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# Prevalence of Iron Deficiency Anemia and Reference Range of Complete Blood Count, Reticulocyte Parameters in Infants Aged 9–11 Months

## Harapan Parlindungan Ringoringo

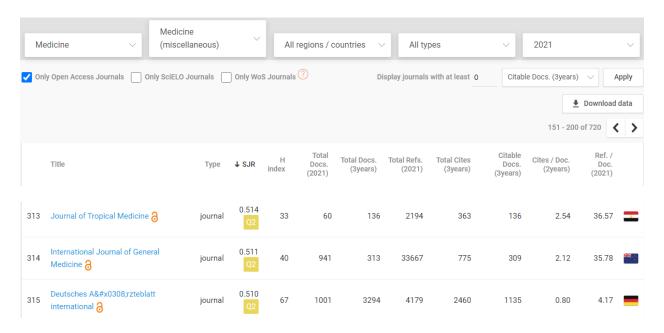
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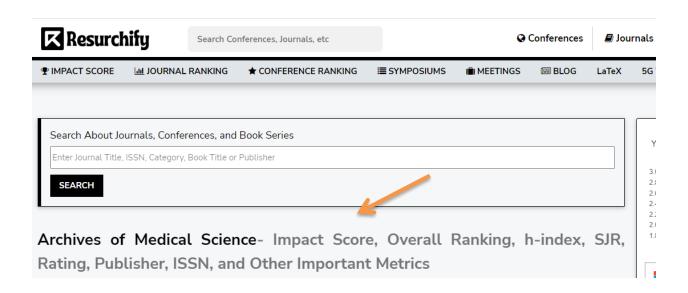
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INTERNATIONAL JOURNAL OF GENERAL MEDICINE

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Title	International Journal of General Medicine
Abbreviation	Int. J. Gen. Med.
Publication Type	Journal
Subject Area, Categories, Scope	Medicine (miscellaneous) (Q2)
h-index	40
Overall Rank/Ranking	9796
SCImago Journal Rank (SJR)	0.511
Impact Score	2.12
Publisher	Dove Medical Press Ltd.
Country	New Zealand
ISSN	11787074

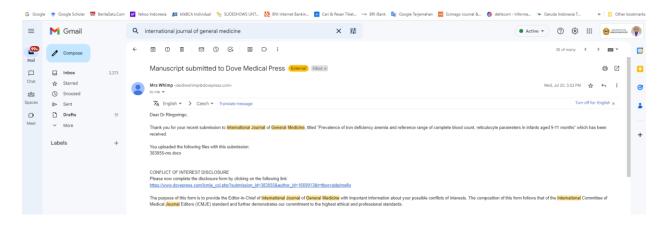
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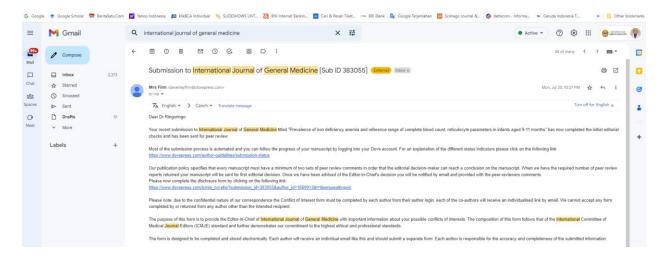
COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
New Zealand  Universities and research institutions in New Zealand	Medicine  └─ Medicine (miscellaneous)	Dove Medical Press Ltd.	40
PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Journals	11787074	2009-2021	Homepage  How to publish in this journal



#### **SUBMISSION ARTIKEL: TANGGAL 20 JULI 2022**

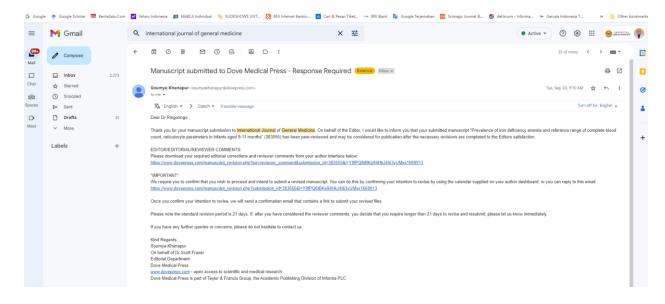


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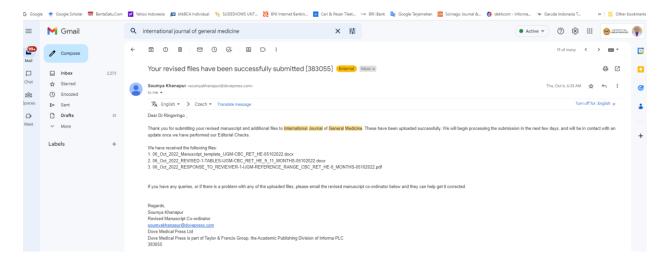


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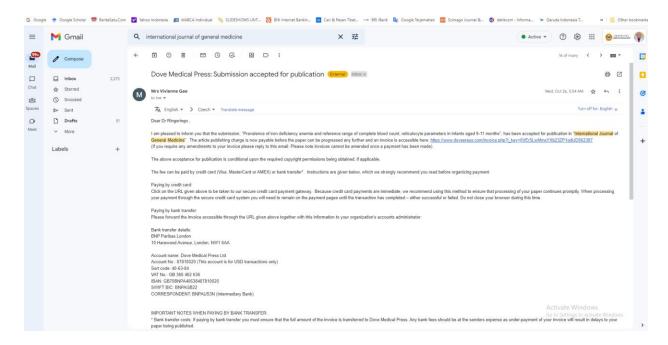
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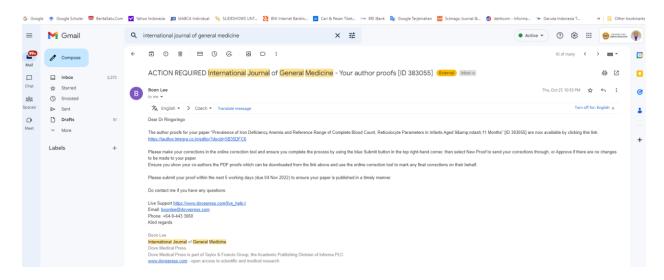
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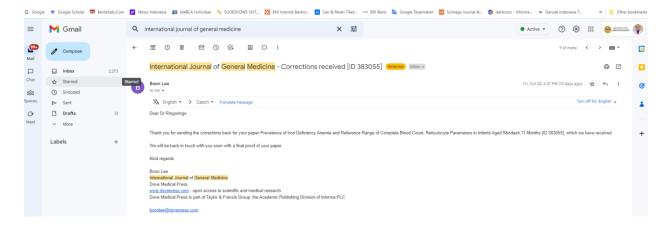
### REVISED MANUSCRIPT ACCEPTED: 26 OKTOBER 2022



#### MANUSCRIPT FOR PROOF READING: 27 OKTOBER 2022



#### MANUSCRIPT PROOF READING TELAH DITERIMA: 28 OKTOBER 2022



#### **International Journal of General Medicine**

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ORIGINAL RESEARCH

# Prevalence of Iron Deficiency Anemia and Reference Range of Complete Blood Count, Reticulocyte Parameters in Infants Aged 9–11 Months

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**Background:** Iron deficiency anemia (IDA) is still a major global health problem. Determination of reference ranges for complete blood count (CBC), reticulocyte hemoglobin content (Ret-He), immature reticulocyte fraction (IRF), and reticulocyte production index (RPI) are essential to help diagnose a disease.

**Purpose:** The study aims to know the prevalence of IDA, risk factors that influence it, and set a reference range for CBC and reticulocyte parameters in infants aged 9–11 months in Indonesia.

Patients and Methods: The study was conducted prospectively at 10 Community Health Centers in Banjarbaru, South Kalimantan, Indonesia, from August 2020 to August 2021.

Results: This study recruited 100 healthy infants (47% boys, 53% girls) aged 9-11 months. The prevalence of IDA was 32%. There is

anges for reflectively to parameters.

Conclusion: The reference range of CBC, Ret-He, IRF, and RPI for healthy infants aged 9–11 months in this study can be used as a benchmark.

Keywords: reference range, anemia, complete blood count, Ret-He, IRF, RPI, infant

#### Introduction

All ages anemia prevalence was 22.8% globally in 2019. The prevalence was highest among children under five years, 39.7%, with the most contributing cause being dietary iron deficiency (ID). Iron deficiency anemia (IDA) is still one of the leading global health problems. So, the early diagnosis and prompt treatment of IDA is critical to prevent the long-term effects of brain iron deficiency that cause cognitive, behavioral, and neurodevelopment deterioration. Some causes of IDA are low iron stores at birth, not being given iron supplementation, the baby's rapid growth rate, and inadequate iron intake. In addition, the mother's education and occupation, parity, family income, and infant nutritional status contribute to insufficient iron intake.

Reference range data for complete blood count (CBC), reticulocyte hemoglobin content (Ret-He), immature reticulocyte fraction (IRF), and reticulocyte production index (RPI) for infants 9–11 months old are limited. So then, establishing the reference range of CBC, Ret He, IRF, and RPI in infants 9–11 months is helpful to determine whether an infant is an iron deficiency with or without anemia. Combining several parameters, hemoglobin (Hb), mean corpuscular volume (MCV), mean corpuscular hemoglobin (MCH), red cell distribution with (RDW), Mentzer index (MI), reticulocyte count, Ret-He, IRF, and RPI will undoubtedly make it easier to determine if an infant has ID or IDA and monitor oral iron therapy.

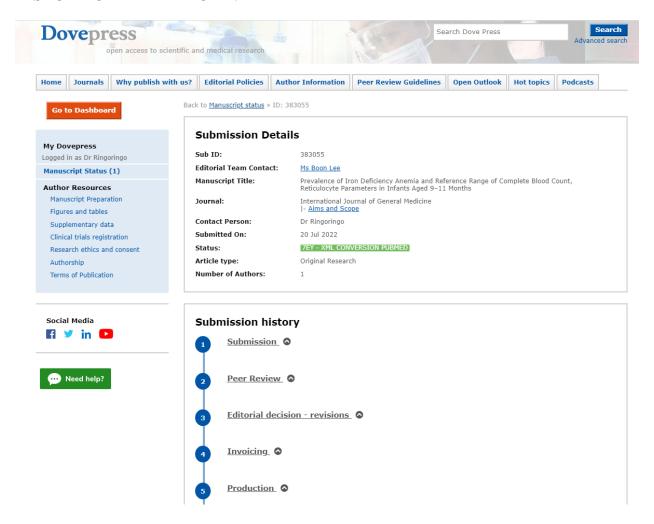
International Journal of General Medicine 2022:15 8017-8024

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2022-11-02 07:52:55	International Journal of General Medicine Author approval [ID: 383055]	<u>View</u>
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