BREASTFEEDING IN NEPAL: PATTERNS AND DETERMINANTS

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ABSTRACT

The aim of this study was to investigate the determinants of breast-feeding according to the characteristics of mother and her child. Cox proportional hazard model technique has been employed to investigate the determinants of breast-feeding. The data were utilized from a sample survey of Palpa and Rupandehi districts of rural Nepal.

The study revealed that the current age of mothers, their education and socio-economic status were found to be the main determinants of breast-feeding. The current age of mother showed statistically significant relation with the duration of breast-feeding. Younger mothers are most likely to terminate breast-feeding early as compared to older counter-parts. The decreased risk of terminating breast-feeding was found with increased duration of post-partum amenorrhea, and a strong positive association was found to be statistically significant.

The increased relative risk of terminating breast-feeding was found with increased the level of education of mothers, which indicates that the education is inversely related to the duration of breast-feeding. For instance, three times higher risk of terminating breast-feeding was found for educated mothers as compared to illiterate mothers. Socio-economic status of the household exhibits a statistically significant effect on the duration of breast-feeding.

It is believed that this finding may help planners and policy-makers for designing proper policy and program for improving mothers and their children's health and for reducing fertility of a country.

Key Words: Fertility, amenorrhea, significant, determinants, suckling.

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Received Date : *5th Oct, 2005*
Accepted Date : *11th Feb, 2007*

INTRODUCTION

Breast-feeding (BF) practice is a social norm, and it is critical for sustaining the health and well-being of newborns and infants.[1,2] Considerable importance is being given to the study of BF practices around the globe.[3] It is important, particularly in developing countries, because of its relationship with child health and birth spacing. It is well documented that mother's milk is the best food for the newborn baby and it has a significant impact on reducing mortality in infants.[4] It also plays an equally important role in controlling fertility particularly in less developed countries where use of contraception is still not common.[5] Indeed, infants who are properly breast-fed grow better and experience less sickness and fewer deaths than do infants who are not breast-fed.[2,6,7] Globally, BF is on the rise, and in most countries a relatively small percentage of mothers practice optimal BF behaviors that reduce infants' risk of morbidity and mortality, including initiation of BF in the first hour after birth and exclusive BF for the first 6 months of life.[1,2,8]

BF is a duration variable, which influences fertility by lengthening the duration of post-partum amenorrhea (PPA).[9] Since, breast milk contains all types of nutrients, it is rich in antibody and protects babies from diarrhea, infections, food allergies etc.[4] Consequently it reduces infant and child mortality rate in a country.[1,10] A number of studies have reported that the babies who were exclusively breast-fed survive longer and became healthier than formula-fed babies.[4,7,11] In fact longer practice of BF would delay the risk of conception, which increases the interval between two consecutive births.[8,12,13] Therefore it is considered as one of the most significant factors to reduce the pregnancy.[8,14] Early suckling BF benefits mothers to stimulate the release of a hormone, which helps the uterus to contract.[4] In addition, BF also increases the bond between mother and her baby.[1,5]

The initiation of BF is universal in most part of the societies; however, the degree of BF varies from society to society depending on the characteristics of mothers.[1,3,5,8] Previous studies have shown that the socio-economic, cultural and demographic characteristics of the population have played a great role on determining the duration of BF.[3,15,16,17] For instance, the work status of mothers perhaps makes a major difference in the duration of BF as it demands leaving the infant at home during working hours.[2] Education and occupations of mothers have shown an inverse relation to the duration of BF.[1,5,8] Literatures further have documented that low socio-economic status mother breastfed longer than high socio-economic counter-parts.[1,8] The higher parity mothers have had longer duration of BF than lower parity mothers.[1,16] Likewise mothers belong to urban and better off region have lower duration of BF than rural and back ward counter-parts.[2,7] Further the close interrelationship between PPA and BF was well established in several literatures.[1,5,8,16]

BF is the common phenomenon and universal practice in Nepal. However, detailed work has not been done in Nepal. This study attempts to investigate the influencing factors on the duration of BF among rural Nepalese mothers by using survey data of Palpa and Rupandehi districts.

BF practice is directly related to children and their mothers' health and thereby it lengthen PPA period, which leads to lower levels of fertility especially for high fertility experienced countries like Nepal, which underscores the immediate need of comprehensive study of BF and thereby needs to identify the influencing factors on determining the duration of BF. Thus, the main aim of this paper is to investigate the factors influencing BF of rural Nepalese mothers. Accordingly, a multivariate analysis technique has been utilized to study the effect of various socio-economic, demographic and caste/ethnic variables on the duration of BF. Finally a policy implication has also been recommended.

MATERIAL AND METHODS

The data taken from a sample survey entitled "Demographic Survey on Fertility and Mobility in rural Nepal (DSFM 2000): A Study of Palpa and Rupandehi Districts" conducted between January and June 2000. These districts lie in the Western Development Region and are about 250 km. west of Kathmandu, the capital city of Nepal. The data were collected from eight clusters; four clusters from each

district and each cluster consisted of wards of the Village Development Committee (VDC), a lowest administrative unit. A VDC consists of nine wards. The clusters were randomly selected and completely enumerated. The survey schedule included questions on the household composition, facilities and belongings. A total of 811 households were surveyed. A sample of 1019 ever-married women of marriageable ages were obtained. Besides, information on socio-economic, demographic and cultural variables, information on the duration of BF and PPA was collected from all mothers. Among them 851 mothers provided the information of BF status of their last born child. Two hundred thirty seven mothers had already weaned and 608 mothers were still breastfeeding at the time of survey. Twelve mothers who had experienced still birth were excluded in the analysis.

The duration of BF is taken as dependent variable. It included both censored as well as non-censored cases. For instance, mothers who were still breastfeeding at the survey date were considered to be the censored cases.[3] The duration of BF was presented in completed months. The variables such as current age of mothers, parity of mothers, duration of PPA, birth intervals and sex of child were included as demographic variables. However, education of mothers, education of husbands, working status of mothers, socio-economic status of household and place of residence were included as socio-economic variables. Caste/ethnicity is included as a cultural variable. The detailed of the variables and their measurements is available in previous study.[1,18]

Univariate hazard model analysis provided a measure of the effect of each variable on the duration–specific probabilities of weaning of breastfeeding (hazard function) in the absence of the control for other variables (Table I). A multivariate proportional hazard model analysis is utilized to examine the effect of each category of each variable on hazard function while controlling for the effects of other variables along with their categories included in the model (Table II). The survival time is treated as dependent variable and the associated variable is treated as independent covariates. Thus the risk of terminating BF by Cox proportional hazard model technique is given below:[19]

$$h_i(t, x) = h_0(t, x)\, e^{\beta' x}$$

Where, $h_0(t, x)$ is the baseline hazard for which no specific function is assumed, t is the survival time, $X=(x_1, x_2, ..., x_p)$ is a vector of independent covariates and $\beta' = (\beta, \beta_2, \ldots, \beta_p)$ is a vector of regression parameters.

RESULTS

The results of univariate analysis indicated that the current age of mothers, duration of PPA, socio-economic status and education variables were found to be statistically significant effect on the duration of BF (Table I). However, other variables included in the analysis did not show significant effects on the timing of BF. It is therefore insignificant variables were excluded while carrying out multivariate analysis.

Table I: Univariate hazard model analysis of the duration of breastfeeding

Characteristics of variables	-2 Log	Model χ^2	d.f	p-value
Current age of mother	11569.88	13.94	2	0.0175*
Parity of mothers	11583.24	0.58	3	0.9023
Duration of PPA	11544.00	39.82	6	0.0001*
Birth interval	11577.13	6.67	4	0.2512
Sex of the child	11583.63	0.17	1	0.6840
Education of mother	11514.99	68.83	3	0.0001*
Education of husband	11531.58	52.24	3	0.0001*
Occupation of mother	11581.83	1.97	1	0.1600
Socio-economic status of household	11569.25	14.57	2	0.0007*
Caste/ethnicity	11578.53	5.29	2	0.0710
Residence	11583.55	0.27	1	0.6060

Since a multivariate Cox proportional hazard model analysis provided the net relative risk of the terminating BF. A relative risk of 1.00 indicates the 'base line or reference category' for each variable. The relative risk greater (or less) than 1.00, indicates high (or low) risk of terminating BF than the reference category (Table II). The results obtained from Cox proportional hazard model analysis of the duration of BF according to the characteristics of mothers are presented in Table II. The model suggested that the current age of mothers, their education and socio-economic status were found to be the main determinants of the duration BF. BF practice is also found to be the main predictors of duration of PPA, and thereby voluntarily limits the fertility. For instance, the current age of mother showed a statistically significant relation to the duration of BF after controlling other covariates in the analysis. About 43 per cent less risk of terminating BF was found among older mothers (mothers' of age of 35 years or older) as compared to younger mothers (mothers' of age 25 years or younger). However, 14 per cent less risk of terminating BF was found among mothers of ages 25 to 34 years as compared to mothers of age 25 years and younger.

The regression coefficients of PPA categories were found to be statistically significant except early duration of PPA category. The decreased relative risk of terminating BF was found with increases the duration of PPA, indicating a strong positive association between the duration of PPA and BF while controlling the other covariates in the analysis. Indeed only 12 per cent less risk of terminating BF was found for mothers whose duration of PPA was 3 to 5 months as compared to mothers whose duration of PPA was 0 to 2 months whereas about 44 per cent less risk of terminating BF was found for mothers whose PPA duration was 18 months and more as compared to the reference category. Likewise, 24 per cent less risk of terminating BF was found for mothers whose PPA duration was 12 to 14 months as compared to mothers whose PPA duration was 0

Table II: Cox proportional hazard model analysis of breastfeeding

Characteristics of mothers & their categories	Estimated co-efficient (B)	P-value	Relative risk ratio
Current age of mothers			
<25	-	-	1.0000
25-34	-0.1487	0.1895	0.8618
35 and above	-0.5684	0.0170*	0.5664
Duration of PPA (in months)			
0-2	-	-	1.0000
3-5	-0.1287	0.2337	0.8792
6-8	-0.1429	0.0828	0.8669
9-11	-0.2695	0.0080*	0.7637
12-14	-0.3066	0.0032*	0.7359
15-17	-0.4058	0.0010*	0.6664
18 and above	-0.5726	0.0005*	0.5641
Education of mothers			
Illiterate	-	-	1.0000
Literate & primary	0.1298	0.0455*	1.1386
Mid- high school	0.3145	0.0004*	1.3723
Inter and more	1.0384	0.0001*	2.8023
Education of husbands			
Illiterate	-	-	1.0000
Literate & primary	0.0364	0.5892	1.0371
Mid-high school	-0.0970	0.3488	0.9076
Inter and more	0.4112	0.0855	1.5086
Socio-economic status of household			
Low	-	-	1.0000
Middle	0.0570	0.3680	1.0587
High	0.2530	0.0328*	1.2879

* Significant at 5% level of significance and – indicates reference category

to 2 months. This result indicated that the longer the duration of BF the longer duration of PPA in this population, which finally results in less risk of conception.

The regression coefficients of mothers' education categories were found to be statistically significant. It was found that the increased risk of terminating BF was found with increased level of mothers' education. For instance, 2.8 times higher risk of terminating BF was found for mothers who have intermediate and higher education as compared to uneducated counter-parts. Similarly, 1.4 times higher risk of terminating BF was found for mothers who have middle and high school level education as compared to uneducated counter-parts. The regression coefficients of husbands' education categories were found insignificant. However, 1.5 times higher risk of terminating BF was found among mothers whose husbands have intermediate and higher level of education as compared to uneducated husbands. Socio-economic status of mothers exhibited significant effect on the duration of BF. For instance, 1.3 times higher risk of terminating BF was found among mothers who belong to high socio-economic class as compared to low socio-economic counter-parts, which implies that increased the socio-economic levels of mothers with decreases the duration of BF.

DISCUSSION

BF practice is a social norm and nearly universal in Nepal where average duration of BF is long of around 31 months.[1] Since mal-nutrition among children under-5 years of age is significant in Nepal, and the level of chronic energy deficiency among mothers is also relatively high.[4] No doubt breast milk is the optimal source of nutrients for infants.[2] Nearly 33 per cent children born in the 5 years preceding the survey was breastfed within an hour of birth while around 66 per cent were breastfed within one day of birth.[4] It is well-established fact that exclusive BF is recommended during the first 6 months of a child's life because limits exposure to diseases as well as provides all of the nutrients that a baby requires.[4,20] Infants feeding practices affect the health of both the mother and her child. Previous studies have shown that BF has beneficial effects on the nutritional status, morbidity, and mortality of young children.[1,2,3,4,20] BF is also associated with longer periods of PPA, which in turn leads to longer birth intervals and thereby lower levels of fertility.[5] Longer BF also leads to have larger spacing of births often results to have better health outcomes both mothers and their children.[8] Since, the nature of BF data showed a large heaping at the multiple of six months, which may perhaps be to memory lapse, mis-reporting and selection bias.[15] Nevertheless, it is difficult to detect the systematic tendencies of under/over reporting in the data of BF unless the errors are gross.[8,16]

Thus, the present study identified the main determinants of the duration of BF among rural Nepalese mothers. For instance, mothers' age, their education and socio-economic status were the main predictors of the timing of BF. Study also reveals that older mothers usually breastfed longer times than younger mothers. The duration of BF increased with the increase in the parity order of mother; however, the relation was insignificant. This is consistent finding that higher order parity mothers were most likely breastfeeding longer than lower parity mothers.[1,2,6,7,8] These findings are also consistent with other findings made by several researchers.[6,7,16,21,22] The duration of PPA period was found to be increased with increase in the duration of BF, which indicating a strong positive association between the duration of PPA and BF. This finding is consistent with several findings elsewhere.[1,3,8,9,23] The BF varied by birth intervals: a shorter duration of BF leads to shorter birth intervals while longer duration of BF leads to longer birth intervals in most of the society.[8] Many studies have shown that a significantly positive relationship has been observed between BF and birth intervals.[15,22] However, present study did not show a significant association between BF and birth intervals as identified by multivariate analysis, which may perhaps be due to presence of multicolinearity of the variables.

Education of mothers was found to be the most influencing factors of BF, where educated mothers

breastfed shorter duration than uneducated mothers. This may be due to educated mothers being more likely to engage to white-collar jobs or works elsewhere and they leave their children at home and probably start giving food supplements to their children early that may lead to a shorter duration of BF. This finding is also consistent that working mothers' breastfed shorter time than non-working counter-parts as documented by several researchers.[1,2,8] This further corroborates that urban mothers are less likely to breastfed longer time than rural counter-parts, which was well-established findings by several researchers.[1,9,21,23] Socio-economic status of the household was found to be the most important factors on the timing of BF, indicating that mothers belong to high socio-economic class have had shorter duration of BF than low socio-economic counter-parts. This finding is also consistent with the finding of other researchers.[1,8,16]

Thus, the findings of this study confirm the important determinants of BF among mothers of rural Nepal. Findings underscore the immediate needs to increase the duration of BF among mothers who have a shorter practice of BF for improving the health of children and their mothers. The best way to increase the duration of BF is to implement formal and non-formal education to mothers and their families regarding the benefits of longer duration of BF.

CONCLUSIONS

The present study investigated the determinants of duration BF in relations to the characteristics of mothers of rural Nepal. Multivariate analysis indicated that the current age of mothers, their education and socio-economic status were found to be the main determinants on the timing of BF. The study also revealed that there was a strong relation between BF and PPA period. The education of mothers was inversely related to the duration of BF indicating that 2.8 times higher risk of terminating BF was found among educated mothers as compared to uneducated counter-parts. There was a higher risk of terminating BF among mothers who belong to high socio-economic class as compared to lower socio-economic counter-parts. It is believed that the findings of this study will have a number of policy implications; however, one should keep in mind to generalize the findings at national levels because sample size was small and limited only to two districts, which may lead to erroneous conclusion. However, the finding may assist the planners, policy-makers and researchers for designing proper policy and program on mothers' and children health, and for reducing the level of fertility of a country.

ACKNOWLEDGEMENTS

I would like to acknowledge Professor Satoru Kanoh, Institute of Economic Research, Hitotsubashi University, Tokyo Japan, for his inspiring guidance and encouragement in preparing this article. I am thankful to the Japan Society for the Promotion of Science.

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