

Prevalence and factors associated with dietary diversity and food insecurity in a rural community of a Small Island Developing State



Jioje Fesaitu¹, Christina Howitt², Eden Augustus², Madhuvanti Murphy², Nigel Urwin³, Viliamu Iese^{1,4}, Epeli Waqa¹, Filipe Veisa¹, Melaia Salacakau⁵, Lavenia Naivalu⁶.

¹Pacific Centre for Environment and Sustainable Development, The University of the South Pacific, Suva, Fiji. ²George Alleyne Chronic Disease Research Centre, University of the West Indies, Barbados. ³MRC Epidemiology Unit, University of Cambridge and European Centre for Environment and Human Health, University of Exeter, United Kingdom. ⁴School of Agriculture and Food, The University of Melbourne, Dookie Campus, Australia. ⁵Representing the Foundation for Rural Integrated Enterprises and Development (FRIEND) Fiji, Tuvu, Lautoka, Fiji. ⁶Yasawa Community Representative, Fiji.

INTRODUCTION

Small Island Developing States (SIDS) experience high burdens of non-communicable disease (NCDs), which can in large part be attributed to poor diet. This is exacerbated by an increasing reliance on food imports, which are often of low nutritional quality, and typically high levels of food insecurity (FI).^{1,2} Our study was based in the Yasawa Islands of Fiji, and aimed to estimate the prevalence of FI and an indicator of diet quality (dietary diversity score or DDS) in this remote rural setting. We also explored associations between two outcomes (FI and DDS) with food production diversity (FPD), food sources, and sociodemographic factors.



METHODS

- Cross-sectional survey of adults aged 18 and over. Movement restrictions due to COVID-19 meant that data had to initially be collected by telephone (34%), followed by in-person data collection (66%) once restrictions were removed.
- The questionnaire covered dietary intake over the previous 24 hours, FI, FPD, sources of food consumed, and sociodemographic data. Dietary intake was used to calculate the DDS, which was based on the number food groups consumed and scored out of ten (adequate diversity being a score of ≥ 5).
- Food production diversity was derived by mapping the types of food produced to the same ten food groups as the DDS. Food and Agriculture Organization's (FAO) Food Insecurity Experience Scale was used to assess FI, then Rasch modelling was used to rescale the data and defined FI as those in the moderate or severe categories.
- We explored the factors associated with DDS and FI using two types of multivariable models (Poisson and linear, respectively), with the model choice depending on the structure of the outcome and all independent variables entered together.

FINDINGS AND INTERPRETATIONS

Data collection occurred between September 2021 and July 2022. Two hundred participants completed the survey: 52% were female and the mean (SD) age was 44.9 (15.2) years. The majority (64%) had attained at least a primary school education, and around half (48%) lived in a house with three or more occupants. Consuming foods produced by their own households and food obtained from borrowing/exchanging/bartering were the most common sources, with 94% and 93% consuming food from these sources more than weekly, respectively. Regular consumption (>weekly) of food from supermarkets and small shops was relatively rare (7% for both).

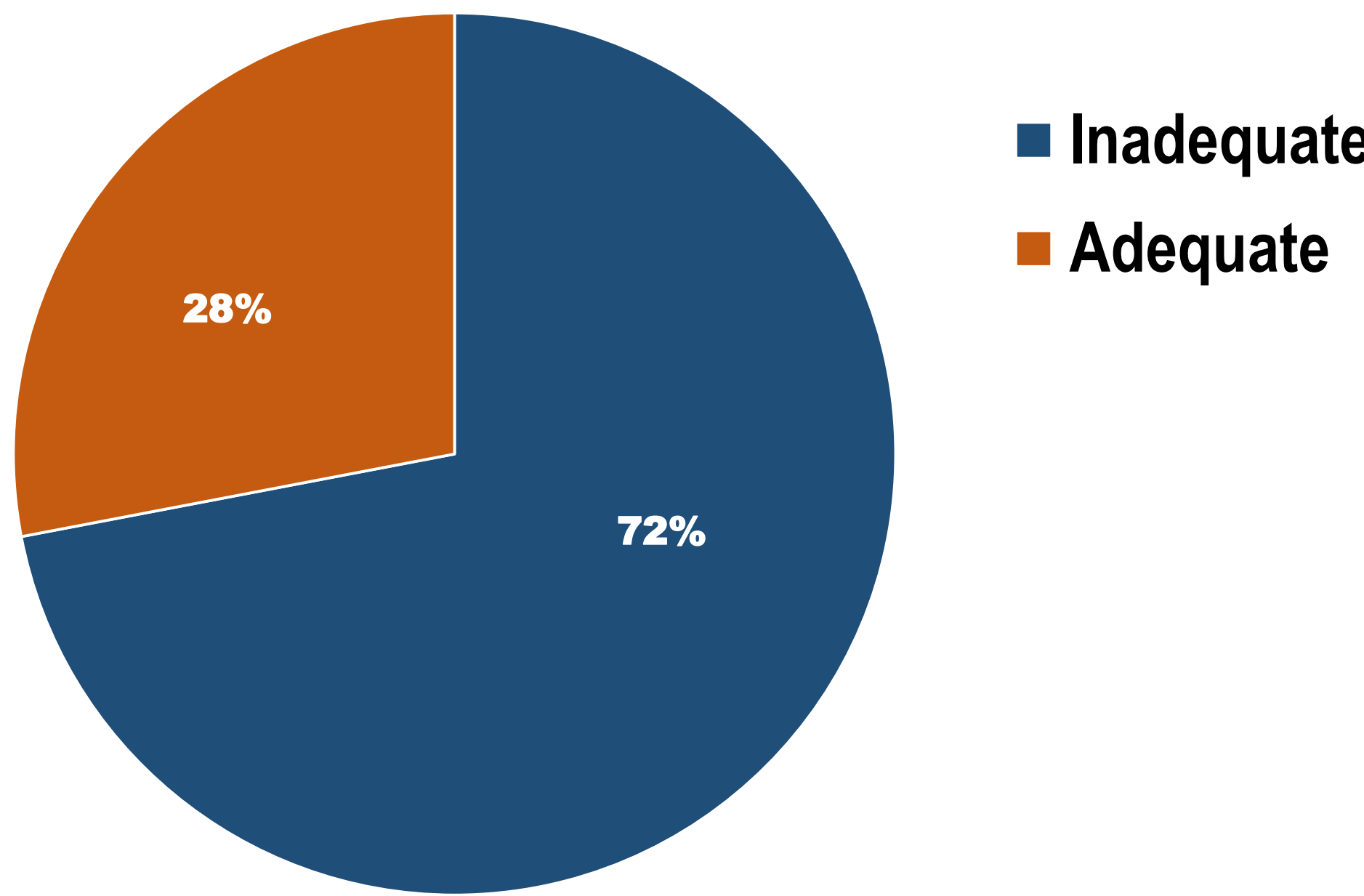
The prevalence of inadequate dietary diversity was 72% (95%CI: 65, 78), and mean (SD) DDS was 3.6 (1.7). The prevalence of moderate-to-severe FI was 5.5% (95% CI: 2.6, 8.5). For both DDS and FI, there were no differences by gender. In the multivariable analyses, increased FPD was associated with both a higher DDS [incidence rate ratio (95% CI): 1.08 (1.01, 1.17)] and lower FI [coefficient (95% CI): -3.77 (-6.56, -0.97)]. No other variables were associated with DDS. Older age and higher educational attainment were also associated with less FI, with coefficients (95% CI) of -0.34 (-0.62, -0.06) and -13.27 (-21.36, -5.19) respectively.

ACKNOWLEDGEMENTS

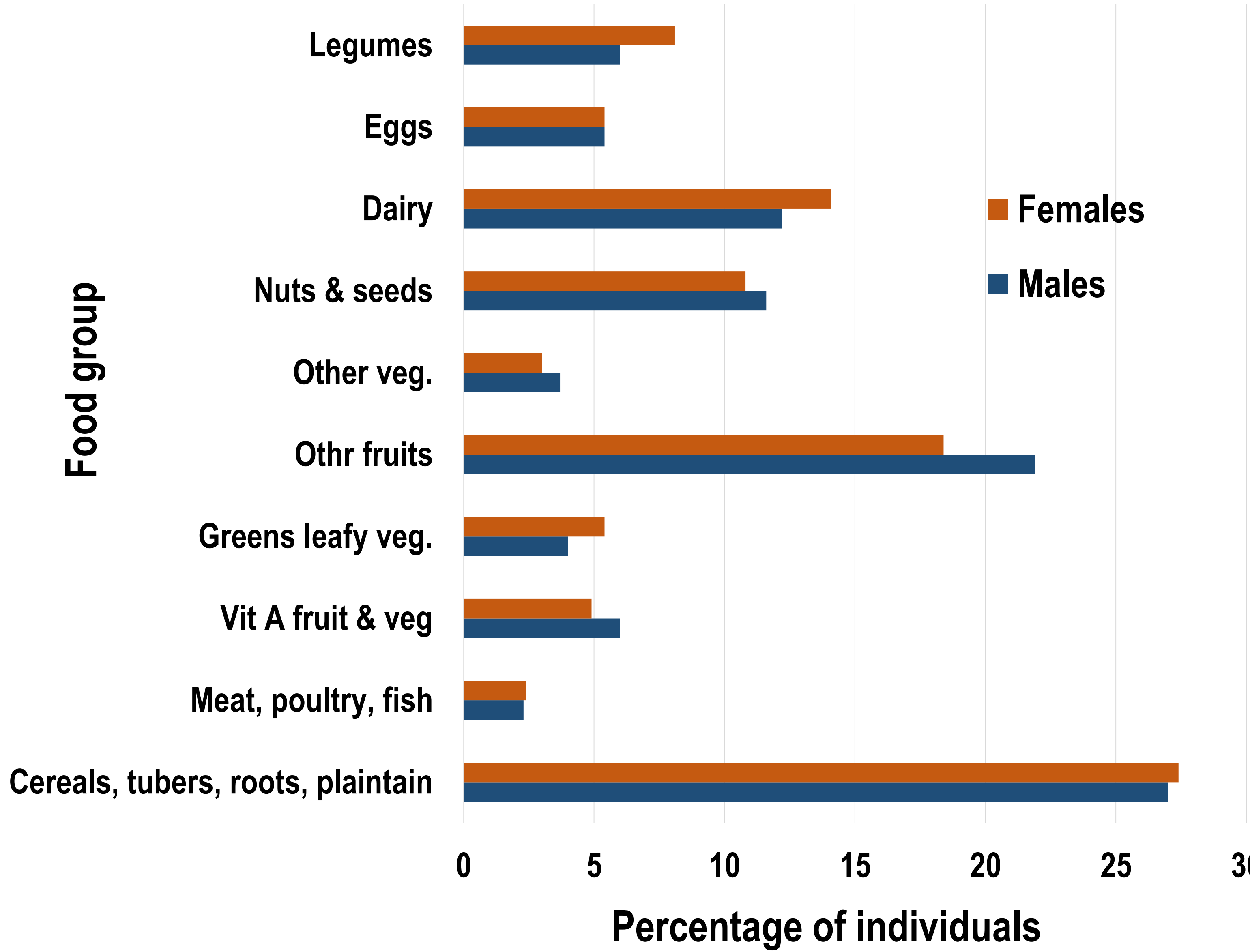
This study was funded by the Biotechnology and Biological Sciences Research Council (BBSRC) through the UK Research and Innovation (UKRI) collective program. The authors gratefully acknowledge our fellow ICoFaN team members from various Institutes, the USP data collectors and the elders of the "Vanua" of Bukama, Dalomo, Teci, Nacula, Malakati, Navotua, and Naisilili for accepting us into their communities and the people for participating in this survey. Vinadu riki!



Dietary Diversity



Proportion of respondents (%) reporting consumption of specific food groups in one 24 hour period.



CONCLUSION

Our findings confirm that food security can be attained through home food Home production and community sharing of food, which is primarily used for home consumption. Despite the high prevalence of food insecurity in the Yasawa Islands, dietary quality could be improved through increasing dietary diversity, which is desirable in order to reduce NCDs in this setting.

REFERENCES

- Bhagatani, D.; Augustus, E.; Haynes, E.; Iese, V.; Brown, C.R.; Fesaitu, J.; Hambleton, I.; Badrie, N.; Kroll, F.; Saint-Ville, A.; Samuels, T.A.; Forouhi, N.G.; Benjamin-Neelon, S.E.; Unwin, N.; on behalf of the CFaH Team. Dietary Patterns, Food Insecurity, and Their Relationships with Food Sources and Social Determinants in Two Small Island Developing States. *Nutrients* 2022, 14, 2891. <https://doi.org/10.3390/nu14142891>
- Connell J, Lowitt K, Saint Ville A, Hickey GM. Food security and sovereignty in Small Island developing states: Contemporary crises and challenges. In *Food security in small island states 2020* (pp. 1-23). Springer, Singapore.