

Abstract

Maternal Plasma Selenium and the Occurrence of Infection Symptoms among Women at Six and Twelve Months Postpartum [†]

Ying Jin ^{1,*} , Jane Coad ²  and Louise Brough ² 

¹ School of Health Sciences, College of Health, Massey University, Palmerston North 4442, New Zealand

² School of Food and Advanced Technology, College of Sciences, Massey University, Palmerston North 4442, New Zealand

* Correspondence: yjin@massey.ac.nz

[†] Presented at the Annual Scientific Meeting of the Nutrition Society of New Zealand 2022, Wellington, New Zealand, 1–2 December 2022.

Abstract: Selenium is essential for human health because it produces selenoproteins, which have antioxidant and anti-inflammatory roles. Recently published data have suggested high selenium status (high hair selenium concentration) improved outcomes in patients with COVID-19 infections. Our objective was to investigate the occurrence of infectious symptoms and selenium status among postpartum women. This is a secondary analysis of data collected in the Mother and Infant Nutrition Investigation—an observational, longitudinal cohort study spanning the first postpartum year of mother and infant pairs ($n = 87$) in Palmerston North, New Zealand. Plasma selenium was measured in women at six months postpartum (6MPP), and the validated Carr Infection Symptom Checklist (CISC) measured the type and frequency of infection symptoms experienced at 6MPP and twelve months postpartum (12MPP). The checklist contains 30 symptoms of infection; each symptom is scored from 0 (no symptoms) to 4 (severe symptoms), thus the possible total score ranges from zero to 120. The data were expressed as the median (q25, q75). The median maternal plasma selenium was 105.8 (95.6, 115.3) $\mu\text{g/L}$, with 41% of women meeting the criteria for the maximum expression of selenoprotein P ($>110 \mu\text{g/L}$). The median CISC scores were 12 (8, 18) at 6MPP and 13 (8, 21) at 12MPP, which were weakly correlated ($r = 0.363$, $p = 0.002$). Plasma selenium levels among women with a low CISC score ≤ 15 ($n = 56$) at 6MPP were significantly higher (110.05 $\mu\text{g/L}$) than those women with a high score of symptoms of infection (score > 15 , $n = 23$) at 102.18 $\mu\text{g/L}$ ($p = 0.048$, Mann–Whitney U test). Further research is warranted to investigate whether higher plasma selenium levels contribute to a lower rate of maternal infection during the postpartum period. The association between wider selenium biomarkers and maternal immune function should be determined by examining inflammatory markers or immunoglobulin concentrations.

Keywords: symptoms of infection; postpartum women; plasma selenium



Citation: Jin, Y.; Coad, J.; Brough, L. Maternal Plasma Selenium and the Occurrence of Infection Symptoms among Women at Six and Twelve Months Postpartum. *Med. Sci. Forum* **2023**, *18*, 30. <https://doi.org/10.3390/msf2023018030>

Academic Editors: Claire Smith, Sally Mackay, Shabnam Jalili-Moghaddan and Michelle Gibbs

Published: 3 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Author Contributions: Conceptualization, methodology, validation, Y.J., J.C. and L.B.; formal analysis and data curation, Y.J.; investigation, Y.J., J.C. and L.B.; writing—original draft preparation, Y.J.; writing—review and editing, Y.J., J.C. and L.B.; visualization, Y.J.; supervision, J.C. and L.B.; project administration, Y.J.; funding acquisition, J.C. and L.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received funding from the Oakley Mental Health Fund (no number, 2017) and the Massey University Research Fund (no number, 2018). The funding bodies played no role in the design of the study and collection, analysis, and interpretation of data or in the writing of the abstract.

Institutional Review Board Statement: The study was conducted in accordance with and approved by the Health and Disability Ethics Committee (reference 15/NTA/172).

Informed Consent Statement: Informed consent was obtained from all participants involved in the study.

Data Availability Statement: The data are not publicly available due to privacy and ethical restrictions.

Conflicts of Interest: The authors declare no conflict of interest.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.