Breastfeeding initiation and morbidity risk in Lira district, post conflict Uganda.

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Background

• Under-5 mortality in Uganda is estimated at 64 deaths/1,000 live births whereas neonatal mortality is estimated at 27 deaths/1,000 live births.

• This is way short of the SDG targets of reducing Under-5 mortality to no more than 25 deaths/1,000 live births, and neonatal mortality to no more than 12 deaths/1,000 live births.

• A significant proportion of these deaths are caused by illness in the neonatal and post neonatal period

• In addition, illness may results in significant disability. Low cost interventions that reduce risk of morbidity and death are urgently needed
Background

• Initiating breastfeeding early (within 1 hr.) reduces the risk of illness and death

• Timely initiation reduces the risk of neonatal morbidity and death by:
  • Decreasing use of pre lacteal feeds
  • Newborns benefiting from colostrum and thermo protection
  • Decreasing likelihood of non exclusive breastfeeding

• There is new evidence that the mother’s immune cells are ingested during breastfeeding and lodge in the newborn’s lymphoid tissues (breastfeeding micro-chimerism), during the early neonatal period
Background

• Interventions to promote early initiation of breastfeeding are listed as priority interventions to improve neonatal survival

• Post conflict areas different from other areas

• Limited evidence of the effect of timey initiation on non severe illnesses
Research Objectives

• To determine the effect of delayed initiation of breastfeeding on the incidence of severe illness in the neonatal period in a cohort of newborns in Lira district, post conflict Northern Uganda.

• To determine the effect of delayed initiation of breastfeeding on the incidence of any illness (severe and non severe illness) in the neonatal period in a cohort of newborns in Lira district, post conflict Northern Uganda.

• To determine the effect of timely initiation of breastfeeding on the proportion of neonates who practice exclusive breastfeeding in Lira district, post conflict Northern Uganda.
Sister Objectives (not addressed today)

• To determine the prevalence and predictors of delayed initiation of breastfeeding among mothers with children under 2 years in Lira district.

• To assess the effect of an integrated intervention (peer buddies, mama kits and mobile phone messages) on the proportion of mothers who practice early initiation of breastfeeding in Lira district.
Study Context: Survival Pluss study

• A cluster randomized controlled study evaluating the effect of an integrated intervention (peer buddies, mama kits, phone messages) in promotion of facility delivery, timely breastfeeding, and postnatal health facility visits

• Mothers are recruited during pregnancy and followed up for 50 days; interviews are conducted in the community during pregnancy and day 1, day 7, day 28, day 50 post partum

• Setting: 3 sub counties; Aromo, Agweng and Ogur

• Sample size: 1800
Women recruited from communities

Pregnant women from 7 months of gestation

Intervention consisting of peer counselling, mama kits, and mobile phone messages

Intervention (15 clusters)
Control (15 clusters)

Day 1 follow up ascertains exposure, and presence of outcome for exclusion from cohort, day 7, 28 and 50 ascertains outcomes
Confounders ascertained on all visits

Follow up day 1, 7, 28 and 50
Follow up day 1, 7, 28 and 50
Methods

• Setting: Lira District
  • 3 sub-counties: Aromo, Agweng, Ogur
  • 15 clusters in control area

Map of Uganda showing Lira District
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Methods

• Design: Prospective cohort

• Variables
  • Exposure: Delayed initiation of breastfeeding; initiating breastfeeding later than 1 hour after birth but less than 96hrs
  • Outcomes: Severe illness defined as symptoms of fever, hypothermia, inability to breastfeed, vomiting everything, convulsions, loss of consciousness, movement only on stimulation and/or results in hospitalization or death after day 7
  • Non severe illness defined as symptoms of skin pustules, eye discharge, ear discharge, diarrhea, blood in stool, malaria, umbilical stump infection in the first 28 days of life
Methods

• Potential effect modifier: Exclusive breastfeeding; giving baby anything apart from breastfeeding in the first month of life

• Potential confounders: sex, birth weight, mode of delivery, primi parity, maternal age, maternal education, wealth quintile, exclusive breastfeeding, study site, twin birth

• Sample size
  • 1260 (ratio exposed to unexposed 1.5, prevalence of severe illness in non-exposed 5%, prevalence in exposed 9%) [800 recruited so far]
Data collection process
Methods

• Analysis

• Univariable: risks calculated as ‘ever having outcome’/persons at risk

• Risks were presented as outcome/At population * 1000 [over 28 days]

• Stata for univariable, bivariable and multivariable analysis

• We used GEE with logit link, binomial family, assuming an exchangeable correlation and with adjustment for clustering

Sample stata code: . Xtgee outcome exposure var1-varx, family(binomial) link(logit) corr(exch) i(cluster_2) vce (robust) eform
558 Live children

534 at risk children on day 1

509 at risk children on day 7

292 initiated early

19 had severe illness
59 had any illness
220 exclusively breastfed

9 not certain of time to initiation
24 severely ill on day 1

16 severely ill by day 7

217 initiated late

19 had severe illness
50 had any illness
154 exclusively breastfed
### Results: Table 1 Mother’s characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Early N=292</th>
<th>Late N=217</th>
<th>Variable</th>
<th>Early N=292</th>
<th>Late N=217</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
<td></td>
<td>n(%)</td>
<td>n(%)</td>
</tr>
<tr>
<td>Mother’s education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>40 (13.7)</td>
<td>34 (15.7)</td>
<td>Mother’s age</td>
<td>73 (25.0)</td>
<td>57 (26.3)</td>
</tr>
<tr>
<td>Primary</td>
<td>223 (76.4)</td>
<td>165 (76.0)</td>
<td>&lt;=19</td>
<td>163 (55.8)</td>
<td>112 (51.6)</td>
</tr>
<tr>
<td>Secondary/above</td>
<td>29 (9.9)</td>
<td>18 (8.3)</td>
<td>20-30</td>
<td>56 (19.2)</td>
<td>48 (22.1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&gt;30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marital status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>26 (8.9)</td>
<td>31 (14.3)</td>
<td>Mode of Birth</td>
<td>290 (99.3)</td>
<td>194 (89.4)</td>
</tr>
<tr>
<td>Married</td>
<td>266 (91.1)</td>
<td>186 (85.7)</td>
<td>SVD</td>
<td>2 (0.7)</td>
<td>23 (10.6)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C/Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;=1</td>
<td>130 (44.5)</td>
<td>101 (46.5)</td>
<td>Place of Birth</td>
<td>114 (39.0)</td>
<td>113 (52.1)</td>
</tr>
<tr>
<td>2-3</td>
<td>73 (25.0)</td>
<td>49 (22.6)</td>
<td>Home</td>
<td>178 (61.0)</td>
<td>127 (47.9)</td>
</tr>
<tr>
<td>&gt;=4</td>
<td>89 (30.5)</td>
<td>67 (30.9)</td>
<td>Health facility</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Delayed initiation vs exclusive breastfeeding

- *Risk in exposed: 0.720
- *Risk in unexposed: 0.756
- RR: 0.95
- *Risk over 28 days
Delayed Initiation vs severe illness

- *Risk in exposed: 0.088
- *Risk in unexposed: 0.065
- RR: 1.35
- *Risk over 28 days
Delayed initiation vs any_illness

- Risk exposed: 0.230
- Risk unexposed: 0.202
- RR: 1.14

*Risk over 28 days
## Results

<table>
<thead>
<tr>
<th>Initiation</th>
<th>Num Severe_ill (risk/1000)</th>
<th>Bi-variable Exclusively breastfed</th>
<th>Bi-variable Not exclusively breastfed</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=1hr</td>
<td>19(65.1)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&gt;1hr</td>
<td>19(87.6)</td>
<td>1.6 (0.69-3.9)</td>
<td>0.87 (0.33-2.3)</td>
</tr>
</tbody>
</table>
## Results

<table>
<thead>
<tr>
<th>Initiation</th>
<th>Num Severe_ill (risk/1000)</th>
<th>Bi-variable</th>
<th>*Multivariable N=509</th>
<th>**Multivariable N= 450</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=1hr</td>
<td>19(65.1)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&gt;1hr</td>
<td>19(87.6)</td>
<td>1.4 (0.66-2.8)</td>
<td>1.3 (0.53-3.0)</td>
<td>1.03 (0.34-3.1)</td>
</tr>
</tbody>
</table>

*adjusted for mother’s education, mother’s age, mode of delivery, wealth index, baby’s sex, place of birth  ** added birthweight  
***model with all above and adjusting for effect modification by exclusive bf
## Results

<table>
<thead>
<tr>
<th>No any_ill (risk/1000)</th>
<th>Bi-variable</th>
<th>Bi-variable</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exclusively breastfed</td>
<td>Not exclusively breastfed</td>
</tr>
<tr>
<td>Initiation</td>
<td>OR (95% C.I)</td>
<td>OR(95% C.I)</td>
</tr>
<tr>
<td>&lt;=1hr</td>
<td>59 (202.1)</td>
<td>1</td>
</tr>
<tr>
<td>&gt;1hr-24hrs</td>
<td>47 (223.8)</td>
<td>1.3 (0.81-2.2)</td>
</tr>
<tr>
<td>&gt;24hrs</td>
<td>3 (428.6)</td>
<td>3.7 (0.51-26.8)</td>
</tr>
</tbody>
</table>
# Results

<table>
<thead>
<tr>
<th></th>
<th>No any_ill (risk/1000)</th>
<th>Bi-variable</th>
<th>*Multivariable N=509</th>
<th>**Multivariable N=450</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>OR (95% C.I)</td>
<td>OR (95% C.I)</td>
<td>OR (95% CI)</td>
</tr>
<tr>
<td>&lt;= 1hr</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&gt;1hr-24hrs</td>
<td>47 (223.8)</td>
<td>1.2 (0.73-1.9)</td>
<td>1.2 (0.75-2.1)</td>
<td>1.3 (0.78-2.3)</td>
</tr>
<tr>
<td>&gt;24hrs</td>
<td>3 (428.6)</td>
<td>3.2 (0.84-12.5)</td>
<td>3.9 (1.5-10.3)</td>
<td>2.9 (0.82-10.3)</td>
</tr>
</tbody>
</table>

*adjusted for mother’s education, mother’s age, mode of delivery, wealth index, baby’s sex, place of birth  
** birth weight included in adjustment  
*** all the above plus effect modification effect of exclusive breastfeeding
## Results

<table>
<thead>
<tr>
<th>Initiation</th>
<th>No exclusive bf (risk/100)</th>
<th>Bi-variable</th>
<th>*Multivariable N=509</th>
<th>**Multivariable N= 450</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=1hr</td>
<td>220 (75.6)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>&gt;1hr</td>
<td>154 (72.0)</td>
<td>0.84 (0.54-1.32)</td>
<td>0.92 (0.63-1.36)</td>
<td>0.84(0.55-1.3)</td>
</tr>
</tbody>
</table>

*adjusted for mother’s education, mother’s age, mode of delivery, wealth index, baby’s sex, place of birth  ** birth weight included in adjustment

No-number
Discussion:

• Disclaimer: Study underpowered as for now and we cannot draw any conclusions
• However it seems as if early initiation is protective of non_severe illness

• Qns: Is there an alternative way I could analyze the data PS: REM and MEM not so good with binary outcome data
• Any advice concerning way forward?
• Any other confounders I could adjust for?