Supplementary Tables S1–S7
Structural Barriers to Health Services and Child Nutrition in Rohingya Camps

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Dataset: IFPRI replication dataset — Harvard Dataverse DOI: 10.7910/DVN/5BAN6C

Contents: Tables S1–S7, Figures S1–S4 (placeholders), STROBE note, analysis README

CONTENTS

SUPPLEMENTARY TABLE S1

Healthcare Access Index: Item Wording and Coding

The Healthcare Access Index combined five survey items covering the AAAQ (availability, accessibility, acceptability, quality) dimensions. All items were reverse-coded where necessary so that higher values indicate greater access barriers. Continuous items were standardised (z-scores) prior to factor analysis.

Item code	Survey item wording	Coding used in index
DIST_MIN	How many minutes does it take to walk to the nearest health facility?	Continuous; minutes; standardised (z-score)
TRANS_COST	Typical transport cost to reach the facility (local currency)	Continuous; winsorised at 99th percentile; standardised
STOCKOUT	How often are medicines unavailable at your usual clinic?	Ordinal: 0 = Never · 1 = Rarely · 2 = Often
OVERCROWD	How crowded is the clinic when you visit?	Likert: 1 = Not crowded → 5 = Very crowded

Item code	Survey item wording	Coding used in index
FORGONE	In the past 3 months, did you forgo a needed visit because of access barriers?	Binary: 0 = No · 1 = Yes

Note: Items are sourced from the IFPRI survey instrument. Composite index standardised to mean 0, SD 1 (z-score). Higher index values indicate greater structural healthcare access barriers.

SUPPLEMENTARY TABLE S2

Exploratory Factor Analysis (EFA) Output — Healthcare Access Index

EFA was conducted on the polychoric correlation matrix of the five access items, pooled across 20 imputations. A single dominant factor was retained based on eigenvalue >1 and interpretability.

Statistic	Value	Notes
Number of items	5	
Extraction method	EFA — polychoric correlations	Appropriate for mixed item types
Number of factors retained	1	Eigenvalue >1 criterion
Eigenvalue (factor 1)	**2.34**	Single dominant factor
% variance explained (factor 1)	**47.0%**	
KMO measure of sampling adequacy	0.72	Acceptable (≥0.60)
Bartlett's test of sphericity	$\chi^2(10) = 312.4$, $p < 0.001$	Factor analysis justified
FACTOR LOADINGS		
DIST_MIN (walking distance)	0.72	
TRANS_COST (transport cost)	0.68	
STOCKOUT (medicine stockouts)	0.61	
OVERCROWD (clinic overcrowding)	0.59	
FORGONE (foregone visits)	0.55	All loadings > 0.50
Cronbach's α (internal consistency)	**0.78**	Acceptable (≥0.70)

Statistic	Value	Notes
Index scaling	Standardised z-score	Mean 0, SD 1; higher = greater barriers

Note: Full EFA output including pooled factor loadings with standard errors and item-level descriptives available in `Table_S2_full.csv`. The 47% variance explained by a single factor is moderate; the remaining variance may reflect distinct sub-dimensions (geographic, financial, supply-side) not disaggregated by this composite index.

SUPPLEMENTARY TABLE S3

Baseline Balance Diagnostics — Voucher vs In-Kind (Selected Covariates)

Means, standard deviations, and standardised differences for key covariates by treatment group before propensity score adjustment. Standardised differences >0.10 are flagged as potentially imbalanced.

Covariate	Voucher mean (SD)	In-kind mean (SD)	Std diff
Maternal education (years)	2.1 (1.8)	1.6 (1.7)	0.29
Household size	6.2 (2.1)	6.5 (2.3)	-0.13
Dietary diversity score (0–7)	3.4 (1.1)	3.1 (1.2)	0.26
Proportion in camp block A	0.34	0.48	-0.28
Recent child illness (past 2 weeks)	0.22	0.24	-0.05
Baseline HAZ mean	-1.45 (1.12)	-1.62 (1.18)	0.15

Values in red or amber indicate standardised difference >0.10 — flagged for potential imbalance. PS and IPW methods were used to improve covariate balance; post-weighting diagnostics are in Supplementary Table S4.

SUPPLEMENTARY TABLE S4

Propensity Score Model and Diagnostics

Propensity scores were estimated using logistic regression. Balance was assessed using standardised differences before and after PS adjustment.

Diagnostic item	Value	Notes
PS model type	Logistic regression	
Covariates in PS model	Maternal education; household size; dietary diversity; child age; child sex; recent illness; camp block dummies; household head employment	
C-statistic (AUC)	0.62	Moderate discrimination
Mean PS (voucher group)	0.42	Before weighting
Mean PS (in-kind group)	0.36	Before weighting
Std diff (mean PS) after PS adjustment	**0.03**	Good balance achieved
Max std diff (pre-PS)	0.29	Maternal education
Max std diff (post-PS)	0.06	Below 0.10 threshold

Note: Adjusted OR for voucher following PS covariate adjustment: 0.74 (95% CI 0.45–1.22, p=0.24). Consistent with primary model (M3) result.

SUPPLEMENTARY TABLE S5

IPW Diagnostics — Stabilised Inverse Probability Weights

Stabilised weights were trimmed at the 99th percentile to reduce the influence of extreme values. The effective sample size after weighting is reported.

Metric	Value	Notes
Mean stabilised weight	1.00	Expected for stabilised weights
SD stabilised weight	0.42	After trimming
Median stabilised weight	0.98	
Max weight (pre-trim)	8.7	Extreme value
Max weight (post-trim)	3.2	Trimmed at 99th percentile
Effective sample size (weighted)	**498**	Slight reduction from n=523
Proportion of weights trimmed	0.8%	Minimal trimming

Note: IPW-adjusted OR for voucher: 0.77 (95% CI 0.48–1.24, p=0.28). Consistent with primary and PS-adjusted estimates.

SUPPLEMENTARY TABLE S6

Full Regression Tables — Key Coefficients (M1–M4)

Survey-weighted logistic regressions pooled across 20 MICE imputations. All ORs are on the odds ratio scale; 95% CIs and p-values shown. Full coefficient tables including all covariates are in `Table_S6_full_M1_M4_stunting.csv` and `Table_S6_full_M1_M4_wasting.csv`.

TABLE S6A — PRIMARY OUTCOME: STUNTING (HAZ < −2)

Model	Voucher OR (95% CI)	Access Index OR (per SD)	Recent illness OR
M1 — Crude	0.66 (0.44–1.00) *p*=0.048	–	–
M2 — + Household controls	0.70 (0.44–1.13) *p*=0.146	–	–
M3 — + Access Index	0.76 (0.46–1.25) *p*=0.275	1.28 (1.03–1.59) *p*=0.026	1.45 (1.02–2.06) *p*=0.038
M4 — + Interaction	0.78 (0.47–1.31) *p*=0.343	1.27 (1.02–1.58) *p*=0.030	1.44 (1.01–2.05) *p*=0.044

M4 interaction term (Voucher × Access Index): OR = 0.98 (95% CI 0.72–1.33), p=0.88 — not significant. Voucher main effect in M4 is interpretable at mean access index value.

TABLE S6B — SECONDARY OUTCOME: WASTING (WHZ < −2)

Model	Voucher OR (95% CI)	Access Index OR (per SD)	Recent illness OR
M1 — Crude	0.89 (0.55–1.44) *p*>0.65	–	–
M3 — + Access Index	0.93 (0.56–1.55) *p*>0.65	1.18 (0.88–1.58) *p*>0.10	2.10 (1.40–3.15) *p*<0.001

TABLE S6C — MODEL DIAGNOSTICS SUMMARY

Diagnostic	Value	Threshold / Notes
VIF (max across predictors)	< 3	No multicollinearity concern (<5)
Events per variable (EPV)	> 10	Meets minimum threshold
AIC/BIC — favoured specification	Spline age + Access Index (M3)	Lower AIC/BIC vs M1, M2

Diagnostic	Value	Threshold / Notes
E-value for adjusted OR (M3, stunting)	1.56	Modest robustness to unmeasured confounding

Full coefficient tables with all covariates, standard errors, z-statistics, and p-values are provided in the accompanying CSV files.

SUPPLEMENTARY TABLE S7

Subgroup Analyses by Healthcare Access Index Tertile

Exploratory stratified analysis by Healthcare Access Index tertile. Adjusted ORs from M3 model estimated within each tertile stratum. Sample sizes within strata are limited; these analyses are hypothesis-generating only.

Access tertile	N	Stunting % (n)	Adj. OR (M3)	95% CI	p
Low barriers (tertile 1)	174	28.7% (50)	0.58	0.31–1.08	0.086
Medium barriers (tertile 2)	175	34.3% (60)	0.82	0.44–1.53	0.53
High barriers (tertile 3)	174	41.6% (72)	0.95	0.52–1.74	0.87
Total	523	34.8% (182)	–	–	–

Interaction test (Voucher × Access tertile): p = 0.41 — not statistically significant. The directional pattern (lower OR in low-barrier tertile, approaching null in high-barrier tertile) is consistent with the study hypothesis but should be interpreted as exploratory given limited stratum sample sizes and non-significant formal interaction test.

SUPPLEMENTARY FIGURES S1–S4

Figure Captions

Figure S1 — Forest plot of voucher ORs across nested models (M1–M4)

Point estimates and 95% confidence intervals for the voucher effect from M1–M4 for stunting and wasting outcomes. OR axis on log scale; vertical reference line at OR = 1. File: `Figure_S1.png`

Figure S2 — E-value plot for adjusted stunting OR (M3)

E-value curve showing the minimum required confounder risk ratio (with both exposure and outcome) to fully explain away the observed association. Observed adjusted OR = 0.76; E-value = 1.56. File: `Figure_S2.png`

Figure S3 — Propensity score overlap and IPW weight distribution

Panel A: PS density plots by treatment group before and after weighting, demonstrating overlap. Panel B: Histogram of stabilised weights after trimming at the 99th percentile. File: `Figure_S3.png`

Figure S4 — MICE convergence diagnostics

Trace plots for imputed means across 20 iterations for DIST_MIN, TRANS_COST, and maternal education. Convergence is indicated by stable, well-mixing chains. File: `Figure_S4.png`

REPORTING STANDARDS

STROBE Compliance Note

This manuscript was prepared in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) Statement for cross-sectional studies. A completed STROBE checklist mapping all 22 items to page/section references in the main manuscript is provided as a separate submission file (`STROBE_checklist.pdf`). All 22 items are addressed; items 12–16 (statistical methods, quantitative variables, bias, study size, missing data) are reported in Methods §3 and Supplementary Tables S3–S5.