Innovative Methods and Metrics for Agriculture and Nutrition Actions

Policy Briefing Note
February 13, 2024

Application of Novel Diet Quality Metrics in Vietnam

KEY MESSAGES

- The prevalence of micronutrient inadequacy among Vietnamese individuals aged 15-49 is reported at 56.4%, with a higher prevalence observed among women (60.7%) compared to men (52.0%).
- The prevalence of micronutrient inadequacy is gradually decreased across quintiles of the FGDS.
- The GDR score shows a positive correlation with both global recommendations, as reflected by the HDI-2020, and national recommendations, as reflected by the VHEI.

RATIONALE

In Vietnam, the shift towards urbanization and economic advancement has caused notable shifts in dietary habits, contributing to a rise in obesity rates and non-communicable diseases (NCDs). It is imperative to take immediate action through the implementation of national food policies and nutritional initiatives to address the deteriorating diet quality and its associated nutrition and health outcomes in the Vietnamese population. One of the key objectives outlined in the National Nutrition Strategy for the 2021-2030 timeframe, with an overarching vision extending to 2045, is to elevate dietary quality to enhance the nutritional status of the Vietnamese population (Objective 2a, No.02/QD-TTg). Nonetheless, the current nutrition assessment tool lacks the necessary metrics and indicators to effectively measure diet quality.

Our project aimed to achieve two primary objectives: (1) to utilize various diet quality metrics, including low-burden proxy metrics derived from the Diet Quality Questionnaire (DQQ) such as FGDS, GDR score, etc. to examine their associations with micronutrient adequacy and dietary risk factors for NCDs among individuals aged 15-49 in Vietnam, as an initial validation; and (2) to evaluate the feasibility of incorporating the DQQ and its derived indicators into the existing nutrition monitoring tool in Vietnam. This initiative was piloted in collaboration with the Nutrition Surveillance & Policies at the National Institute of Nutrition (NIN), Ministry of Health, Vietnam.

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Table 1. Association between food group-based diet quality indicators and quantitative indexes of national recommendations, global recommendations, energy intake and BMI

	HDI-2020[1]	Healthy components[2]	Components to limit[3]	Energy intake	BMI	FGDS	VHEI
NCD-Protect	0.19*	0.61*	-0.20*	0.16*	0.004	0.89*	0.41*
NCD-Risk	-0.39*	0.06*	-0.50*	0.20*	-0.03	0.25*	0.10*
GDR score	0.40*	0.53*	0.10*	0.02	0.02	0.66*	0.32*
FGDS	0.08*	0.53*	-0.27*	0.19*	-0.004	1.00	0.39*
VHEI	0.09*	0.29*	-0.09*	0.11*	-0.03	0.39*	1.00

FGDS, Food group Diversity Score, with a range from 0 to 10 points. GDR score, Global Dietary Recommendations score, with a range from 0 to 18 points. NCD-Protect, with a range from 0 to 9 (higher score indicates higher consumption of more health-promoting foods). NCD-Risk, with a range from 0 to 9 (higher score indicates higher consumption of foods to avoid or limit).

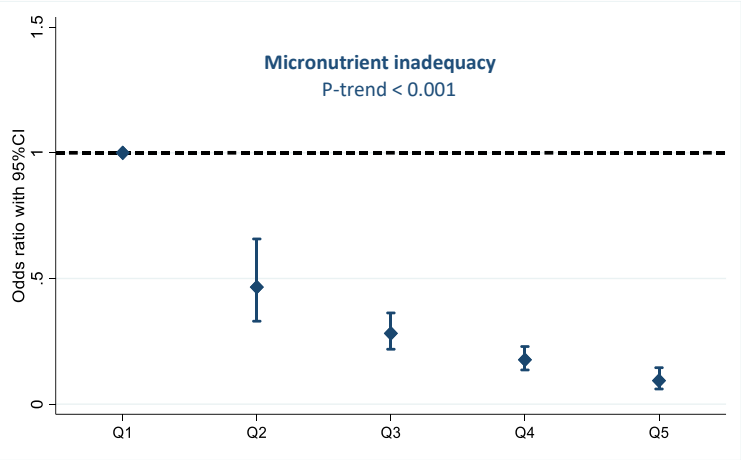
[1] Index of all 11 global dietary recommendations.

[2] Index of 5 global dietary recommendations encouraging consumption of fruits and vegetables, beans and other legumes, nuts and seeds, whole grains, and dietary fiber.

[3] Index of 6 global dietary recommendations about limiting consumption of total fat, saturated fat, dietary sodium, free sugars, processed meat, and unprocessed red meat.

* *P-value* of <0.001 calculated from Spearman rank correlation.

Figure 1. ORs (95% CI) of micronutrient inadequacy according to quintiles of the FGDS of participants aged 15-49 years in the Vietnamese General Nutrition Survey 2019-2020



RECOMMENDATIONS

- These diet quality metrics can track the progress of countries and populations in aligning with WHO guidance on healthy diets.
- The use of FGDS (underlying MDD-W) along with a low-burden set of indicators translated from the global recommendations captures different aspects of diet quality.
- The introduction of new diet quality metrics represents a significant advancement in measuring and monitoring diet quality at the population level, suggesting the possibility of broader application.

METHODS AND FINDINGS

Data and methods

To apply the novel diet quality metrics for evaluating the associations between diet quality and nutrition outcomes in Vietnam:

- We used the 24-hour recalls data from the Vietnamese General Nutrition Survey 2019-2020 (GNS 2019-2020), which included information from 3,845 Vietnamese males and females aged 15-49 years. This survey was conducted as a nationally representative, cross-sectional study by NIN Vietnam.
- Regarding the performance of different diet quality metrics, we examined the association between the FGDS and micronutrient inadequacy. The adequacy of 12 micronutrients (calcium, potassium, magnesium, zinc, iron, folate, Vitamin B1, vitamin B2, vitamin A, vitamin C, vitamin B6, and vitamin B12) was calculated using the probability approach. To validate low-burden proxy metrics that reflect dietary risk factors for NCDs against a standard of diet quality, we used the HDI-2020, which is a recently updated index of WHO global dietary recommendations for the prevention of chronic disease. We also used the Vietnamese Healthy Eating Index (VHEI), which is a diet quality standard in terms of conformance to the national Vietnamese FBDGs.

Findings

We observed inverse associations between a straightforward, minimally burdensome, and globally applicable diet quality metric (i.e., FGDS) and the odds of micronutrient inadequacy across various demographic segments of the Vietnamese population. Furthermore, NCD-Protect, NCD-Risk, and the GDR score contribute as indicators of healthy dietary patterns aligned with global recommendations, thereby encompassing another significant aspect of diet quality not accounted for by the FGDS, which is a continuous 10-point score underlying the MDD-W.

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In detal, the overall prevalence of micronutrient inadequacy based on the 12 micronutrients is 56.4%. Women has higher prevalence of micronutrient inadequacy (60.7%) compared to men (52.0%).
The odds ratio (OR) of micronutrient inadequacy for participants in the highest quintile (Q5) compared to those in the lowest quintile (Q1) for FGDS is 0.09 (95% CI: 0.06-0.15). In **Figure 1**, the prevalence of micronutrient inadequacy is gradually decreased across quintiles of the Food Group Diversity Score (FGDS).

The correlation coefficient between the GDR score and the HDI-2020 (our comprehensive quantitative measure for meeting dietary recommendations) is 0.40 (**Table 1**). In comparison to previous findings by Herforth et al., 2020, the correlation coefficient is 0.55 in Brazil and 0.66 in the United States. The correlation between NCD-Protect and the HDI-2020 subindex on healthy components is 0.61, while the correlation between NCD-Risk and the HDI-2020 subindex on dietary components to limit is -0.50. The observed strength of correlations is very acceptable for this type of indicator.

In conclusion, after a thorough validation drawn from an extensive, nationally representative nutrition survey of Vietnamese adults, the introduction of new diet quality metrics signifies a significant advancement in the measurement and monitoring of diet quality at the population level, indicating potential for broader application.

NEXT STEPS

- We plan to organize a workshop in collaboration with NIN, aimed at implementing the diet quality metrics evaluated within our IMMANA project. Our goal is to explore the feasibility of integrating these metrics into future research and nutrition monitoring systems at NIN.
- Draft a proposal aimed at assessing the efficacy of integrating the Diet Quality Questionnaire (DQQ) and its derived indicators into the current nutrition monitoring tool at the provincial level in Vietnam.

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