

## Duration of Exclusive Breastfeeding in a Nigerian Population: A Survival Analysis

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### **ABSTRACT**

*Breastfeeding has several abstract benefits such as bonding between mother and child, the convenience of having a ready-made milk supply wherever mother and baby may go. Knowledge and practice of Exclusive Breastfeeding (EBF) also reduce infant mortality by preventing infant from supplement induced sicknesses in infancy. This paper examined duration of EBF in Bauchi. Data was collected by direct interview using predesigned and pretested questionnaire. The data was analysed using survival analysis procedure. The study confirmed that the determinants of EBF duration are multiple, variable and dependent on the population studied. The survival curves for husband and without husband support different are not significant and the survival curves for mother with no education and with post secondary education different are not significant. One of the recommendations made is that suggest that health institutions and medical professional should play significant role in promoting breastfeeding in Bauchi.*

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**Keywords:** *Exclusive Breastfeeding, Median Duration, Hazard Function, Survival Analysis*

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### **INTRODUCTION**

An early introduction of breast milk substitutes and late introduction of semi-solid complementary items are responsible for rapid increase in the prevalence of under-nutrition during 6-24 months of age (Ramachandran, 2004). World Health Organisation (WHO) defines exclusive breastfeeding (EBF) as the practice of feeding only breast milk (including expressed breast milk) and allows the baby to receive vitamins, minerals or medicines. Water, breast-milk substitute, other liquids and solids foods are excluded.

WHO World Health Assembly in 2001 resolved that exclusive breastfeeding for the first six months is the most appropriate infant feeding practice (WHO, 2001). Earlier the ideal duration universally accepted for full breastfeeding was 4 to 6 months. Recent developments suggest full breastfeeding should continue to six months (Boland, 2005; WHO, 2001). Early introduction of other foods is of public health concern because it exposes infants to increased infection, particularly diarrhoeal diseases. It may also lead to poorer infant nutrition and adversely affect growth rates.

Breast feeding and complementary feeding of an infant are not only crucial for optimal growth and development but also are important determinants of future physical and mental well being because of the rapid growth spurt and development of organs and tissues during the first year of life (Waterlow, 1992; Deshpande et al, 2010). Non-exclusive breastfeeding rather than exclusive breastfeeding among 0-5 month old infants can increase the risk of dying due to diarrhoea and pneumonia by more than two fold (Arifeen et al, 2001).

Breastfeeding has several abstract benefits such as bonding between mother and child, the convenience of having a ready-made milk supply whenever you go (whatever time of night) and environmental responsibly by reducing waste associated with formula and bottle production. It is also a free source of food for the baby, which can benefit both individual families and reduce costs for public aid programs. Knowledge about EBF will also reduce infant mortality by preventing infant from supplement induced sicknesses in infancy.

It is well known that breastfeeding, even in developed countries, protects against gastrointestinal and respiratory infection, sudden infant death syndrome, diabetes, allergy, and, in preterm infants, necrotizing enterocolitis (Ip et al, 2009). It is also known that the protection conferred by breastfeeding is maximized with greater duration and exclusivity of breastfeeding.

Despite the scientific evidence recommending EBF for the first 6 months of life (WHO, 2001), this practices has low prevalence worldwide (Merten, Dravta and Anckermann-Liebrich, 2005; Al-Sahab et al, 2010). The amount of time a mother has to breastfeed is determined by several factors. The aim of this present research work is to identify factor associated with discontinuation of EBF in the study population of Bauchi. The limitation of this research is that the study did not explore other cultural determinants of breastfeeding which might have some influence on exclusive breastfeeding.

### **Hypothesis**

- i. The higher the level of education the greater the probability of early termination of breastfeeding
- ii. Women who received husband support have a low probability of early terminal of breastfeeding; whereas women who received husband support have a probability of longer termination of breastfeeding.

### **Material and Method**

In this study the target population was all women that had their child within the last five years from the time of the survey. Cluster sampling was adopted as sampling method in collection of the data since there is no satisfactory sampling frame for the study area. Areas were demarcated using existing established area divisions in the study area of Bauchi. The breastfeeding data concerns data on 825 last born children not more than five years back whose mothers chose for Exclusive breast feeding. This research employs the use of survey method in assessing practice of Exclusive Breast Feeding (EBF) in Bauchi. Predesigned and pretested questionnaire was used as instrument for data collection. The questionnaire included socio-demographic data like age of mother, education and occupation of parents, socio-economic status and some obstetric factors like parity and type of ante natal care. The mother reporting continuations of EBF on the date of interview were considered as censored cases. Presence of censored data makes the survival analysis appropriate for the analysis. Survival

Analysis will be used to examine the factors that influence EBF based on the data collected. Minitab 16 statistical Package will be used for data analysis.

### **Survival Analysis**

Survival Analysis is used where the design of the underlying study must ensure that the mechanisms giving rise to censoring of individual subjects are related to the probability of an event occurring. Survival Analysis deals with the modelling and analysis of data that have as a principal end point the time until an event occurs. Such events are generically referred to as failures though the event may, for instance, be the performance of a certain task in a learning experiment in psychology or a change of residence in a demographic study as well. Major areas of application, however, are medical studies on chronic diseases and industrial life testing. Survival analysis is concerned with studying the time between entry to a study and a subsequent event. Originally the analysis was concerned with time until death, hence the name, but survival analysis is applicable to many areas as well as mortality. A common feature of survival data is censoring, it means that the exact failure times of a number of subjects are not known.

### **Results**

Information extracted from Minitab Statistical Software results is presented as follows. Husband support for exclusive breastfeeding

The first portion of the output gives survival times for those subjects were on husband support. For the variable husband support the mean survival time is 6.89 months (C.I 6.38 to 7.32).

The different survival estimates are displayed in Kaplan-Meier Estimate, together with the numbers at risk and the number failing. The survival probability for time 4 months 85.67 % and for time 6 months is 21.31 %

Hazard estimates are a measure of 'hazard function' at the mid-point of the interval. Then hazard function is a measure of the failure rate (i.e. termination of exclusive breastfeeding) for each time t.

Similar result follows for the control group. Mean survival time for this group is 6.88 months.

Are the survival curves for husband and without husband support different? This table contains measures that tell one if the survival curves for various groups are significantly different. In the table of test statistic the p-value for both tests (Log-Rank and Wilcoxon) are not significant. P value for Log-Rank test is 0.317 and for Wilcoxon test is 0.558.

Impact of mother education on duration of exclusive breastfeeding

For the variable no education the mean survival time is 4 months (C.I 3.19 to 4.81). The survival probability for time 4 months is 39.73 % and for time 6 months is 8.21 % for the mother with no education. The survival probability for time 4 months is 54.41 % and for time 6 months is 6.76 % for the mother with post secondary education. Mean survival time for mother with no education group is 4 months and 4.3 months for mother with post secondary education.

Are the survival curves for mother with no education and with post secondary education different? In the table of test statistic the p-value for both tests (Log-Rank and Wilcoxon) are not significant. P value for Log-Rank test is 0.697 and for Wilcoxon test is 0.473.

## Discussion

Practice of exclusive breastfeeding (EBF) was critically examined to know the status of its practice in Bauchi using data collected from field survey. Many variables having impact on practice of EBF were examined such as husband support for exclusive breastfeeding and mother level of education. It was revealed that the mean survival time for husband support for breastfeeding is 6.89 months. Kaplan-Meier Estimate, together with the numbers at risk and the number failing showed that the survival probability for EBF time 4 months is 85.67 % and for time 6 months is 21.31 %. On the other hand, are the survival curves for husband and without husband support different? In the table of test statistic the p-value for both tests (Log-Rank and Wilcoxon) are not significant. P value for Log-Rank test is 0.317 and for Wilcoxon test is 0.558.

Findings on impact of mother education on duration of exclusive breastfeeding revealed that the mean survival time for mother with no education for breastfeeding is 4 months is 39.73 % and for time 6 months is 8.21 % for the mother with no education. The survival probability for time 4 months is 54.41 % and for time 6 months is 6.76 % for the mother with post secondary education. Mean survival time for mother with no education group is 4 months and 4.3 months for mother with post secondary education. Are the survival curves for mother with no education and with post secondary education different? In the table of test statistic the p-value for both tests (Log-Rank and Wilcoxon) are not significant. P value for Log-Rank test is 0.697 and for Wilcoxon test is 0.473

The survival plot from figure 1 revealed that the survival probability is gradually decreasing with the increase in the time interval of EBF. There is comparatively maximum decline between 6-7 months.

## Conclusion

The present study confirmed that the determinants of EBF duration are multiple, variable and dependent on the population studied. The survival curves for husband and without husband support different are not significant and the survival curves for mother with no education and with post secondary education different are not significant. This finding is in contrast to that of Abada et al (2000). We believe that there is need to look into this since there should be significant different in breastfeeding pattern among women with different level of education.

## Recommendation

The paper puts the following recommendation forward as ways to encourage EBF in Bauchi.

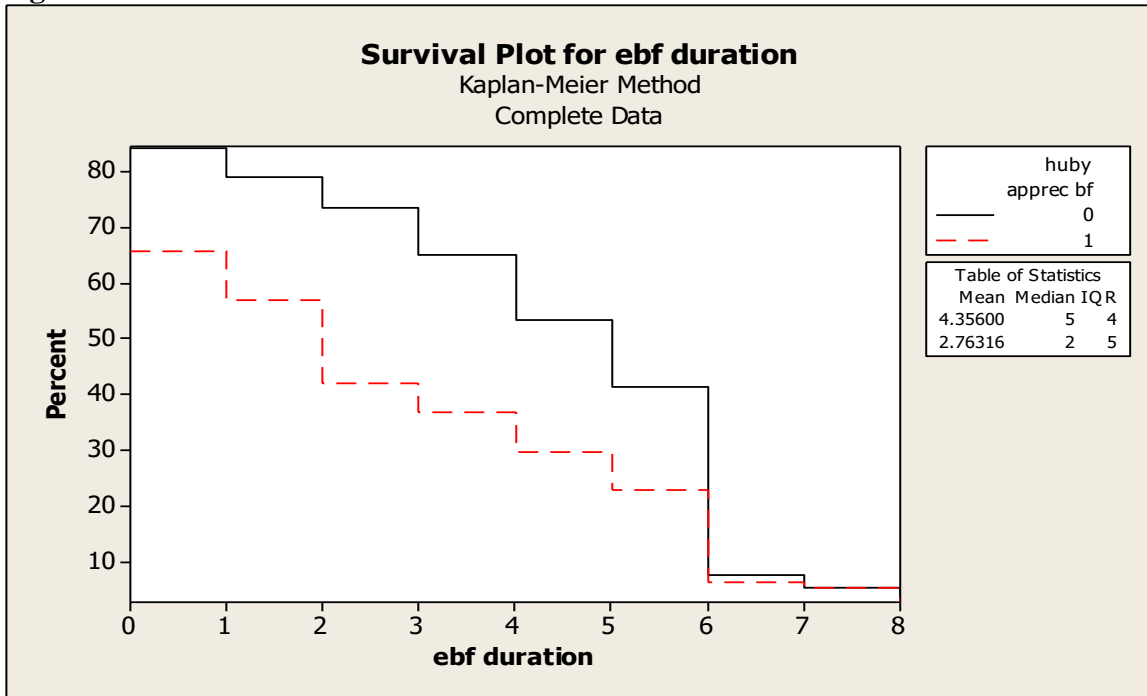
- We suggest that health institutions and medical professional should play significant role in promoting breastfeeding in Bauchi.
- Educational campaigns that stress the benefits of lactation and important strategies for encouraging mothers to breast feed longer should be carried out.
- Government should give who will be father paternity live to support the mother on EBF.
- Breastfeeding rooms should be provided by employers of labours close to mother place of work since maternity live is only for three months.

- The government can also look into extending the maternity live to six months which is the duration of exclusive breastfeeding
- Research of larger scale and scope should be carried out on exclusive breastfeeding by stakeholders in Nigeria with adequate funding to really establish state of EBF in Nigeria so as to achieve the MDGs goal on reduction of infant mortality which had been linked also to early introduction of other meals to infants beside the mothers breast in the first six months of life.

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**Figure 1**



**Survival Curve Showing Survival Probability for Duration of ebf**