Study of the Relationship between Exclusive Breastfeeding Rates among Nurses and Infant Morbidity at Kenyatta National Hospital, Kenya

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Abstract

Low Exclusive Breast Feeding (EBF) practice is associated with frequent infant morbidities such as RTI. Despite the fact that nurses are trained on the importance of EBF and are the first line promoters of EBF, research shows that nurses have lower EBF rates than non-nurse working mothers. Nosocomial infections, especially in developing countries may be indirectly contributing to low EBF practice among nurses. In this prospective study of 435 Breast Feeding nurses, were interviewed using structured questionnaire. The EBF mothers were cross matched with NON-EBF mothers by age of baby, age of mother, marital status and parity. The data was entered and analysed using SPSS version 18. The study showed that majority of the nurses (40%) were of age between 30 - 34 years, majority (42.5%) were married and most (34.5%) of them had one child. About 214 nurses’ children had experienced disease incidences (RTI, GE and OM) (p < 0.05). There was significant association between disease incidences and feeding practice (p < 0.05). The children who were exposed were 2.69 times more likely to suffer from the three diseases. It is concluded that the group exposed to NONEBF were more likely to suffer from RTI, GE and OM than the unexposed.

Keywords: Exclusive Breast Feeding (EBF); RTI; GE; OM

Introduction

Exclusive breastfeeding (EBF) rates remain low at 36% globally, 36% in Africa WHS (2015) and 61% in Kenya [1]. Generally, a lot of studies have been done on EBF among mothers revealing demographic factors [2], knowledge [3], attitude [4] and socio-cultural factors [5] as the major reasons for low rates. Lack of EBF has been associated with higher morbidity [6-8] and which are associated with higher costs of care [9,10].

Nurses who are the promoters of EBF to mothers find it almost impossible to achieve it because they care for individuals with infections and work in an infectious environment (hospital) hence they cannot expose their babies to such environment. The baby’s immunity is still very low making them prone to acquiring nosocomial infections which are costly to treat, nevertheless, that is why all children including those for nurses are prohibited by law to visit the patients in the wards [11]. Only few studies on breastfeeding nurses revealing very low EBF rates [12] with workplace factors and maternity policy as the main reasons being associated with the low rates [13] and could be associated with high morbidity among their infants, as well as costs of care [10,14].

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However, no study has ever associated nurses’ EBF uptake with infant morbidity in order to influence policy. No study has ever been done among nurses in Kenya or elsewhere to determine the association of EBF with infant morbidity and mechanisms to address the problem. The broad objective of the study was to determine the relationship between nurses’ breastfeeding practice in KNH and morbidity among their infants the cost implications.

Aim of the Study

This study aimed to fill a gap of rigorous research relating specifically to the nurses as lactating working mothers that could answer whether increasing their maternity leave to six months could increase their EBF uptake hence reducing disease prevalence.

Research Methods

Study area

The study was conducted at KNH, Nairobi, Kenya. KNH is the Kenya National referral hospital and also the largest referral hospital in East Africa hence it has a national outlook. KNH also has many nurses compared to other hospitals who are the study subjects in this case hence was easy to conduct the study.

Study population

The study population were women (nurses) of reproductive age.

Study design

This study adopted prospective cohort design to demonstrate the relationship between nurses’ breastfeeding practices with frequency of morbidities. All nurses with children aged 6 to 8 months were targeted for the study. A baseline study was then conducted to identify the EBF mothers to form one arm of the study while NON-EBF mothers formed the other arm of the study. The EBF mothers were matched by NON-EBF mothers by age of the baby, age of the mother, marital status and parity to avoid biasness.

Study method

The study used interviews by structured questionnaire to collect the data. The qualitative data was collected by FGD, KII and while in-depth interviews was done to explore and explain the relationship between nurses’ breastfeeding practice with their infant morbidity at KNH. This method was used to explain findings, expand understandings and validate data from quantitative method through in-depth interviews and open ended questions.

Sampling method/technique

This random sampling technique was used to choose the sample. All EBF mothers with 6 months, 7 months and 8 months old babies were eligible to be enrolled into the study. A list of mothers meeting the criteria below was made and using random tables those meeting the criteria were chosen. The sample size was determined by Fisher, et al. 2007 N = Z²pq/d² n = desired sample size z = standard deviation of required confident level given as 1.96 p = proportion of the target population. The sample size was 384. Since this study is associated with high dropout of participants as in any cohort because it’s longitudinal, an increment of 20% of the sample size was provided to cater for the drop out and hence increase response rate. Hence the sample size was adjusted to n = 384*20% = 76, hence the targeted sample size was 384+76 = 460.

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Inclusion criteria

1. The study included female nurses who were employees of KNH.
2. Those with children between six and eight months old.
3. Those with history of having breast fed the children.
4. Those whose children had no history of underlying diseases that could interfere with immunity like sickle cell disease, HIV, leukaemia just to mention a few.
5. The nurses who gave consent.

Exclusion criteria

1. The study included female nurses who were employees of KNH.
2. Those with children between six and eight months old.
3. Those with history of having breast fed the children.
4. Those whose children had no history of underlying diseases that could interfere with immunity like sickle cell disease, HIV, leukaemia just to mention a few.
5. The nurses were excluded from this study on basis that they are on leave, off duty or have declined to participate.

Ethical considerations

The research approval was given by KNH/University of Nairobi (UoN) ERC and GLJK ERC.

Results

The study population

The study population was 435, (215 on EBF wing while 220 were on the NON-EBF wing). For age, majority of the respondents (174) were between ages 34 - 40 while ages 45 - 49 had the least (4). Marital status had married respondents as majority (185) while those who were divorced were the least (50). On parity, majority of the respondents (150) were para 2’s while para 4 + 1 had the least (6).

Association between RTI incidences and feeding practices

From table 1, the risk ratio was 2.37 indicating that the exposed group (NEBF) were 2.37 times more likely to suffer from RTI than their relative unexposed group and the association was insignificant at p > 0.05.

<table>
<thead>
<tr>
<th></th>
<th>Outcome +</th>
<th>Outcome -</th>
<th>Total</th>
<th>Inc risk*</th>
<th>Odds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed +</td>
<td>81</td>
<td>134</td>
<td>215</td>
<td>37.7</td>
<td>0.604</td>
</tr>
<tr>
<td>Exposed -</td>
<td>35</td>
<td>185</td>
<td>220</td>
<td>15.9</td>
<td>0.189</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>319</td>
<td>435</td>
<td>26.7</td>
<td>0.364</td>
</tr>
<tr>
<td>Risk ratio</td>
<td>2.37 (1.67, 3.36) at 95% CI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk ratio</td>
<td>X-squared = 25.24, df = 1, p-value = 5.063e-07</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Association between RTI incidences and feeding practices.

Association between GE incidences and feeding practices

From table 2, the risk ratio was 3.18 indicating that the exposed group (NEBF) were 3.18 times more likely to suffer from GE than their relative unexposed group and the association was significant at $p < 0.05$.

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Outcome +} & \text{Outcome -} & \text{Total} & \text{Inc risk*} & \text{Odds} \\
\hline
\text{Exposed +} & 59 & 156 & 215 & 27.44 & 0.3782 \\
\text{Exposed -} & 19 & 201 & 220 & 8.64 & 0.0945 \\
\text{Total} & 78 & 357 & 435 & 17.93 & 0.2185 \\
\hline
\text{Risk ratio} & & & & 3.18 (1.96, 5.14) at 95% CI \\
\text{Chi-square} & & & & X-squared = 24.869, df = 1, p-value = 6.137e-07 \\
\hline
\end{array}
\]

**Table 2: Association between GE incidences and feeding practices.**

Association between OM incidences and feeding practices

From table 3, the risk ratio was 3.07 indicating that the exposed group (NEBF) were 3.07 times more likely to suffer from OM than their relative unexposed group and the association was significant at $p < 0.05$.

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Outcome +} & \text{Outcome -} & \text{Total} & \text{Inc risk*} & \text{Odds} \\
\hline
\text{Exposed +} & 15 & 200 & 215 & 6.98 & 0.0750 \\
\text{Exposed -} & 5 & 215 & 220 & 2.27 & 0.0233 \\
\text{Total} & 20 & 415 & 435 & 4.60 & 0.0482 \\
\hline
\text{Risk ratio} & & & & 3.07 (1.14, 8.30) at 95% CI \\
\text{Chi-square} & & & & X-squared = 4.4654, df = 1, p-value = 0.03459 \\
\hline
\end{array}
\]

**Table 3: Association between OM incidences and feeding practices.**

Association between RTI hospitalization incidences and feeding practices

From table 4, the risk ratio was 0.00 indicating no change in suffering between the exposed group (NEBF) and non-exposed group (EBF) concerning RTI hospitalization. The chi-square test was insignificant at $p > 0.05$ which indicating insignificant association between the feeding practices and RTI hospitalization.

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{Outcome +} & \text{Outcome -} & \text{Total} & \text{Inc risk*} & \text{Odds} \\
\hline
\text{Exposed +} & 2 & 213 & 215 & 0.00 & 0.0000 \\
\text{Exposed -} & 0 & 220 & 220 & 0.93 & 0.00939 \\
\text{Total} & 2 & 433 & 435 & 0.46 & 0.00462 \\
\hline
\text{Risk ratio} & & & & 0.00 (0.00, NaNs) at 95% CI \\
\text{Chi-square} & & & & X^2 test statistic: 2.056 p-value: 0.152 \\
\hline
\end{array}
\]

**Table 4: Association between RTI hospitalization incidences and feeding practices.**
Study of the Relationship between Exclusive Breastfeeding Rates among Nurses and Infant Morbidity at Kenyatta National Hospital, Kenya

Discussion

The results revealed that the exposed group (NEBF) were 2.37 times more likely to suffer from RTI than their relative unexposed group and the association was significant at $p < 0.05$. These findings support N Fatouma., et al. [15] on specific morbidities in relation to feeding which found that EBF seems to protect infants against RTI ($OR: 0.27; 95\% \text{ CI}: 0.14 - 0.50$) compared with non-EBF. Kramer., et al. [7] found that infants from the intervention sites were significantly more likely than control infants to be breastfed to any degree at 12 months ($19.7\% \text{ vs} 11.4\%$; adjusted odds ratio [OR], 0.47; 95\% confidence interval [CI], 0.32 - 0.69), were more likely to be exclusively breastfed at 3 months ($43.3\% \text{ vs} 6.4\%$; $p < .001$) and at 6 months ($7.9\% \text{ vs} 0.6\%$; $p = .01$) but no significant reduction in RTI hospital visits (intervention group, 39.2%; control group, 39.4%; adjusted OR, 0.87; 95\% CI, 0.59 - 1.28) which contradicts the findings. Nevertheless, our findings showed that the exposed group (NEBF) were 3.18 times more likely to suffer from GE than their relatively unexposed (EBF) group and the association was significant at $p < 0.05$ indicating existence of an association between the feeding practices and GE which agrees with a review study by Golding., et al. [16] on GE and breastfeeding which found the OR were generally in excess of 3.0 for non-breast milk feeds. In contrast, Ayisi and Wakoli [17] found no relationship between EBF and GE leading to hospital visits for those infants who had experienced diarrhoea in the previous two weeks prior to the study. In the present study, we found that the exposed group (NEBF) were 3.07 times more likely to suffer from OM than their relative unexposed group and the was significant at $p < 0.05$ indicating existence of an association between the feeding practices and OM and which concurs with a systematic review study by Mary., et al. [6] which showed that the adjusted OR quantifying the effect of EBF on risk of OM at 95\% CI for hospital visits was 0.50 (0.37 - 0.70) and 0.40 (0.21 - 0.75) among the NON-EBF group.

In contrast to this study, Ermis., et al. [18] suggests that breastfeeding for a period of up to 11 months can play a significant preventive role against AOM (odds ratio and lower 90\% CI > 1). More so, significantly the risk ratio was 0.00 which indicates no change in suffering between the exposed group (NEBF) and non-exposed group (EBF) as per hospitalization of RTI was concerned. The chi-square test was also insignificant indicating no significant association between the feeding practices and RTI hospitalization. The findings matched a cohort study by Sinha., et al. [19] on reduced risk of neonatal RTI hospitalizations among breastfed girls but not boys found no meaningful association between breastfeeding and risk of neonatal RTI among neonatal boys, for whom the unadjusted ORs associated with EBF only and mixed feeding were 1.1 (95\% CI: 0.63 - 1.8) and 1.3 (95\% CI: 0.74 - 2.1), respectively. On the contrary, a Prospective Observational Study by Amarpreet., et al. [20] showed the effect of EBF on Hospital Stay and Morbidity due to Various Diseases in Infants under 6 Months of Age found that Prolonged hospital stay, that is, > 7 days, was lesser in exclusively breastfed infants and results were statistically significant in case of RTI ($p \text{ value} = 0.0012$) [21,22].

Conclusion

In summary, we found that, majority of the nurses were of age between 30-34 years, majority (40%) were married and most of them had one child. 214 nurses’ children had experienced disease incidences (RTI, GE and OM) and association between diseases incidences and feeding practice was significant $p < 0.05$.

Recommendations

For the lactating working mothers like nurses should be given a six months maternity leave in order to achieve EBF.

Bibliography


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