

Food Insecurity and Mental Well-Being in Immigrants: A Global Analysis



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Introduction: This study estimates the prevalence of food insecurity, mental well-being, and their associations among immigrants and compares the food insecurity–mental well-being associations with nonimmigrants globally and by region.

Methods: The Gallup World Poll data from 2014 to 2019 were analyzed in 2021. A total of 36,313 immigrants and 705,913 nonimmigrants were included. Food insecurity was measured by the Food Insecurity Experience Scale. Mental well-being was assessed using the Negative Experience Index and Positive Experience Index. A community attachment index was used to measure the living environment. Multilevel mixed-effect linear models were used to examine how the Negative Experience Index/Positive Experience Index was associated with food insecurity and the community attachment index in immigrants and nonimmigrants, adjusting for sociodemographic characteristics, survey years, and country fixed effects. The modifying effects of immigration status on food insecurity–mental well-being associations were tested.

Results: The weighted proportion of food insecurity among global immigrants was 38.6% during 2014–2019. In the pooled adjusted model, food insecurity was dose–responsively associated with greater Negative Experience Index and lower Positive Experience Index than the food-secure ref ($p < 0.001$ for trend). Similar dose–response associations were observed in nonimmigrants and in region-specific analyses. Community attachment marginally affected the food insecurity–mental well-being associations (all $p \leq 0.001$ for interaction). Immigration status significantly modified the food insecurity–mental well-being associations in all analyses (all $p = 0.01$ for interaction), and immigrants experienced poorer mental well-being than nonimmigrants at the same level of community attachment and food insecurity.

Conclusions: Food insecurity is prevalent and is associated with poor mental well-being in immigrants worldwide. Future interventions are needed to alleviate food insecurity and promote community attachment to improve mental health among immigrants, especially in Asian and Pacific countries.

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INTRODUCTION

With rapid globalization, the number of immigrants worldwide has tripled from approximately 84 million to 272 million in the past 4 decades.¹ Immigration has been associated with negative mental health outcomes.^{2,3} Pooling cross-sectional ($n=18$) and longitudinal ($n=3$) associations examined within 13 countries in Europe, Asia and Pacific, and North America, a systematic review found that immigrants experienced around 2–5 times higher prevalence

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of depression, anxiety, and somatic disorders than the native population.² A mental health crisis is evident among immigrants, and eliminating the mental health inequalities among this vulnerable subgroup should be a priority.⁴

Food insecurity (FI) is a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life.⁵ Worldwide, the prevalence of moderate or severe FI (meeting 4 of 8 food-insecure situations on the Food Insecurity Experience Scale [FIES]) increased from 22.6% to 30.4% between 2014 and 2020.⁶ Immigrants suffer higher burdens of FI than native-born citizens.^{7–9} Experiences that may exacerbate the risk of FI among immigrants include financial insufficiency, low education levels, unstable employment, acculturation, culturally restricted food preferences, and limited access to available resources and federal assistance services.^{9–11}

Previous evidence has indicated that FI is associated with compromised mental health,¹² and the associations are amplified by immigration status.¹³ However, the existing findings have been primarily conducted among immigrants from single countries with variations in the measurements on FI and mental well-being, yielding mixed results.^{8,14,15} In addition, having a close attachment to one's living community in the destination country plays a protective role in preventing food inequality and adverse mental health among immigrants.^{14,16,17} Immigrants from a satisfying community may receive additional supports and resources from their neighborhood.^{16,18,19} However, how immigrants' living environment modifies the association between FI and mental well-being is less known.

Using data from the Gallup World Poll (GWP) 2014–2019, this study intends to examine the prevalence of FI, mental well-being, and their associations in immigrants and compare the FI-mental well-being associations in immigrants and non-immigrants. Specifically, the study aims to (1) assess the global and regional prevalence of FI and status of mental health among adult immigrants, (2) examine how FI relates to mental well-being in immigrants globally and by region, (3) examine the potential impact of living environments on the FI–mental well-being association, and (4) compare the FI–mental well-being associations between immigrants and nonimmigrants globally and by region.

METHODS

Study Population

The GWP collects nationally representative data of adults aged ≥ 15 years in >160 countries globally.²⁰ Details of the GWP

sampling methods and survey questions can be found elsewhere.²¹ Briefly, in the first stage of sampling, primary sampling units or 100–135 clusters of households were selected on the basis of probability proportional to population size and stratified by geographic locations. In the second stage, about 8 households were selected within each primary sampling unit by a random-route procedure, and index respondents were selected from each household by a Kish Grid method. Face-to-face interviews were conducted in countries with $<80\%$ telephone coverage, and telephone surveys were conducted in other countries.

In this study, data from the 2014–2019 GWP collected in 159 countries were analyzed because the standardized measurement on individual-level FI was introduced to the GWP survey starting in 2014. Similar to previous studies and reports,^{22,23} these countries were grouped into World Bank–defined geographic regions, which include Europe ($n=13,783$), Latin America and Caribbean ($n=2,192$), Middle East and North Africa ($n=9,845$), North America ($n=978$), Sub-Saharan Africa ($n=4,831$), Asia and Pacific ($n=4,114$), and South Asia ($n=570$).²⁴ Because of the relatively small sample size in South Asia, South Asia was combined with the Asia and Pacific region (combined $n=4,684$) to reach comparable regional sample sizes.

Measures

Immigration status was assessed by 1 question: *Were you born in this country, or not?* Respondents with an answer of *not born in this country* were considered immigrants.

The FIES survey was developed by the Food and Agriculture Organization Voices of the Hungry Project (Appendix Table 1, available online).²⁵ It is a validated psychometric scale with 8 binary questions regarding the respondents' experiences in food access over the past 12 months.²⁵ The FIES was validated to cover the common domains of challenges in food acquisition.²⁶ The FIES raw score was calculated by adding up the affirmative responses to each of the 8 questions, yielding a scale that ranged from 0 to 8. According to the published guideline from the Food and Agriculture Organization,²⁵ respondents were further categorized into 4 groups, with 0 representing food security, 1–3 representing mild FI, 4–6 representing moderate FI, and 7–8 representing severe FI.

Mental well-being was assessed by 2 aggregated indices calculated by GWP (Appendix Table 1, available online). The Negative Experience Index (NEI) is an individual-level composite index of 5 questions regarding the negative experiences of physical pain, worry, sadness, stress, and anger during the previous day. The Positive Experience Index (PEI) is a similar composite index of 5 items regarding positive experiences in feeling well rested, being treated with respect, smiling, laughing, learning or doing something interesting, and experiencing enjoyment during the preceding day. The mean of the dichotomous items was calculated for NEI and PEI and then multiplied by 100 to produce the composite indices. The NEI and PEI range from 0 to 100, with lower NEI and higher PEI representing better mental well-being. The Cronbach's α has been reported as 0.80 for NEI and 0.91 for PEI when aggregated at the country level.²¹

The 2-item community attachment index measures respondents' satisfaction with the community they live in and their likelihood to recommend this community to others (Appendix Table 1, available online). Affirmative responses were recorded

as 1, and nonaffirmative responses were recoded as 0. The community attachment score was calculated as the summed score of the 2 questions, with 0 representing low, 1 representing medium, and 2 representing high community attachment.

Respondents' sociodemographic information on age, sex, education level, urbanicity, employment status, number of children in the household, household size, and annual household income were collected using the GWP questionnaire. Accounting for national differences in the classification of education levels, the educational levels were categorized as elementary education and less, secondary education and some education beyond, and postsecondary education.²⁰ Urbanicity was categorized as living in rural areas, farms, villages, or towns; suburbs of large cities; and cities. Employment status was categorized as being employed full time, employed part-time, or unemployed or out of the workforce. Total annual household income in international dollars was divided into quintiles, with 1 representing the poorest level and 5 representing the richest level.

Statistical Analysis

Statistical analyses were performed using Stata/SE, version 15.0. The 2014–2019 GWP data were appended and adjusted for the multistage sampling frame using the Taylor series linearization method.²⁷ Weighted means and proportions describing respondents' sociodemographic characteristics, FI severity levels, NEI, and PEI were calculated after applying survey sampling weights provided by Gallup.²¹ Between-region differences in continuous (NEI, PEI, age, number of children in the household, and household size) and categorical (FI levels, sex, education level, urbanicity, employment status, and annual household income levels) variables were tested by Kruskal–Wallis test and chi-square test, respectively.

The global and regional analyses were performed by pooling all country data collected in 2014–2019, adjusting for survey years, to account for the between-year differences in FI prevalence (ANOVA, $p < 0.001$), NEI (ANOVA, $p = 0.005$), and PEI (ANOVA, $p < 0.001$). Multilevel mixed-effect linear models were used to examine the associations between FI and NEI/PEI in immigrants and nonimmigrants, controlling for country-level fixed effects. On the basis of previous studies,^{23,28} other covariates included age, sex, education level, employment status, urbanicity, household size, number of children in household, and total annual and household income quintile. The trends for dose–response association between FI and mental well-being were tested using *np*trend in Stata. To explore potential interactions between FI and community attachment in immigrants and nonimmigrants, a categorical X categorical interaction term was included in the regression models. To compare the relationship between immigrants and nonimmigrants, the study performed stratified analyses by immigration status and tested the interaction between FI and immigration status by adding a categorical X categorical interaction term in the regression models.

Access to the full and deidentified GWP data set was granted by the Food and Agriculture Organization's Voices of the Hungry project. The survey protocols were approved by the required governing bodies of each country, and informed consent was obtained from all participants.

RESULTS

Data were available for 49,759 immigrants and 842,442 nonimmigrants. After excluding respondents with answers of *don't know* and *rejected to answer* or missing responses in FI ($n = 11,610$), NEI/PEI ($n = 242$), or any covariates ($n = 1,594$), 36,313 (~73.0% of the eligible sample) immigrants were included in the analytic sample. The sample sizes included in the analytic sample varied by region and year, and the numbers are presented in [Appendix Table 2](#) (available online). A total of 705,913 (~84% of the eligible sample) nonimmigrants with complete responses on FI, NEI/PEI, and covariates were also included in the analyses as a comparison group.

The distribution of sociodemographic characteristics, FI status, and mental well-being indices is presented in [Table 1](#). Among all immigrants from 2014 to 2019, the weighted mean age was 42.0 years, and 46.6% of the immigrants were female. The majority (76.6%) of the immigrants received secondary education or beyond. Around half of the immigrants were living in urban areas (48.8%) and were employed full time (48.9%). The distribution of sex, education, urbanicity, employment, number of children in the household, household size, and annual household incomes varied significantly among immigrants from the 6 regions ($p < 0.001$).

Globally, 38.6% of immigrants experienced FI from 2014 to 2019 (FIES score ≥ 1). Across the 6 regions, the weighted prevalence of FI ranged from 24.4% in North America to 78.0% in Sub-Saharan Africa. The weighted mean NEI and PEI among all immigrants were 30.7 (95% CI=30.4, 31.1) and 69.6 (95% CI=69.3, 70.0), respectively.

The adjusted associations between FI and mental well-being indices in the global sample are presented in [Table 2](#). Among immigrants, FI was dose–responsively associated with mental well-being indices ($p < 0.001$ for trend). The dose–response associations showed that increasing severity of FI was associated with higher NEI and lower PEI than that of the food-secure refs. The NEI scores among immigrants who reported mild, moderate, and severe FI were significantly higher by 11.6 (95% CI=10.8, 12.4), 19.2 (95% CI=18.1, 20.2), and 27.3 (95% CI=26.1, 28.5) points, respectively. Immigrants with mild, moderate, and severe FI reported an –8.2 (95% CI= –9.0, –7.4), –11.4 (95% CI= –12.4, –10.4), and –15.5 (–16.6, –14.4) point reduction in PEI scores, respectively. In the region-specific analysis, increasing severity of FI was related to higher NEI and lower PEI ([Figure 1](#)). The dose–response association held statistically significant for both NEI and PEI in all regions

Table 1. Food Insecurity Status, Mental Wellbeing Indices, Sociodemographic, and Household Characteristics of Immigrants From 2014 to 2019

Variables	All	Asia and Pacific	Europe	Latin America and the Caribbean	Middle East and North Africa	North America	Sub-Saharan Africa	p-value ^a
N	36,313	4,684	13,783	2,192	9,845	978	4,831	
Food insecurity level, %								<0.001
Food secure	61.5	72.1	67.4	42.4	68.0	75.5	22.0	
Mild food insecure	18.3	16.0	19.4	21.4	16.9	13.5	20.6	
Moderate food insecure	10.7	7.7	8.5	16.2	8.7	5.9	24.1	
Severe food insecure	9.5	4.2	4.6	20.0	6.3	5.1	33.3	
Negative Experience Index	30.7 (30.4, 31.1)	24.8 (23.8, 25.8)	29.6 (29.0, 30.1)	35.6 (34.1, 37.1)	31.6 (30.9, 32.3)	30.0 (27.6, 32.4)	35.7 (34.6, 36.8)	<0.001
Positive Experience Index	69.6 (69.3, 70.0)	70.9 (69.9, 71.9)	65.3 (64.7, 65.9)	77.9 (76.8, 79.1)	72.2 (71.6, 72.9)	78.0 (75.9, 80.1)	67.5 (66.6, 68.5)	<0.001
Sociodemographic and household characteristics								
Age	42.0 (41.8, 42.2)	45.9 (45.2, 46.6)	46.6 (46.2, 46.9)	38.8 (38.0, 39.5)	38.8 (38.5, 39.2)	44.6 (43.2, 45.9)	34.6 (34.1, 35.2)	<0.001
Female, %	46.6	57.4	53.4	52.7	31.7	48.7	51.3	<0.001
Education level, %								<0.001
Elementary education and less (up to 8 years of basic education)	23.4	23.1	21.3	34.5	7.9	8.7	66.4	
Secondary education and some education beyond (9–15 years of education)	47.2	51.4	56.5	49.0	41.0	60.1	29.6	
Postsecondary education	29.4	25.5	22.2	16.4	51.1	31.2	4.1	
Urbanicity, %								<0.001
Rural area, farm, village, or town	38.1	27.3	49.7	43.4	19.8	27.2	61.2	
Suburb of a large city	13.1	26.3	10.1	7.9	13.2	28.9	8.9	
City	48.8	46.5	40.3	48.7	67.0	43.9	29.9	
Employment status, %								<0.001
Employed full time	48.9	43.2	40.8	43.4	67.2	49.5	35.2	
Employed part-time	12.6	13.2	12.1	19.1	5.6	15.5	26.2	
Unemployed or out of workforce	38.5	43.7	47.1	37.5	27.2	35.1	38.6	
Number of children in the household	1.4 (1.3, 1.5)	1.1 (1.0, 1.3)	0.9 (0.8, 1.0)	1.7 (1.3, 2.2)	1.3 (1.2, 1.4)	0.7 (0.6, 0.8)	3.0 (2.8, 3.2)	<0.001
Household size	3.9 (3.9, 3.9)	4.1 (4.0, 4.2)	3.1 (3.1, 3.2)	4.1 (4.0, 4.2)	3.9 (3.8, 3.9)	3.4 (3.3, 3.6)	6.0 (5.8, 6.1)	<0.001

(continued on next page)

Table 1. Food Insecurity Status, Mental Wellbeing Indices, Sociodemographic, and Household Characteristics of Immigrants From 2014 to 2019 (continued)

Variables	All	Asia and Pacific	Europe	Latin America and the Caribbean	Middle East and North Africa	North America	Sub-Saharan Africa	p-value ^a
Quintiles of annual household income, %								<0.001
1 (the poorest)	8.5	6.5	2.7	15.0	1.0	30.1	45.0	
2	10.2	12.8	7.6	21.8	4.4	20.4	27.5	
3	17.2	13.1	19.4	34.2	15.2	9.1	15.3	
4	27.1	18.3	35.5	22.7	28.8	27.3	8.6	
5 (the richest)	37.0	49.4	34.9	9.4	50.6	58.5	3.5	

Note: Boldface indicates statistical significance ($p < 0.05$).

Values are presented as means (95% CI) or proportions. Poststratification weights and Taylor-linearized SEs were used to adjust the multistage sampling frame of the Gallup World Poll and were applied to all estimates.

^ap-values of between-region differences in categorical variables (food insecurity levels, sex, education levels, urbanicity, employment status, and household income levels) and continuous variables (Negative Experience Index, Positive Experience Index, age, number of children in the household, and household size) were calculated by chi-square test and Kruskal–Wallis test, respectively.

($p < 0.001$ for trend for all regions) (Appendix Tables 4 and 6, available online).

Globally, immigration status modified the FI–NEI and FI–PEI associations significantly (both $p = 0.01$ for interaction); however, the differences by immigration status were small (ranging from 0 to 1.2) (Table 2). Greater significant differences in β -coefficients were seen in Asia and the Pacific (Figure 1), where immigrants experienced higher NEI scores than nonimmigrants at all FI levels.

Figure 2 presents the adjusted relationships between FI and NEI/PEI, considering the interaction between FI and community attachment in the global sample. Immigrants experienced a higher NEI and lower PEI when at the same level of FI and community attachment than the nonimmigrants. FI was consistently associated with increased NEI scores and decreased PEI scores dose–responsively in immigrants with community attachment at low, medium, and high levels ($p < 0.001$). Higher community attachment was associated with better mental health indices. However, the biggest differences by community attachment level in both NEI and PEI were observed at the severe FI level (FI–NEI: $p = 0.001$ for interaction; FI–PEI: $p < 0.001$ for interaction), suggesting the greatest modifying effect of community attachment in the severely food-insecure immigrants. A similar marginal effect of community attachment on FI–mental well-being associations was found among nonimmigrants ($p < 0.001$ for interaction).

Comparing the characteristics of included and excluded immigrants revealed that included immigrants were older and had lower SES, lower education attainment, higher rates of unemployment, and lower household income, in contrast to the excluded immigrants (Appendix Table 8, available online).

DISCUSSION

Among immigrants, FI was prevalent, affecting almost 4 in 10 surveyed global immigrants in 2014–2019. In the global and region-specific samples, FI was universally associated with worse mental well-being in both immigrants and nonimmigrants in a dose–response manner. Globally, this study found that immigration status statistically modified the FI–mental well-being associations; however, the practical differences in the associations were marginal. Immigrants in Asia and the Pacific region experienced poorer mental well-being than nonimmigrants. Community attachment modified the FI–mental well-being associations in both immigrants and nonimmigrants, especially among severely food-insecure populations. To the authors’ knowledge, this is the first study to examine and compare the association between

Table 2. The Adjusted Association of Food Insecurity With Mental Wellbeing Indices Among Immigrants and Nonimmigrants Globally From 2014 to 2019

Variables	Negative Experience Index				Positive Experience Index			
	Immigrants(n=36,313)		Nonimmigrants(n=705,913)		Immigrants(n=36,313)		Nonimmigrants(n=705,913)	
	β (95% CI) ^a	P- Value	β (95% CI) ^a	P- Value	β (95% CI) ^a	P- Value	β (95% CI) ^a	P- Interaction ^b
Food insecurity level	1		1		1		1	0.01
Food secure (ref)								
Mild food insecure	11.6 (10.8, 12.4)	< 0.001	10.9 (10.7, 11.0)	< 0.001	-8.2 (-9.0, -7.4)	< 0.001	-7.1 (-7.3, -6.9)	< 0.001
Moderate food insecure	19.2 (18.1, 20.2)	< 0.001	19.2 (18.9, 19.4)	< 0.001	-11.4 (-12.4, -10.4)	< 0.001	-11.1 (-11.3, -10.9)	< 0.001
Severe food insecure	27.3 (26.1, 28.5)	< 0.001	27.1 (26.8, 27.3)	< 0.001	-15.5 (-16.6, -14.4)	< 0.001	-14.3 (-14.5, -14.1)	< 0.001

Note: Boldface indicates statistical significance ($p < 0.05$).

The full table including the estimates on covariates is presented as Appendix Table 3 (available online).

^aAdjusted for age, sex, education level, employment status, urbanicity, household size, total annual household income, number of children in household, survey year, and country fixed effects.

^bThe categorical-by-categorical (FI status X immigration status) interaction term was added in the full model to examine the moderation effects of immigration status on FI–mental well-being associations. FI, food insecurity.

FI and mental well-being in immigrants and nonimmigrants from the global perspective using standardized methods. The findings are of importance to show that FI and poor mental health coexist in immigrants worldwide and that a better-perceived living environment may alleviate the negative experience and promote a positive experience, particularly among immigrants with severe FI.

Globally, 38.6% of adult immigrants reported FI. The prevalence was about 8% lower than the global prevalence of FI in the general population over the same period.²⁸ Most immigrants move between countries for work, study, and family reunions, and only about 9% of immigrants were forced to move given hardship in their original countries.²² The middle- and high-income destination countries are more likely to accept the wealthy and educated immigrants,^{29–31} whereas the low-income countries primarily accept working laborers.^{30,32} Employment status is associated with FI,³³ and in the sample, there was a 15 percentage point higher employment rate among immigrants than that in the general population across 2014–2019.³² These data may help to explain the lower FI prevalence in immigrants.

Echoing the findings of previous studies in general populations,^{23,28} the results showed that FI was associated with poorer mental well-being among immigrants. One global analysis using GWP 2014–2016 data revealed similar dose–response relationships, and the magnitudes of the associations were also comparable with those of the findings (e.g., mild, moderate, and severe FI were associated with 10.4–24.5 points higher NEI scores and 8.3–16.2 points lower PEI scores than in the food-secure group).²³ Another global analysis in the general population using GWP 2014–2019 data also confirmed the FI–NEI/PEI associations (e.g., higher FIES raw score was associated with 2% [95% CI=1.01, 1.03] increased rate of experiencing negative well-being symptoms and 1% [95% CI=0.98, 0.99] decreased rate of experiencing positive well-being symptoms).²⁸ A few cross-sectional studies focusing on specific immigrant subgroups (e.g., adult refugees in South Africa and immigrant outpatients in the U.S.) provide similar results regarding different mental health outcomes.^{15–35} Expanding beyond the few existing small studies, this study suggests that FI and adverse mental well-being in immigrants are likely universal worldwide.

In all regions, this study observed similar dose–response relationships between FI and NEI/PEI in immigrants and nonimmigrants. In the Asia and Pacific region, immigrants appeared to report poorer mental well-being than nonimmigrants at moderate and severe FI levels. The dominant form of immigration in this region is the temporary labor force.²³

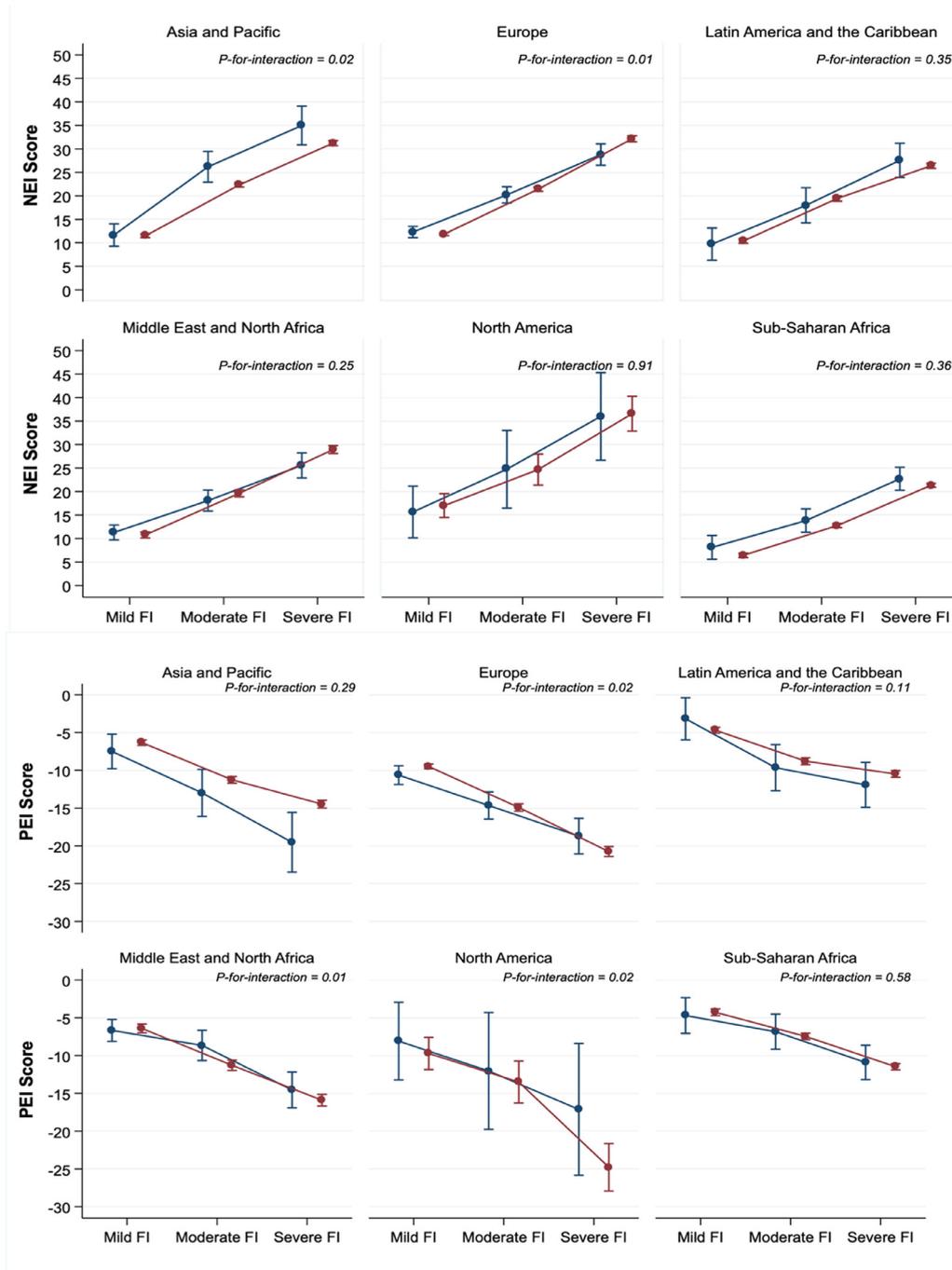


Figure 1. The associations of FI with (Figure 1A) NEI and (Figure 1B) PEI scores in 6 geographic regions among immigrants and nonimmigrants.

Note: Adjusted for age, sex, education level, employment status, urbanicity, household size, total annual household income, number of children in household, survey year, and country fixed effects. Estimates for immigrants and nonimmigrants are presented in blue and orange, respectively. FI, food insecurity; NEI, Negative Experience Index; PEI, Positive Experience Index.

The conservative welfare policies in the Asia and Pacific region that benefit mostly the native-born citizens may prevent immigrants from receiving governmental assistance.^{36,37} Limited access to welfare programs, disadvantaged labor markets, and

socioeconomic constraints are all factors that may influence mental well-being.³⁸ In addition to the previously summarized mechanisms linking FI and mental health,^{12,39} other plausible explanations relevant for immigrants include the lack of social

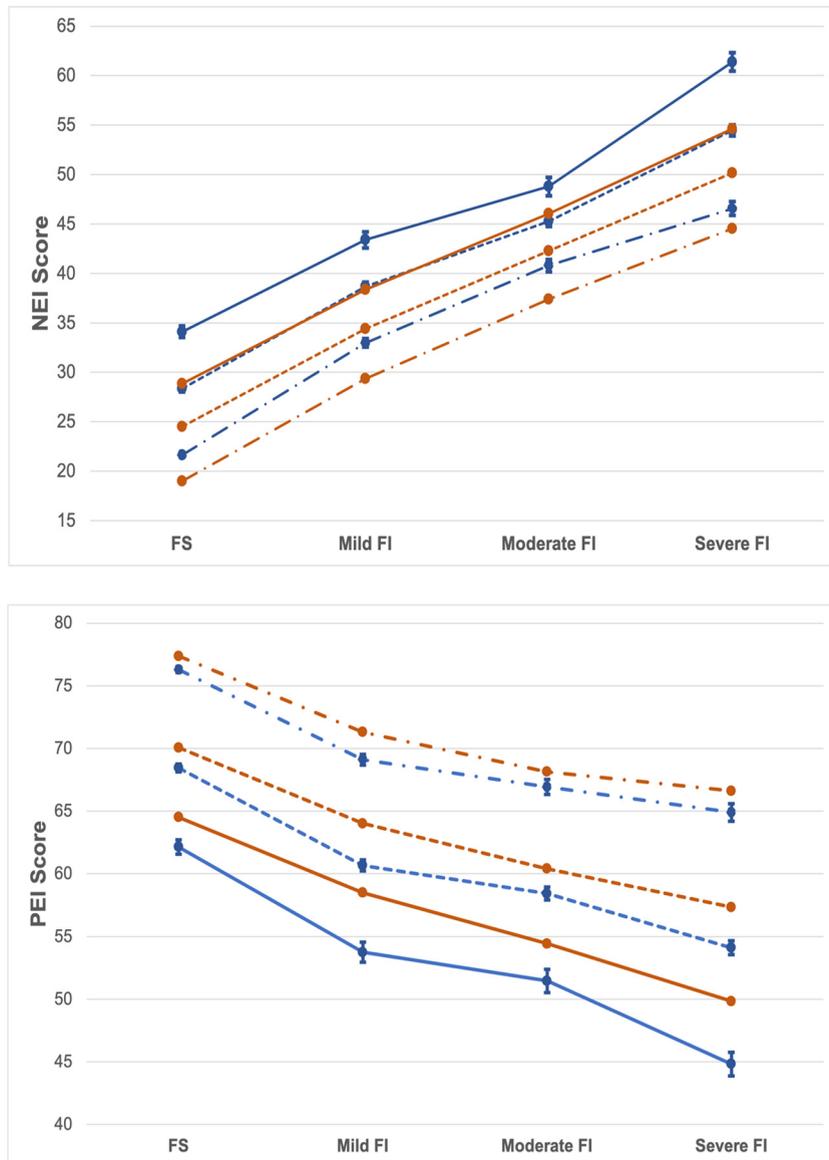


Figure 2. The marginal effect of community attachment on (Figure 2A) FI–NEI and (Figure 2B) FI–PEI associations among immigrants and nonimmigrants.

Note: Adjusted for age, sex, education level, employment status, urbanicity, household size, total annual household income, number of children in household, and survey years. Community attachment was assessed by 2 questions: *Are you satisfied or dissatisfied with the city or area where you live?* and *Would you recommend the city or area where you live to a friend or associate as a place to live, or not?* Low: ____; Medium: _ _ _; High: _ _ _ . Estimates for immigrants and nonimmigrants are presented in blue and orange, respectively.

FI, food insecurity; FS, food security; NEI, Negative Experience Index; PEI, Positive Experience Index.

connectedness that may induce feelings of isolation and reduce opportunities for receiving material aid and emotional support, resulting in worsened anxiety and depression related to FI,^{40–42} and difficulties in acculturation, especially language barriers, which may prevent immigrants from being employed and applying for governmental food assistance programs, exacerbating both FI and mental distress.^{43,44}

This study found an interaction of community attachment in FI–mental well-being associations among

immigrants and nonimmigrants. It is likely an extension of the findings of previous research that focused on 1 or 2 of the factors in relation to FI and well-being. For example, using the 2014 GWP data from 138 countries, Frongillo et al.⁴⁵ found that lack of adequate shelter or housing was associated with increased risk of moderate or severe FI and decreased daily experience score. The lack of social support among immigrants, caused by social isolation, could also lead to the low community attachment rating.⁴⁶ Social support plays a protective

role in preventing mental distress among the food insecure.¹⁹ Social ties and networks with neighborhoods are associated with reduced risk of FI.¹⁶ However, dissatisfaction with the community may prevent immigrants from receiving additional help from the neighborhood.¹⁸ The FI experience may be exacerbated and impact-related mental problems.

Limitations

This study is subject to some limitations. The directionality of the FI–mental well-being relationship could not be determined given the cross-sectional design of the GWP data. The findings could be confounded by unmeasured factors, such as chronic conditions⁴⁷ and governmental assistance programs.⁴⁸ The 1-item question assessing immigration status does not discriminate against immigrants of various lengths of stay, legal status, residential tenure, or reason for immigration. Self-reported data on FI and mental well-being may introduce reporting bias, the direction of which is unknown. The difference in data reference period on FI in the past 12 months and mental well-being over the past 24 hours limited the ability to infer the temporality of the association. Owing to the significant differences observed in sociodemographic characteristics among included and excluded immigrants, the study findings may not be generalized to all immigrants worldwide.

CONCLUSIONS

Among immigrants, FI is prevalent and is dose–responsively associated with adverse mental well-being. Attachment to the living community modifies the FI–mental health association in both immigrants and nonimmigrants, especially those experiencing severe FI. Continuous efforts are needed to address the FI and mental health disparities as well as improve supportive living environments in vulnerable populations.

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SUPPLEMENTAL MATERIAL

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