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Naomi M. Saville, Bhim P. Shrestha, Sarah Style, Helen Harris-Fry, B. James Beard, Aman Sen, Sonali Jha, Anjana Rai, Vikas Paudel, Raghbendra Sah, Puskar Paudel, Andrew Copas, Bishnu Bhandari, Rishi Neupane, Joanna Morrison, Lu Gram, Anni-Maria Pulkki-Brännström, Jolene Skordis-Worrall, Machhindra Basnet, Saskia de Pee, Andrew Hall, Jayne Harthan, Meelan Thondoo, Sonja Klingberg, Janice Messick, Dharma S. Manandhar, David Osrin, Anthony Costello

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Consumption of fortified infant foods reduces dietary diversity but has a positive effect on subsequent growth in infants from Sumedang district, Indonesia

Aly Diana1,2,*, Simonette R. Mallard2, Jillian J. Haszard2, Dwi Monik Purnamasari1, Ikrimah Nurulazmi1, Pratami D. Herliani1, Gaga I. Nugraha1, Rosalind S. Gibson2, Lisa Houghton2

1 Faculty of Medicine, Universitas Padjadjaran, West Java, Indonesia, 2 Department of Human Nutrition, University of Otago, Otago, New Zealand

* diana.aly@gmail.com

Abstract

Stunting and underweight among under-five children in Indonesia are common, raising public health concerns. Whether inappropriate complementary feeding (CF) practices compromise optimal growth during late infancy in Indonesia is uncertain. Therefore we characterized and evaluated CF practices in Indonesian infants and investigated their relationship with subsequent growth. We enrolled breastfed infants at 6 months of age (n = 230); and followed them at 9 (n = 202) and 12 months of age (n = 190). We collected socio-demographic and anthropometric data and two-day in-home weighed food records. Relations between WHO CF indicators, sentinel foods, and energy and micronutrient intakes at 9 months and growth at 12 months were explored using multiple linear regression. Stunting and underweight increased from 15.8% and 4.4% at 6 months to 22.6% and 10.5% at 12 months, respectively. Median intakes of calcium, iron, zinc, and riboflavin were below WHO recommendations. Infants consuming fortified infant foods (FIFs) at 9 months had diets with a lower dietary diversity (DD) score (2.3 vs.3.0), energy density, median energy (250 vs. 310 kcal/d) and protein (6.5 vs. 9.1 g/d) intake than non-consumers (p<0.01), despite higher intakes of calcium, iron, and vitamins A and C (p<0.001). Positive relations existed for 9-month consumption of iron-rich/iron fortified infant foods with length-for-age Z-score (LAZ) at 12 months (β = 0.22; 95% CI: 0.01, 0.44; P = 0.04), and for fortified infant foods alone with both LAZ (β = 0.29; 95% CI: 0.09, 0.48; P = 0.04) and weight-for-age Z-score (β = 0.14; 95% CI: 0.02, 0.26; P = 0.02) at 12 months. The positive association of FIFs with subsequent growth may be attributed to their content of both powdered cow’s milk and multi-micronutrient fortificants. Nonetheless, mothers should not be encouraged to over-rely on FIFs as they reduce DD.