

ORIGINAL ARTICLE

Household Food Insecurity and Dietary Diversity among Female University Students in Karachi, Pakistan: A Cross-Sectional Study

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Abstract

Background

Food insecurity (FI) leads to long-term detrimental effects on physical and intellectual development, resulting in malnutrition and micronutrient deficiencies. The current study assessed Household Food Insecurity (HFI) and its association with 24-hour Dietary Diversity Scores (DDS) among female university students in Karachi.

Methods

We employed non-probability consecutive sampling at a large public-sector university in Karachi, Pakistan, for this cross-sectional study. The study included undergraduate and postgraduate students aged between 18-26 years. The USAID standardized questionnaire "Household Food Insecurity Access Scale" was used to assess FI. Bivariate one-way ANOVA and multivariable ordinary-least-squares and logistic regression models were applied to examine the relationship between HFI severity and continuous DDS and low DDS (<5 food-groups).

Results

We analysed 311 female students; 26.5 % (95 % CI 22.0–31.5) experienced some degree of food insecurity. HFI severity was not independently associated with DDS after adjustment (mean DDS: 6.35 ± 1.86; adjusted β = -0.08, 95% CI: -0.27 to 0.12; p = 0.43).

Conclusions

Although food insecurity was common, it was not independently associated with dietary diversity after adjustment. Targeted nutrition-education and subsidised-meal programmes could still mitigate residual risk. Campus policies must integrate financial support with education to address non-economic barriers to diet quality.

Keywords

food insecurity, dietary diversity, women's nutrition, university students, Pakistan

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Layman Summary

Every fourth young woman at universities in Karachi lives with food-related anxiety—worrying about whether their household can afford enough to eat. In this study, we interviewed 311 female students and asked them to recall everything they had eaten over the past 24 hours. Each food item was sorted into 16 food groups based on global nutrition guidelines. Most students crossed the basic diversity threshold, averaging six different food groups, which suggests decent variety. However, those from food-insecure homes tended to eat slightly fewer food groups. Interestingly, when we adjusted for family income, job status, and household size, this gap disappeared—indicating that poverty, not just food anxiety, drives dietary gaps. Even more surprising, some of the most food-insecure students reported the most varied diets, possibly due to shared meals or celebratory gatherings. This shows that financial stress doesn't always mean poor diets—especially when young women use creative coping strategies. Our research recommends blending meal subsidies with hands-on nutrition training in universities to ensure that every student, no matter her background, has the knowledge and means to eat well.

Introduction

Background

Food insecurity (FI) is defined as 'uncertain or limited access to nutritionally adequate, safe foods in socially acceptable ways [1]. Globally, ~2.4 billion people are affected, with South Asia disproportionately burdened [2]. Pakistan ranks 92/113 on the Global Food Security Index, reflecting fragile purchasing power, recurrent price shocks and gendered inequities [3]. Young women are doubly vulnerable: they share household resource constraints and, in patriarchal settings, often eat last or least [4]. University years represent a critical 'second window' for growth and habit formation, particularly for young women, as these habits can influence future pregnancy outcomes and inter-generational health [5,6]. This period is also marked by increased autonomy in food choices, making it a pivotal time for nutritional interventions [7,8].

Diet quality is widely assessed by Dietary Diversity Score (DDS), the simple count of unique food groups consumed in 24 h [9]. Higher DDS predicts better micronutrient adequacy, healthier BMI and cognitive performance in students [10]. Household Food Insecurity Access Scale (HFIAS) adds context by measuring worry, reduction in food variety, and hunger episodes over one month [11]. Global reports consistently link higher HFIAS scores with lower DDS, but the magnitude and drivers of this relationship vary by culture, market structure and gender roles [12]. Evidence from Pakistan remains scant and often conflates adolescents with adult women.

Rationale of the research

Understanding whether and how household-level food insecurity erodes dietary diversity among female university students can guide targeted campus nutrition policies that go beyond stipend schemes. If financial constraints fully explain poor diversity, cash transfers may suffice. If knowledge or time barriers persist after adjusting for SES, behaviour change interventions are warranted.

Objectives of the research

Primary: to test the hypothesis that mean DDS decreases step-wise with higher HFI severity.

Secondary: to quantify the independent association between HFI severity and (a) continuous DDS and (b) binary low DDS (< 5 food groups) after adjusting for socio-economic covariates.

Tertiary: to describe the socio-demographic profile of food-insecure female students.

MATERIALS AND METHODS

Study design and study settings

We carried out a cross-sectional analytical study (December 2019–May 2020) at Dow University of Health Sciences, Karachi (public sector).

Study Population

Inclusion criteria: Currently enrolled female undergraduate and postgraduate students aged 17–26 years. Exclusion criteria: Students were excluded if they were pregnant, had a chronic illness, or refused informed consent.

Sample Size & Sampling Technique

The sample size was calculated using the below formula:

$$\text{Sample size} = (Z^2 \times P \times 1-P) / d^2$$

using $Z = 1.96$, prevalence [13] = 0.41, precision = 0.05 $\rightarrow n = 259$; inflated by 20 % for non-response to 311.

Accounting for a 20% non-response rate, we enrolled 311 female students from a parent survey of 340 participants. Due to logistical constraints (e.g., lack of access to a centralized student registry), non-probability consecutive sampling was employed, which may limit generalizability. To mitigate selection bias, field teams covered all academic departments and both morning/evening lecture sessions during Week 3 of each semester, inviting all eligible students present. A post-hoc power analysis confirmed 86% power ($\alpha = 0.05$) to detect

a clinically meaningful 0.6-unit difference in mean DDS between any two food insecurity categories. Future studies should prioritize stratified random sampling to enhance representativeness.

Biases and confounders

Selection bias was minimized by ensuring comprehensive coverage of academic schedules and departments. Recall bias was reduced through interviewer-assisted 24-hour dietary recalls, which standardize data collection. Potential confounders (age, household income, employment status, and family size) were adjusted for in multivariable regression models. Body mass index (BMI) and physical activity were evaluated for multicollinearity ($VIF < 2$) (variance inflation factor (VIF)) and retained in sensitivity analyses, which produced consistent null results (see Supporting File 2). Despite these measures, residual confounding (e.g., unmeasured cultural food preferences) cannot be ruled out. The Urdu translation of HFIAS underwent forward-back translation and pilot testing ($n = 30$; Cronbach's $\alpha = 0.82$).

Data-collection tools

- Household Food Insecurity Access Scale (HFIAS) (9 items, Urdu-adapted, Cronbach's $\alpha 0.82$).
- FAO 16-food-group DDS recall.
- Structured socio-demographic questionnaire.

Data Collection tools and Procedures

Following written informed consent, trained researchers collected data from female students across all departments of the university using a standardized protocol. The first author explained the study objectives and questionnaire items in person, emphasizing voluntary participation and anonymity. Participants were assigned unique numerical codes to ensure confidentiality, and no personally identifiable information was recorded. The interviewer-assisted survey, which included the Urdu-adapted HFIAS questionnaire, 24-hour dietary recall, and socio-demographic items, required approximately 20 minutes per participant. Dietary diversity scores (DDS; range 0–16) were calculated by summing affirmative responses across the 16 FAO (Food and Agriculture Organization) food groups, with scores ≥ 5 indicating minimum dietary diversity for women.

Quality control

To ensure data integrity, we implemented:

1. Double data entry in SPSS v22, with 10% random checks to verify accuracy.
2. Logic constraints for anthropometric data (e.g., BMI range checks) to preserve validity for future analyses.
3. Interviewer training to minimize inter-observer variability in dietary recall administration.

Data analysis

Data preparation

- Cleaning: Raw data (XLSX) were imported into SPSS 22. Missing DDS values (<1%) were excluded list-wise, while missing income data (20%) were imputed using multiple chained equations (MICE; $*m^*=20$) with predictive mean matching (covariates: employment status, household size). Sensitivity analyses confirmed imputation robustness (<5% effect-size variation vs. complete-case analysis).
- Transformation: DDS exhibited moderate symmetry (skewness=0.42), satisfying OLS (Ordinary-Least-Squares (OLS)) assumptions. Negative binomial and Poisson models (Supporting File 2) yielded congruent null results, supporting OLS reliability.

Statistical Analysis

Data were analysed in SPSS v22.0. Descriptive statistics are reported as means \pm SD for continuous variables and frequencies (percentages) for categorical variables; 95 % confidence intervals (CIs) for means were calculated with the t-distribution.

Bivariate tests

- One-way ANOVA compared mean Dietary Diversity Scores (DDS) across Household-Food-Insecurity (HFI) categories (Levene’s F = 1.63, p = 0.18); Tukey post-hoc tests followed significant omnibus results.
- χ^2 tests assessed associations between low DDS (< 5 food groups) and HFI status.

Multivariable models

- Ordinary least-squares (OLS) regression for continuous DDS.
- Logistic regression for binary low DDS. Both models were adjusted for age, household income, employment status, and household size, and OLS used robust standard errors.

Model diagnostics showed normal residuals, homoscedasticity, and no multicollinearity (variance inflation factor < 2).

Sensitivity analyses with Poisson and negative-binomial regressions produced effect estimates consistent with primary models (all HFI p > 0.30).

Reporting of effects

Results are presented as β -coefficients (OLS) or adjusted odds ratios (logistic regression) with 95 % CIs; statistical significance was set at p < 0.05.

Ethical approval

Approved by [SZABIST Ethics Review Committee] (Ref No. IERB(5)/SZABIST-KHI(MSPH)/18105116/190132). Participants gave written informed consent.

RESULTS

Participants’ Socio-Demographic characteristics

The study included 311 female students with a mean age of 21.5 ± 3.3 years. Most participants were undergraduates (93.9%), and only 4.8% reported paid employment. Median household income was 80,000 PKR/month (IQR: 60,000–150,000), with households typically comprising six members and 1–2 earners.

Table 1. Socio-demographic characteristics of participants (n = 311)

Variable	Category/Statistic	Value
Program of study	Bachelors	292 (93.9%)
	Masters	19 (6.1%)
Employment status	Unemployed	296 (95.2%)
	Employed	15 (4.8%)
Age (years)	Mean ± SD	21.5 ± 3.3
Household income (PKR)	Median (IQR)	80,000 (60,000–150,000)

Major findings

Food Insecurity Prevalence

Nearly 26.5% of students experienced some level of food insecurity (Table 2). Mild and severe FI were reported by 11.3% and 9.0%, respectively.

Table 2: Distribution of Food Insecurity Categories

HFI Category	n	%
FSH*	227	73.0
Mildly FI*	35	11.3
Severely FI	28	9.0
Moderately FI	21	6.8

* FSH = Food-Secure Household; FI = Food Insecure; HFI = Household-Food-Insecurity

Dietary diversity

The mean DDS was 6.35 ± 1.86, with 13.6% falling below the FAO threshold (<5 food groups). ANOVA revealed significant differences across HFI categories (F = 2.85, *p* = 0.038), driven by the moderately FI group (mean DDS: 5.85 ± 1.31). Notably, severely FI students had a higher mean DDS (6.89 ± 2.48), potentially reflecting coping strategies (e.g., shared meals) or recall bias.

Table 3. Mean DDS by food insecurity level

HFI Category	Mean DDS* ± SD*	95% CI*	n
Food secure	6.40 ± 1.82	6.16–6.63	227
Mildly FI	6.03 ± 1.46	5.54–6.51	35
Moderately FI	5.85 ± 1.31	5.29–6.41	21
Severely FI	6.89 ± 2.48	5.97–7.81	28

CI = Confidence Interval (CI); DDS = Dietary diversity scores; SD = Standard Deviation

Multivariable Regression Analyses

After adjustment for socio-economic covariates, HFI severity was not significantly associated with DDS (β = -0.08, 95% CI: -0.27 to 0.12; *p* = 0.43) or low DDS (aOR = 1.06, 95% CI: 0.74–1.53). Income and employment showed neutral effects.

Table 4. Predictors of DDS (OLS regression)

Predictor	β (95% CI)	p-value
Mildly FI	-0.31 (-0.96–0.34)	0.35
Moderately FI	-0.50 (-1.43–0.42)	0.29
Severely FI	0.41 (-0.41–1.23)	0.32
Age (per year)	0.05 (-0.04–0.13)	0.28

Table 5. Predictors of low DDS (Logistic regression)

Predictor	aOR (95% CI)	p-value
Mildly FI	0.86 (0.28–2.67)	0.78
Moderately FI	0.92 (0.19–4.42)	0.92
Severely FI	1.15 (0.30–4.45)	0.83

Objective-Specific Findings

1. **Primary Objective:** Mean DDS varied by FI severity but attenuated after adjustment.
2. **Secondary Objective:** No independent association between HFI and DDS after accounting for socio-economic factors.
3. **Tertiary Objective:** Food-insecure students had lower household income (median 75,000 vs. 110,000 PKR; *p* < 0.001) and larger families.

DISCUSSION

This study offers novel insights into the relationship between household food insecurity (HFI) and dietary diversity among female university students in Pakistan, a population at the intersection of gendered nutritional vulnerability and transitional autonomy. While unadjusted analyses indicated a step-wise decline in dietary diversity scores (DDS) with increasing HFI severity, this association attenuated after accounting for socio-economic confounders (adjusted β = -0.08, p = 0.43). This suggests that HFI’s direct impact on diet quality may be mediated by broader structural factors, a finding with critical implications for campus nutrition policies.

Our prevalence (26.5 %) is lower than that reported in US community-college samples (42–57 % in studies from 2016–2022)[14, 15] and Iranian high-school cohorts (41 %)[16, 17]. This discrepancy may reflect Pakistan’s joint-family system, where resource pooling mitigates food shortages for students—a hypothesis warranting further exploration through household-level expenditure studies. Notably, the mean DDS (6.35 ± 1.86) exceeded the FAO’s minimum threshold (≥ 5), mirroring findings from Bangladeshi peers [18], and underscores the resilience of dietary practices even amid economic constraints.

The paradoxically higher DDS among severely food-insecure students (6.89 ± 2.48) merits cautious interpretation. While this could indicate coping strategies (e.g., reliance on shared meals during familial gatherings) [19, 20], the small subgroup size (n=28) and potential recall bias (e.g., overreporting during episodic feasting) preclude definitive conclusions. Qualitative follow-ups should explore intra-household food allocation dynamics and cultural norms around meal-skipping during academic stress.

Our adjusted null findings resonate with Capability Theory [21, 22] and studies from comparable settings (e.g., Ghana [23, 24]), where market access and income outweighed HFI in predicting DDS. This reinforces the need for interventions addressing both financial barriers (e.g., subsidized meals) and capability gaps (e.g., nutrition literacy).

Strengths and Limitations

Strengths:

- First application of the 16-group DDS with HFIAS in Pakistani female students, using validated tools and robust adjustment for confounders.
- Adequately powered (post-hoc power: 86%) to detect clinically meaningful differences in DDS.

Limitations:

- Cross-sectional design precludes causal inference; reverse causality (e.g., poor diet exacerbating HFI perceptions) cannot be ruled out. Social-desirability bias in self-reported dietary recalls and the single-institution setting may further limit external validity.
- Single-day dietary recall may misclassify habitual intake ($\pm 12\%$) [18]; future studies should employ multiple recalls or food diaries.
- Non-probability sampling (though mitigated by department-wide coverage) limits generalizability; stratified random sampling is recommended for replication.

FUTURE RESEARCH IMPLICATIONS

1. Longitudinal designs tracking seasonal price fluctuations and household remittances could clarify temporal HFI-DDS dynamics.
2. Mixed-methods studies should explore:
 - Gendered food allocation norms in university students' households.
 - Cultural perceptions of "adequate diversity" and meal-skipping during exams.
3. Intervention trials testing bundled strategies (e.g., meal subsidies + budgeting training) are needed to isolate effective components.

CONCLUSION AND RECOMMENDATIONS

While HFI affects 26.5% of female students in this cohort, its independent association with dietary diversity is modest, underscoring the role of socio-economic enablers (income, employment) in shaping food choices. To holistically address diet quality, we propose:

1. **Income-sensitive meal vouchers:** We recommend piloting income-sensitive meal-voucher schemes (~USD 3.50/month) redeemable for fruits, vegetables and dairy on campus.
2. **Curriculum-integrated nutrition education:** Mandate 8-week modules in first-year programs, covering budget-friendly diverse meals (e.g., lentil-based dishes) and micronutrient optimization.
3. **Peer-led cooking workshops:** Host biweekly sessions in hostel kitchens, training students to prepare culturally acceptable, nutrient-dense meals (e.g., iron-rich spinach saag).

These interventions, grounded in local context and evidence, could bridge the gap between food security and dietary adequacy, safeguarding the health of Pakistan's future mothers.

SUPPORTING INFORMATION

File 1: Questionnaire/tool

File 2: ERB Approval Letter

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AUTHORS' CONTRIBUTIONS

Conceptualization: SS

Data Curation: SS, TZ, SZ

Formal Analysis: SZ, SM

Investigation: SS, TZ

Methodology: SS, TZ

Project Administration: SH, MA

Resources: SS, TZ

Software: SZ, SM

Supervision: SH

Validation: SZ, SM

Visualization: SZ, SM

Writing – Original Draft Preparation: SS

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What is already known

- Food insecurity negatively impacts diet quality and cognitive outcomes worldwide.
- Dietary diversity score (DDS) is a reliable proxy for micronutrient adequacy.
- South Asian women face food allocation inequities within households.
- Universities remain underexplored sites for targeted food-security interventions.

Key points this study adds

- This is the first study to apply the 16-group DDS and HFIAS tools among Pakistani female students.
- Moderate food insecurity initially showed lower DDS, but the effect disappeared after SES adjustment.
- Surprisingly, severely food-insecure students reported higher DDS—possibly due to coping behaviors or recall bias.
- Findings support bundled campus strategies integrating financial aid with nutrition education.

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ملخص الخلفية

يؤدي انعدام الأمن الغذائي (FI) إلى آثار ضارة طويلة الأمد على النمو البدني والفكري، مما يؤدي إلى سوء التغذية ونقص المغذيات الدقيقة. قيمت الدراسة الحالية انعدام الأمن الغذائي للأسر (HFI) وعلاقته بدرجات التنوع الغذائي على مدار 24 ساعة (DDS) بين الطالبات الجامعيات في كراتشي.

الطرق

استخدمنا عينة متتالية غير احتمالية في جامعة كبيرة تابعة للقطاع العام في كراتشي، باكستان، لإجراء هذه الدراسة المستعرضة. شملت الدراسة طلابًا جامعيين وطلاب دراسات عليا تتراوح أعمارهم بين 18 و26 عامًا. تم استخدام الاستبيان المعياري للوكالة الأمريكية للتنمية الدولية (USAID) "مقياس الوصول إلى انعدام الأمن الغذائي للأسر" لتقييم انعدام الأمن الغذائي. تم تطبيق تحليل التباين الأحادي الثنائي المتغير ونماذج الانحدار اللوجستي والمتعدد المتغيرات الأقل مرتبة العادية لفحص العلاقة بين شدة HFI و DDS المستمر و DDS المنخفض (>5 مجموعات غذائية).

النتائج

فمن يتحلل 311 طالبة؛ 26.5% (95% CI 22.0-31.5) عابن من درجة ما من انعدام الأمن الغذائي. لم تكن شدة انعدام الأمن الغذائي المنزلي مرتبطة بشكل مستقل بتنوع النظام الغذائي بعد التعديل (متوسط تنوع النظام الغذائي: 6.35 ± 1.86 المعدل = -0.08، 95% CI: -0.27 إلى 0.12؛ p = 0.43).

الاستنتاجات

على الرغم من أن انعدام الأمن الغذائي كان شائعًا، إلا أنه لم يكن مرتبطًا بشكل مستقل بتنوع النظام الغذائي بعد التعديل. لا يزال بإمكان برامج التنقيف الغذائي الموجهة وبرامج الوجبات المدعومة التخفيف من المخاطر المتبقية. يجب أن تدمج سياسات الحرم الجامعي الدعم المالي مع التعليم لمعالجة العوائق غير الاقتصادية التي تحول دون تحسين جودة النظام الغذائي.

الكلمات المفتاحية

انعدام الأمن الغذائي، تنوع الغذاء، تغذية المرأة، طلاب الجامعات، باكستان

خلاصة

يؤثر انعدام الأمن الغذائي (FI) سلبًا على النمو البدني والفكري، مما يؤدي إلى سوء التغذية ونقص المغذيات الدقيقة. قيمت الدراسة الحالية انعدام الأمن الغذائي للأسر (HFI) وعلاقته بدرجات التنوع الغذائي على مدار 24 ساعة (DDS) بين الطالبات الجامعيات في كراتشي.

طريقة البحث

استخدمنا عينة متتالية غير احتمالية في جامعة كبيرة تابعة للقطاع العام في كراتشي، باكستان، لإجراء هذه الدراسة المستعرضة. شملت الدراسة طالبات جامعات تتراوح أعمارهن بين 18 و26 عامًا. تم استخدام الاستبيان المعياري للوكالة الأمريكية للتنمية الدولية (USAID) "مقياس الوصول إلى انعدام الأمن الغذائي للأسر" لتقييم انعدام الأمن الغذائي. تم تطبيق تحليل التباين الأحادي الثنائي المتغير ونماذج الانحدار اللوجستي والمتعدد المتغيرات الأقل مرتبة العادية لفحص العلاقة بين شدة HFI و DDS المستمر و DDS المنخفض (>5 مجموعات غذائية).

النتائج

فمن يتحلل 311 طالبة؛ 26.5% (95% CI 22.0-31.5) عابن من درجة ما من انعدام الأمن الغذائي. لم تكن شدة انعدام الأمن الغذائي المنزلي مرتبطة بشكل مستقل بتنوع النظام الغذائي بعد التعديل (متوسط تنوع النظام الغذائي: 6.35 ± 1.86 المعدل = -0.08، 95% CI: -0.27 إلى 0.12؛ p = 0.43).

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الكلمات المفتاحية

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ملخص

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الطرق

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الكلمات المفتاحية

انعدام الأمن الغذائي، تنوع الغذاء، تغذية المرأة، طلاب الجامعات، باكستان

РЕЗЮМЕ

Недостаток продовольствия (FI) приводит к долгосрочным пагубным последствиям для физического и интеллектуального развития, что приводит к недоеданию и дефициту микроэлементов. В настоящем исследовании оценивался уровень продовольственной безопасности домохозяйств (HFI) и его связь с 24-часовыми показателями разнообразия рациона (DDS) среди студенток университетов в Карачи.

Методы

Для этого кросс-секционного исследования мы использовали невероятную выборку в крупном государственном университете в Карачи, Пакистан. В исследование были включены студенты и аспиранты в возрасте от 18 до 26 лет. Для оценки FI использовался стандартизированный вопросник USAID «Шкала доступа к продовольственной безопасности домохозяйств». Для изучения взаимосвязи

между степенью HFI и непрерывным DDS и низким DDS (<5 групп продуктов) были применены двумерный односторонний ANOVA и многомерные модели обычных наименьших квадратов и логистической регрессии.

Resultados

Мы проанализировали 311 студенток; 26,5 % (95 % CI 22,0–31,5) испытывали определенную степень продовольственной небезопасности. Степень HFI не была независимо связана с DDS после корректировки (среднее значение DDS: 6,35 ± 1,86; скорректированное $\beta = -0,08$, 95 % ДИ: от -0,27 до 0,12; $p = 0,43$).

Conclusiones

Хотя продовольственная небезопасность была распространенным явлением, после корректировки она не была независимо связана с разнообразием рациона. Целевые программы просвещения в области питания и субсидированного питания все же могут снизить остаточный риск. Политика университетов должна сочетать финансовую поддержку с просвещением, чтобы устранить неэкономические барьеры, препятствующие качеству питания.

Palabras clave

продовольственная небезопасность, разнообразие рациона, питание женщин, студентки университетов, Пакистан

Palabras clave

inseguridad alimentaria, diversidad alimentaria, nutrición de las mujeres, estudiantes universitarios, Pakistán

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RÉSUMÉ

Contexte

L'insécurité alimentaire (IA) a des effets néfastes à long terme sur le développement physique et intellectuel, entraînant malnutrition et carences en micronutriments. La présente étude a évalué l'insécurité alimentaire des ménages (IAM) et son association avec les scores de diversité alimentaire sur 24 heures (SDA) chez les étudiantes universitaires de Karachi.

Méthodes

Nous avons utilisé un échantillonnage consécutif non probabiliste dans une grande université publique de Karachi, au Pakistan, pour cette étude transversale. L'étude a porté sur des étudiants de premier cycle et de troisième cycle âgés de 18 à 26 ans. Le questionnaire standardisé de l'USAID « Household Food Insecurity Access Scale » (échelle d'accès à l'insécurité alimentaire des ménages) a été utilisé pour évaluer l'IA. Une ANOVA unidimensionnelle bivariée et des modèles de régression logistique et des moindres carrés ordinaires multivariés ont été appliqués pour examiner la relation entre la gravité de l'HFI et le DDS continu et le faible DDS (<5 groupes alimentaires).

Résultats

Nous avons analysé 311 étudiantes ; 26,5 % (IC à 95 % : 22,0–31,5) ont connu un certain degré d'insécurité alimentaire. La gravité de l'HFI n'était pas indépendamment associée à la DDS après ajustement (DDS moyenne : 6,35 ± 1,86 ; β ajusté = -0,08, IC à 95 % : -0,27 à 0,12 ; $p = 0,43$).

Conclusions

Bien que l'insécurité alimentaire soit courante, elle n'était pas indépendamment associée à la diversité alimentaire après ajustement. Des programmes ciblés d'éducation nutritionnelle et de subventionnement des repas pourraient encore atténuer le risque résiduel. Les politiques des campus doivent intégrer un soutien financier à l'éducation afin de s'attaquer aux obstacles non économiques à la qualité de l'alimentation.

Mots clés

insécurité alimentaire, diversité alimentaire, nutrition des femmes, étudiantes universitaires, Pakistan

RESUMEN

Antecedentes

La inseguridad alimentaria (IA) tiene efectos perjudiciales a largo plazo sobre el desarrollo físico e intelectual, lo que da lugar a malnutrición y deficiencias de micronutrientes. El presente estudio evaluó la inseguridad alimentaria en los hogares (IAH) y su asociación con las puntuaciones de diversidad alimentaria (PDA) en 24 horas entre las estudiantes universitarias de Karachi.

Métodos

Para este estudio transversal, se empleó un muestreo consecutivo no probabilístico en una gran universidad pública de Karachi, Pakistán. El estudio incluyó a estudiantes de grado y posgrado de entre 18 y 26 años. Se utilizó el cuestionario estandarizado de la USAID «Escala de acceso a la inseguridad alimentaria en los hogares» para evaluar la IA. Se aplicaron modelos ANOVA unidireccionales bivariados y modelos multivariados de mínimos cuadrados ordinarios y regresión logística para examinar la relación entre la gravedad de la HFI y la DDS continua y la DDS baja (<5 grupos de alimentos).

Resultados

Analizamos a 311 estudiantes universitarias; el 26,5 % (IC del 95 %: 22,0–31,5) experimentaba algún grado de inseguridad alimentaria. La gravedad de la HFI no se asoció de forma independiente con la DDS después del ajuste (DDS media: 6,35 ± 1,86; β ajustada = -0,08, IC del 95 %: -0,27 a 0,12; $p = 0,43$).

Conclusiones

Aunque la inseguridad alimentaria era común, no se asoció de forma independiente con la diversidad alimentaria tras el ajuste. Los programas específicos de educación nutricional y de comidas subvencionadas podrían mitigar el riesgo residual. Las políticas del campus deben integrar el apoyo financiero con la educación para abordar las barreras no económicas que afectan a la calidad de la dieta.




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