Impact of Migration on Nutrition Condition of Children Under Five Years of Age in the Rural Households of Bangladesh

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Outline

- What is migration?
- The situation of migration in the context of Bangladesh.
- Nutrition Status of children under five years of age in Bangladesh.
- What are the objectives of this study?
- Impact of migration on nutritional status of children.
- Does migration affect nutrition only through income?
- Channels through which migration affect nutrition.
- Data & Methodology.
- Results.
- Conclusion.

1.Migration

- A purposeful geographical movement of workers towards divisions/ districts/ regions for employment.
- **International Migration** : A "migrant worker" is someone who engages in a remunerated activity in a country of which he or she is not a national (World Bank 2016) .
- **Internal Migration**: A movement of population from a region to another region for permanent or semi-permanent engagement in a work or a job for economic reasons, family reunification, or other motivations (Bangladesh Population Monograph, Volume 6, 2015) .

2. International Migration : Situation of Bangladesh

❑ In FY 2016-17 about 9.05 lakh workers went abroad

❑ Bangladesh earned remittances of US$ 12,769.50 million in that year

❑ It is equal to 5.17 percent of the country's GDP

❑ And 49.22 percent of total export earnings

   (Bangladesh Economic Review, 2017)

❑ 6.1 percent of total households have family members working abroad

❑ 81 percent of total migrants reside in the rural areas of Bangladesh

❑ Share of households with members working abroad is disproportionately high in the rural areas

   (Bangladesh Population Monograph ,Volume 3,2015)

3. Internal Migration

- Migration from rural to urban area has shown an increasing trend.
- For work opportunity to the urban informal sector and garments manufacturing units (Hossain, 2011; Afsar, 2003).
- Nearly **two-fifth** of rural households of Bangladesh have sent adult members to seek work in towns (Skeldon, 2005)
- **Seasonal migration** is also a common feature for livelihood strategy in Bangladesh
- It is an important livelihood strategy for about 25% of chronic poor households
  (Hossain et al., 2003 cited in Population Monograph, vol-6, 2015).

Figure 1: Prevalence of Stunting, Underweight and Wasting among children under five years of age
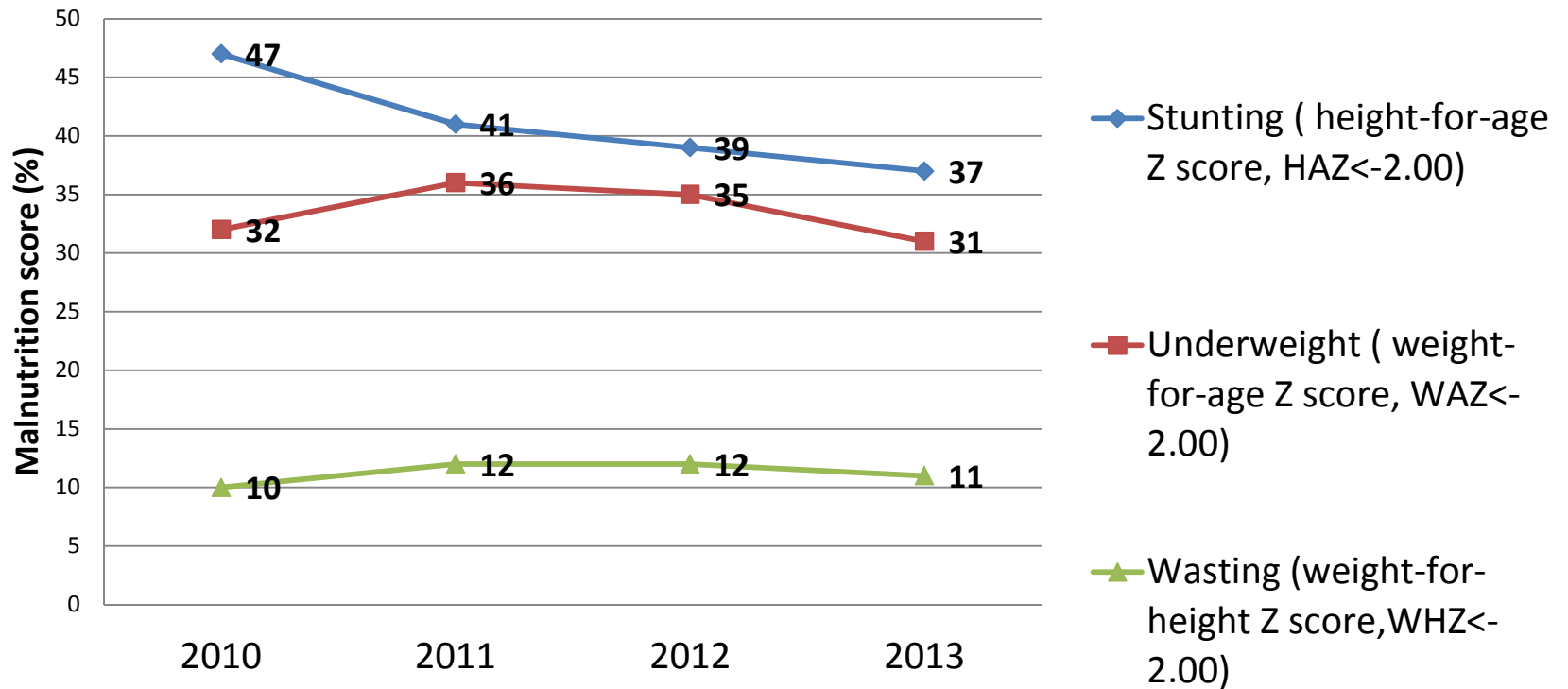
Source: Food Security Nutrition Surveillance Project (FSNSP), 2013

4. Nutrition status of children under five years of age in Bangladesh

- 39 out of 63 Districts still have stunting rates above WHO critical threshold level for stunting (40%)
- Approximately 6 million children are still stunted.
- National reductions in poverty and hunger alone are not sufficient to solve the problem of under-nutrition.
- One in every four children (26%) <5 years old are stunted even in the highest household wealth quintile.
- While money buys food, it does not guarantee nutrition if the buyer is not aware of the value of nutrients in foods and utility of those nutrients, and/or the family member has no control over how those foods and their nutrients are distributed at household level.

5. Objectives

1.To explore the relationship between migration (both internal and international migration) and its impact on the nutritional status in rural households of Bangladesh.

2. Whether there is any difference in nutritional status of children under five years of age [weight-for –age- z-scores (WAZ) and height-for-age-z-scores (HAZ)] between households with a current migrant member (living away for 6 months or more) and households with no migrant members.

6. Reasons for internal & international migration

- Household coping strategy to ensure food security and nutrition.

- It is of extreme need, during the "hunger seasons" for extremely poor, landless households, (the most food- and nutrition-insecure).

- Those with fewer resources likely undertake internal migration because of higher costs.

- It is the middle to higher income quartiles that can afford international migration.

- It is youth who migrates among the household members , to improve their livelihoods and overall resilience.

7. Impact of migration on nutritional status

Positive Impact :

- Mexico : Children in households with migrant members are less underweight (Frank and Hummer ,2002).
- China : Positive association between migration and short term nutritional status of children in rural areas. Parent's migration increases WAZ scores between 0.08 and 0.2 standard deviations. (Mu & Braw , 2013).
- Tajikistan :Living in a household with international migrants increases the child z-score by 0.2 standard deviations among the children in the lower part of the HAZ distribution (Azzari & Zezza, 2010) .
- Latin America , Guatemala and Salvador : Migration bought positive impacts on HAZ scores among the emigrants children (Acosta et al., 2007 ; Carletto et al. 2011 & de Brauw 2011)

7. Impact of migration on nutritional status

Negative Impact :

- Guatemala: Fathers' international migration is associated with a 0.427 decrease in child HAZ on left behind children (Davis and Brazil , 2016) .

- SriLanka: Households most at risk of malnutrition are the poorest households where the mother is based overseas as a migrant worker (Jayatissa and Wickramage, 2016).

- Whether parental migration is permanent or seasonal also determines the different impacts on children left behind.

- Positive impact of seasonal maternal migration in Nicaragua on the early cognitive development of those children (Macours and Vakis 2007)

7. Impact of migration on nutritional status

Mixed Impact :

- Antón's study (2010) on impact of remittance in nutritional status of children in Ecuador show that remittances do not affect WAZ in OLS estimates. IV estimates receiving remittances, on average increased WAZ by 0.60 standard deviations.

- In the case of stunting, receiving remittances have no significant effect on HAZ.

- Hildebrandt and McKenzie (2005) found that despite migration's reduction of infant mortality and the risk of low birth weight, lower access to preventive healthcare services offsets these beneficial effects.

8. Does migration affect nutrition only through income?

- Mexico : Income does not present a significant effect on low birth weight, whereas receiving remittances always has a significant effect in reducing low birth weight and underweight (Frank and Hummer, 2002)

- Remittances fail to account fully for the positive contribution of migration to children's health because migrant family members increase mothers' health knowledge (Hildebrandt and McKenzie , 2005)

- "Social Remittances" :Migrant members of the household bring back not only financial remittances but also new information, behaviours, identities and values that may have a positive effect on children (Levitt ,1998).

- This positive effect depends, on the possibility of existing means of contact between migrants and the household.

9.Channels through which migration affect nutrition

1) Change in Pattern of Food Expenditure and Consumption Pattern:

- Increasing consumption of fruits and vegetables and a more varied diet.

2) Change in Fertility Decision:

- Couples tend to have fewer children and invest more in their children's education and health expenditures. Thus, reductions in neonatal and infant mortality, illnesses, low birth weight, and underweight young children occurs (Becker, 1974 and Hildebrandt, 2005).

3) Breast feeding practices and care giving behavior in migrant households

- "Care Drain" occurs due to changes in labour allocation, increasing time burdens for the household members specially for a left-behind mother who compensate for lost labor

10.Methodology

- $Y_i = \alpha + \beta * \text{Migration} + \gamma * X_i + \delta * F_i + \varepsilon_i$ (1)

- where Y measures height-for-age z-scores (HAZ) and for weight-for-height z-scores (WHZ), in children under 5 years of age.

- MIGRATION measures migration exposure at the household level and the coefficient β encompasses the net effects of migration through the various possible channels.

- The variable "migvsnon" is 1 if the household has any member who was a member of the household in the past five years and currently a migrant (living away for 6 months or more) either within the country or abroad (both internal and international migration) and 0 otherwise.

- Another variable is "int_vs_non" which takes value 1 if the household has any member currently an international migrant and 0 otherwise.

10. Methodology :Dealing with Endogeneity

- If unobservable household characteristics influence the outcome of interest, then ε_i is correlated with MIGRATION in Eq. (1), which will indicate that the OLS estimate of coefficient β may be biased.

- To deal with this issue, we revert to two-stage least square (2SLS) technique.

- $Y_i^* = \partial_* \hat{E}_i + \Phi_* X_i u_i$ (2)

- $\hat{E}_i = \Pi_{1*} X_i + \Pi_{2*} Z_i + v_i$ (3)

- where i = 1, . . . , N, E_i is a vector of endogenous variables, X_i is a vector of exogenous variables, Z_i is a vector of instruments that satisfy the requirements of instrumental exogeneity and relevance, ∂ and Φ are vectors of structural parameters, Eq. (3) is written in its reduced form, Π_1 and Π_2 are matrices of reduced form parameters.

10. Methodology: Dealing with Endogeneity

Instrument must satisfy two conditions:

i) instrumental relevance and

ii) instrumental exogeneity.

- The instruments chosen for migration at the household level is sex_ratio 2011 at district level (number of males over females) measured in the 2011 Bangladesh Household and Population Census.

- The instrument deemed to satisfy the characteristics expected of valid exclusion restrictions; that is, they are good predictors of household migration, but do not have any direct influence on child nutrition other than via migration.

11. Data Source:

- **Bangladesh Integrated Household Survey (BIHS) 2015:**

  For this study the total sample size of 4460 households and 52 districts have been used representing the rural households of Bangladesh.

Migration status of Households with children under five years of age	Number of Observations
Households with non-migrant members	1705
Households with international migrant members	49
Households with internal migrant members	94
Total	1,848

- **Population and Housing Census 2011**

Variables	Full name
poverty_rate2011	District-wise estimates of poverty head count ratio
sex_ratio2011	Share of male population over female by districts
elderly_pc	Percentage share of elderly people in total population by districts
international_migranthhpc2011	Percentage share of international migrant households by total households) in districts

12. Table 1:Summary Statistics

Variables	Households with No international Migrant /past migrant	Households with Current international Migrant	Total	Ha: diff != 0 Pr(|T| > |t|)
Height for age z score (HAZ)*	-1.44	-0.79	-1.42	0.01*
Weight for age z score(WAZ)***	-1.51	-1.18	-1.5	0.07***
Weight for height z score (WHZ)	-1	-1.06	-1	0.77
Gender of child: male 0;female1	0.46	0.54	0.46	0.36
Child age in months	29.47	27.54	29.43	0.49
Age of the mother	27.21	27.48	27.21	0.76
Height of the mother (cm)	150.94	151.95	150.96	0.28
Weight of the mother (kg)**	48.04	50.77	48.09	0.06**
Mother's age at marriage	17.6	17.18	17.59	0.36
Years of education of the mother	5.25	5.86	5.26	0.29
Household Head is female*	0.1	0.61	0.11	0.00*
Number of child below 15 years of age in household	2.44	2.46	2.44	0.92
Number of adult above 15 years of age in household	2.93	2.83	2.92	0.7
Household has sanitary latrine	0.43	0.4	0.43	0.75
Household disposes garbage in a systematic way	0.3	0.27	0.3	0.71
Distance of household to nearest town	8.97	8.39	8.95	0.68
Age of Household Head	40.02	42.86	40.08	0.19
Household Head has Primary education	0.42	0.48	0.42	0.41
Household Hea has Secondary education	0.09	0.08	0.09	0.84
Land amonut owned by household in 2011 (decimal)	94.14	124.58	94.81	0.24
Sex Ratio_2011(share male/female)	98.59	99.24	98.61	0.38
Percentage of international migrant households by district 2011*	8.44	12.07	8.52	0.00*
Percentage of elderly persons in district population 2011	7.65	7.8	7.64	0.41

Table 2: OLS regression results: Child nutritional status (Height-for-age z scores) for migrant (both internal & international) and non-migrant households

VARIABLES	OLS HH Full HAZWHO	OLS HH Reduced HAZWHO
Gender of child: male 0;female1	0.0672(0.0629)	0.0672(0.0617)
Child age in months	-0.107***(0.00789)	-0.105***(0.00771)
Child age in months (squared)	0.00139***(0.000122)	0.00137***(0.000119)
Age of the mother	0.00392(0.00898)	0.00305(0.00864)
Height of the mother (cm)	0.0404***(0.00663)	0.0386***(0.00649)
Weight of the mother (kg)	0.0102**(0.00419)	0.0108***(0.00411)
Mother's age at marriage	-0.00531(0.0125)	-0.00384(0.0122)
Years of education of the mother	0.0447***(0.0108)	0.0475***(0.0103)
Household Head is female	0.151(0.105)	0.166(0.102)
Birth order of the child	0.0308(0.0428)	0.0377(0.0410)
Number of child below 15 years of age in household	-0.0532(0.0368)	-0.0498(0.0362)
Number of adult above 15 years of age in household	0.0134(0.0253)	0.0150(0.0248)
Household has sanitary latrine	0.107(0.0660)	
Household disposes garbage in a systematic way	-0.0148(0.0684)	
Distance of household to nearest town	-0.00462(0.00334)	
Household's total yearly income	7.70e-07**(3.19e-07)	7.88e-07**(3.13e-07)
Migrant and non-Migrant households (migvsnon)	0.0935(0.154)	0.0542(0.148)
Constant	-6.860***(0.942)	-6.684***(0.924)
Observations	1,679	1,742
R-squared	0.231	0.226

Table 3: OLS regression results: Child nutritional status (Weight-for-age z scores) for migrant (both internal & international) and non-migrant households

VARIABLES	OLS HH Full WAZWHO	OLS HH Reduced WAZWHO
Gender of child: male 0;female1	-0.0715(0.0470)	-0.0573(0.0462)
Child age in months	-0.0485***(0.00571)	-0.0478***(0.00558)
Child age in months (squared)	0.000545***(8.91e-05)	0.000537***(8.74e-05)
Age of the mother	-0.00243(0.00669)	-0.00601(0.00661)
Height of the mother (cm)	0.0204***(0.00466)	0.0202***(0.00457)
Weight of the mother (kg)	0.0238***(0.00322)	0.0245***(0.00315)
Mother's age at marriage	-0.00636(0.00939)	-0.00364(0.00918)
Years of education of the mother	0.0379***(0.00803)	0.0361***(0.00787)
Household Head is female	0.164**(0.0757)	0.190**(0.0736)
Birth order of the child	0.0353(0.0297)	0.0397(0.0290)
Number of child below 15 years of age in household	-0.0517**(0.0244)	-0.0495**(0.0242)
Number of adult above 15 years of age in household	0.00959(0.0187)	0.0119(0.0184)
Household has sanitary latrine	0.0565(0.0475)	
Household disposes garbage in a systematic way	-0.0440(0.0510)	
Distance of household to nearest town	-0.00254(0.00290)	
Household's total yearly income	8.23e-07***(1.99e-07)	8.54e-07***(1.96e-07)
Migrant and non-Migrant households (migvsnon)	-0.0562(0.108)	-0.0785(0.106)
Constant	-4.998***(0.671)	-5.018***(0.658)
Observations	1,679	1,742
R-squared	0.213	0.211

Table 4: OLS regression results: Child nutritional status (Height-for-age z scores) for international migrant and non-migrant households

VARIABLES	OLS HH Full HAZWHO	OLS HH Reduced HAZWHO
Gender of child: male 0;female1	0.0642(0.0634)	0.0649(0.0622)
Child age in months	-0.106***(0.00806)	-0.104***(0.00790)
Child age in months (squared)	0.00138***(0.000125)	0.00135***(0.000122)
Age of the mother	0.00236(0.00914)	0.00158(0.00885)
Height of the mother (cm)	0.0396***(0.00675)	0.0376***(0.00661)
Weight of the mother (kg)	0.0102**(0.00430)	0.0109***(0.00422)
Mother's age at marriage	-0.00304(0.0126)	-0.00111(0.0123)
Years of education of the mother	0.0439***(0.0110)	0.0464***(0.0106)
Household Head is female	0.147(0.107)	0.144(0.104)
Birth order of the child	0.0274(0.0446)	0.0321(0.0427)
Number of child below 15 years of age in household	-0.0489(0.0370)	-0.0456(0.0364)
Number of adult above 15 years of age in household	0.00958(0.0259)	0.00971(0.0254)
Household has sanitary latrine	0.0947(0.0661)	
Household disposes garbage in a systematic way	-0.0241(0.0683)	
Distance of household to nearest town	-0.00501(0.00349)	
Household's total yearly income	7.74e-07**(3.26e-07)	7.81e-07**(3.20e-07)
International Migrant and non-Migrant households (int_vs_non)	0.445*(0.252)	0.451*(0.250)
Constant	-6.724***(0.962)	-6.543***(0.945)
Observations	1,602	1,659
R-squared	0.232	0.227

Table 5: OLS regression results: Child nutritional status (Weight-for-age z scores) for international migrant and non-migrant households

VARIABLES	OLS HH Full WAZWHO	OLS HH Reduced WAZWHO
Gender of child: male 0;female1	-0.0771(0.0478)	-0.0672(0.0470)
Child age in months	-0.0482***(0.00579)	-0.0473***(0.00567)
Child age in months (squared)	0.000545***(9.04e-05)	0.000533***(8.88e-05)
Age of the mother	-0.00405(0.00688)	-0.00697(0.00678)
Height of the mother (cm)	0.0204***(0.00480)	0.0201***(0.00470)
Weight of the mother (kg)	0.0238***(0.00332)	0.0248***(0.00325)
Mother's age at marriage	-0.00394(0.00951)	-0.000967(0.00927)
Years of education of the mother	0.0371***(0.00827)	0.0358***(0.00811)
Household Head is female	0.159**(0.0777)	0.176**(0.0755)
Birth order of the child	0.0372(0.0311)	0.0393(0.0302)
Number of child below 15 years of age in household	-0.0472*(0.0251)	-0.0459*(0.0248)
Number of adult above 15 years of age in household	0.00933(0.0190)	0.0112(0.0187)
Household has sanitary latrine	0.0577(0.0485)	
Household disposes garbage in a systematic way	-0.0285(0.0523)	
Distance of household to nearest town	-0.00167(0.00304)	
Household's total yearly income	8.31e-07***(2.01e-07)	8.57e-07***(1.98e-07)
International Migrant and non-Migrant households (int_vs_non)	0.133(0.206)	0.130(0.206)
Constant	-5.028***(0.691)	-5.044***(0.678)
Observations	1,602	1,659
R-squared	0.214	0.214

Table 6: First-stage regression results of 2SLS

Set of Regressors	Migrant and non-Migrant households (migvsnon)	International Migrant and non-Migrant households (int_vs_non)
Barisal	0.0348(0.0538)	0.0127(0.0333)
Chittagong	-0.0818***(0.0234)	-0.0309**(0.0141)
Khulna	-0.0371(0.0464)	-0.00972(0.0279)
Rajshahi	0.00401(0.0230)	-0.00188(0.0140)
Rangpur	-0.0228(0.0235)	-0.00838(0.0142)
Sylhet	-0.0702***(0.0213)	-0.0125(0.0128)
Sex Ratio_2011(share male/female)	0.00699**(0.00316)	0.00636***(0.00190)
Distance of household to nearest town	-0.000229(0.000725)	-0.000256(0.000445)
Ownership of household residence	0.0373(0.0260)	0.0263*(0.0158)
Number of adults aged above15 in household	0.00671(0.00472)	0.000909(0.00287)
Land Amount in 2011 (decimal)	8.22e-05*(4.30e-05)	6.37e-05**(2.58e-05)
Households total yearly income	-1.83e-07***(5.13e-08)	-1.19e-07***(3.08e-08)
Percentage of elderly persons in district population 2011	-0.0383**(0.0179)	-0.0322***(0.0108)
Percentage of international migrant households by district 2011	0.00729***(0.00188)	0.00538***(0.00113)
Percentage of internal migrant persons by district 2011	-0.00172(0.00160)	-0.00157(0.000962)
Constant	-0.616**(0.309)	-0.597***(0.186)
Observations	1,694	1,615
R-squared	0.027	0.032

Table 7: 2SLS regression results : Migrant households (both internal & international) compared with non-migrant households

Explanatory Variables	Weight-for-age z scores(WAZWHO)	Height-for-age-z- scores (HAZWHO)
Gender of child: male 0;female1	-0.074(0.0472)	0.0653(0.0628)
Child age in months	-0.0487***(0.00553)	-0.107***(0.00736)
Child age in months (squared)	0.000547***(9.09e-05)	0.00140***(0.000121)
Age of the mother	-0.00311(0.00676)	0.00344(0.00900)
Height of the mother	0.0209***(0.00462)	0.0408***(0.00615)
Weight of the mother	0.0231***(0.00305)	0.00976**(0.00406)
Mother's age at marriage	-0.00422(0.00970)	-0.00379(0.0129)
Years of education of the mother	0.0356***(0.00792)	0.0431***(0.0105)
Household Head is female	0.155**(0.0789)	0.145(0.105)
Birth order of the child	0.035(0.0304)	0.0305(0.0404)
Number of child below 15 years of age in household	-0.0427*(0.0252)	-0.0469(0.0336)
Number of adult above 15 years of age in household	-0.00755(0.0200)	0.00124(0.0266)
Household has sanitary latrine	0.0645(0.0492)	0.113*(0.0654)
Household dispose garbage in a systematic way	-0.0649(0.0525)	-0.0296(0.0699)
Distance of household to nearest town	-0.00235(0.00277)	-0.00448(0.00368)
Household's total yearly income	1.21e-06***(2.22e-07)	1.05e-06***(2.95e-07)
Migrant and non-Migrant households (migvsnon)	2.424***(0.661)	1.852**(0.880)
Constant	-5.235***(0.675)	-7.028***(0.898)
Observations	1679	1679
R-squared	0.219	0.233
F-test (p value)	25.90 (0.000)	27.94(0.000)
F statistic for weak identification	4.89(0.027)	4.89(0.027)

Table 8: 2SLS regression results : International Migrant households compared with non-migrant households

Explanatory Variables	Weight-for-age z scores(WAZWHO)	Height-for-age-z- scores (HAZWHO)
Gender of child: male 0;female1	-0.0826*(0.0482)	0.0592(0.0636)
Child age in months	-0.0484***(0.00562)	-0.106***(0.00741)
Child age in months (squared)	0.000543***(9.24e-05)	0.00138***(0.000122)
Age of the mother	-0.00296(0.00687)	0.00336(0.00907)
Height of the mother	0.0208***(0.00472)	0.0400***(0.00622)
Weight of the mother	0.0233***(0.00312)	0.00979**(0.00412)
Mother's age at marriage	-0.00537(0.00986)	-0.00435(0.0130)
Years of education of the mother	0.0344***(0.00814)	0.0415***(0.0107)
Household Head is female	0.138*(0.0827)	0.127(0.109)
Birth order of the child	0.0278(0.0314)	0.0187(0.0414)
Number of child below 15 years of age in household	-0.0448*(0.0262)	-0.0467(0.0346)
Number of adult above 15 years of age in household	9.49e-07 (0.0200)	0.00108(0.0264)
Household has sanitary latrine	0.0632(0.0499)	0.0997(0.0658)
Household disposes garbage in a systematic way	-0.0361(0.0534)	-0.031(0.0704)
Distance of household to nearest town	-0.00112	-0.00451
Household's total yearly income	1.15e-06***(0.00287)	1.07e-06***(0.00378)
International Migrant and non-Migrant households (int_vs_non)	3.678***(1.011)	3.675***(1.335)
Constant	-5.134***(0.687)	-6.820***(0.907)
Observations	1602	1602
R-squared	0.221	0.235
F-test (p value)	24.90 (0.000)	26.98(0.000)
F statistic for weak identification	11.28(.001)	11.28(.001)

Table 8 :First-stage regression results of another IV specification
International Migrant and non-Migrant households

Set of Regressors	Coefficient (Standard Error)
Age of Household Head	-0.00365**(0.00177)
Age of Household Head (squared)	4.19e-05**(1.85e-05)
Household Head is female	0.108***(0.0119)
Years of education of Household head	-0.000193(0.000980)
Barishal	-0.00879(0.0317)
Chittagong	-0.0197(0.0142)
Khulna	-0.0307(0.0289)
Rajshahi	0.00491(0.0134)
Rangpur	0.0116(0.0142)
Sylhet	-0.00140(0.0111)
Sex Ratio_2011(share male/female)	0.00539***(0.00141)
Percentage of international migrant households by district 2011	0.00296***(0.000881)
Percentage of elderly persons in district population 2011	0.0101*(0.00541)
Distance of household to nearest town	0.000122(0.000429)
Land amonut owned by household in 2011 (decimal)	4.75e-05*(2.67e-05)
Household total yearly income	-5.26e-08*(2.92e-08)
Constant	-0.546***(0.176)
Observations	1,608
R-squared	0.078

Table 2 : Second Stage regression results of another IV specification International Migrant and non-Migrant households

VARIABLES	2SLS Weight-for-age z scores(HAZWHO Full)	2SLSWeight-for-age z scores(WAZWHO Full)
Gender of child: male 0;female1	0.0576(0.0638)	-0.0861*(0.0483)
Child age in months	-0.106***(0.00743)	-0.0489***(0.00563)
Child age in months (squared)	0.00139***(0.000122)	0.000554***(9.26e-05)
Age of the mother	0.00301(0.00908)	-0.00318(0.00688)
Height of the mother (cm)	0.0394***(0.00623)	0.0201***(0.00472)
Weight of the mother (kg)	0.0101**(0.00412)	0.0237***(0.00313)
Mother's age at marriage	-0.00344(0.0130)	-0.00447(0.00987)
Years of education of the mother	0.0426***(0.0108)	0.0353***(0.00815)
Household Head is female	-0.117(0.205)	-0.199(0.155)
Birth order of the child	0.0262(0.0413)	0.0356(0.0313)
Number of child below 15 years of age in household	-0.0457(0.0346)	-0.0429(0.0263)
Number of adult above 15 years of age in household	0.000782(0.0269)	-0.00262(0.0204)
Household has sanitary latrine	0.0947(0.0659)	0.0578(0.0499)
Household disposes garbage in a systematic way	-0.0226(0.0705)	-0.0265(0.0534)
Distance of household to nearest town	-0.00520(0.00378)	-0.00194(0.00287)
Household's total yearly income	8.69e-07***(2.70e-07)	9.61e-07***(2.05e-07)
International Migrant and non-Migrant households (int_vs_non)	2.793*(1.563)	3.322***(1.185)
Constant	-6.699***(0.907)	-4.995***(0.688)
Observations	1,602	1,602
R-squared	0.233	0.218
F-test (p value)	26.71(0.000)	24.53(0.000)
F statistic for weak identification	14.92(0.000)	14.92(0.000)

14.Findings

- Both OLS and 2SLS estimates indicate that child age , mother-height and weight along with mother years of education and household's yearly income significantly have positive impact in reducing the incidence of both HAZWHO (stunting) and WAZWHO (underweight) – z scores.

- All of these variables impact are found to be robust in terms of abating stunting and wasting of children less than five years of age.

- Besides, both the OLS and 2SLS results also suggest that female children are more prone to be underweight compared to their male counterparts though there is no such evidence is found in case of stunting.

15. Conclusion

- Relationship between two major current issues: migration as a major sector of the economy and source of livelihoods and high levels of malnutrition.

- Reducing the current levels of child malnutrition is already identified as a key priority for national efforts toward poverty reduction and the economic and social development of the country [2nd (Bangladesh National Plan of Action for Nutrition (NPAN) 2016-2025].

- Considering that child malnutrition in the first years of life has a significant impact on cognitive development and can affect the lifetime earning potential and productivity of children.

- Our analysis shows that migration specially international has had a positive impact on child nutrition. However, further analysis is needed to identify the potential channels through which the impact can be explained rigorously.

Thank You

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