Poster #876

Malnutrition among HIV-Exposed Uninfected Children in Botswana

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Background

In resource-limited settings, children exposed to HIV *in utero* who remain uninfected experience higher morbidity and mortality compared with children born to HIV-uninfected women.(Ref) In Botswana, where malnutrition is significantly associated with mortality in children under 5 (U5), we sought to compare the prevalence of malnutrition between HIV-exposed uninfected (HEU) and HIV-unexposed uninfected (HUU) children.

Greater than > 95% of all U5 children in Botswana attend monthly government well-child clinics. During well-child clinics, food rations are universally distributed to children from 6 to 60 months of age, scheduled immunizations are provided and growth is assessed.

Methods

We conducted a cross-sectional observational study in 5 health districts in Botswana with medium to high levels of malnutrition among U5 children. Malnutrition was defined as a weight-for-length or length-for-age z-score > 2 standard deviations below the median by 2006 World Health Organization Growth Standards. Caregivers and U5 children were recruited while attending government health center well-child clinics. Child weight/height were measured by trained study staff and maternal HIV status was abstracted from the child's health booklet.

Prevalence of malnutrition between HEU and HUU children was compared using Chi square testing. Multivariate regression modeling was used to identify risk factors for malnutrition.

Results

Maternal HIV Status (N=1,703)	Mother HIV-	Mother HIV+	Mother unknown
	1,109 (65%) (HUU children)	432 (25%)	162 (10%)

HIV Status of HIV-Exposed Children (N=432)	Child HIV-	Child HIV+	Child unknown
	396 (91.7%) (HEU children)	7 (1.6%)	29 (6.7%)

Maternal & child characteristics by child HIV exposure status

Characteristics and Socioeconomic Variables	HEU Children (n= 396)	HUU Children (n= 1,109)	P-value
Mean Maternal Age in Years [95% CI]	30.0 [29.4, 30.6]	25.8 [25.5, 26.2]	**< 0.0001**
Maternal Marital Status (#,%)			0.18
Single	331 (85.5%)	932 (84.0%)	
Married	52 (13.5%)	174 (15.7%)	
Divorced/Widowed	4 (1.0%)	4 (0.3%)	
Household Income < 1000 Pula/mo (#,%)	145 (37.5%)	282 (25.5%)	**< 0.0001**
Mean Child Age in Months [95% CI]	24.9 [23.4, 26.4]	25.9 [24.9, 26.9]	0.30
Male Child (#,%)	213 (55.1%)	509 (45.9%)	**0.002**
Male Mean Birth Weight in kilograms [95% CI]	2.95 [2.88, 3.02]	3.12 [3.07, 3.16]	**< 0.0001**
Female Mean Birth Weight in kilograms [95% CI]	2.77 [2.70, 2.84]	2.95 [2.91, 3.00]	**< 0.0001**
Birth Order			**< 0.0001**
First	79 (20.3%)	496 (44.7%)	
Second	101 (26.0%)	314 (28.3%)	
Third	109 (28.2%)	165 (14.9%)	
Fourth	58 (15.0%)	73 (6.5%)	
Fifth or Greater	41 (10.5%)	62 (5.6%)	
No Electricity in Household (#, %)	165 (42.7%)	383 (34.5%)	**0.004**
No Refrigerator in Household (#,%)	197 (51.0%)	484 (43.6%)	**0.01**
No Tap Water in Household (#,%)	258 (66.5%)	677 (61.0%)	**0.05**
No Electric or Gas Cooking Source (#,%)	131 (33.8%)	326 (29.4%)	0.11
No Toilet in Household (#,%)	242 (62.5%)	642 (57.8.%)	0.10
Household Food Insecurity in Last Month (#,%)	112 (29.0%)	251 (22.8%)	**0.01**

Malnourished	HEU	HUU	P-value
	132 (33%)	288 (26%)	0.005

Significant multivariate risk factors for malnutrition:

Risk Factor	aOR (95% CI)	P-value
Birth weight < 2.5 kg	3.3. (2.4-4.6)	<0.0001
Absence of gas or electric cooking source	1.6 (1.1-2.2)	0.005
Mother unmarried	1.6 (1.1-2.5)	0.02
Male child	1.5 (1.2-1.9)	0.002
Household food insecurity in last month	1.3 (1.0-1.8)	0.05

Conclusions

- **Birth weight < 2.5 kg and markers of poverty were associated with higher risk of malnutrition among children under the age of 5 in Botswana**
- **Being born to an HIV-infected mother did not place a child at higher risk of malnutrition, but children born to HIV-infected mothers experienced a higher prevalence of low birth weight and were more likely to reside in a socioeconomically deprived household**
- **Interventions to improve HEU infant birth weight and address poverty eradication in households where HEU children reside may decrease malnutrition prevalence among HEU children in Botswana**

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