

Abstract

Respiratory Health of Pacific Youth: Nutrition Resilience and Risk in Childhood [†]

Siwei Zhai ^{1,*}, Alain C. Vandal ^{1,2} , Shabnam Jalili-Moghaddam ³, Catherine A. Byrnes ⁴, Conroy Wong ^{5,6}, Leon Iusitini ⁷ and El-Shadan Tautolo ⁷

- ¹ Department of Statistics, Faculty of Science, The University of Auckland, Auckland 1142, New Zealand
² Research and Evaluation Office, Ko Awatea, Te Whatu Ora Counties Manukau, Auckland 1640, New Zealand
³ National Institute for Stroke and Applied Neurosciences, Auckland University of Technology, Auckland 0627, New Zealand
⁴ Department of Paediatrics, Faculty of Medical and Health Sciences, The University of Auckland, Auckland 1023, New Zealand
⁵ Department of Respiratory Medicine, Middlemore Hospital, Te Whatu Ora Counties Manukau, Auckland 2025, New Zealand
⁶ Faculty of Medical and Health Sciences, The University of Auckland, Auckland 1023, New Zealand
⁷ Centre for Pacific Health & Development Research, Auckland University of Technology, Auckland 2202, New Zealand
* Correspondence: szha580@aucklanduni.ac.nz
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Abstract: In New Zealand, 7% of deaths are related to respiratory diseases, and Pacific people are at higher risk. This work investigated the causal effects of early-life nutritional factors on early-adulthood lung function among Pacific Islands Families Study cohort members, who consist of the 1398 individuals born from Pacific Island families in Middlemore Hospital between March and December 2000. A total of 466 people from the cohort participated in the respiratory study. The primary outcome was the forced expiratory volume in 1 s (FEV₁) z-score at age 18 years. FEV₁ and healthy lung function (HLF), defined as the z-score being larger than −1.64, were secondary outcomes. Nutrition and other information were previously collected in 4 measurement waves at ages 4, 6, 9, and 14 years. Food portions consumed daily were totaled within each of the 12 food categories at each measurement wave. Exploratory and multi-group confirmatory factor analyses identified 4 eating patterns represented by nutritional factor scores (NFS), identified as “Occasional”, “Seafood”, “Fruit and vegetables”, and “Meat”. The NFS were scaled to portions per day. Confounders were identified using a causal-directed acyclical graph. Semi-parametric linear and relative risk regression models were fitted to estimate the causal effects of NFS on respiratory outcomes, using estimated weights compensating for attrition-induced selection bias. The population-attributable fractions of HLF for each NFS were estimated for each measurement wave. HLF cohort prevalence was estimated at 90% (95% confidence interval [CI] [0.86, 1.00]), lower than the expected 95%. Only the “Fruit and vegetables” eating pattern at 9 years was found to have a statistically significant causal effect on the FEV₁ z-score in early adulthood (change in FEV₁ z-score: +0.25, 95%CI [0.00, 0.43]). The proportion of HLF attributable to the “Fruit and vegetables” eating pattern at 9 years was estimated at 11% (95%CI [0.00, 0.19]). Results suggest a positive impact of consuming more fruit and vegetables during childhood on respiratory health later in life. There is a need to support healthier food environments for Pacific children and provide access to healthier food choices.

Keywords: respiratory health; lung function; nutrition; Pacific; children; PIFS cohort study



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Data Availability Statement: Data sharing/access can be sought from the PIF Study team. Applicants are required to submit a concept paper outlining their analysis plan and use of the data, as well as provision for secure storage and access of the data if not held on-site. Co-directors of the Pacific Islands Families study: c/-research@aut.ac.nz. This email address is monitored by independent administrative staff who will forward the request to the appropriate committee.

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