

Presented here is diagnostic serum ferritin levels, full blood pictures and high sensitivity C-reactive protein data (HS CRP) collected from the ORIGINS cohort's child participants (55.3% male) at 1- and 3-year clinic visits from 2017 to 2024. The described children (and their families) were recruited from the general population, are predominantly (82.8%) Caucasian and of relatively high socio-economic status based on Socio-Economic Indexes for Areas (SEIFA) and Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD) scores. Preliminary findings from ORIGINS show a concerning prevalence of iron deficiency, at 15% of 1-year-old children and 20% of 3-year-old children, using the WHO cut-off value of $< 12\,\mu g/L$, see Table 1. Children with elevated inflammatory markers (HS CRP) were excluded from the analysis as inflammation may lead to elevated ferritin results. All children with low ferritin levels or other significant health/developmental concerns were

TABLE 1 | *Hb 105 lower limit of normal for 1 year, Hb 108 lower limit of normal for 3 years.

	Age	Total number	Deficient (%)
Iron deficiency (serum ferritin < 12 μg/L)	1 year	602	92 (15.3%)
	3 years	761	149 (19.6%)
Iron deficiency (serum ferritin < 20 μg/L)	1 year	602	244 (40.5%)
	3 years	761	432 (56.7%)
Anaemia*	1 year	551	32 (5.8%)
	3 years	695	18 (2.6%)

consulted by paediatricians and received referrals for follow-up as necessary.

It is noteworthy that many children in the ORIGINS cohort could not be screened for iron deficiency due to resistance to phlebotomy, and we therefore suggest exploring non-invasive screening methods, such as measuring ferritin levels in urine, which have shown promise in early studies [5], should be of high importance.

In conclusion, the high prevalence of iron deficiency observed in this cohort calls for renewed attention from child health professionals and agencies. Iron deficiency is a widespread concern, even in relatively affluent populations, and regular monitoring and non-invasive screening should be considered. Addressing this issue is crucial for optimising children's health, development and overall well-being.

Author Contributions

N.D. prepared the manuscript with input from all authors. N.B. performed the data analysis. All authors reviewed the manuscript prior to publication.

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Ethics Statement

Ramsay SA/WA HREC.

Consent

The authors consent to publish this paper.

Conflicts of Interest

The authors declare no conflicts of interest.

Data Availability Statement

Data are available from ORIGINS via an application process, including Scientific Committee and ORIGINS Director approval, Ramsay Human Research Ethics approval and payment of an access fee. This application process is in place as the data collected are sensitive health data related to pregnancy, birth and children.

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