Association Between Type of Delivery and Childhood Disease: Evidence from Multiple Indicator Cluster Survey, Bangladesh

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Background

- A caesarean section (C-section) is a surgical procedure, performed when a vaginal delivery would put the baby or mother at risk
- Women experiencing C-section delivery have a risk of major morbidity

  e.g., cardiac arrest, hysterectomy, puerperal infection, wound hematoma are some complications to women

Objective

To inspect the association between C-section delivery and infantile disease (e.g. cough, diarrhoea, difficulty in breathing)

Methodology (Study Design)

- Multiple indicator cluster survey (MICS), data 2012-13
- Based on a sample of 51,895 households (43,474 rural, 8,421 urban) interviewed with response rate 98.5%
- Provides a comprehensive picture of children and women in the seven divisions of our country
- Women were aged between 15-49 years
- Overall 19.1% women had delivery by C-section

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- 7,921 children were under 2 years of age
- Information of the mode of delivery (C-section vs. normal) was available for 2,138 children
- Among them, 62.1% were born by C-section delivery & 37.9% were delivered normally

Methodology (Statistical analysis)

- We examined two outcome variables of interest, using Poisson regression analysis & Logistic regression analysis
- Firstly, we count all disease for Poisson regression analysis
- Then, we count higher disease and lower disease by their median point for Logistic regression analysis

Methodology (Statistical analysis)

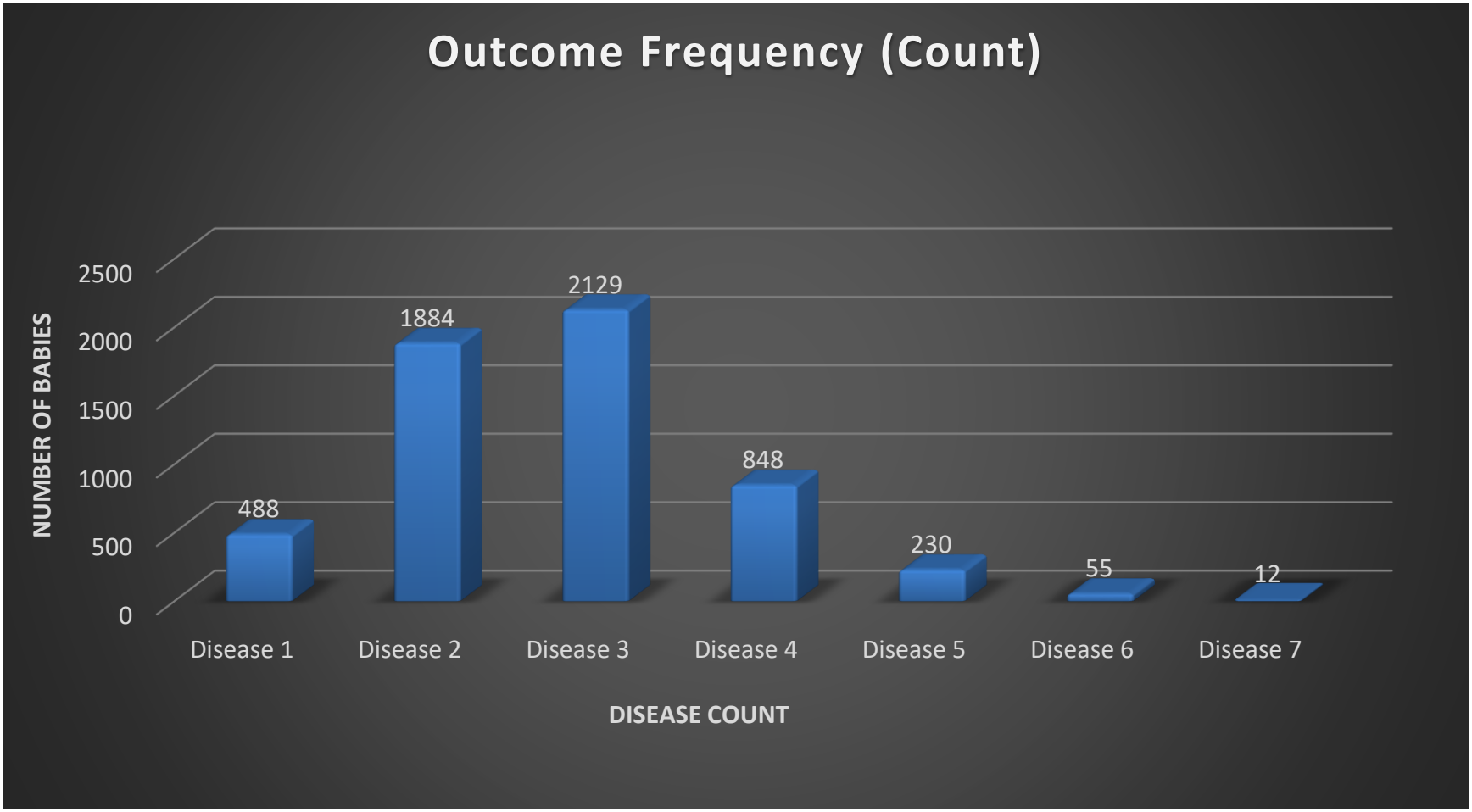
- Poisson regression analysis (as the outcome is count)
- Logistic regression analysis (outcome binary, where 0 means lower disease[<3] and 1 means higher disease[≥3])
- Crude model:

  Disease (count) ~ C-section
- Adjusted model:

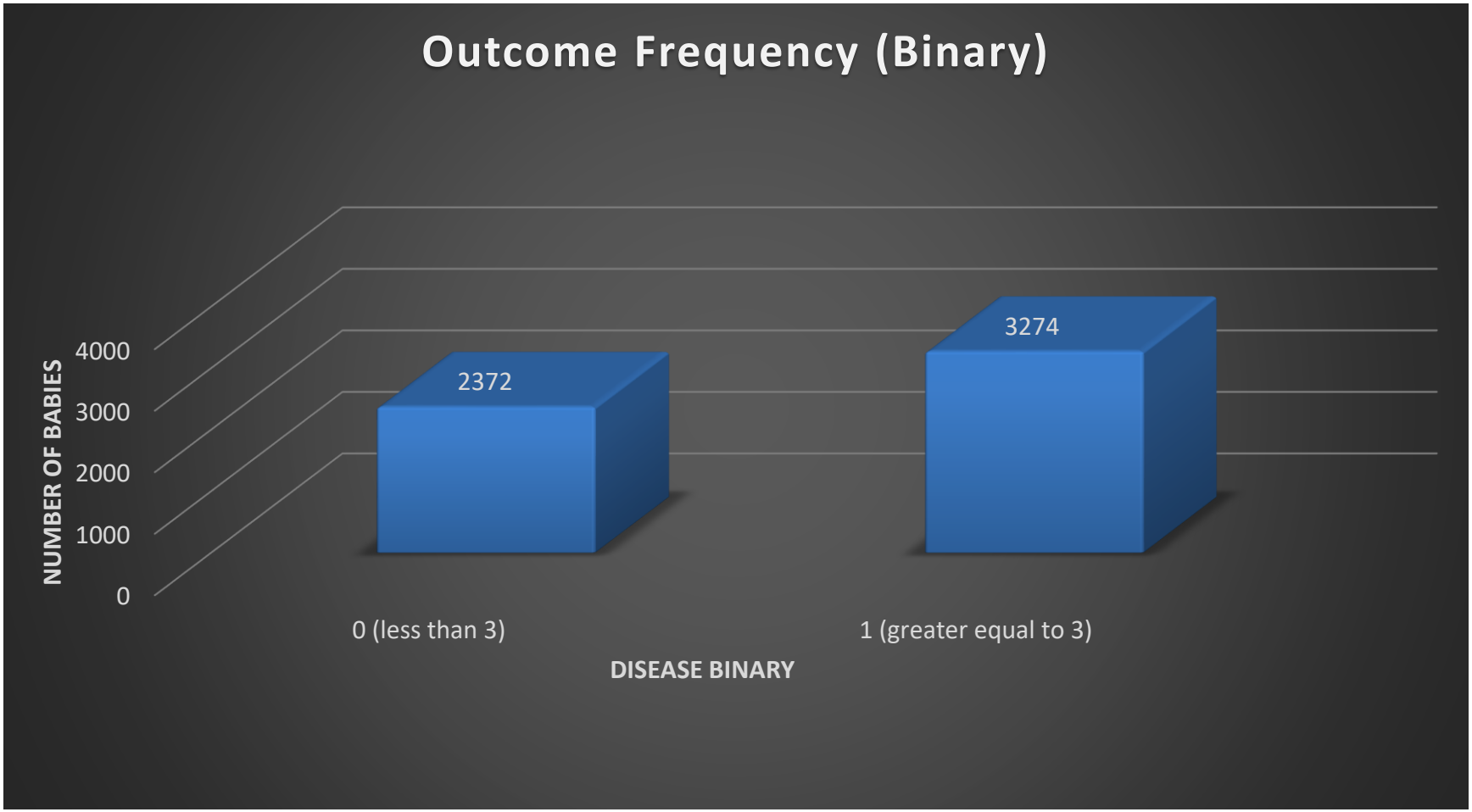
  Disease(count) ~ C-section + Religion + Breastfed + Sex (child) + Education (mothers) + Child Age (in months) + BMI (mothers)+ Wealth Index

C-section: caesarean section

Bar chart for disease (Poisson outcome)



Bar chart for disease (Logistic outcome)



Result

Poisson regression analysis between disease (count) and C-section

Crude Model (only C-section variable in the model)

	Relative Risk	95% CI	P-value
C-section (Yes vs No)	1.06	1.00 – 1.11	0.03

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

	Relative Risk	95% CI	P-value
C-section (Yes Vs No)	1.03	0.99 – 1.08	0.14

- The Poisson regression analysis showed that the relative risk for the C-section was 1.06 (Crude) & 1.03 (Adjusted), indicates that children were born in C-section compare to the normal delivery are at increased risk for developing childhood disease. However, the association was not significant in the adjusted model.

CI: Confidence Interval

Adjusted Poisson model

Source	Chi-Square	Pr > ChiSq
C-Section	2.22	0.14
religion	0.30	0.59
Breastfed	2.83	0.09
Sex	1.00	0.32
Mothers Education	0.01	0.92
Child Age	1.23	0.27
BMI Category	0.22	0.64
Wealth Index	6.39	0.01

Result

Logistic regression analysis between disease (binary) and C-section

Crude Model (only C-section variable in the model)

	Odds Ratio	95% CI	P-value
C-section (Yes vs No)	1.18	0.93 – 1.50	0.18

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

	Odds Ratio	95% CI	P-value
C-section (Yes Vs NO)	1.10	0.86 – 1.41	0.44

- The crude and adjusted logistic regression analyses showed that the odds ratios for the C-section were 1.18 and 1.10 times higher than the odds ratio for the normal delivery, respectively, though the association was not statistically significant at 5% level.

CI: Confidence Interval

Adjusted Logistic Model

Source	Chi-Square	Pr > ChiSq
C-Section	0.60	0.44
religion	0.21	0.65
Breastfed	1.11	0.29
Sex	0.00	0.98
Mothers Education	0.83	0.36
Child Age	0.00	0.96
BMI Category	0.00	0.96
Wealth Index	9.91	0.01

Key findings

- Both Poisson and logistic regression showed that children were born in C-section compare to the normal delivery are at increased risk for developing childhood disease (children less than 2 years of age).
- However, based on our data the association was not statistically significant in the adjusted model at 5% level of significance.
- This may due to i) small size ii) did not available proper information of the delivery and iii) many missing observations

Limitation of our data

- There is a lack of information about C-section babies in MICS data
- Number of children under the age of 2 years was not enough
- Information about child disease like Asthma, type 1 diabetes, Crohn's disease, allergic diseases, immune deficiencies leukemia, were not available
- Information about Food habit of children also wasn't given enough
- Insufficient information was available about mothers health

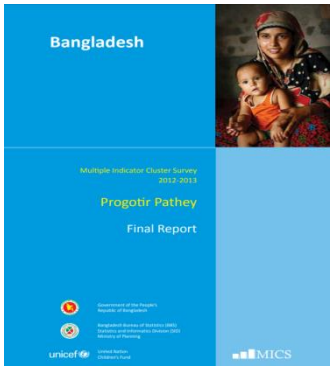
Conclusion

- Although we did not identify the significant association between C-section and childhood disease, we recommend to parents, doctors to try normal delivery first unless a medical emergency threatens the life of the mother or the child.

Acknowledgement

unicef

MICS




Thank you ...