Breastfeeding and Childhood Diseases: Evidence from Nationally Representative Survey

Mohammad Nayeem Hasan, MSc, Najmun Nahar Nisha, BSc, Md. Jamal Uddin, PhD

Department of Statistics, Shahjalal University of Science & Technology, Sylhet, Bangladesh

Background:

- Breastfeeding is a normal feeding method for infants and young children that ensures optimum growth and development.
- Breast-feeding has many benefits for babies, e.g. physical growth, directing to height and weight gain etc.
- Moreover, it also reduce the risk of many illnesses and diseases e.g. Ear infections, Respiratory tract infections, Gut infections, Allergic diseases, Diabetes and Childhood leukemia.
- Several national and international organizations (e.g. WHO) indorse exclusive breastfeeding for the first six months

Objective:

To inspect the association between exclusive breastfeeding and common childhood diseases in Bangladesh. (e.g. diarrhea, blood in stools, fever, cough, breathing problem, a problem in chest and problem in the nose)

Methodology (Study Design):

- We used Bangladesh Demographic and Health Survey 2014.
- Women were aged between 15-49 years
- There were 632 children of 6 months who were finally selected for analysis
- EBF means that the child receives only breast milk. No other liquids or solids are given-NOT even water.

Methodology (Outcome Variable):

- A child is identified as suffering from diseases if their mother reported that the child had diseases in the two weeks prior to the survey
- For study purpose, firstly, we put 1 if their mother reported that the child had a specific disease, otherwise 0
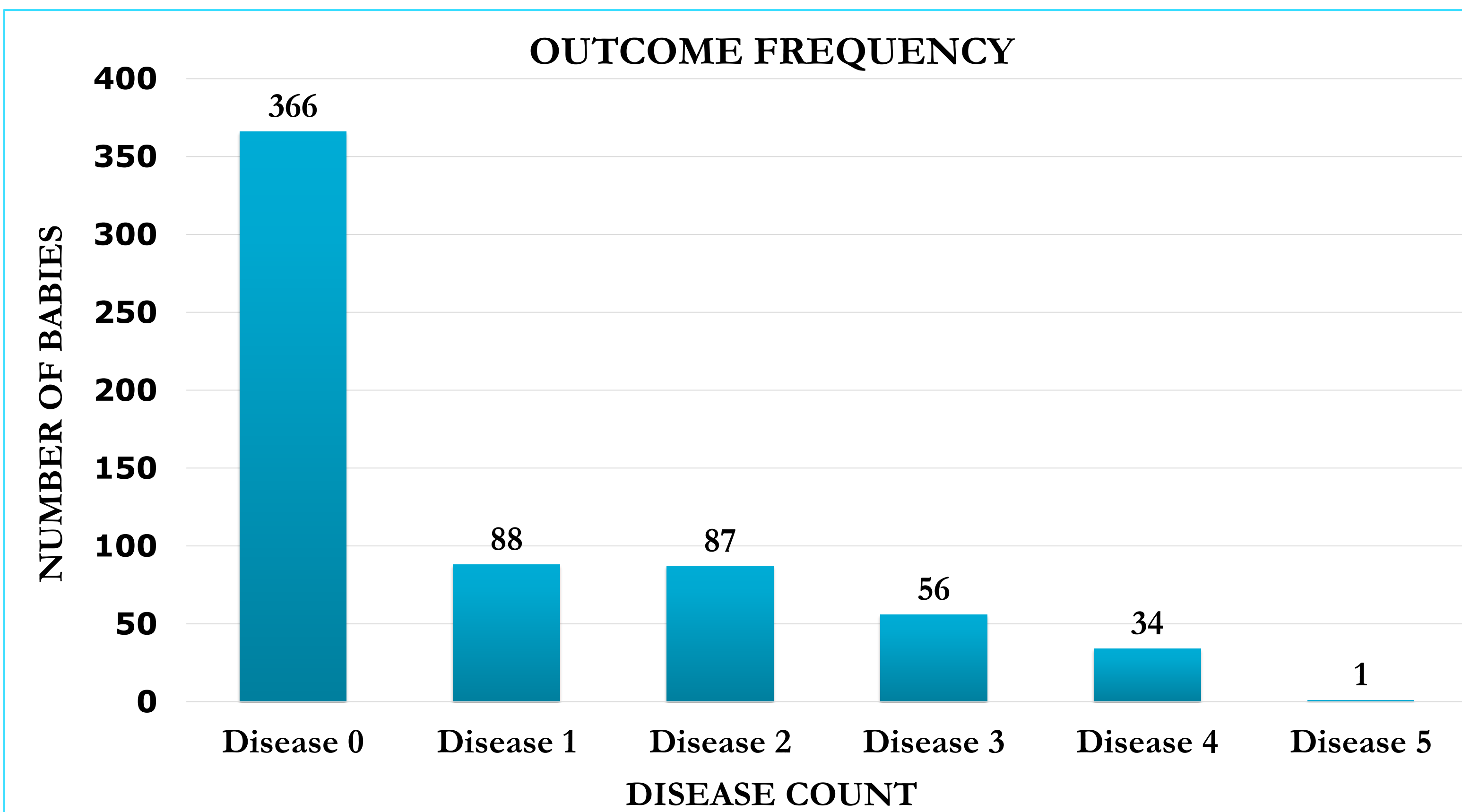- Then, we count all diseases for regression analysis

Figure 1: Diseases held for children of 6 months

Methodology (Statistical Analysis):

- We examined a outcome variable (childhood disease) of interest, using
  - Poisson regression (PR),
  - Negative Binomial (NB) regression,
  - Zero-inflated Poisson (ZIP) regression and
  - Zero-inflated Negative Binomial (ZINB) regression analysis
- In PR analysis, deviance and Chi-square goodness of fit test indicating overdispersion were obtained as 1.85 and 1.83, respectively
- So, we analyzed data based on all other models (NB, ZIP and ZINB) and selected a best model based on AIC and BIC
- We estimate crude (unadjusted) risk ratio (CRR) and adjusted risk ratios (ARRs) model for evaluating the association between EBF and childhood disease
- Adjusted model: included all important confounding factors

Result:

Table 1: Model selection criteria for NB, ZIP and ZINB

Model	Log-likelihood	AIC	BIC
NB	-558.74	1670.46	1683.80
ZIP	-531.01	1705.04	1718.39
ZINB	**-797.34**	**1602.67**	**1620.47**

*In the selection of appropriate regression model, ZINB regression was chosen as the best model

ZINB regression analysis between disease (count) and Exclusive breastfeeding

Table 2: Influence of EBF on the early childhood diseases

	Relative Risk	95% CI	P-value
EBF (Yes vs No)	**1.23**	**0.98 − 1.53**	**0.072**

*Crude Model (only EBF variable in the model)

Table 2: Association between EBF and childhood diseases 0-6 months aged children in Bangladesh

	Relative Risk	95% CI	P-value
EBF (Yes Vs No)	**1.21**	**0.97 − 1.52**	**0.099**

*Adjusted Model (C-section & other covariates in the model)

The ZINB regression analysis showed that the risk ratio for the EBF was 1.23 (Crude) & 1.21 (Adjusted)

Key findings:

Our analyses showed that children who exclusively breastfed compare to non-exclusively breastfed are at increased risk for developing childhood disease.

Limitation of the Data:

- This study such as the information was derived from a secondary source.
- Number of children under the age of 6 month was not enough.
- Information about child disease like Asthma, type 1 diabetes, Crohn's disease, allergic diseases, immune deficiencies leukemia, were not available.
- Insufficient information was available about mothers health.

Conclusions:

This study reveals that there is an association between EBF and children health development. Although exclusive breastfeeding status in Bangladesh is good, still monitoring is necessary to achieve the SDGs. Proper awareness and training program for mothers during antenatal and postnatal visits are highly recommended.

Competing interests: The authors declare that they have no competing interests (financial or non-financial).

*Questions or suggestions please E-mail to Nayeem: nayeem5847@gmail.com