

Background: Even though WHO (WHO, 2002) recommends exclusive breastfeeding till 6 months of age for its protection against gastrointestinal diseases, the evidence base is less than complete; a study using cross-sectional data in India reported increased risk of post-neonatal mortality with exclusive breastfeeding > 3 months (Anandaiah R & Choe M., 2000). The association of continued breastfeeding after 6 months with growth of children has also not been studied.

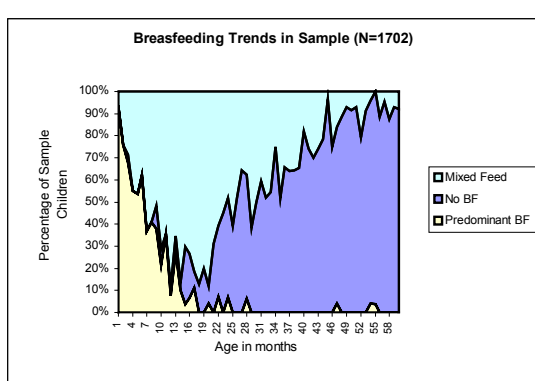
Objectives: We studied breastfeeding (BF) status, the risk of diarrhea, and anthropometric indicators among 1702 children aged 0-59 months in rural Rajasthan, India to better appreciate this relationship.

Methods:

Survey:

- Cross-sectional (2004) in one rural block (Thanagazi) of Rajasthan state in India.
- DHS questionnaire, training manual, measuring boards, electronic weighing scales.
- Three stage sampling using Probability Proportional to Size (population)
- Date entered in the field, measurement errors flagged using EpiNut and corrected.

Analysis: Done using Stata 8.2. We looked for the trends by plotting graphs using "lowess" smoothing, and used regression methods, controlling for household wealth, mother's literacy and Body Mass Index in multivariate models.



Findings:

While breastfeeding was universal (Figure-1), 61% of children aged 4-6 months (both inclusive) were predominantly breastfed (defined as daily breastfeeding, with no intake of non-human milk, vegetables, fruits or pulses), which was associated with a lower risk of diarrhea (Figure-2) in a bivariate (OR:0.68, CI: 0.21, 2.13) and multivariate model (OR: 0.51, CI: 0.14, 1.86; N=49); but the difference was not statistically significant in our small sample. Predominantly breastfed children aged 0-6 months had a higher weight for height zee (WHZ) score (Figure-3) (Bivariate coefficient: 0.4, CI: 0.08, 0.85; multivariate OR: 0.47, CI: 0.09,0.85, N=114).

Breastfeeding till late childhood was common. In the 0-23 months age group, 90% mothers breastfed their children every day, while 25% did so in the 24-59 month age group. Continued breastfeeding was protective against diarrhea till 24 months. (Odds of diarrhea over 20 - 24 months: 0.20, CI: 0.07, 0.52; N=115). Children with continued breastfeeding had a higher weight for height Zee score till 17 months of age (Bivariate coefficient: 0.6, CI: 0.15, 1.03; multivariate coefficient: 0.56, CI: 0.13,0.98, N=418) and a higher height for age zee score (Figure-4) till 24 months (Bivariate coefficient: 0.66, CI: 0.35, 0.97; multivariate coefficient: 0.78, CI: 0.48,1.09, N=643)

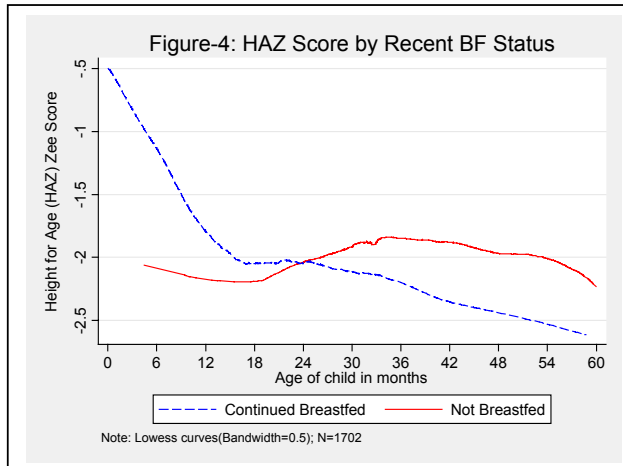
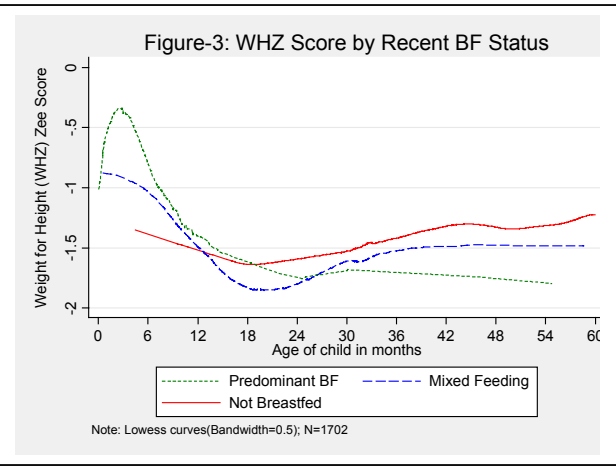
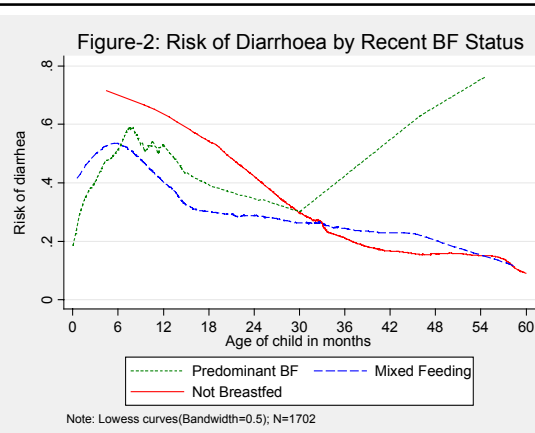


Table: Multivariate Regression Findings

	Model-1 Diarr (4-6m.)	Model-2 Diarr(20-24m.)	Model-3 WHZ(0-6m.)	Model-4 WHZ(0-17m.)	Model-5 HAZ(0-24m.)
ses	1.00 (1.000)	0.81 (0.282)	-0.14 (0.215)	-0.01 (0.889)	0.10 (0.073)
w_literate	0.12 (0.148)	0.84 (0.780)	0.49 (0.110)	0.27 (0.056)	0.36* (0.015)
bmi	0.78 (0.151)	0.88 (0.239)	0.12** (0.008)	0.14*** (0.000)	0.07** (0.001)
Breastfed	0.51 (0.308)	0.20* (0.001)	0.47* (0.015)	0.56* (0.010)	0.78*** (0.000)
r2			0.13	0.11	0.081
N	49	115	114	418	643

Regression coefficient (p-value)
 ses: Wealth status of household
 w_literate: literacy status of mother
 bmi: Body Mass Index of mother
 BF: Breastfeeding status of child, a dichotomous variable.
 Models 1 & 2: Logistic regression models with binary variable of diarrhea as outcome
 Models 2, 4 & 5: Multiple linear regression models with raw Zee score as outcome.
 The predictor in Models 1 & 3 is predominant breastfeeding, while in the remaining Models is breastfed at all.
 Model-5 also adjusts for caste of child.
 *** if p<.001; ** if p<0.01; * if p<0.05

Conclusions: Predominant breastfeeding till age 6 months, and continued breastfeeding till at least 24 months was associated with best child health outcomes in our rural study population.

Policy Implications: WHO-UNICEF guidelines on breastfeeding are relevant in the Indian context. Predominant breastfeeding, and continued breastfeeding should be encouraged.