BREASTFEEDING AND ITS RELATION TO FERTILITY IN UGANDA

BY

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DECLARATION

This project is my own original work and to the best of my knowledge has not been submitted for a degree diploma in any other University.

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This project has been submitted for examination with my approval as the University supervisor.

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DEDICATION

This project is dedicated to my husband Dr. Christopher Laker and to our children Tracy and Ian Laker.

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ABSTRACT

This study was undertaken to examine how breastfeeding relates to fertility in Uganda.

The objective was based on the fact that family planning programs were introduced to Uganda almost two decades ago. However to date the program seems to have had no major impact. Hence there is a need to re-examine what other avenues are available to tackle this problem. Breastfeeding can provide such an alternative.

Data from the Uganda Demographic Health Survey shows that a majority of Uganda women breastfeed their babies for an average of 19 months. Prolonged durations of breastfeeding after successive livebirths is one of traditional mechanism used though not deliberately to keep fertility well below its biological maximum.

This study examines the relationship between breastfeeding and postpartum amenorrhea. This is because the duration of postpartum amenorrhea following child birth has been observed to increase with increased duration of breastfeeding. The extent to which fertility is reduced during the period prior to the resumption of menstruation is therefore determined by the extent of breastfeeding. Thus the duration of postpartum amenorrhea is here used as an index of lactational infertility.

Using the characteristics of 2921 women in the last closed birth interval differentials in breastfeeding and postpartum amenorrhea were studied. Large differentials were observed among the selected socio-economic and demographic variables.

The study employed cross tabulation and Bongaarts analytical

and empirical framework as tools of analysis. It was shown that women with longer durations of breastfeeding have longer durations of amenorrhea and longer birth intervals. With long amenorrheic periods women are able to attain birth intervals of 3 years in the absence of contraceptive use.

The effect of urbanisation, maternal education and workstatus was negatively related to long durations of breastfeeding and amenorrhea.

Similarly increase in age and parity did seem to have a positive effect on breastfeeding and amenorrhea. However, contraceptive use was found to be inversely related to long breastfeeding and amenorrheic durations. Strategies to promote breastfeeding included breastfeeding educational programs, availability of labour laws promoting maternity leave and benefits, the intergration of breastfeeding programs into existing family planning programs and training of personnal in breastfeeding management programs.

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CHAPTER ONE

1.1 INTRODUCTION

Breastfeeding plays an important role in developing countries - Uganda in this particular case because of its relationship with child health and birth spacing. It is well known that breastfeeding has a significant role on reducing mortality in infants. Aside from this major role, breastfeeding is equally important in controlling fertility in developing countries. Post partum infertility associated with the practice of breastfeeding is a major determinant of spacing between births with resulting reductions in overall fertility levels. This effect has been highlighted by Legthsagne (1982) with data from World Fertility Survey. In Nepal for example only 2 per cent of the population practice contraception. In the absence of breastfeeding 47 per cent would need to practice birth control to maintain the currently high total martial fertility rate of 6.9.

Since modernization may cause increases in fertility when child survival is enhanced but high birth rates are not yet offset by family planning use (Easterun, 1982), it is important to know how breastfeeding can be maintained at early stages of development until appropriate successful practice of contraception is achieved.

1.2 THE STUDY AREA

The republic of Uganda is located in East Africa and lies a stride the equator (see map). It is a landlocked country bordering

Kenya in the east, Tanzania and Rwanda in the south, Zaire in the west and Sudan in the north. The country has an area of 241,038 sq km 18% of which is open water and swamps and 12% is forest reserves and game parks. Lake Victoria the third largest in the world makes up most of the open water area and is shared by Kenya and Tanzania. Uganda is divided by administrative purposes into 10 regions and 34 districts. The districts are further divided into counties, sub counties, parishes and villages.

Uganda has a favourable climate because of its relatively high altitude. Temperatures range between 17°C to 26°C. The central and west and south west regions receive heavy rainfall during the months of March through May and light rainfall between September and December. The level of rainfall diminishes towards the north as the border with Sudan is approached. The soil composition varies accordingly being generally fertile in the central, west and south west regions and becoming less fertile as one moves east to the north. Due to these combinations of climatic conditions, Uganda has tropical rain forest vegetation in the south and savanna woodlands and semi-desert vegetation in the north. The regional agricultural potential is determined by these climatic conditions and land population carrying capacity is closely related to these agricultural potentials.

UGANDA DISTRICTS

KEY
National boundary
District boundary
Lake

0   50   100 Km

UGANDA DISTRICT BOUNDARIES

Uganda has an agricultural economy with 90% of the population dependant in agriculture and agrobased industries. Agricultural produce contributes 98% of Uganda exports and the country is basically self sufficient in food. From 1960 - 1970 Uganda had an expanding economy with a Gross Domestic Produce (GDP) growth rate of 5% per annum compared to a population growth rate of 2.6% per annum. However during the past 25 years the country has experienced a period of civil and military unrest with resultant destruction of social infrastructure and disruption of the economy. This has had a negative impact on the economic, educational and health situation of the general population. Since 1986 however, the present government has introduced and implemented a recovery programme which is steadily moving the country towards economic prosperity.

Table 1.1   DEMOGRAPHIC INDICES FOR UGANDA

Index	Census	Year		
Population	1948	1959	1969	1980
	4,917,555	6,449,558	9,466,466	12,636,179
Inter-Censual Growth Rate	-2.5	3.2	2.8	-
Natural Growth Rate	1.7	2.4	3.1	3.0
Sex Ratio	100.0	100.8	101.8	98.2
CBR	42	44	50	50
TFR	5.9	5.9	7.1	7.4
CDR	25	20	19	20
IMR	200	160	120	115
% Urban Density per km	26.2%	33.2%	48.4%	64.1%

Source: Statistics Department Ministry of Planning and Economic
          Development Entebbe

Uganda is one of the few African countries which have held
censuses as called by the United Nations   The results of
these censuses linked with other head counts show that the
population rose more than fivefold from 2.5 million in 1911 to 12.6
million in 1980 (Wcarrd, 1984 pg. 4).

All recent population statistics must be treated with caution.
The 1980 census was flawed by general under-counting and under-
reprecentation of some areas of the country. The 1991 population

census has not yet been analyzed. The population however is estimated to be about 16 million based on the 1969 - 80 annual growth rate of 2.8%. The annual growth rate of the 1969 - 80 intercensal period falls below the 3.7 growth rate released between 1959 and 1969 and 3.4 preciously projected for the 1970s.

Current estimates of the Department of Statistics are 20 per 1000 for the crude death rate, and the crude birth rate of 50 per 1000 and infant mortality rate of 110 per 1000 and total fertility rate of about 7.4 per woman.

Accordingly, Uganda population exhibits the characteristics of the young population displaying the pyramid structure typical of most developing countries. Forty six per cent of the population are under 15 years and 20% below 5 years. Only 10.7% of the population is aged over 50 years.

The 1980 sex ratio has 98.2 males per 100 females compared to 101.9 males in 1969 implying a considerable depletion of the male population during the 1970s.

With a density of 64 per sq km in 1980, Uganda population density ranked fifty among the most crowded in Africa. However, this figure masks strong regional differences. District densities range from the relatively low levels of 12 to 85 per sq km in Karamoja and Nebbi to 197 to 223 in Kabale and Mbale.

Uganda is one of the least urbanised countries on the continent and ranks eight lowest in the world. Ninety per cent of the population lives in rural areas. Towns are small with only 8.7% of the population in centres of 2000 or more inhabitants.

Average household size is between five and six persons. A study of four contrasting ethnic areas found that more than 30% of homes had nine or more residents (the experiment in international living 1984 p.48).

The social setting in Uganda is composed of villages which are an aggregate of many individual homesteads each on its own land. Larger villages have a few shops, a school and perhaps a dispensary, a church and local government office. The accessibility of community institutions is limited by this special dispersal. Rural families are linked in an effort of extended kinship relationships although these may not necessarily be supportive. The extent of which kinship permits a local community is culturally determined and varies by ethnic group. It is however the primary basis of local organization.

Religious affiliation is fundamental to social groupings in Uganda. Area studies have shown that about 49% of the population is Catholic, 33% Protestant and 7% Muslim and 10% belong to no groups (UNICEF, report on Child Study, 1980).

A network of 8000 primary schools reaches almost all parishes throughout the country. Parents have demonstrated study support for the school system and parent teacher associations have been responsible for almost all school construction and improvements in the last decade. Another rural institution which cares for women and children is the local health centre or dispensary. Access to health facilities is poorer than schools. Whereas a primary school is likely to be not more than 2 - 3 km from a childs home, the

local health unit is often 10 km or more away.

In conclusion, Uganda political, socio-economic, and demographic situation shows that Uganda is a typical developing country with problems characteristic of other developing countries. Any population programme has to take this into account.

1.3   PROBLEM STATEMENT

Although a family planning programme has existed in Uganda since 1957 fertility has been on the increase and it currently stands at a total fertility rate of 7.4 per woman and a crude birth rate of 50 births per 1000 population, contrary to what would have been expected. This high fertility has resulted into a rapid population growth. For instance the inter-censual growth rate between 1948 and 1959 was 2.5 per cent, between 1959 and 1969 was 3.2 per cent and between 1969 and 1980s was 2.8 per cent. This high growth rate is bringing about population related problems for example lack of adequate facilities and resources to comfortably accommodate the population.

The Uganda Demographic Health Survey has reported a contraceptive prevalence rate of only 5 per cent indicating that the use of contraceptives is very low. This manifests that the family planning programme has not made an impact on fertility. This lack of success can be attributed to:- lack of funds to effectively carry out the programme, Uganda political history that has witnessed 26 years of political, economical and social degradation with its resultant negative effect on provision of

social infrastructure, the urban orientation of most of family planning programmes, the fact that modern contraception is culturally unaccepted and absence of an explicit population policy among other reasons. In view of this prevalent situation breastfeeding could act as an alternative contraceptive method until the time when modern contraceptive methods became more prevalently accepted. However rising levels of education and modernisation have a declining effect on the length of the breastfeeding period thus lowering its contraceptive effect and resulting in increases in marital fertility. This being the case there is need to encourage the breastfeeding practice for instance by formulating appropriate policies and programmes. The effect would then be to reduce fertility as well as improve the general level of child health.

1.4   STUDY JUSTIFICATION

Family planning activities were introduced in Uganda in 1957 that is more than two decades ago. The government, and the Family Planning Association of Uganda have continued to provide clinical information, education and communication service delivery to couples so that they can regulate their fertility. At a contraceptive prevalence rate of 5% and the fact that programme has existed for quite some time, it appears quite clear that the programme has not made a major impact on reducing the country's fertility. It is therefore important to find out through research other alternative approaches to solving this problem. A research

on breastfeeding can be of such use, because although not as effective as modern contraceptives breastfeeding does provide some form of contraception against pregnancy.

A study on breastfeeding as a factor affecting natural fertility that is postpartum infecundity can be used in formulating appropriate policies and strategies of lowering population growth rate. Hence, this is the primary objective of this study. Lastly, this study also provides a basis upon which further research can be made. This is because research focus has always been on the effects of breastfeeding on child survival. The effect of breastfeeding on preventing pregnancy has often been ignored. This study is an attempt to fill this gap.

1.5   OBJECTIVES OF THE STUDY

This study is an attempt to establish the relationship between breastfeeding and fertility in Uganda. Most specifically the study attempts:

(a) To examine relationship between breastfeeding and post partum amehorrhea.

(b) To examine differentials in breastfeeding and post partum amenorrhea by selected socio-economic and demographic variables.

(c) To examine the effects of breastfeeding on the last closed birth interval.

(d) To suggest appropriate recommendations for policy makers and planners regarding breastfeeding as a method of

reducing fertility.

SCOPE AND LIMITATION

1.6   SCOPE

This study uses the 1989 Uganda Demographic Health Survey. Data on breastfeeding and postpartum amenorrhea has been extracted. This is related to information on current use of contraceptives, place of residence, education levels, age and work status of women respondents aged between 15-49 years. Specifically the study uses the characteristics of 2921 women respondents in the last closed birth interval. Differential in breastfeeding and post partum amenorrhea are also studied.

1.7   LIMITATION

One major limitation to the UDHS data was the selection of the sample size. Due to security problems, at the time of sample selection 9 districts namely Gulu, Kitgim, Kotido, Apac Lira, Soroti, Kumu, Kapchorwa and Moroto containing an estimated 20 per cent of the country's population were excluded from the sample frame. This factor makes the UDHS not representative of the whole Uganda population as it would have been preferred. Secondly as in many surveys the main questionnaire used in UDHS did not make very explicit exactly what was intended by the word 'breastfeeding'. The main question was:

Question 406

Did you ever breastfeed (Name)?

Question 407

Are you still breastfeeding (Name)?

Question 408

How many months did you breastfeed (Name)? (UDHS 1999)

No indication is given in the questions themselves of what constitutes breastfeeding in particular whether partial or infrequent breastfeeding is to be included as well as full breastfeeding. The key issue these questions were intended to elucidate is the duration of breastfeeding. Measurement of all duration variations presupposes that both beginning and end point can be clearly defined for practical purposes. It can be assumed that the period of breastfeeding starts at birth but its end point is often less clear cut. Breastfeeding often tampers with the length of post-partum amenorrhea and hence the the length or the birth interval. Most respondents in UDHS interpretated the question to mean any form of breastfeeding including partial breastfeeding as was apparently intended.

The most outstanding defect in reporting of duration variables postpartum amenorrhea, breastfeeding and sexual abstinence is related to the nature of the data collection. The question filters in UDHS imply dependency of one or more questions on each other. In this case dating of the duration of breastfeeding, return of menstruation after a live birth and length of postpartum abstinence will depend on the dating of the birth in question. Thus if a woman fails to recall the date of a childs birth it is most likely

that she will not recall the duration of postpartum amenorrhea. If she does information will not be accurate. Another conceptual problem is the observation of postpartum bleeding which can be mistaken for menstrual bleeding.

A similar limitation in the use of UDHS data for breastfeeding studies is the problem of observing women observing terminal abstinence. In some societies in Uganda once a woman becomes a grandmother she immediately stops her reproductive life. This poses problems because old women who may be in postpartum abstinence may continue to terminal abstinence.

Lastly old respondents had problems identifying menopausal state especially for women, who breastfeed for long durations. For example, a woman aged 40 who breastfeeds will not know she has reached the menopausal state she might say she is in a state of postpartum amenorrhea. The last but not least major limitation is:

THE PATTERNS OF DISTORTION ON REPORTED DATA ON DURATION VARIABLE FROM THE UDHS 1989

Consider durations of breastfeeding in the last closed birth interval for penultimate children; it can be observed that reported durations of breastfeeding show outstanding concentrations on values and multiples of six months. 18.7 per cent of women breastfeed their penultimate children for 12 months. 15.7 per cent for 18 moonths, 9.1 for 24 months. These durations are higher than any other months as shown in table 1.2.

Table 1.2 PERCENT DISTRIBUTION OF WOMEN 15-49 ACCORDING TO LENGTH
OF BREASTFEEDING IN MONTHS OF PENULTIMATE CHILDREN

Length of Breastfeeding in Months	Second Last Child	
	No.	%
1	5	0.4
2	7	0.5
3	9	0.6
4	9	0.6
5	10	0.7
6	26	1.8
7	20	1.4
8	57	3.6
9	63	4.5
10	28	2.0
11	15	1.1
12	262	18.7
13	41	2.9
14	116	8.3
15	97	6.9
16	74	5.3
17	71	5.1
18	219	15.6
19	44	2.1
20	19	1.4
21	11	0.8
22	3	0.2
23	127	9.7
24	33	2.4

Source: UDHS 1989 in Months

The graph depicts distortions according to multiples of six months. Women respondents tend to report breastfeeding months of six, twelve, eighteen etc.

PERCENTAGE DISTRIBUTION OF WOMEN
ACCORDING TO LENGTH OF BREASTFEEDING
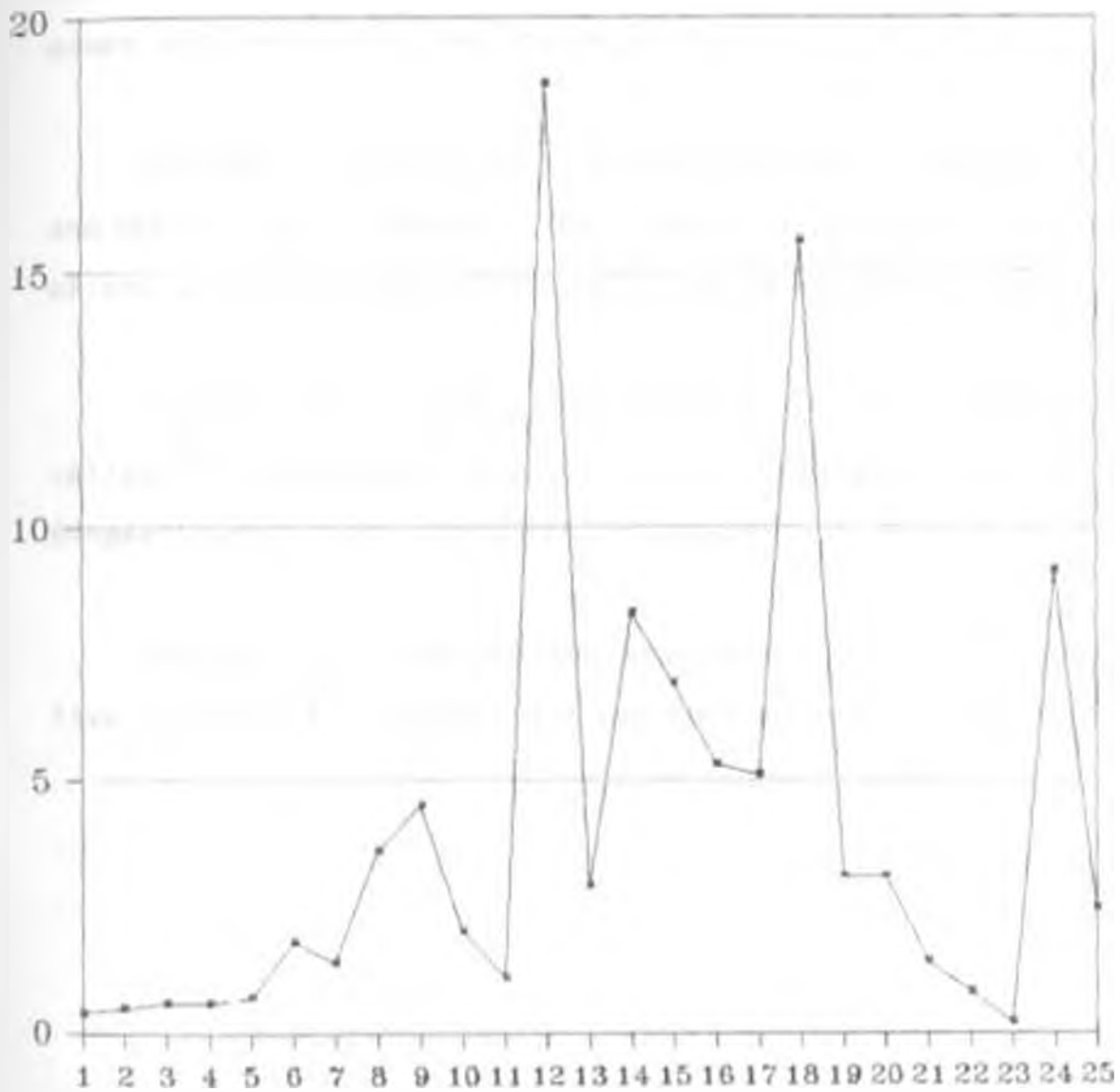
— ◆ — NO OF WOMEN

1.8 ORGANIZATION OF THE STUDY

The results of this presented in five Chapters, Chapter One carries the introduction regarding the study area, the statement of the problem, the justification and objectives of the study, its scope and limitation and its organization.

Chapter two covers the literature review, conceptual framework and operational framework. This Chapter also covers the hypothesis of the study and the definition of terms of used in the study.

Chapter three covers the methods of data collection, its reliability and application of cross tabulation and the use of Bongaarts empirical analytical framework.

Chapter four presents the analysis of the study and Chapter five contains the summary and recommendations of the study.

CHAPTER TWO

This literature review has been divided into four parts. Particular attention has been drawn to literature related to the area of study. The first section deals with studies and findings on the relationship between breastfeeding and amenorrhea. This section specifically deals with the mechanism between the two factors.

The second section covers the different patterns of breastfeeding and its effects on amenorrhea. This section is very important to this particular study because not all women practice the same infant feeding practices. These variations also cause variations in postpartum amenorrhea which has been used as an index of fertility in this study.

The third section deals with breastfeeding in the traditional contexts. This section is relevant to this study because Uganda is country that still has traditional characteristics. e.g socio-cultural beliefs, norms and practices and most of the population are still basically rural, uneducated exhibiting characteristics of society at its early stages and development.

The fourth section covers differential in breastfeeding as a result of socio-economic and demographic characteristics namely by education levels, place of residence, work status, age, parity and contraceptive use.

2.1   BREASTFEEDING AND AMENORRHEA

Several studies done by a number of scholars Buchannan (1975),
Van Cunneken (1977) have shown that after the delivery of a child
the fertility of breastfeeding women is substantially lower than
the fertility non-breastfeeding women. This apparent contraceptive
effect of breastfeeding is attributable to the suppression of
ovulation and of menstruation which is associated with lactation.

However, Perez et al (1971) have documentated that it must be
noted that the existence of amenorrhea does not in itself cover
complete immunity from conception since in a significant proportion
of cases ovulation can precede the onset of the first postpartum
menstrual period.   The degree to which lactation suppresses
fecundity and protracts amenorrhea varies from society to society.
Among non-nursing mothers the mean duration of amenorrhea is
approximately two months (Perez et al, 1971). According to Chen et
al (1974) Singarimburn Manning (1976) the mean duration of
amenorrhea among nursing mothersvaries from around 3 - 4 months.

- Das and Mistra (1961) in a study among Indian woman
  observed that 12.2% of women ovulated prior to the first
  menses.

- Perez et al (1972) observed that ovulation is more likely
  to precede the first menses in the later months of
  lactation than earlier months.

These studies show that the frequency with which ovulation

precedes the resumption of bleeding in breastfeeding women is not entirely clear but may be substantial.

There is also a significant difference between full and partial breastfeeders. Perez et al (1971) has reported that during full breastfeeding the resumption of menstruation is occasionally preceded by ovulation in almost 75 per cent of cases in that suspended breastfeeding resulted in ovulation preceding first menses in 90 per cent of the cases.

Although ovulation can occur prior to the onset of postpartum menses, the gland of conception during lactational amenorrhea is small. Following the resumption of bleeding the probability of ovulation increases.

According to Wchin (1988) 97 per cent of British women breastfeeding for more than 29 days ovulated by the third postpartum menses according to their basal body temperatures.

Simpson and Herbert (1977) doing a study among Eskimo women found that the first two to three menstrual cycles are widely spaced falling anywhere from six weeks to nine months apart.

A similar study done by Simpson Herbert (1977) found out that spotting events preceded the resumption of normal menses 38 per cent of the time and in a few cases occurred between widely spaced cycles. Evidence indicates that spotting events are anovular and that such events often precede full ovular cycles by several days or weeks (Brown, 1956).

Recent studies indicate that the percentage who become pregnant during lactational amenorrhea ranges from one per cent in

India, (Karkal, 1969) to 13 per cent in the United States (Kippley and Kippley, 1972). This similar finding has been documented by earlier studies reviewed by Tietze 1961 which indicate a range of 3 to 10 per cent. The per cent is influenced by culturally medicated patterns of breastfeeding, the timing of introduction of supplementary foods and the duration of breastfeeding.

2.2 PATTERNS IN BREASTFEEDING AND ITS RELATIONSHIP TO AMENORRHEA

The physiologic process of breast milk production and output is dependent on the suckling process including its frequency, intensity and duration (Bongaarts, 1981).

Studies carried out by Delvoye and Robyn (1980), Mc Neilly et al (1980) have documented that there is a relationship between breastfeeding and prolactin and oxytocin levels in a mothers body. Prolactin is the hormone necessary for milk production and secretion is also associated with the maintenance of the anovular state but the mechanism is not as yet understood. (Delieye and Robyn, 1980).

Mc Neilly et al, (1980) in his studies has documented that factors which decrease suckling frequency include the supplementation of the child's diet, practice of scheduled feeding lack of nighttime feedings and use of feeding bottles and pacifiers. According to him low milk output can lead to maternal anxiety which inhibits oxytocin release and eventually termination of breastfeeding.

Numerous studies have documented the association between supplementation of the child's diet and shortened duration of postpartum amenorrhea (Chet al 1974, Buchanan 1975, Prema and Philips 1980, Delgado et al 1985). This presumably is the result of reduced suckling due to increased food supplements.

Prema and Ravindranath (1982) have illustrated in a study in Hyderabad in India that a high proportion of the association of duration of breastfeeding with length of time the infant is fully breastfed. This is because the length of amenorrhea is highly correlated with the duration of total breastfeeding. An introduction of supplements at too early a date is detrimental both to amenorrhea and the infant's health.

Studies done by Hintingten and Hostlelen (1966) among the Hutterites, Simpson Herbert (1977) among the Indians and Howie et al (1981) in Scotland have found out that populations exhibiting early supplementation with substantial contribution in terms of nutrients have shorter duration of amenorrhea.

In a United States study (Hintingten 1966) in which supplementation of breast milk was delayed until at least five months and no bottles were used the observed duration of amenorrhea was 14 months. This suggests that if infants are fed without the use of bottles and the mother maintains her other natural breastfeeding patterns (including night feeds, no use of pacifiers, etc) extended period of amenorrhea may result.

Some authors have suggest that maternal nutrition indirectly

affects suckling by enabling a well nourished woman to produce more milk with less suckling than one who is poorly homeshed (Whitehead 1983). It has been documented (Huffman et al, 1980) that the total amount of time spent in suckling by infants aged 18 - 36 months in Bangladesh did not differ by mothers weight for height. Chavez et al (1985) in a Mexican study supplementation of mothers did seem to result in higher milk outputs and was associated with less total suckling time by infants.

A study done by Whitehead (1982) found out that suckling frequency was reduced when maternal calories intakes increased. Since most studies have found only a minimal association between maternal health and postpartum amenorrhea (Huffman et al 1978). It is doubtful that any effect of nutrition on milk output would have a substantial effect on fecundity.

In a country like Uganda where the breast is used to pacify the child as well as for nutritive needs, the effect of improved maternal nutrition is unlikely to affect total suckling time.

2.3   LITERATURE REVIEW

BREASTFEEDING IN THE TRADITIONAL CONTEXT

When looking at the role of breastfeeding as regulator of fertility in traditional societies, it is important to note that there is as yet little satisfactory evidence of conscious limitation of family size in traditional societies. There is widespread findings of knowledge and use of indigenous

contraceptive practices and these have frequently been cited in recent years to suggest that the limitation of family size has long been an aim of many traditional societies. The case has not been proven and may be well wrong Polgar (1972). Studies undertaken in Nigeria by Caldwell (1970) reveal that any practice at family limitation usually seems to be aimed at preventing conception at certain times (from certain women) that are undesirable than limiting the ultimate size of the family. Such undesired conceptions may be those that could result from pre-marital or extra-marital relations, where a woman is too young and the relationship is incestuous, where insufficient time has passed since the last birth or where a woman has reached stage in life where either her age and circumstances such as achieving grand-maternal status means that reproduction should cease.

Jain et al and Bongaarts (1978) have observed that fertility differential between traditional societies other than those due to pathological causes have also been cited as evidence of conscious family limitation. However, it may well be that most differential can be explained by a variety of behaviour ranging from different practices regarding age at first marriage, marriage of widows etc. All these activities may affect the ultimate size of the family but none of these necessarily has this end in mind. It is in this context that the role of breastfeeding in family limitation should be sought. Although most traditional societies advocated for the need for high numbers of children ABC Ocholla-Ayayo (1978), practices entrenched in the social cultural sociology such as

prolonged breastfeeding of an infant regulated and brought down the otherwise high fertility.

Studies done by R. Shoenmaker et al (1981) in Tropical Africa have documented that breastfeeding when accompanied by the lactation taboo plays a major role in inhibiting fertility in Africa. This postpartum taboo was virtually universal principle for the whole of traditional Sub-Saharan Africa (Tombashe, 1981). Lewis (1973) states the following concerning declining durations for Somalia.

- Abstention from sexual relations is normally practised for at least 40 nights after the birth of child while Monstserat (1975) recognises the local heterogeneity among the Dogon.
- Parents are not allowed to resume sexual relations until after the shaving of the childs head which takes place between 4th month and 5th month of 3rd year.

The above studies show that most traditional societies accompanied breastfeeding practice with the lactation taboo. This in effect on made possible long birth intervals thus reducing fertility.

Studies done by Muidock (1960s) have revealed that differentials in the lactation taboo existed in Sub-Saharan Africa Societies. Societies with more than 1 year of lactation abstinence were societies in western African Yarba, Dogin, Haisa etc. While certain traditional societies like those in the Lacustrine region

(of which Uganda is part) observed relatively short postpartum taboo. These societies included Alur, Babira, Baharu, Bahinde, Bafalero, Lango, Luo, Lugbara, Baganda, Autu, Tutse, Banyora and Bachiga. Of these societies or ethnic groups some are natives of Uganda. They stand, out as the people with short postpartum taboo. One of the possible explanations is that most of these population Alur, Bachiga, Banyakore engage in animal husbandry and customarily consume milk thereby reducing the need to protect the mothers lactation period through abstinence.

According to south world study (1979) among the Baganda in Uganda, traditionally women were forbidden to engage in sexual intercourse during pregnancy and breastfeeding. The Baganda knew that premature weaning caused 'kwashiorkor' the name for the 'obwosi' is derived from the verb 'okwosa' to be next in order. While Curley (1973) reports of the Lango of Uganda as follows:

'Older informants commented on the laxity with which young people view the taboo in the present period and stated that the taboo should remain ineffect until the child's weaned'.

This shows that breastfeeding in Africa has traditionally accompanied socio-cultural practice that enabled women to observe long durations of breastfeeding and acquire long birth intervals.

BREASTFEEDING DIFFERENTIALS

As mentioned in the conceptual framework changes in socio-
economic and demographic environment can lead to changes in
attitudes and incident of breastfeeding. This study examines the
effect of education, place of residence, mothers workstatus, plus
age, parity and contraceptive use on the duration of breastfeeding.

2.4.1 DIFFERENTIALS IN BREASTFEEDING BY SOCIO-ECONOMIC CHARACTERISTICS

PLACE OF RESIDENCE

In the study this variable refers to respondents usual place
of residence. It is categorical variable, rural or urban.

According to Jellief and Jellief (1978) changes in
breastfeeding behaviour as affected by modernization are caused by
social, cultural and economic influences due to parental attitudes
and behaviour in relation to self-images. Life styles are
influenced by place of residence, an example of local elites,
advertising according to that particular place.

Raphael (1979) in his studies among the south Americans
concluded that women in rural areas were more likely to initiate
breastfeeding and to breastfeed for longer durations than women in
urban areas. The reason why urbanization is associated with lower
prevalence of breastfeeding are unclear. Raphael (1979) suggests
that life styles in modern cities are somehow incompatible with
breastfeeding. Others have stated that the declines in

breastfeeding reflects subconscious attempt to move from traditional to modern culture (Jellife and Jelliefe, 1978). This is suggested by the rapid declines in breastfeeding noted among recent Mexican and Pakistan immigrants to United States and United Kingdom respectively (Smith et al, 1982 and Evans et al, 1976). Pelto (1981) her indicated that in urban areas the main features of modernization is the acquisition of material goods and technology of more economically favoured societies. She suggest that a shift to bottle feeding may be another instance of the acquisition of western material culture and the reasons for acquiring this practice of bottle feeding are variable and may include convenience and prestige emulation.

Studies done by Pelto (1981) and Byrant (1978) have suggested that in rural areas family pressures by family members can encourage and force women to breastfeed. Mothers in laws, husbands, influence women's infant feeding practices. Such extended families are more prevalent in rural areas than urban areas.

Mathias (1979) states that the rapid movement away from breastfeeding in developing nations revolves around the dynamics of change in basic values and alternatives presented by the mass media especially in urban areas.

Aside from behaviour decisions not related to breastfeeding, many women who stop breastfeeding do so inspite of the oral intent to breastfeed. One of the most common reasons given by women who stop breastfeeding is the insufficiency of milk. This seems more

common among women in rural. An understanding of this insufficiency of milk syndrome therefore may help us delineate the socio-cultural factors in urban areas that seem to inhibit breastfeeding.

Studies undertaken by Raphael (1979) also suggest that in rural areas women are exposed to other women who are breastfeeding and can learn by observation the essential techniques of breastfeeding. In urban areas the support of relatives, neighbours and other women in the area is not available. The existence of social networks in rural areas helps to promote breastfeeding which does not exist in urban areas. In urban areas, few alternatives have emerged to help women overcome some of the difficulties inherent in isolated households. Women groups and organizations have been formed in some countries to fill that gap but generally they are relatively few (WHO 1981).

Baer (1981a) in his studies has documented that health care services in most developing countries have been associated with lower rates of initiation of breastfeeding and shorter durations. Whereas most births in rural areas are delivered at home, births to women in cities occur more often in hospitals where women have to contend with hospital routines and are exposed to the beliefs and practices of trained health professionals. Such health professionals have often not been made aware of the benefits of breastfeeding. Hence, practices in many hospital settings are detrimental to the initiation of breastfeeding (Baer, 1981a).

In Guatemala, changes in hospitals routines that included

immediate suckling after birth have been shown to increase the proportion of breastfeeding from 17 per cent to 53 per cent at six months postpartum, and from 0 - 29 per cent at 12 months postpartum (Klaus and Kennett, 1976).

Lastly, drugs given to a mother during labour and delivery in urban hospitals pass to the infant through the placenta (Wong 1975). Care should be used when such medicines are given to women during the antenatal period since certain drugs have been shown to inhibit successful initiation of lactation.

2.4.2 BREASTFEEDING DIFFERENTIALS BY LEVEL OF EDUCATION

Numerous studies have been undertaken to analyse the effect of education on fertility among women. A study done by the Central Bureau of Statistics (1979) using Kenya Fertility Survey of 1978 analysed channels through which education may stimulate fertility. It was hypotheses that education could stimulate fertility in a variety of ways, by weakening the observance of traditional customs and practices which served to limit fertility and space pregnancies, by raising fecundity and by discouraging polygamy. The KPS data showed that this had broken down due to education. This data indicated that Kenyan women breastfed for 15.7 months and experienced a period of lactation amenorrhea due to breastfeeding which accounted for 25 per cent of the interval between live births. There was evidence in the KPS that educated women tended to breastfeed for 6 - 7 months i.e. shorter periods. The resultant

negative correlation between education and lactation amenorrhea curtails postpartum infertility. The corresponding period of amenorrhea for these women is from 12.0 months for women with no education to 6.5 months for women with some secondary education; the menstruating interval was from 9.8 months to 3.3 months CBS, KFS (1979).

The above shows that education and lactational amenorrhea are inversely correlated in Kenya. R. Lesthaeghe and H.J. Page (1981) using the Lagos parity study of 1976 analysed the effect of education on parity. In this study it was found that women with secondary education breastfed for only 6.4 months on average compared to 15.7 months for uneducated. Those with primary education were exactly in the middle. Amenorrhea was correspondingly shorter among educated women, only 2.8 months compared to 10.2 months for the uneducated. the difference in postpartum abstinence was even larger, 6.7 months for secondary educated compared to 18.7 months for the uneducated.

R. Lesthaeghe perceived the mechanism through which education affects breastfeeding as due to the fact that women with higher education levels are more likely to have jobs that are in-compatible with prolonged intensive breastfeeding.

In his studies Nag (1982) postulated that modernization and educational factors to be which are related to the decline in breastfeeding include the perception of female breasts as symbols of sexual attraction, the sense of modesty about breasts and the restriction of the practice of breastfeeding to private areas.

This makes young educated girls less likely to be oriented toward breastfeeding by observation and limitation.

A study done by J. Caldwell (1978) in Illorin a Nigerian urban community examined the influence of women's education on postpartum practices. Using lifetable survival analysis to estimate breastfeeding and abstinence durations and sex proportional Hazards models to estimate relative risk of weaning and terminating abstinence; women's education was found to have a strong negative relationship with breastfeeding and postpartum abstinence. Incase of breastfeeding, the mean duration of breastfeeding declined from 21.4 months among the literate group to 9.5 months among those post secondary educated women. A decline of about 56 per cent.

Jain and John Bongaarts (1981) using data from the World Fertility Survey (WFS), taken from eight countries: Bangladesh, Indonesia, Sri Lanka, Jardan, Peru, Guyana, Colombia and Panama analysed the effect of education on breastfeeding in those countries. In all eight countries education was associated with short periods of breastfeeding. The average duration of breastfeeding for the non educated in rural Bangladesh was 24.8 months and 15.8 months for secondary level women. In Indonesia among the duration for non-educated was 21.8 months and 9.5 months for those in urban educated upto secondary school, level. In urban Bangladesh the duration was 15.8 months. In Indonesia the duration among the non-educated was 21.8 months and 9.5 months for those in urban areas who had upto secondary level education. These

examples show that the average duration of breastfeeding is longest for women who have no education and live in rural areas and shortest for those who live in urban areas and have at least seven years of schooling, the remaining fall in between these two extremes.

Several countries have attempted nation wide programmes to reverse the trend in breastfeeding decline by promoting the socio-cultural environment in favour of breastfeeding. For example, in Brazil and the Philippines school curriculums now include information on the appropriateness and benefits of breastfeeding (Marin 1982, Solon, 1982).

Education campaigns have been also shown to enhance breastfeeding for example in India and Kenya; nutrition education campaigns associated with a primary health care programme have increased the average duration of breastfeeding (Kielmann et al 1978, Were 1981).

According to De Chateau et al (1977) education of father has been shown in other studies to have a positive effect on breastfeeding. Gail and Kathy Kennedy conducted studies in Philippines (1989) to determine whether breastfeeding mothers could intensify their nursing enough to increase the period of lactational amenorrhea. These studies were conducted in two communities in which women in one community were exposed to a breastfeeding education programme before birth and during lactation while women in the other community served as a control group. Increased breastfeeding was observed in the group that received

breastfeeding education beginning in the sixth month postpartum. Bottle use began earlier and was more common in the control group but the introduction of other foods at 5 - 6 months was similar. No difference in the duration of postpartum amenorrhea (a proxy for the duration of unfertility) was observed.

2.4.3 BREASTFEEDING AND WOMENS WORKSTATUS

Some authors have suggested that women employment status has little effect on breastfeeding prevalence (Van Ectorick and Griener, 1981). This conclusion is primarily based on studies examining reasons for the termination of breastfeeding. Most of these studies illustrate that less than 10 per cent of women reportedly stop breastfeeding because of demands of employment. Other authors such as Butz and Popkin have challenged the assumption by providing data from Malaysia and the Philippines that suggest that work and infant care do not conflict with breastfeeding patterns (Butz et al 1981, Popkin and Solar, 1976). Butz (1981) states that it is inappropriate to assess the impact of working status on breastfeeding through oral reports since, although women may not give it as the primary reason for terminating breastfeeding there are other factors that indirectly influence breastfeeding that they also do not give (e.g. advertising of breast milk substitutes).

According to the WHO (1981), there are numerous factors associated with employment status that do affect breastfeeding. In developed countries for example Sweden and Hungary where there is

a high rate of female employment outside the home, breastfeeding incidence is quite high. However the duration is low. In Sweden for example half of the breastfeeding women stop by three months and two thirds by six months postpartum (WHO, 1981). Such short duration of breastfeeding would have only a small effect on fertility regulation if they were to be the average for developing country women. Therefore, even though female employment opportunities outside the home are not necessarily incompatible with breastfeeding, there is little evidence currently available that illustrates extended breastfeeding in modern industrialized settings. However, numerous World Fertility Surveys illustrate breastfeeding durations of over one year in urban areas of Sri Lanka, Indonesia, Bangladesh, Pakistan and Kenya. (Lesthaegne, 1982).

In Philippines, Popkin and Solon (1976) observed that women who worked in their own barrios had similar rates of breastfeeding as those who did not work, but for those who worked outside their own barrios the prevalence of breastfeeding was reduced.

In Thailand Knodel and Debalxalga (1980) noticed that women working on the family farm were more likely to breastfeed than those working outside their own farms. Apparently logical work that is closer to the household appears to be compatible with breastfeeding and child care activities Ho (1979).

The type of work has been shown by Davanzo and Lee 1978 to significantly affect whether women remain with their children. In their studies in Malaysia, women who were involved in sales or

productive activities including dressmaking, food and beverage makers or weavers were more likely to have children less than 10 years of age with them when they worked than those involved in other types of activities, including professional occupations, management, clerical work and service occupations. Since breastfeeding is dependent upon the mother and child being together, we can deduce from these data that certain occupations are more likely to promote breastfeeding than other types of work. Both the Malaysian study and the Philippine study illustrate that child care is an activity that loses most of the mothers attention when she increases her market activities.

The availability of alternative patterns of child care may affect the prevalence of breastfeeding. In a study by Harret (1981) in Taiwan it has been illustrated that when mothers in law were living in the same household, women were more likely to work, than when a relative was available. However in the Taiwan study there was no association with the prevalence of breastfeeding in relation to working.

Greiner (1977a) has shown through time studies in Ghana, the amount of time spent per day breastfeeding infants to be about 45 minutes in urban Accra. The amount of time needed to bottle feed was noted to be 27 minutes. However, an additional 38 minutes are necessary for preparation of food and washing of bottles. Although time needed to breastfeed is less than the total amount of time needed for breastfeeding, if this time can be substituted for sibling or other family members this frees the women by nearly an

hour. Since mothers already are under considerable time constraints, any additional activities associated with work result in a decrease in time spent in other activities. Generally it appears that time for child care is what suffers either in terms of decreased breastfeeding or decreases in other child care activities (Greiner, 1977a).

The type of work a woman engages in can influence breastfeeding by affecting both her access to the infant and time available with the infant. Breastfeeding is more likely to be compatible with part-time work that has flexibility in scheduling as found when a woman works within her household activities. If women have children at their work setting for example through creches or day care centers and if work is flexible and allows nursing breaks, women are more likely to have access to the children. However, if her work is more highly structured and where such alternatives are not feasible as when women are employed in domestic work, there is less compatibility with child care. The income received from the woman's employment has a substantial influence on whether she will work or not and it also appears to affect the likelihood of breastfeeding (Butz et al. 1981). Women who make higher incomes outside the home are less likely to breastfeed. However, the interrelationship of education, mothers income and total household income are hard to separate. Bottle feeding can have a substantial cost for the families over and above what the mother earns. Reutlinger and Selowsky (1976) have pointed this out in relation to cost in Calcutta. They estimated that the

marginal propensity to spend income as milk to maintain the health status of children would be over 50 per cent for infants aged zero to six months.

2.4.4 BREASTFEEDING AND AVAILABILITY OF BREASTMILK SUBSTITUTES

The WHO collaborative studies have illustrated that in Nigeria Guatamala and the Philippines free milk samples were commonly distributed in hospitals to postpartum women during the 1970s. In Guatamala breastfeeding was less common among those who had received samples. In Philippines breastfeeding was less among a high proportion of the upper class who received the samples. However, in the urban Philippines there was no association between the provision of free samples and breastfeeding (WHO 1981, p. 77). In Malaysian studies there was no association between the prevalence of breastfeeding and the availability or price of infant formula in communities where the mother lived. Butz suggests that in Malaysia breastfeeding declined before the beginning of widespread commercial merchandising of infant formula. R. Schoenmaeker et al (1981) have indicated that areas in the Lacustrin region of East Africa, were characterised by a short postpartum taboo than surrounding areas because the peoples in these areas mainly the Banyakole, Chiga Alur, Baganda of Uganda, Bihinde, Bahavu, Bafulene, Tulse, Hutsi of Rhada and Burundi engage in animal husbandry and customarily consume the milk thereby reducing the need to protect the mothers lactation period through

abstinence. Hence, the availability of a breastmilk substitute among these peoples affects women's postpartum periods.

2.4.5 DIFFERENTIALS IN BREASTFEEDING BY DEMOGRAPHIC CHARACTERISTICS

AGE AND PARITY

Maternal age has been found to exert an influence on the duration of lactation and lactational amenorrhea as evidenced by studies carried out by Jain and Sun 1972 in India and Polter et al (1984) in Bangladesh. Chen et al in their studies in India have documented that among younger women, their duration of postpartum amenorrhea is shorter as compared to older women. In Bangladesh, for example women under 30 years had a mean duration of lactational amenorrhea of 16.4 months as compared to 23.2 months for women aged over 30 years.

Bongaarts (1972) has also documented that older mothers are more prone to feeding their infants for longer durations than younger mothers probably because of more social commitments. Secondly, younger mothers who have not completed their family size might not need to use breastfeeding as a method to limit their number of births as compared to older women.

Bongaarts (1972) has also documented by using the WFS data that age increase in Bangladesh has corresponding effect on duration of breastfeeding. In Bangladesh, it was found that about three years increase in mothers age adds about one month to the

duration of breastfeeding. In Peru, about 9 years increase in mothers age adds about one month to duration of breastfeeding. These findings show that the net effect of age on breastfeeding is small.

The survey done in Ibadan 1973 (CAFN 1) noted that illiterate women of younger age groups compared to older age groups abstained and breastfed for lesser months. This is particularly striking among illiterates whose average duration of abstinence dropped from 29 months in the 40 - 49 age group to 24 months in the 16 - 29 age group. Although these women have no direct experience of formal education, they have been exposed to western ideas portrayed through the mass media with the discussion of sex being one of the most popular topics and one of the most potentially harmful to the traditional system. The fact that young illiterate women abstain and breastfed for shorter periods than their older sisters suggests that new ideas have filtered through to them quite independently of formal education.

According to Rable (1984), women with higher parity tend to be less friendly as compared to those of lower parity, this is because women with lower parity are likely to be young, educated and employed. These characteristics have been found to have some influence on duration of postpartum amenorrhea of women. Higher parity women tend to breastfeed for longer periods than lower parity women. Jain et al 1982 in analysing data collected from Tawanese women by using multiple regression analysis has documented that women's parity did not have any significant effect on the

duration of breastfeeding after controlling for the effects of such factors as women's age, education and place of residence.

2.4.6   BREASTFEEDING AND CONTRACEPTIVE USE

There is evidence that women who are breastfeeding are less likely to be active contraceptors than non-breastfeeders (Pobley et al 1985).

Oral contraception use also seems less likely during early lactation. In addition women who use contraception seem less likely to breastfeed for longer periods (Millman 1985).

Data from Winikoff 1981 - 82 surveys of infant feeding practices in developing countries, Thailand, Kenya, Indonesia and Colombia were used to analyse the relationship of amenorrhea lactation and time since birth with contraceptive use. The relationship was first explored using contingency table analysis. Logistic regression analysis was then performed to control for effects of background variables. The analysis showed a strong independent and consistent negative relationship between amenorrhea and contraceptive use. Women with less than 4 months postpartum were less likely to use contraceptives. A negative relationship between breastfeeding and contraceptive use was found only for users of oral contraceptives. It is possible that women in immediate postpartum period especially those who are lactating and amenorrhea are not highly motivated to use modern contraceptives.

Other authors have argued that in most parts of the world particularly in developing world many couples adopt breastfeeding

and abstinence as a means of fertility regulation and for protecting the health of both the child and the mother. With this long reliance in breastfeeding and abstinence many women reject modern methods of contraception (Zuryak, 1981).

Zuryak (1981)in analysing the relationship between breastfeeding and contraceptive use among 273 Lebanese women and found a significant negative association between the duration of breastfeeding and probability that a woman will start contraception during postpartum. Thus the shorter duration a woman breastfeeds the more likely she is to start contracepting.

However, Bongaarts et al (1981) using data from WFS has found a positive association between breastfeeding and contraceptive use among exposed women in Bangladesh. This is a unique case where both breastfeeding and contraceptive use have been promoted as complementary rather than substitutes.

2.5   CONCEPTUAL FRAMEWORK FOR THE ANALYSIS OF THE EFFECTS OF BREASTFEEDING ON FERTILITY

This study has adopted Bongaarts' framework (1978) to analyse the effects of breastfeeding on fertility. The levels of fertility in a population is directly determined by a set of biological and behaviourial factors called intermediate fertility variables (Davis Balke 1950) or proximate determinants of fertility (John Bongaarts 1978). These factors are in turn indirectly affected by socio-economic, cultural and environmental variables.

```
┌─────────────────────┐        ┌─────────────────┐        ┌──────────────┐
│ Socio-Economic      │        │ Intermediate    │        │ Fertility    │
│ Cultural and        │───────▶│ Fertility       │───────▶│              │
│ Environmental       │        │ Factors         │        │              │
│ Variables           │        │                 │        └──────────────┘
└─────────────────────┘        └─────────────────┘
```

According to Bongaarts there are four most important proximate determinant of fertility namely: proportion married, contraception, induced abortion and postpartum infecundity. Breastfeeding as an inhibition to conception affects fertility through postpartum infecundibility.

A conceptual framework adopted from the above general model has been developed to illustrate the relationship between breastfeeding and fertility. Various factors such as employment opportunities for womens, availability of breastmilk substitutes and changes in traditional and socio-cultural norms can affect breastfeeding by influencing existing attitudes norms and values towards breastfeeding practice.

CONCEPTUAL FRAMEWORK

```
┌─────────────────────────────────────────────────┐
│      Socio-Economic and Demographic Factors      │
└─────────────────────────────────────────────────┘
        │                              │
        │                              ▼
        │              ┌──────────────────────────────┐
        │              │     Behaviour, Norms and      │
        │              │           Beliefs             │
        │              └──────────────────────────────┘
        ▼                              │
┌───────────────────────┐             ▼
│ Other Proximate        │  ┌──────────────────────────────┐
│ Variables              │  │     Attitude towards          │
│ . Contraception        │  │      Breastfeeding            │
│ . Induced Abortion     │  └──────────────────────────────┘
│ . Proportion Married   │             │
│   ETC                  │             ▼
└───────────────────────┘  ┌──────────────────────────────┐
        │                  │        Breastfeeding          │
        │                  └──────────────────────────────┘
        │                              │
        │                              ▼
        │                  ┌──────────────────────────────┐
        │                  │        Postpartum             │
        │                  │      Infecundibility          │
        │                  └──────────────────────────────┘
        │                              │
        ▼                              ▼
┌─────────────────────────────────────────────────┐
│          F  E  R  T  I  L  I  T  Y               │
└─────────────────────────────────────────────────┘
```
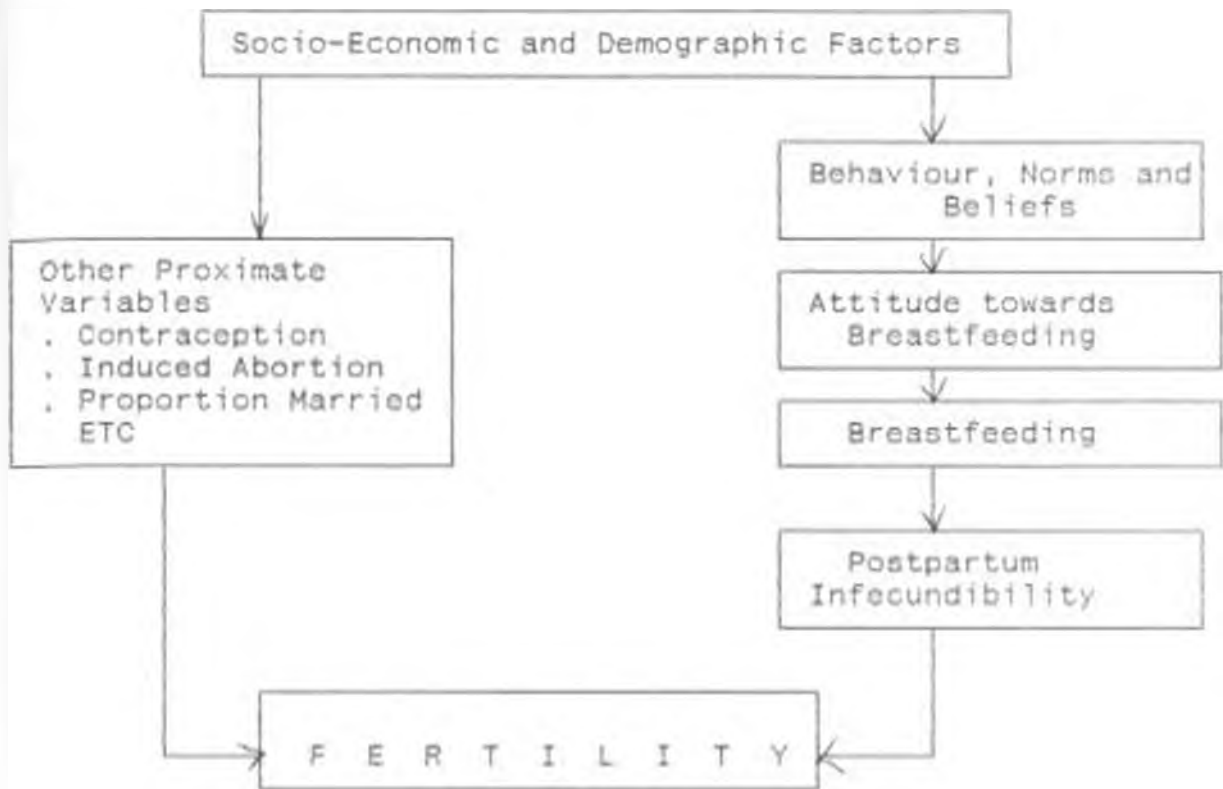
Source: Adapted from Bongaarts Framework, 1978

The pathways between the various segments can affect
breastfeeding in various ways.   Changes in socio-economic and
demographic variables can affect breastfeeding.   The effects of
modernization through education, urbanization, work status etc.
Can act through various ways to change breastfeeding patterns.
These include the provision of:

OPERATIONAL FRAMEWORK

```
          ┌─────────────────────────────┐
          │ Knowledge and Availability  │
          │ of Breastmilk Subatitutes   │
          └─────────────────────────────┘
                        │
┌──────────────┐  ┌─────────────────────────┐  ┌──────────────┐
│ * Age        │  │ Working Patterns of     │  │ * Place of   │
│              │──│ Mothers                 │──│   Residence  │
│ * Parity     │  └─────────────────────────┘  │              │
│              │                                │ * Education  │
│ * Contra-    │  ┌─────────────────────────┐  │              │
│   ceptive    │──│ Socio-Cultural          │──│ * Workstatus │
│   Use        │  │ Environment             │  │   of Mother  │
└──────────────┘  └─────────────────────────┘  └──────────────┘
                        │
          ┌─────────────────────────────┐
          │ Incidence and Duration      │
          │ of Breastfeeding            │
          └─────────────────────────────┘
                        │
          ┌─────────────────────────────┐
          │ Postpartum                  │
          │ Infecundibility             │
          └─────────────────────────────┘
                        │
                 ┌────────────┐
                 │ Fertility  │
                 └────────────┘
```
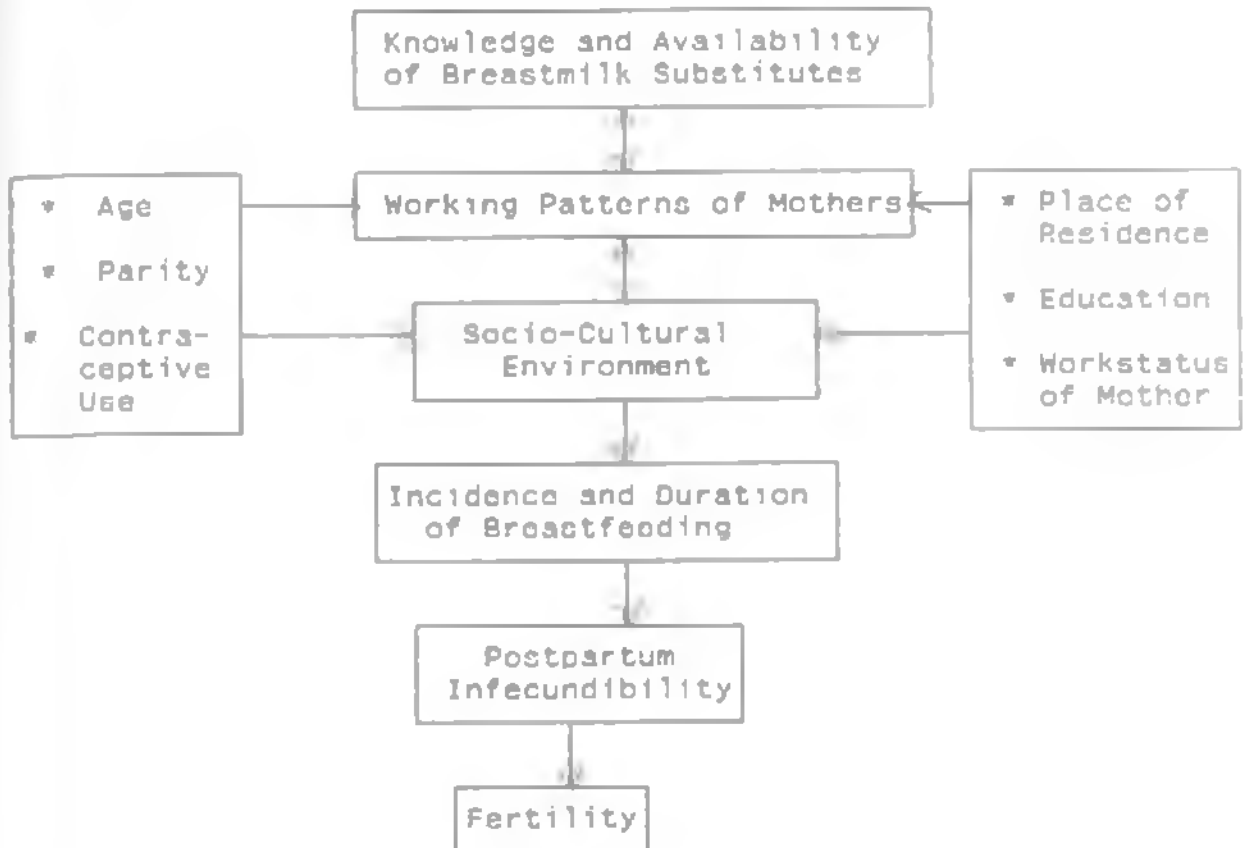
2.6   DEFINITION AND MEASUREMENT OF KEY CONCEPTS

SOCIO-ECONOMIC FACTORS

The socio-economic factors included in this study are, educational level, work status and place of residence.

(1) EDUCATIONAL LEVEL

This variable is defined as the highest level of education acquired. It is measured in terms of no education, primary

education, secondary and higher educational level. Throughout
this study women who completed junior 1 in the old method of
educational classification were considered to have completed
primary level education.   Those with junior 2 and 3 were
tabulated ed having as having completed secondary education.
Women with up to level 4 were classified as having attained
more than secondary education. This category includes women
who went on to complete at least one year of vocational
training after secondary 4 or who completed at least two years
of such training after secondary 3.

(2)   **PLACE OF RESIDENCE**

This variable refers to whether the respondent was residing in
the rural or urban area at the time of the interview.

(3)   **WORK STATUS**

This variable refers to whether the respondent was working
salaried employment or not.

DEMOGRAPHIC FACTORS

The following demographic factors are used:

(1)   **AGE OF MOTHER**

This variable refers to the years lived by the respondent
since birth and upto the time of the interview. Information
on this variable was obtained by asking both questions on age

and the date of birth in order to avoid misreporting of age.

(2) PARITY

This variable refers to the number of children ever borne to each respondent by the time of the interview.

(3) CONTRACEPTIVE USE

This variable refers to whether the respondent was using modern contraceptives or not. This variable also had information on the different types of contraceptives being used.

2.7   CONCEPTUAL HYPOTHESIS

The literature review indicates that:

(a) Changes in the socio-economic and socio-cultural environment (namely place of residence, education and workstatus) and variations in demographic characteristics (i.e. parity, age and contraceptive use) of a mother can affect durations in breastfeeding.

(b) Duration in breastfeeding patterns is most likely to affect duration in postpartum amenorrhea and birth intervals.

(c) Variation in postpartum amenorrhea is most likely to affect fertility levels.

2.8   OPERATIONAL HYPOTHESIS

The following operational hypothesis are examined in this study:

1. The longer the duration of breastfeeding the longer the duration of postpartum amenorrhea and hence lower fertility.
2. Breastfeeding is inversely related to contraceptive use.
3. The longer the duration of breastfeeding the longer the duration of birth intervals among women and hence lower fertility.
4. Women in urban areas tend to observe shorter periods of amenorrhea than women in rural areas.
5. The higher the age of the women the longer the duration of postpartum amenorrhea.
6. Education is inversely related to the duration of postpartum amenorrhea.
7. Women with higher parities tend to have longer durations of breastfeeding than those with small parity.
8. Women who are working tend to have shorter durations of postpartum amenorrhea than those who are not working.

CHAPTER THREE

3.0   SOURCE OF DATA

The data used in this study are drawn from the Uganda
Demographic and Health Survey which was conducted by the Ministry
of Health in 24 districts between September 1988 and February 1989.
The survey was conducted as part of the world wide Demographic and
Health Surveys (DHS) Programme in which surveys were being carried
out in countries in Africa, Asia, Latin america and near east. The
UDHS collected information on fertility, family planning, maternal
and child health.   Additional information was collected on
educational level, literacy, sources of household water and housing
condition.

The survey covered a total of 4,857 eligible women from a
total of 5,101 households. Of these women 4,730 were successfully
interviewed.

The UDHS used a stratified, weighted probability sample drawn
from 206 clusters. Due to security problems at the time of the
survey sample selection excluded 9 districts containing an
estimated population of 20 per cent. Primary sampling units in
rural areas were sub-parishes which in the absence of a more
reliable sampling frame were selected with a probability
proportional to the number of registered tax payers in the sub-
parish. Because Ugandans often pay taxes in rural areas or in
their place of work it was not possible to use tax payers rolls as
a sample frame in urban areas. Consequently, a complete use of all

administrative urban areas known as resistance councils was complied as a sampling frame. A sample of councils was selected with equal probability. The UDHS utilized three questionnaires to collect data: the household questionnaire, the individual woman questionnaire, and the service availability questionnaire.

However, this study focuses on data from the womens individual questionnaire which consisted of seven sections. The first section collected information on the respondents background. This included age, residence, educational level, household amenities, religion, tribe and social status. The second section collected information on the respondent's fertility and pregnancy background. This included the number of live births; those that had died, composition and current pregnancy status. The third section collected information on the respondents knowledge and use of family planning, method preference, attitude towards family planning, source of methods and proximity of these schemes. The fourth section collected information on the respondents breastfeeding habits and the general health care. The fifth section collected information on the respondents reproductive intentions and family size. The last section was on currently married women and the intention was to get information about the respondents characteristics.

Apart from UDHS from which the raw data was derived, the present study also sought data from other secondary sources in the library, family planning association of Uganda records, Ministry of Economic Planning Publications, population reports, magazines etc.

3.1   RELIABILITY AND QUALITY OF DATA

Given the short period within which the current study was required to be completed, it was not feasible to go out in the field and carry out empirical data collection. The UDHS data is highly reliable for this particular study: Emphasis was put on obtaining reliable and quality data. A number of steps were taken to achieve this goal. These included:-

- The selection of a sample that was adequately representative and administratively manageable.

- Accurate mapping of households and use of 3 thoroughly pretested questionnaires.

- The translation of the questionnaires into 3 vernacular language.

- The use of highly qualified personnel (UDHS Department pg5).

However, despite the high amount of work put into the UDHS certain shortcomings should be noted. Due to security problems 9 Districts: Kumi, Soroti, Lira, Apae, Gulu, Kotido, Moroto, and Kapchorwa were left out. The population in these districts comprise of 20 per cent of the country's population. This factor limits the UDHS representativeness of the whole country.

Sampling and Non-sampling errors were inevitable due to the nature of the survey to be taken. Mistakes made in carrying out field activities such as failure to locate and interview the correct household did occur. However, efforts were made during

design implementation of the UDHS to minimise these type of errors.

Sampling errors were measured in terms of standard errors of particular statistics (mean percentage) which were calculated by using the computer package clusters.

3.2   METHOD OF DATA ANALYSIS

This study will use Descriptive statistics and Bongaarts Analytical Empirical framework.

Cross Tabulation

Cross tabulations have been used to establish the duration of Breastfeeding and postpartum Amenorrhea'according to each category of selected variables namely: Age. Parity. Contraceptive use,Educational Level,Work status and place of residence.

Cross tabulation is an efficient and yet simple analytical tool for this type of exercise. The study specifically focuses on the duration of Breastfeeding during the last closed birth interval.

Bongaarts Analysis Model

The third method used to analyse the impact of Breastfeeding on fertility is a simple mathematical developed by Bongaarts.

The level fertility in a population according to Bongaarts is directly determined by a set of biological and behavioural factors called proximate determinants of fertility. In his model Bongaarts is concerned with Quantifying the relationship between these factors and fertility. According to Bongaarts variations in fertility are caused by variations in the following factors:

(a) proportion of reproductive period spent in marriage.

(b) contraception

(c) Induced Abortion

(d) Postpartum Infecundibility

Other factors include:

(e) Frequency of intercourse

(f) Sterility

(g) Spontaneous intrauterine mortality and

(h) Duration of viability of ova and sperm. This framework considerably simplifies the quantitative model since half of the variables can be excluded for most applications. The impact of the four most important variables: proportion married, contraception, induced abortion and postpartum infecundibility are measured by four indexes. The indexes can only take the values between 0 - 1. When there is no fertility inhibiting effect the index is one, when fertility is completely the index equals zero.

Hence

$$TFR = C_g \times C_c \times C_a \times C.$$

C_g Index of proportion married, I in the absence of celibacy and O in the absence of marriage.

C_c Index of contraception

C_a Index of induced abortion

C Index of postpartum infecundibility

The indexes can be estimated directly from measures of the intermediate forth variable with the following equations:

$$C_g = \frac{\Sigma m(a) \times C_g(a)}{\Sigma g(a)}$$

$m(a)$ age specific proportion of women currently married

$g(a)$ age specific maternal rate

$$C_c = 1 - 1 - 1^U \ 18 \times a \times e$$

U average proportion of married women currently using contraceptives

e average use effectiveness of contraception

$$C_a = \frac{TFR}{TFR + 0.4 \times (IXU) \times TA}$$

However for the purposes of this study an assumption of C_a = 1 has been taken because the UDHS did not collect data on abortions.

$$C. = \frac{20}{18.5 + 1}$$

C_i mean duration of postpartum infecundibility in months

With the independent estimates of the indexes derived.

estimates of inhibiting fertility factor of breastfeeding can be derived.

CHAPTER FOUR

This chapter presents the results yielded by the analysis of the UDHS data. As pointed out in Chapter 3, this study employs simple percentages cross tabulation and Bongaarts analystical framework as tools of data analysis.

This chapter is divided into 4 sections. Section A covers the examination of the duration of breastfeeding of women in the last closed birth interval in relation to selected socio-economic and demographic characteristics. Section B covers an analysis of duration of amenorrhea in the last closed birth interval and selected socio-economic and demographic characteristic of these women. Section C covers a descriptive analysis of the relationship between breastfeeding and postpartum amenorrhea. This section will also examine variations in amenorrhea and its effect on birth interval. Section D uses Bongaarts analytical and empirical model to quantify the effect of postpartum infecundibility on fertility in Uganda.

SECTION A

4.1 PREVALENCE AND DURATION OF BREASTFEEDING IN UGANDA

Information on breastfeeding in this study will depend on retrospective information from women included in the last closed birth interval. The total number of women in the last closed birth interval was 2921 out of which 1855 women responded to the

questions 'Did you ever breastfeed your next to last child? for
how long?.

Table 4.1 PERCENTAGE DISTRIBUTION OF WOMEN ACCORDING TO THEIR
LENGTH OF BREASTFEEDING IN THE LAST CLOSED BIRTH INTERVAL

Duration of Breastfeeding in Months							
1 - 3	4 - 6	7-12	13-18	24	25+	Never Hiss for	Int-l Chile Int
Number of cases							
21	45	439	518	247	33	47	165
Per-Cent Distribution							
1.3%	2.8%	27.7%	4.1%	15.3%	2.0%	3.0%	10.4%

From table 4.1 it can be concluded that Ugandan women
breastfeed for long durations. More than half of the women
breastfed for over one year with only 1.3 per cent i.e. 21 women
breastfeeding for 3 months or less. 31.8 per cent of women
breastfed in the last closed birth so for less than one year and
17.3 per cent breastfed for over 2 years. Only 3 per cent of the
women in the last closed birth interval did not breastfed and 10.4
per cent were interrupted by the death of the infant. After a
duration of two years the length of breastfeeding decreases rapidly
to 2 per cent. This indicates that most of the Ugandan women
breastfeed for over 1 year but less than two years.

As shown in Table 4.1 only 3 per cent i.e. 49 women in the
last closed birth interval did not breastfeed. The reasons for not
breastfeeding included insufficient milk and the refusal by the

infant to breastfeed as shown in Table 4.2.

Table 4.2 DISTRIBUTION OF WOMEN BY REASONS FOR NOT BREASTFEEDING

	Total No. of Women	Percentage
Insufficient Milk	5	10.2
Baby Refused	3	6.12
Child Died	41	83.67
Total	49	99.99

Table 4.2 indicates that over 80 per cent of the women who did not breastfeed did so because the child died while 10.2 per cent complained of insufficient milk and 6.2 per cent because the child refused. This indicates that for those who do not breastfeed they do so due to reasons beyond their control.

It is evident from the foregoing results that breastfeeding is a universal phenomena in Uganda. More than half of the women breastfeed for over one year. The mean duration being 19 months. This shows that the prevalence of breastfeeding in Uganda is high. Inquiry into why women stopped breastfeeding their second to last child revealed that 47.2 per cent stop at the weaning age that is between 1½ years to 2 years of age.

BREASTFEEDING DIFFERENTIAL BY AGE

Table 4.5   Percentage Distribution of Women and Their Length
                 of Breastfeeding in the Last Closed Birth Interval
                 According to their Age Groups

Age Group	No. of Cases	Duration of Breastfeeding in Months					
		0-3	4-6	7-12	13-18	19-24	25+
15-19	95	1.1	5.3	40.3	28.4	10.5	14.7
20-24	450	1.7	4.4	28.9	37.1	9.8	18.2
25-29	521	1.4	2.5	27.4	36.3	15.9	16.5
30-34	294	1.3	1.0	23.1	39.1	18.0	17.3
35-39	197	2.0	2.0	20.8	40.1	22.3	12.7
40-44	80	1.3	0	21.3	43.8	13.8	20.0
45-49	18	5.6	0	21	33.3	11.1	33.3
Total	1655						

According to the percentage distribution presented in Table
4.5 the duration of breastfeeding is relatively short among 15 - 19
age group. However, this duration rises steadily from 20 - 24 age
group reaching a peak at 44 - 45 age group.

Table 4.5 indicates that 6.4 per cent of the women in the 15 -
19 age group breastfed for less than 7 months. The percentage
drops further for the 40 - 44 age group to only 1.3 per cent. This
indicates that there are more women among the younger age groups
breastfeeding for shorter periods compared to older age groups.

Almost 50 per cent of the 15 - 19 age group breastfed for less
than one year and 34.8 per cent among the 20 - 24 age group. This
percentage drops to 24.8 among the 35 - 39 age group and 22.6 among
the 40 - 44. This shows that a majority of women in the older age
groups breastfed for over one year while those in the younger age
group did so for a year or less. An examination of women who
breastfed for over two years included 14.7 per cent among the 15 -
19 age group, 18.2 per cent among the 25 - 29 age group and 20 per

cent among the 40 - 44 age group.

Younger women breastfed for shorter durations probably because they are more fertile than their older counter parts and may just be starting their families. This implies that increase in age is positively associated with longer durations of breastfeeding.

Younger women may be using other types of contraceptives and may therefore not need to use breastfeeding as a birth spacing method. From age 40 - 49 breastfeeding durations are long with most women in this age group breastfeeding for over 18 months. Many of them believe they are sub-fecund or sterile (Bongaarts. 1978). Therefore, seems to be an important determinant of long durations of breastfeeding.

It is important to note that age interplays with other factors such as place of residence, education etc. to influence the duration of breastfeeding. Other studies have found a similar pattern. Bongaarts (1972) using the World Fertility Survey data found that increase in mothers age lengthens durations of breastfeeding. For example in Bangladesh it was found that 3 years increase in mothers age added about two months to the duration of breastfeeding.

BREASTFEEDING DIFFERENTIALS BY PARITY

Table 4.6 Percentage Distribution of Women by Parity and Duration
of Breastfeeding of their Second Last Child

Parity	No of Cases	Duration of Breastfeeding in Month						Mean Duration
		1-3	4-6	7-12	13-18	19-24	25+	
2-3	605	1.0	3.5	34.5	43.6	52.2	2.1	14.7
4-6	499	1.2	3.4	36.5	44.1	20.8	2.2	14.3
7-9	209	1.0	1.9	28.8	47.4	19.1	3.8	15.3
10-12	42	7.1	0.9	21.4	52.4	16.7	2.7	14.8

Out of 1655 women in the second last closed birth interval
1355 had 2 or more children. Out of this number 605 women had
2 - 3 children and 499 women had 4 - 6 children and 209 women had
7 - 9 children and only 42 had 10 - 12 children. This indicates
that majority of the women in the last closed birth interval had
4 - 6 children.

The distribution of women by breastfeeding and parity is
inconsistent with findings from other studies. Most women
regardless of their parity breastfed between 7 - 18 months.
However, the average duration of breastfeeding tends to increase
with parity. Although the difference is not very much women with
2 - 3 had an average duration of 14.8 months. Those with 7 - 9
children had a breastfeeding duration of 15.3 months. However
women with 10 - 12 children breastfed for 14.6 months. These
results could be due to the small sample size included in that
group.

Chen et al (1974) has documented in his studies that breastfeeding if used deliberately to limit family size then its duration should be affected by the number of children ever born. However, this is not always the case because most women in developing countries like Uganda breastfeeding has always been undertaken for the health of mother and a child.

BREASTFEEDING DIFFERENTIALS BY CONTRACEPTIVE USE

Table 4.7 Percentage Distribution of Women and Their Duration of Breastfeeding in the Last Closed Birth Interval According to use of any Contraceptive Method

Ever Use of any Method	No of Cases	Duration of Breastfeeding in Months						
		0	1-3	4-6	7-12	13-18	19-24	25
Never Used	1200	.3	.8	1.9	25.2	38.2	15.4	18.3
Used Trad.	291	.3	1.4	2.1	27.8	39.2	16.2	13.1
Used Modern	164	.6	4.9	9.8	34.1	28.0	9.1	13.4

Table 4.7 indicates that out of a total 1655 women breastfeeding in the last closed birth interval 1200 women i.e 72.5 per cent were not using any method. 291, 17.6 per cent of this total were using traditional methods and only 165 women that is 9.9 per cent were using modern methods of contraception. This implies that contraceptive use and breastfeeding might be related.

A comparison of the percentage of women in the early months of breastfeeding shows that there are more women observing shorter durations of breastfeeding among those using modern methods (15.5 per cent women compared to 1.1 per cent among those using no method).

This indicates that Ugandan women who breastfeed are less likely to be active contraceptors than non-breastfeeders particularly in the early months of postpartum.

Similar studies Zuryak (1981) have revealed that many couples in the developing world adopt breastfeeding and abstinence as a means of fertility regulation and for child health. This makes them non-user of modern family planning methods.

DIFFERENTIALS OF BREASTFEEDING BY PLACE OF RESIDENCE

Table 4.8 <u>Percentage Distribution of Women and Their Duration of Breastfeeding in the Last Closed Birth Interval According to their Place of Residence</u>

Place of Residence	No. of Cases	Duration of Breastfeeding in Months						Never Breast-
		0-3	4-6	7-12	13-18	19-24	25+	
Urban	274	3.3	5.8	32.8	33.8	8.4	16.1	4.8
Rural	1362	1.2	2.1	25.3	38.1	16.2	17.1	2.8

Table 4.8 indicates that 83.4 per cent of women in the last closed birth interval are women in rural areas while 16.6 per cent are resident in the urban areas. Although the number of women in the rural areas is higher than the that in the urban areas, using proportion analysis it can be observed that rural women observe longer durations of breastfeeding than urban women. This is probably due to the fact that changes in modernization first occur in the urban areas than in rural areas.

From Table 4.8 it can be observed that women in urban areas who breastfed for less than 6 months were more than those in rural areas (i.e. 9.1 per cent as compared to 3.3 per cent respectively

Those breastfeeding for 12 months or a less were 41.9 per cent in urban areas and 28.6 per cent in rural areas. After one year the percentage of rural women who breastfed was much more than their urban counter parts i.e. 71.4 per cent and 59.1 per cent respectively. Furthermore those who breastfed for over two years were 17.1 i.e. 236 women in the rural areas as compared to 16.' i.e. 44 in the urban areas. Another important indicator of breastfeeding differentials according to place of residence is looking at the proportions of these women who did not breastfeed at all. 4.8 per cent of the urban women did not as compared to 2.6 per cent of the women in the rural areas. This shows that the percentage of those who did not breastfeed is higher among the urban women than the rural women. These results indicate that women in rural areas breastfeed for longer durations than their counter parts in the urban areas. This is most probably due to the fact that women in urban areas are more likely to be educated. employed and having lifestyles that are incompatible with prolonged breastfeeding period. Other studies done by Jelliefe and Jellife (1978). Rapheal (1979) have revealed the same findings that urbanisation is associated with lower prevalence of breastfeeding.

BREASTFEEDING DIFFERENTIALS BY LEVEL OF EDUCATION

Table 4.9 Percentage Distribution of Women and their Durations of Breastfeeding in the Last Closed Birth Interval by Level of Education

Place of Education	No. of Cases	Duration of Breastfeeding in Months					
		0-3	4-6	7-12	13-18	19-24	25+
No Education	647	.6	1.7	23.6	37.1	17.3	19.6
Primary Education	843	1.9	2.3	27.2	39.3	14.1	15.3
Secondary Education	159	3.8	8.8	34.6	28.3	10.1	14.5

Among the women interviewed who breastfed their second to last child 39.1 per cent had no education 60.9 per cent had primary level education 10.0 per cent had secondary plus education.

Table 4.9 shows that the duration of breastfeeding decreases with level of education 0.6 per cent of women with no education breastfeed for 3 months or less, compared 3.8 per cent with secondary plus education. Those with primary level education are midway between i.e. 1.3 per cent. 47.7 per cent that i.e. half of the women with plus secondary education breastfed for one year or less while 31.7 per cent of those with primary level breastfed for the same duration. Breastfed for the same duration 25.9 per cent of those with no education. If these statistics are compared to woman who breastfed for more than one year the reverse is indicated. Women with secondary plus education who breastfeed for more than one year are 52.3 per cent and 68.6 per cent for the primary level

and 74.1 per cent for those without education. These findings indicate that there are more women breastfeeding for shorter durations among the secondary level plus education than primary and no education levels. Secondly, there are less women among the secondary level education breastfeeding for larger durations than the other two groups. A comparison of women who breastfed their second to last child for more than two years further reiterates the fact that increasing education levels seems to be inversely related to long durations of breastfeeding. This is because 14.5 per cent of the women with secondary plus education breastfed for more than two years as compared to 15.3 per cent for the primaryly level and 19.8 per cent for those with no education.

A look at the per cent of those who did not breastfeed by education level indicates that there is a larger percentage among those with secondary plus education. There were only 2.8 per cent among those with no education as compared to 5.2 per cent for those with secondary plus education. Similar findings have been found in Kenya using Kenya Demographic and Health Survey (KDHS 1989). It was found that women with secondary education breastfed for only 6.7 months as compared to 12 months amongst those with no education.

DIFFERENTIALS OF BREASTFEEDING BY WORK STATUS

Table 4.10   Percentage Distribution of Women and Their Duration of Breastfeeding in the Last Closed Birth Interval According by Work Status

Respondent Work Status	No. of Cases	Duration of Breastfeeding in Months					
		0-3	4-6	7-12	13-18	19-24	25+
Not Working	1495	1.3	2.6	26.0	37.6	15.4	17.1
Working	160	3.8	3.8	31.9	35.0	10.6	15.0

Out of a total of 1655 women, 1495 women that is 90.3 per cent were not employed. Majority of these women were house wives working on their shambas. 160 women, that is 9.7 per cent were employed in salaried positions. This large difference might indicate that most women who breastfed were not working. A large proportion of women in both the two groups breastfed for durations between 7 - 18 months.

However, after one year women who were not working tended to breastfeed for longer durations. For example women who were not working were 37.6 per cent i.e. 56.2 women breastfeeding for between 13 - 18 months while those who were working were 35 per cent. 17.1 per cent i.e. 250 women who were not working had a breastfeeding duration of over 2 years. Those in employment were only 15 per cent these result confer with findings in the literature which indicate that employment of a mother does not favour long durations of breastfeeding (Jain Bongaarts, 1978). Employment in most cases necessitates the separation of the infant from the mother for long durations which culminates into shorter

breastfeeding periods and introduction of breast milk supplements.

It can be concluded that the association between female employment and breastfeeding is multi dimensional. The type of work place and relationship with employer are all aspects to consider. However the UDHS did not collect data on specific characteristics on the type of work a respondent had.

SECTION B

This section deals with an analysis of differentials of postpartum amenorrhea in Uganda by selected socio-economic variables namely education levels, place of residence and workstatus. It also looks at selected demographic variables namely age, parity and contraceptive use.

In this study postpartum amenorrhea refers to the period between birth and the return of menstruation.

Table 4.11   Per Cent Distribution of Women Reporting Return of Menses at the Given Intervals in the Last Closed Birth Interval

Women Return of Menses	Still Amenorrhea	% of women at the Time of Return of Their Menses (in Months)					
		1-3	4-6	7-12	13-18	19-24	24+
100%	2.4%	32%	18.4%	29.4%	13.3%	5.2%	0.8%
Total women 1971	37	902	297	442	218	91	12

Table 4.11 illustrates the percentage distribution of women according to the length of amenorrhea at given intervals in the last closed birth intervals.   32 per cent of the women had durations of amenorrhea of 3 months or less.   This percentage declines as the months increase.

About 77.8 per cent of the women in the last closed birth interval had amenorrheric durations of 12 months or less. Most of the women were amenorrheric for durations ranging from 12 - 18

months. However, after 1½ years, the proportion of women still amenorrheic declines to 0.8 per cent by years 2.

As mentioned in Section A the return of menstruation is delayed for those women who breastfeed for long durations. This period is characterised by the inability of the women to conceive. If a comparison between pregnancy rates during amenorrhea with pregnancy rates for other forms of contraception is done, the results could confirm the value of breastfeeding as an inhibiter of fertility. Unfortunately the Uganda Demographic Health Survey data has no information regarding the failure rates of the various methods of contraception. However Sengal and Singh (1966) found in a study of 482 Indian women that the pregnancy rate was 8.9 per 100 years exposure during lactational amenorrhea in contrast to 42.7 per 100 years for lactating menstruating women. Similarly Chen et al (1974) estimated that a pregnancy rate of less than 5 per cent women years of exposure among 107 Bangladesh women during lactational amenorrhea. These pregnancy rates indicate that the natural protection offered by lactational amenorrhea is about as use effective as that offered by other contraceptives e.g. oral contraceptive with 4 to 10 per cent failure rates, (for example condom 13.8 per cent failure rate). Lactational amenorrhea is more effective than the coitus interrupts, rhythm or Doucho (Sengh, 1966).

It can be said that Uganda is a society with universal lactation period that is prolonged. The average duration of lactational amenorrhea is about 12.3 months and average birth

interval is 3 years and 6 months. Lactation prevents as many as 20

per cent of births that would occur in the absence of lactation.

DIFFERENTIALS OF AMENORRHEA BY AGE

Table 4.12   Percentage Distribution of Women and that Length of
                  Amenorrhea in the Last Closed Birth Interval by Age
                  Group

Age Group	No. of Cases	Duration of Amenorrhea in Months					
		0-3	4-6	7-12	13-18	19-24	25
15-19	35	39%	26.3%	21.2%	7.4%	2.1%	4.2%
20-24	450	40.5%	16.9%	27.1%	7.9%	3.4%	4.0%
25-29	521	32.4%	16.7%	25.5%	12.3%	5.2%	7.1%
30-34	294	28.6%	12.2%	31.6%	15.2%	6.1%	2.4%
35-39	193	21.3%	12.2%	32.5%	18.5%	8.6%	3.5%
40-44	80	23.9%	8.6%	31.3%	17.5%	6.3%	12.5%
45-49	18	22.3%	11.1%	27.8%	27.5%	2%	11.1%
Total	1695	32.1%	15.5%	27.3%	12.2%	4.4%	4.4%

Table 4.12 indicates that duration of amenorrhea is longer

among the older age groups than the younger age groups. 39 per

cent of women between the ages of 15 - 19 were amenorrheic for 3

months or less while only 23.9 per cent of 40 - 44 were acquiring

similar periods of amenorrhea. 65.3 per cent of the 15 - 19 age

group were amenorrheic of 6 months or less. This percentage

decreases among older age groups for the same duration. 38.8 per

cent of the 30 - 34 age group were amenorrheic for 6 months or less and 32.8 per cent of the 40 - 44 age group were amenorrheic for the same duration. Those with amenorrhea above 1 year range from 7.4 per cent in the 15 - 19 age group to 27.9 per cent in the 45 - 49 age group. This shows that maternal age exerts an influence on the duration of lactational amenorrhea.

The results show that younger women have shorter durations of amenorrhea. Younger women are therefore more at risk of conception a their older counterparts (Perez et al, 1971). However, it should be noted that older women especially those between 45 - 49 might be confusing menopause, that is terminal amenorrhea with postpartum amenorrhea.

DIFFERENTIALS OF AMENORRHEA BY PARITY

Table 4.13   Percentage Distribution of Women and Their Length of Amenorrhea in the Last Closed Birth Interval by Parity

Parity	No. of Cases	Duration of Amenorrhea in Months						Mean Duration of Amenorrhea in Months
		1-3	4-6	7-12	13-18	19-24	25+	
2-3	445	35.5%	20.6%	27.5%	10.0%	5.5%	.4%	..
4-6	528	29.4%	14.5%	33.3%	16.5%	5.9%	.9%	5.4
7-9	208	21.5%	12.4%	34.4%	23.4%	5.8%	1.5%	3.5
10-12	42	35.7%	7.1%	33.3%	21.4%	2.3%	6%	5.4

Table 4.13 indicates that women with smaller parities tend to have shorter durations of amenorrhea than those with higher parities.   This indicates that parity and breastfeeding are

slightly not consistent. The proportion of women with parity 2 - 3 who are no longer amenorrheic fluctuates from 35.5 per cent at duration of 1 - 3 months to 20.6 per cent at a duration 4 - 6 months and 27.5 per cent at 7 - 12 amenorrheic duration. Therefore women with 2 - 3 children return earlier to menstruation than those with 4 - 12 live births.

These results confirm the fact that women with higher parity tend to be less fecund compared to those of lower parity (Rabel, 1984). This may be probably because women with lower parity are likely to be young, educated and employed. These characteristics have been found to have some influence on duration of postpartum amenorrhea.

DIFFERENTIAL OF AMENORRHEA BY CONTRACEPTIVE USE

Table 4.14   **Percentage Distribution of Women and Their Length of Amenorrhea in the Last Closed Birth Interval by to their use of any Contraceptive Method**

Ever Use of Any Method	No. of Cases	Duration of Amenorrhea in Months					
		0-3	4-6	7-12	13-18	19-24	25+
Never	1200	29.9	14.3	28.9	14.5	5.6	6.8
Used Tradition	291	32.7	17.2	30.2	11.3	4.1	4.5
Used Modern	164	46.9	21.3	16.5	6.7	1.2	.7

Table 4.14 indicates that women who did not use any method of contraception observed longer durations of amenorrhea than those who used other methods of contraception. More than 50 per cent of

them had amenorrheric periods of more than 7 months while only about 25 per cent of those who used modern contraceptives had durations above 7 months.

A look at the percentage of those with amenorrheric periods of over 2 years shows that those who never used any contraceptive method had larger percentages, namely 6.8 per cent, than those who were using traditional methods (4.8 per cent). This declines to 7 per cent among those who used modern methods of contraception. These results are similar to findings documented by Jain and Bongaarts (1978) in India and Bangladesh. Most women in traditional societies tend to use lactation amenorrhea as a method of birth spacing hence might not see the need to use any form of any contraception.

DIFFERENTIAL IN AMENORRHEA BY LEVELS OF EDUCATION

Table 4.16   Percentage Distribution of Women and their Length of Amenorrhea in the Last Closed Birth Interval by Level of Education

Educational Level	No. of Cases	Duration of Amenorrhea in Months					
		0-3	4-6	7-12	13-18	18-24	25+
No. Education	847	27.2	13.6	30.6	15.8	5.4	7.4
Primary Education	843	34.3	15.7	27.2	12.6	4.6	5.7
Secondary Education	159	39	22.6	21.4	6.3	4.4	6.3

The relationship between educational levels of women in the last closed birth interval and duration of amenorrhea show that with increasing levels of education the duration of amenorrhea

decreases.

Table 4.15 shows that 27.2 per cent of women with no education had a period of amenorrhea of 3 months or less. Those with primary level were 34.3 per cent and those with secondary education were 39 per cent. This shows that secondary level women have shorter durations than those with less education. Women with a duration of amenorrhea of between 7 months and 12 months shows that those with no education were 30.6 per cent and those with primary level education were 27.2 per cent and those with secondary education were only 21.4 per cent. The duration of amenorrhea of more than one year was higher among those with no education who were 29.6 per cent compared to 22.9 per cent with primary level and 17 per cent among those with secondary education. This shows that secondary level women have shorter duration of amenorrhea than those with primary and no education. They are therefore more at risk of becoming pregnant if they do no use contraceptives. Shorter durations of amenorrhea might be due to the fact that secondary level women observe shorter durations of breastfeeding than their counter parts with primary or no education.

DIFFERENTIALS AND AMENORRHEA BY PLACE OF RESIDENCE

Table 4.16   Percentage Distribution of Women and Their Length
of Amenorrhea in the Last Closed Birth Interval by
Place of Residence

Place of Residence	No. of Cases	Duration of Amenorrhea in Months						
		0	1-3	4-6	7-12	13-18	19-24	25+
Urban	274	1.8	39.8	20.1	18.6	8.0	4.4	7.3
Rural	1381	1.6	28.6	14.6	29.8	14.2	5.0	6.2

Duration of amenorrhea according to residence reveals that a reasonable per cent of women in urban areas experience shorter durations of amenorrhea as compared to their rural counter parts. In urban areas 70 per cent of the women had amenorrhea of 6 months or less while those in rural areas were 44.8 per cent. 25.4 per cent in rural areas breastfed for more than a year. In the urban areas only 19.7 per cent went beyond a year. A shorter duration among the these residents can be related to shorter duration of breastfeeding in urban areas.

DIFFERENTIALS OF AMENORRHEA BY WORKSTATUS

Table 4.17   Percentage Distribution of Women in the Last Closed Birth Interval and their Duration of Amenorrhea by Currently Working Statuc

Current Working	No. of Cases	Duration of Amenorrhea in Months					
		0-3	4-6	7-12	13-18	19-24	25+
Not Working	1495	31.1	15.3	28.6	13.5	4.8	6.6
Working	160	40.6	17.5	21.3	10.0	5.6	5.0

Table 4.17 indicates that most of the women were not working (i.e. 1495 out 1655).

Despite this difference using proportion analysis it can be observed that women who were not working had longer durations of amenorrhea than those who were working. More than 50 per cent of the women who were not employed had amenorrhea of over one year while those employed were 40 per cent.

Women who worked had shorter durations than those who were not working. The shorter durations of women working might be due to shorter breastfeeding periods among these group.

SECTION C

4.1   THE RELATIONSHIP BETWEEN BREASTFEEDING AND AMENORRHEA
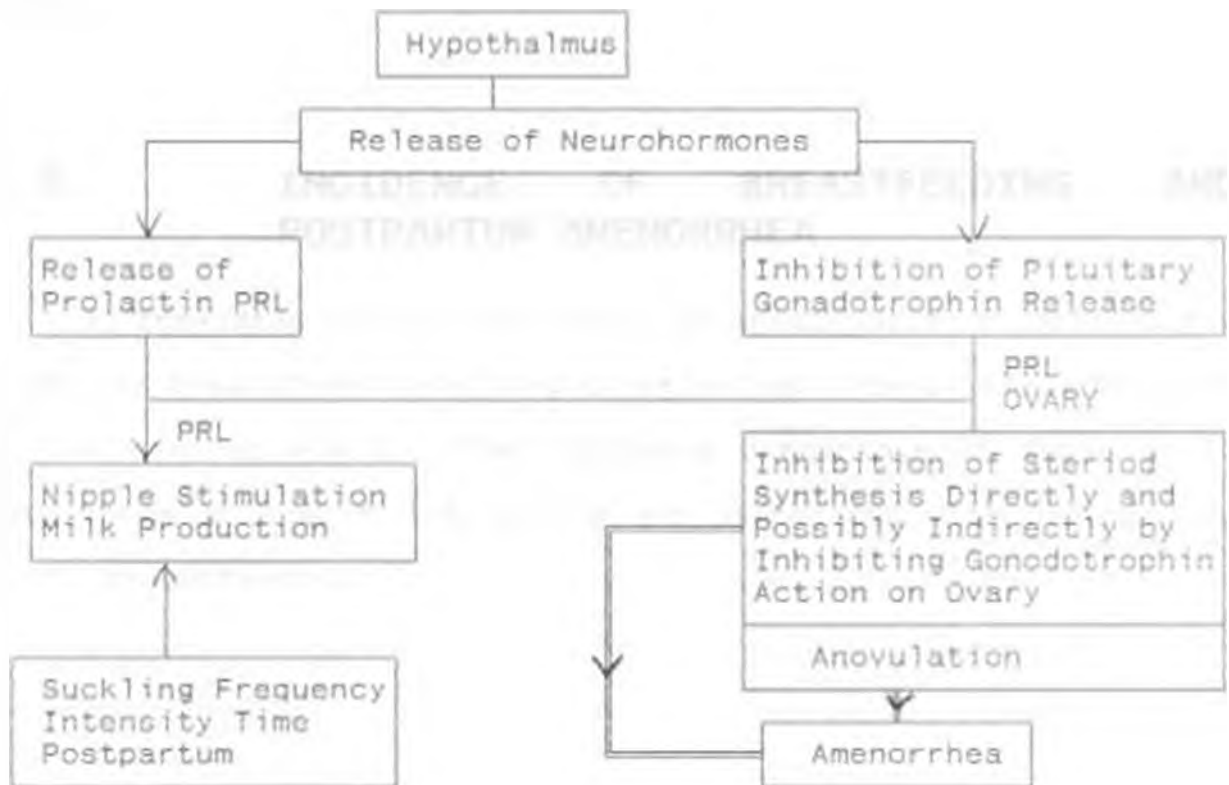
With low contraceptive use, Uganda fertility is almost a society with a natural fertility regime. A major factor affecting natural fertility is postpartum infecundity. This is dependant upon the period of amenorrhea following child birth to the onset of ovulation or the period of postpartum abstinence following a birth. The principal factors affecting the duration of amenorrhea include the incidence of breastfeeding, its duration and the type of suckling patterns intensity of breastfeeding. (J. Bongaarts. 1978).

Easterlin (1982) has hypothesised that during the initial stages of the demographic transition slight increases in fertility may result from breastfeeding declines in the absence of increased usage of modern family planning methods. Evidence for increases in fertility associated with declines in the incidence and low duration of breastfeeding is illustrated by studies conducted in Zaire, Canada, Alaska, Kenya, Malaysia and Algeria (Ramaniuk 1980, Ramaniuk 1981, Blackwood 1981, Leethaeghe 1982, Butz et al 1981, Vallin 1978). It is therefore very important to understand the mechanism between lactation and amenorrhea in this study.

The initiation and maintenance of lactation depends upon the secretion of the hormone from the posteriad pirvitary gland. At the time of delivery prolaction concentrations are high but in the absence of breastfeeding serum prolaction declines rapidly to pre-

pregnant levels which approximately are weak. However, if
breastfeeding is initiated, prolaction is maintained at
high level for larger periods of time. The mechanism underlying
this are summarized below:

RELATIONSHIP BETWEEN BREASTFEEDING AND POSTPARTUM AMENORRHEA


```
                    ┌─────────────────┐
                    │  Hypothalmus    │
                    └─────────────────┘
              ┌───────────────────────────────┐
              │  Release of Neurohormones     │
              └───────────────────────────────┘

┌──────────────────┐              ┌──────────────────────────┐
│ Release of       │              │ Inhibition of Pituitary  │
│ Prolactin PRL    │              │ Gonadotrophin Release    │
└──────────────────┘              └──────────────────────────┘
                                           PRL
                                           OVARY
        PRL
                                  ┌──────────────────────────┐
┌──────────────────┐              │ Inhibition of Steriod    │
│ Nipple Stimulation│             │ Synthesis Directly and   │
│ Milk Production  │              │ Possibly Indirectly by   │
└──────────────────┘              │ Inhibiting Gonodotrophin │
                                  │ Action on Ovary          │
                                  ├──────────────────────────┤
                                  │ Anovulation              │
┌──────────────────┐             └──────────────────────────┘
│ Suckling Frequency│            ┌──────────────┐
│ Intensity Time    │            │ Amenorrhea   │
│ Postpartum        │            └──────────────┘
└──────────────────┘
```

────────→ Stimulating Effects
─────────┤ Inhibiting Effects
════════⟹ Effects on Ovulation and Menstruation

The precise relationship between the raised prolation levels
and postpartum amenorrhea is still disputed. However, it is known
that high levels of prolactin are associated with inhibition of

gonadotrophin release from the pituitary (Tyson et al. 1976). In addition elevated serum prolactin concentrations appear to inhibit ovarian steroid synthesis or to reduce the sensitivity of the ovary to pituitary gonadotrophin stimulation (Bannar et al 1975, Rollard et al 1975). This inhibitory effect of prolactin disrupts the carefully balanced release of pituitary and ovarian hormones required for ovulation and for resumption of normal menstrual cycles.

4.3   INCIDENCE OF BREASTFEEDING AND POSTPARTUM AMENORRHEA

As indicated earlier the return of menstruation is delayed for women who breastfeed for a long duration and intensively. This can be seen in Table 4.3. The cumulated percentage of those still amenorrhea at specific durations are associated with proportions still breastfeeding.

Table 4.3 PERCENTAGE DISTRIBUTION OF WOMEN STILL AMENORRHIC AT SPECIFIC DURATIONS AND THE PROPORTIONS STILL BREASTFEEDING IN UGANDA

Duration in Months	1-3	4-6	7-9	10-12	13-24	25
Still Breastfeeding	100%	98.5%	95%	74%	22%	2%
Still Amenorrhea	100%	67%	55%	20.2%	4.1%	.1%

Table 4.3 illustrates that all women are breastfeeders and amenorrheic during the first few months i.e. 1-3 months after delivery. It is important to remember that this is a period when women cannot conceive and has been used as index of infecundibi... this study. The table indicates that the period of amenorrhea declines at a faster rate than breastfeeding. Between 4 - 6 months 98.5 per cent are still breastfeeding while 67 per cent only are still amenorrheic. After one year 64 per cent of the women are still breastfeeding while those still amenorrheic constitute only 20.2 per cent. This probably is due to the fact that after one year most infants are introduced to other foods and this can affect the intensity and amount of suckling time. This factor has been found to affect the duration of amenorrhea.

%DISTRIBUTION OF WOMEN STILL AMENORRHEIC
AT SPECIFIC DURATIONS OF BREASTFEEDING

Women not protected by breast feeding
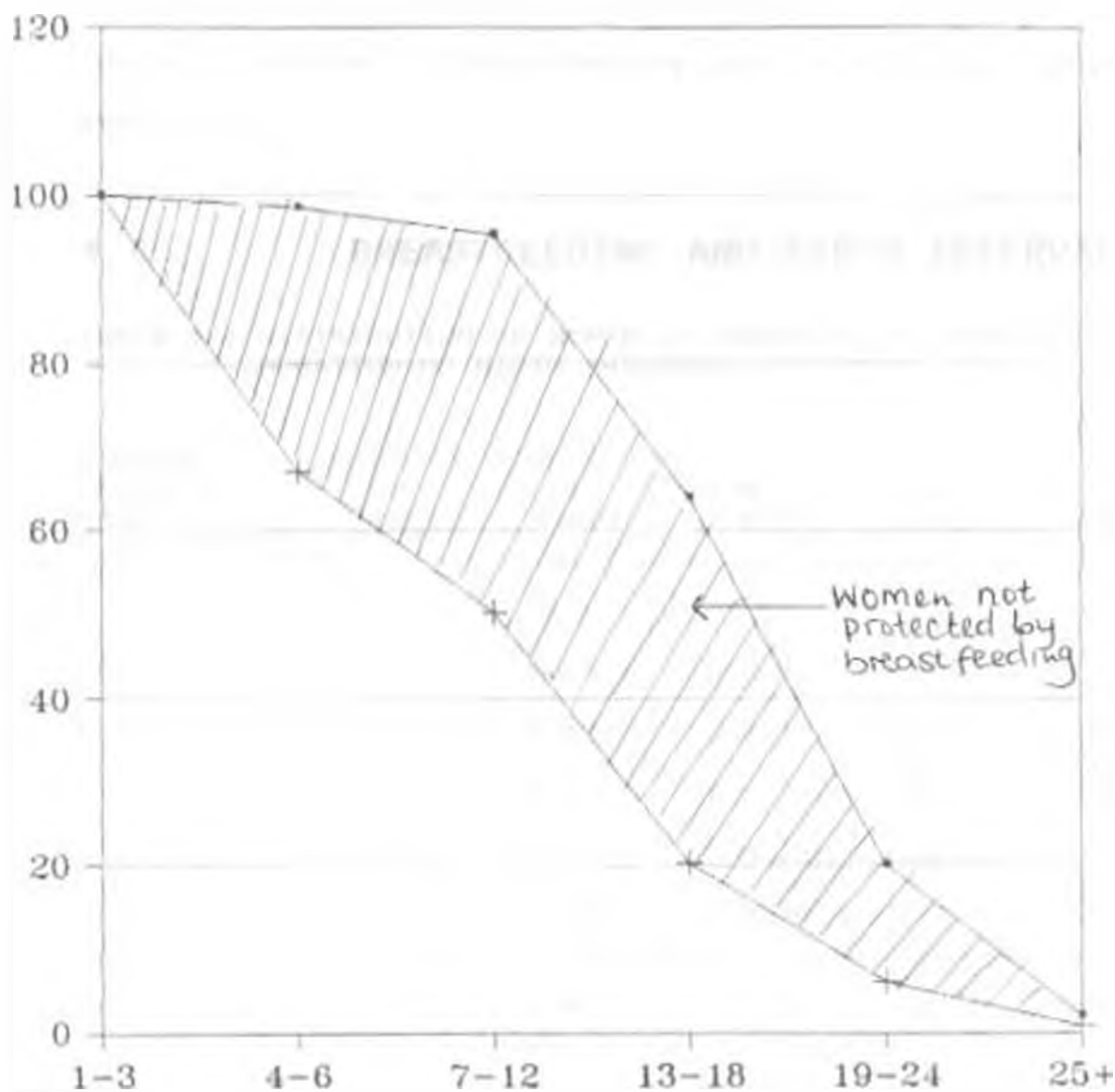
STILL BREASTFEEDING   STILL AMENORRHEIC

In the first 12 months the gap between the lines widens. As the two year mark is approached the gap closes. This indicates that with the increase in breastfeeding the protection offered by breastfeeding through amenorrhea is reduced and this gradually comes to zero protection. This analysis also shows that those with longer durations of breastfeeding also have longer durations of amenorrhea.

4.4 BREASTFEEDING AND BIRTH INTERVAL

Table 4.4 DISTRIBUTION OF WOMEN BY DURATION OF BREASTFEEDING AND DURATION OF BIRTH INTERVAL

Duration of Breastfeeding in Months	Length of Birth Intervals in Years				
	1 year 12 months	2 years 24 months	3 years 36 months	4 years 48 months	5 years 60 months
0	25% (1)	75% (3)	-	-	-
1 - 3	5.3% (1)	65.4% (13)	21.1% (4)	5.3% (1)	-
4 - 6	9.1% (4)	63.6% (28)	20.5% (9)	4.5% (2)	2.3% (1)
7 - 12	3.6% (13)	60.2% (219)	38.1% (108)	7.6% (33)	1.1% (5)
13 - 18	.8% (5)	32.5% (250)	55.0% (339)	11.1% (99)	.7% (4)
19 - 24	-	5.7% (21)	51.8% (140)	25.7% (62)	5.7% (3)
25+	12.9% (31)	45.1% (111)	26.5% (64)	14.3% (35)	1.6% (5)
1665	46	599	730	261	34
Total Cases	3.4%	37.1%	45.5%	12.5%	1.5%

An analysis of birth intervals using table 4.4 indicates that women with larger durations of breastfeeding have longer birth intervals. Out of 1605 women in the last closed birth intervals 730 had birth intervals of 2 years, 201 women had 4 years 55 women had 1 year and 24 women had birth intervals of over 5 years.

The effect of breastfeeding on fertility is measured by using the last closed birth interval as the proxy for fertility. The last closed birth interval is defined as the period in months between the last but one live birth and last live birth preceding the interview, (Andrudh K. 1981).

A majority of women had a birth interval of 3 years as shown in Table 4.2. Women with short birth intervals were mostly those with shorter periods of breastfeeding. 25 per cent were those who breastfed for less than 1 month, 5.3 per cent were those who breastfeed for 1 - 3 months. 9.1 per cent were those who breastfed for 4 - 6 months, 3.0 per cent were those who breastfed for 7 - 12 months and only 8 per cent were those who breastfed for 13 - 18 months.

An observation of birth interval of 4 years reveals that the percentage increases with longer durations of breastfeeding. 5.3 per cent among 4 - 6 months breastfeeding 7.6 per cent among the 7 - 12 months 11.1 per cent among those breastfeeding for 13 - 18 months and 25.7 per cent among those 19 - 24 months.

The above results indicate that long breastfeeding intervals are compatible with long birth intervals.

Table 4.5 PERCENTAGE DISTRIBUTION OF WOMEN AND THEIR LENGTH OF AMENORRHEA IN THE LAST CLOSED BIRTH INTERVAL BY BIRTH INTERVAL

Duration of Amennorhea in Months	Length of Birth Intervals in Years/Months				
	1 year 12 months	2 years 24 months	3 years 36 months	4 years 48 months	5 years 60 months
0	10%	25%	35%	10%	20%
1 - 3	3.3%	44.7%	34.8%	12.1%	5.2%
4 - 6	4.1%	40.4%	29.5%	13.5%	12.4%
7 - 12	3.2%	36.6%	37.7%	14.7%	7.9%
13 - 18	1.4%	26.4%	51.4%	13.9%	6.9%
25+	4.3%	18.5%	44.6%	19.6%	13%
Number of Women	45 3.4%	470 35.9%	500 38.1%	189 14.4%	107 8.2%

Table 4.5 indicates that women with long birth intervals have longer durations of amennorhea.

A woman with short birth intervals were mostly those with shorter periods of amenorrhea. 44.7% women with amenorrheic period of 3 months or less had birth intervals of 2 years or less compared to only 18.5% of women with amenorrhea over 25 months. This shows that women with shorter durations of amenorrhea have shorter birth intervals.

Women with long birth intervals e.g. 4 years 19.6% were from those with amenorrhea of 25+ months compared to 12% with duration of amenorrhea of 1- 3 months.

This section indicates that there is a strong positive

relationship between breastfeeding and amenorrhea. Long breastfeeding durations are associated with long durations of amenoorhea. Secondly breastfeeding also has a positive effect on birth intervals. The longer the duration of breastfeeding the longer the duration of breastfeeding. It was documented that Ugandan women have birth intervals of over 3 years an average because most of them breastfeed for 19 months. Thirdly longer period of amenorrhea seem to be compatible with longer durations of amenorrhea. It was found out that women who attain birth intervals of over 4 years a large percentage are those with amenorrhea of over 1 year.

SECTION D

FERTILITY INHIBITING EFFECTS OF BREASTFEEDING AND APPLICATION OF BONGAARTS MODEL

The prime purpose of this section is to estimate the fertility inhibiting effects of postpartum non-susceptibility by using Bongaarts Model.

The required data for the application of Bongaarts model are available from UDHS 1989 with exception of e, the contraceptive effectiveness values. By using the specific use effectiveness values of the Philipines assumed to prevail in developing countries Bongaarts (1983, 1984) model can be applied.

In addition the analysis assumes that a the index of induced abortion is equal to 1 since no information was provided about it in the UDHS. To assess the fertility inhibiting effect of breastfeeding, fertility rates in the absence of lactation and postpartum abstinence when C, is equal to 1 are estimated.

C_s = Uganda has relatively high proportion of its women currently married 68 per cent UDHS = 0.68

U = Proportion currently using contraceptives among married women 0.06

e = Average use effectiveness = 0.80. Index assumed to prevail in all developing countries.

TA = Total Induced Abortion = 0

C, = Duration of postpartum non-susceptibility using Bongaarts

formula = 8.9

Estimate of intermediate fertility variable fertility rates for Uganda 1999%.

$C_g = 0.68$

$C_c = 0.95$

$C_a = 1.00$

$C_i = 0.73$

Marriage in Uganda is nearly universal due to low age at marriage which is about 18 years.

C_c = With a prevalence of current contraceptive use just about 5% among married women in Uganda the index C_c is 0.95.

C_a = In the absence of data on abortion in the IDHS. This index equals 1.0 in Uganda.

C_i = This index is low in Uganda because the mean duration of postpartum infecundibility is about 27 months hence index equals 0.73.

From these indexes the total natural marital fertility (TN) the total marital fertility rate (TM) and TFR can be calculated with equations 8, 9, 10 under the assumption that TF equals 15.3.

ESTIMATES OF FERTILITY RATES

1. Total fecudity rate 15.3

2. Total natural marital fertility rate

   $TF \times C_c = TN$

   $15.3 \times 0.73 = 11.169 = TN$

3. Total marital fertility rate

   $TN \times C_c \times C_i = TM$

   $= 11.169 \times 0.95 \times 1$

   $TM = 10.6105$

4. Total fertility rate

   $= TN \times C_c \times C_i \times C_a$

   $= TM \times C_a$

   $= 10.6105 \times 0.69$

   $TFR = 7.2154$

Using Bongaarts model the TFR is 7.2154 compared to the 7.4 births per woman according to the UDHS data. This slight difference is not statistically significant.

To check the importance of <u>lactation and abstinence as a fertility</u> measure, lets look at the fertility rates in the absence of lactation and abstinence.

$\therefore$ let $C_i = 1$

$TN = 15.3 \times 1 = 15.3$

$TM = 15.3 \times 0.95 \times 1$

$= 14.535$

$$TFR = TM \times CM$$
$$= 14.535 \times 0.68$$
$$= 9.88$$

Therefore if all women in Uganda were not breastfeeding and not abstaining all things remaining equal the TFR would be 9.9 children per woman. That means the fertility of a woman is reduced by 2.7 in the presence of postpartum infecundibility which is affected by breastfeeding.

If we assume that average duration of amenorrhea is two months in the absence of breastfeeding then these calculations imply that in Uganda breastfeeding adds 10 months on average to the period of postpartum non susceptibility.

Although the above estimates may not be very precise they clearly indicate that breastfeeding has a major impact on fertility processes in Uganda.

Uganda estimate of fertility inhibiting of breastfeeding can be summarised as below:

Uganda Fertility Inhibiting Effect

Total Fedundity
Rate (TF)

15.3

Total Natural
Marital Rate
(TN)

11.2

Total Marital
Fertility Rate
(TR)

10.3

Total Fertility
Rate (TFR)

7.2

0
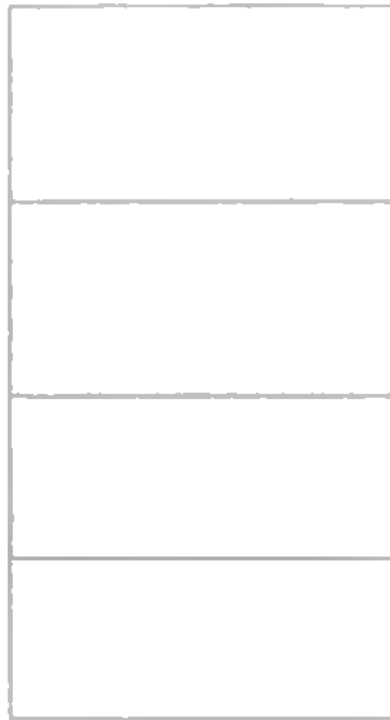
CHAPTER FIVE

5.0   SUMMARY AND RECOMMENDATIONS

5.1   SUMMARY

The objective of this study was to find out the association between breastfeeding and amenorrhea in Uganda. To examine differentials in breastfeeding and postpartum amenorrhea by selected socio-economic and demographic variables, to examine the effect of breastfeeding on fertility in Uganda and to suggest appropriate recommendations for policy makers and planners regarding breastfeeding as method regulating fertility in Uganda.

The result yielded by this study indicate that after birth of every child, a mother experiences a period of amenorrhea sometimes referred to as postpartum amenorrhea. This period is characterised by the absence of menstruation and the inability of the mother to conceive. This period can be lengthened by long durations of breastfeeding from below 3 months for non breastfeeding mothers to one year as in the case of Uganda. Ugandan women breastfeed their children for an average of 19 months and have amenorrheic period of 12.3 months.

One interesting result documented by this study is that a majority of breastfeeding mothers do not use modern contraceptives. Over 70 per cent of breastfeeding mothers in the last closed birth interval were not using any method. Only 0.9 per cent of the women did use a modern method. It was also documented that women who do not use any method breastfeed for much longer durations that those who use modern or traditional contraceptives. This shows that

breastfeeding mothers in Uganda might be using their long period of lactational amenorrhea as a method of 'regulating' or prolonging their fertility birth intervals. Breastfeeding is therefore inversely related to contraceptive use.

Using Bongaarts analytical framework it has been found that Uganda Fertility Rate is very high by world standards (TFR 7.2). Breastfeeding through postpartum infecundibility has an important part to play. In the absence of breastfeeding it was found out that Uganda's Total Fertility Rate would be 9.9 births per woman a much higher fertility level than would otherwise be the case in the presence of breastfeeding.

The study has indicated that women who are educated or working or living in urban areas tend to have shorter durations of breastfeeding and postpartum amenorrhea than their counter parts who are not educated, not working and living in rural areas. However, it should be noted that despite this most of them breastfeed for at least one year.

In the study it was noted that increase in mother's age also means increase in breastfeeding durations and longer periods of postpartum amenorrhea.

Lastly an examination of parity did not show a consistent effect on the duration of breastfeeding. Although it was noted that increase in parity had a positive effect on the length of breastfeeding and postpartum amenorrhea.

5.2   RECOMMENDATIONS

From the study findings a few recommendations can be made:

(a)   Intensive family planning education should be undertaken especially to reach breastfeeding mothers who are educated or working and those living in urban areas, inorder for them to increase contraceptive use since they tend to observe shorter breastfeeding periods and are therefore more at risk of pregnancy than the other group.

(b)   A look at the type of family planning programs in Uganda (Family Planning Association of Uganda Records, 1991) indicates that most family planning personnel do not recognise breastfeeding as a reliable means of contraception.   As a result family planning workers have down played or ignored the importance of breastfeeding on extending the birth.   This study argues that breastfeeding should be promoted by family planning workers as part of their overall concern so that those who do
not accept modern contraceptives at least breastfeed for longer durations.

(c)   Increasingly population analyst believe that a couple's motivation to limit fertility depends upon the likelihood that each child will survive.   A look at infant mortality rate in Chapter one reveals a high rate that is 115 death per 1000 live births (Ministry of Planning, Reports).   By promoting

breastfeeding infant mortality rate can be reduced. This can in effect lead to low fertility rates.

(d)   This study has documented that traditional methods of family planning are much more prevalent than clinical contraceptives. According to Family Planning Records (FPAU Annual Report, 1991). Discontinuation rate is very high (20 per cent). With the extended duration of postpartum amenorrhea (12.3 months) associated with prolonged breastfeeding, their is a need to re-evaluate the timing of postpartum contraceptive use. Use of contraceptives during the early months of postpartum can have a minimal impact on fertility. With this discontinuation, use modern contraceptives after 6 months should be promoted to maximize its negative effect on fertility.

(e)   Government and labour laws should be revised to accommodate breastfeeding mothers, including maternity leave and maternity benefits. Arrangements should be made by employers for working mothers to have their infants near them for the first 6 months.

(f)   Breastfeeding promotion programs should be initiated through mass media. women groups, radio etc so that women can be educated and motivated to breastfeed.

(g)   Withdrawal of breastfeeding substitutes from the market should
        be done to encourage mothers to resort to breastfeeding their
        infants.   This should be accomplished by Government policies
        to control imports, marketing and sales of substitutes.

(h)   Seminars for policy makers and decision makers in the country
        should be carried out by the population secretariat sensitize
        them on the benefits of breastfeeding as fertility inhibitor.

(i)   Improvement in education courses for family planning workers,
        nurses,   doctors   etc.   should   be   enhanced   promote
        breastfeeding.

(j)   The   Ministry   of   Education   should   develop   breastfeeding
        education programs and curricula in primary, secondary and
        vocational schools so that the youth are aware of the benefits
        of breastfeeding before starting their own families.

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APPENDIX

% DISTRIBUTION OF WOMEN ACCORDING TO THEIR LENGTH OF BREASTFEEDING

DURATION IN MONTHS

DISTRIBUTION OF WOMEN ACCORDING TO THEIR LENGTH OF BREASTFEEDING

DURATION IN MONTHS
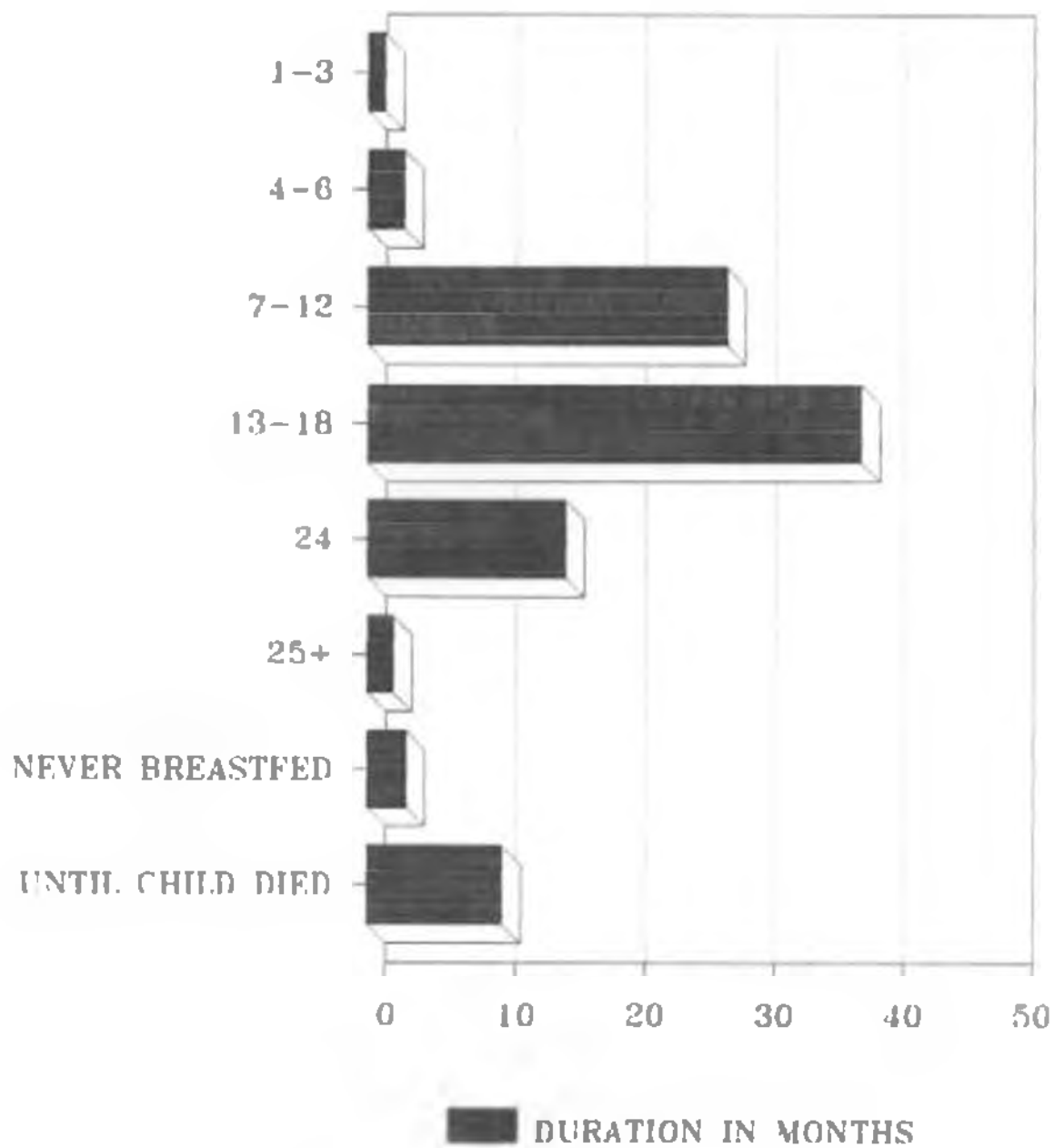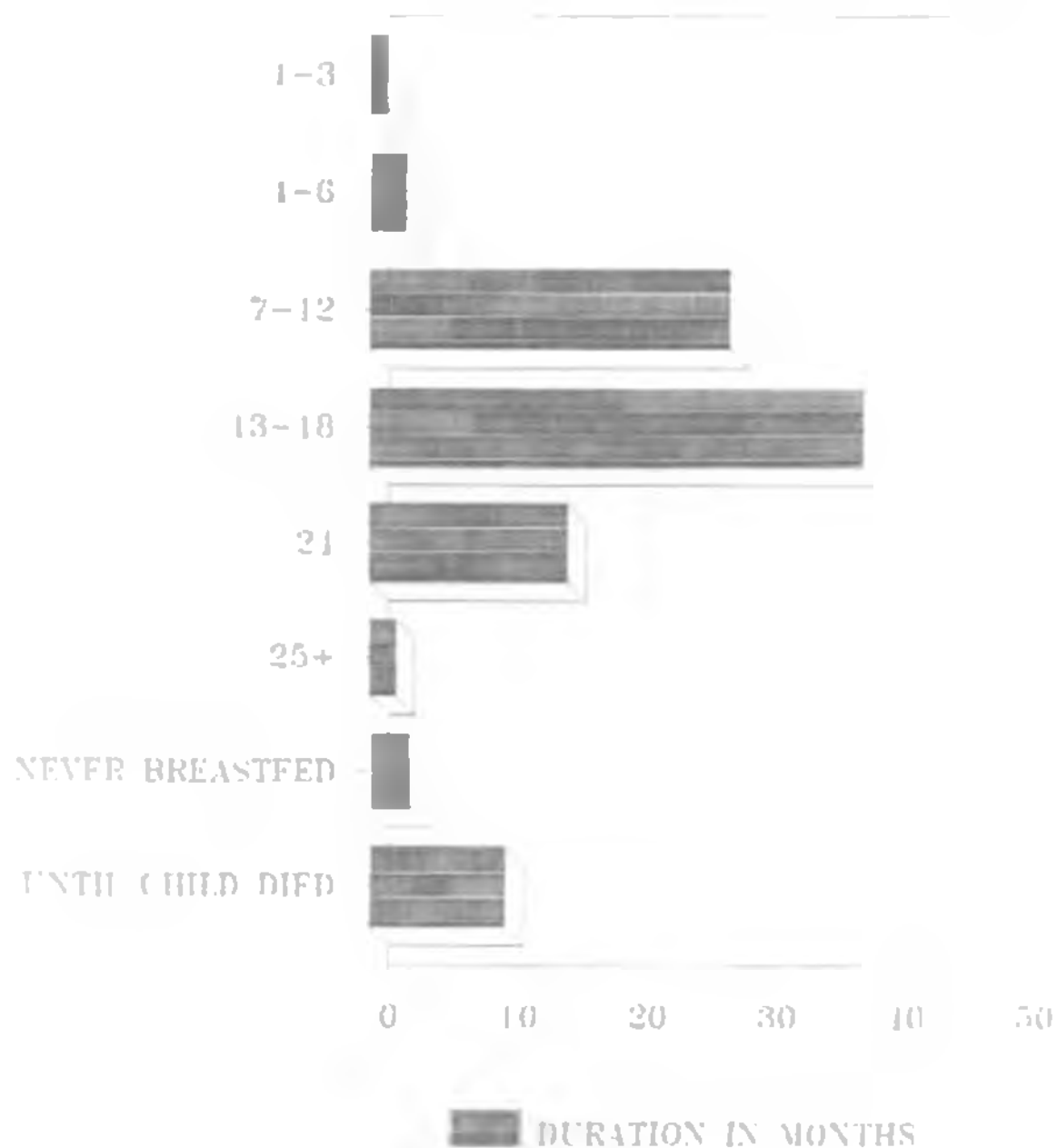
% DISTRIBUTION OF WOMEN NOT BREASTFEEDING
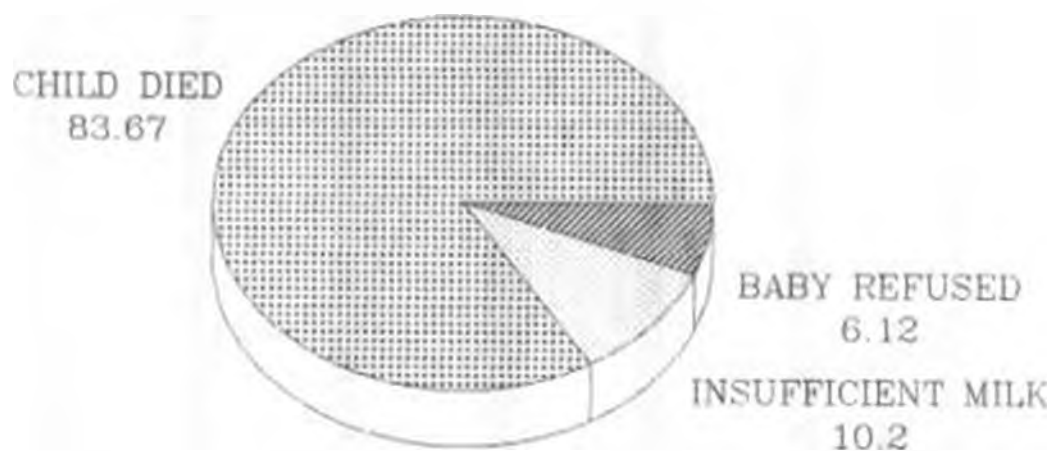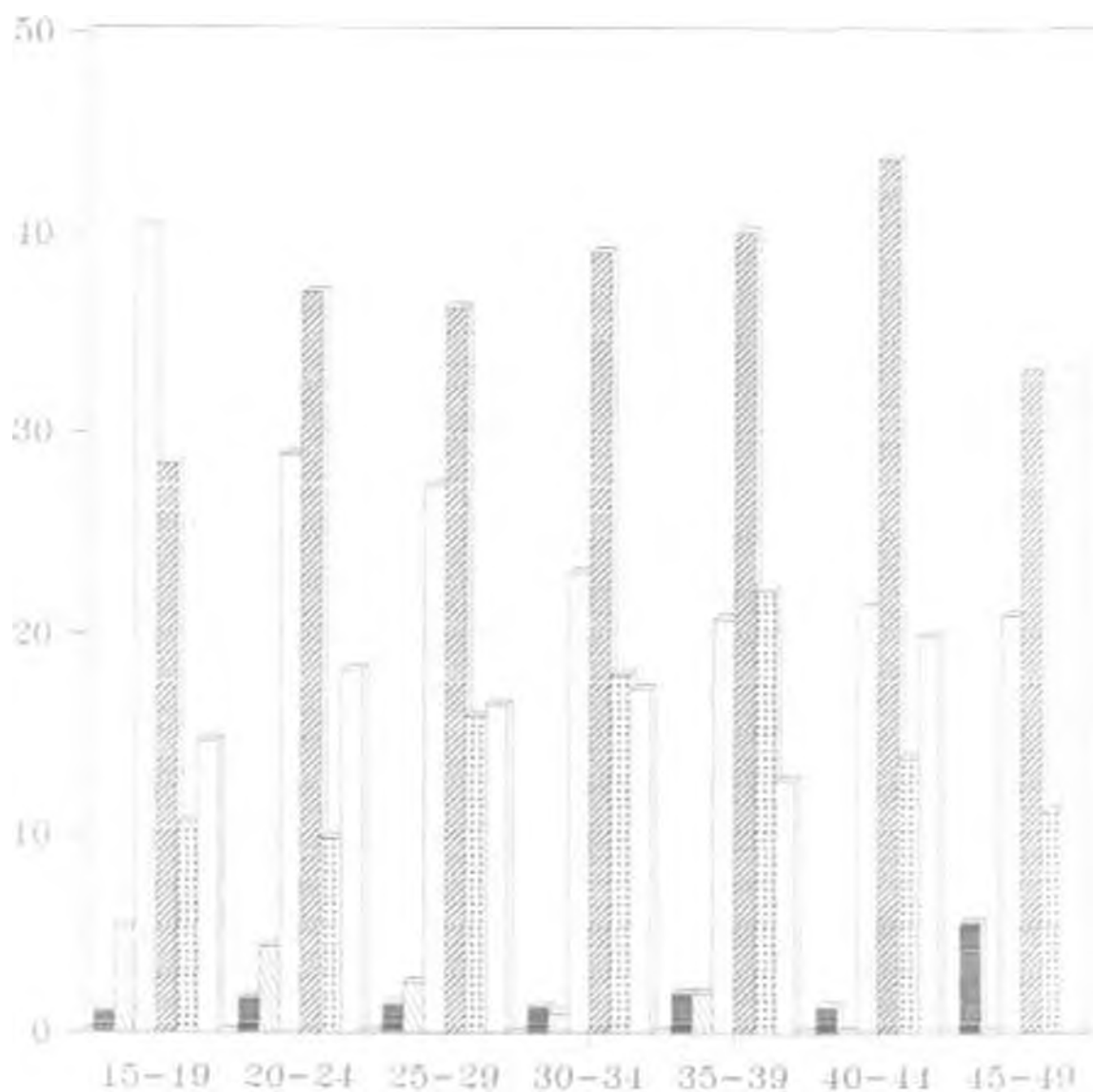
CHILD DIED
83.67

BABY REFUSED
6.12

INSUFFICIENT MILK
10.2

BREASTFEEDING DIFFERENTIAL BY AGE

0-1 MONTHS   1-6 MONTHS   7-12 MONTHS
13-18 MONTHS   19-24 MONTHS   25- MONTHS

BREASTFEEDING DIFFERENTIALS BY PARITY

| | 0-3 MONTHS | 1-6 MONTHS | 7-12 MONTHS |
| 13-18 MONTHS | 19-24 MONTHS | 25- MONTHS |

BREASTFEEDING DIFFERENTIALS BY CONTRACEPTIVE USE

50		
40		
30		
20		
10		
0		
	NEVER USED	USED TRADITIONAL	USED MODERN

0   1—3   4—8   ~ 1

13—18   18—24   25—
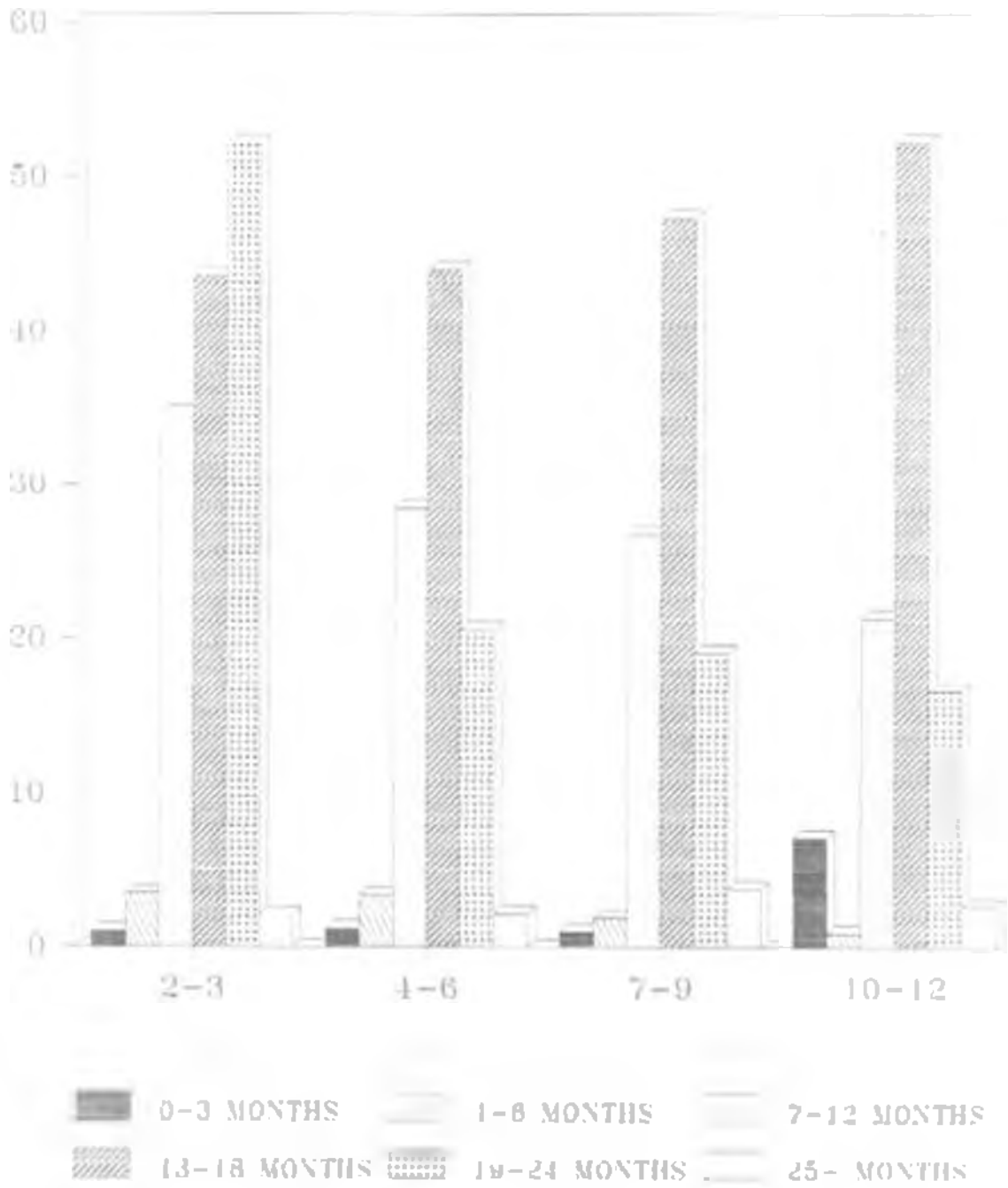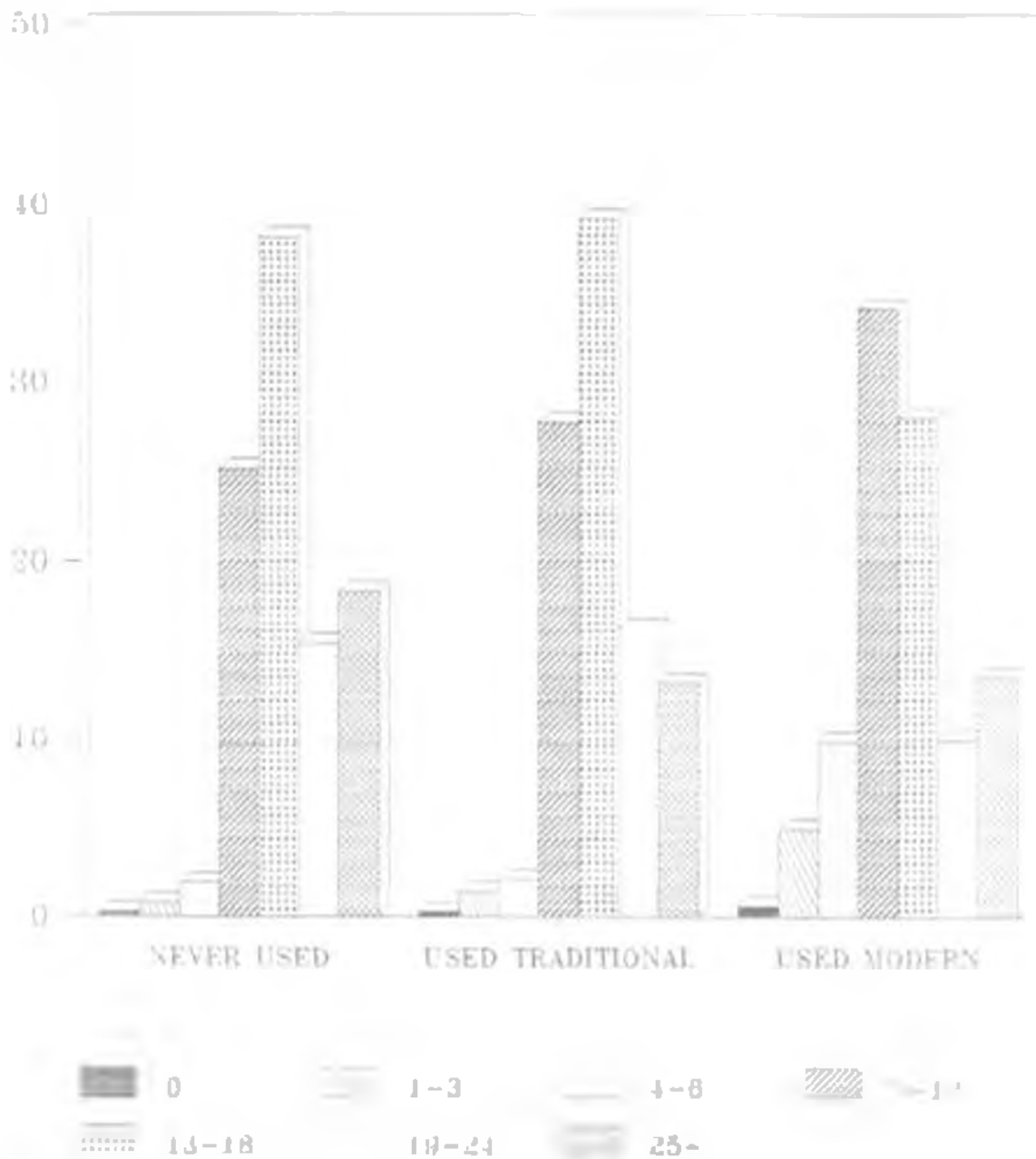
BREASTFEEDING DIFFERENTIALS BY PLACE OF RESIDENCE
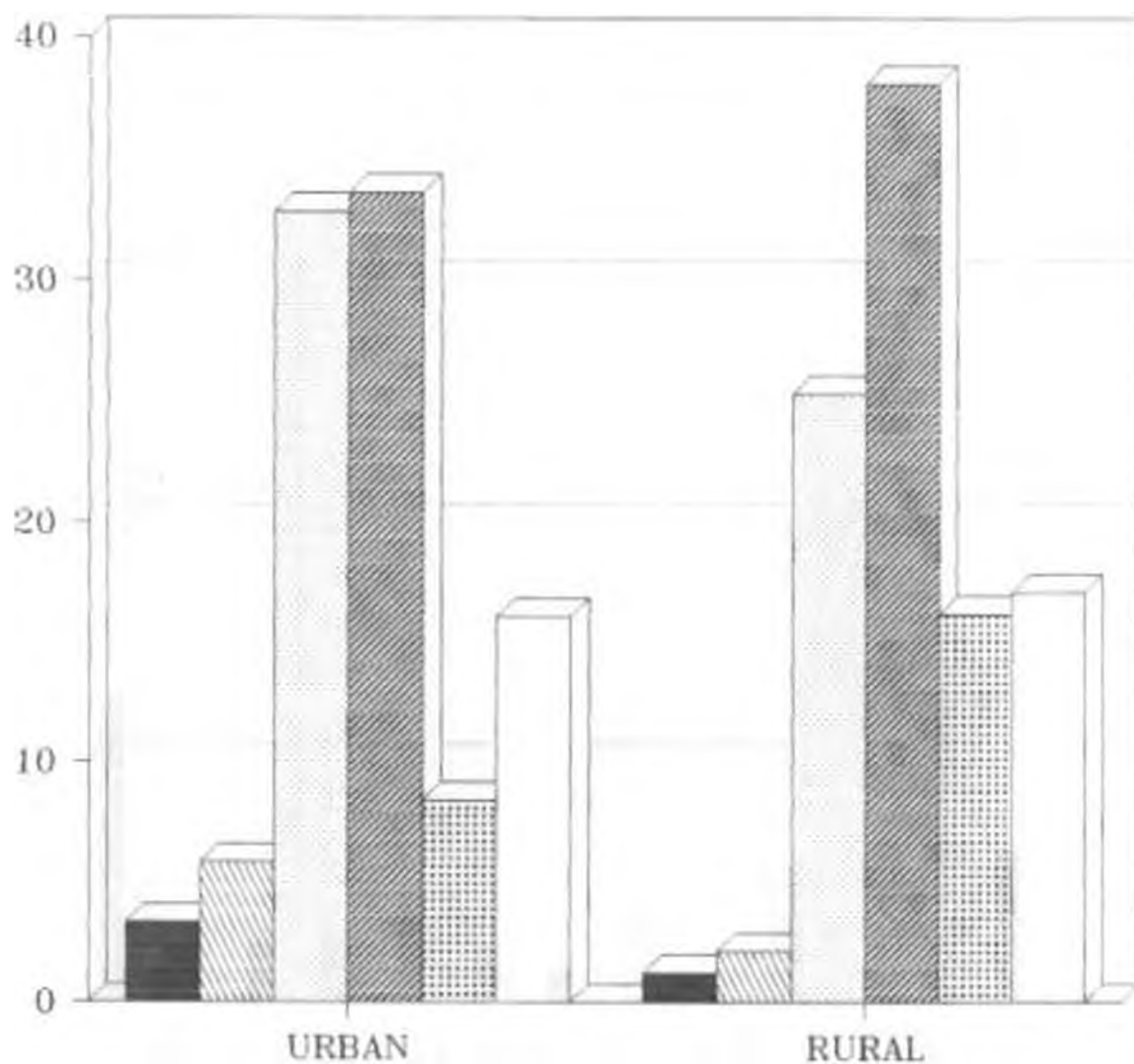
Legend:
- 0-3 MONTHS
- 4-6 MONTHS
- 7-12 MONTHS
- 13-18 MONTHS
- 19-24 MONTHS
- 25+ MONTHS

DIFFERENTIALS OF AMENORRHEA BY CONTRACEPTIVE USE

NEVER USED · USED TRADITONAL · USED MODERN

0-3 MONTHS · 4-6 MONTHS · 7-12 MONTHS
13-18 MONTHS · 18-24 MONTHS · 25- MONTHS

DIFFERENTIALS OF AMENORRHEA BY
LEVEL OF EDUCATION

| | 0–3 MONTHS | 4–6 MONTHS | 7–12 MONTHS |
| 13–18 MONTHS | 19–24 MONTHS | 25– MONTHS |

DIFFERENTIALS OF AMENORRHEA BY WORK STATUS

50

40

30

20

10

0

URBAN   RURAL
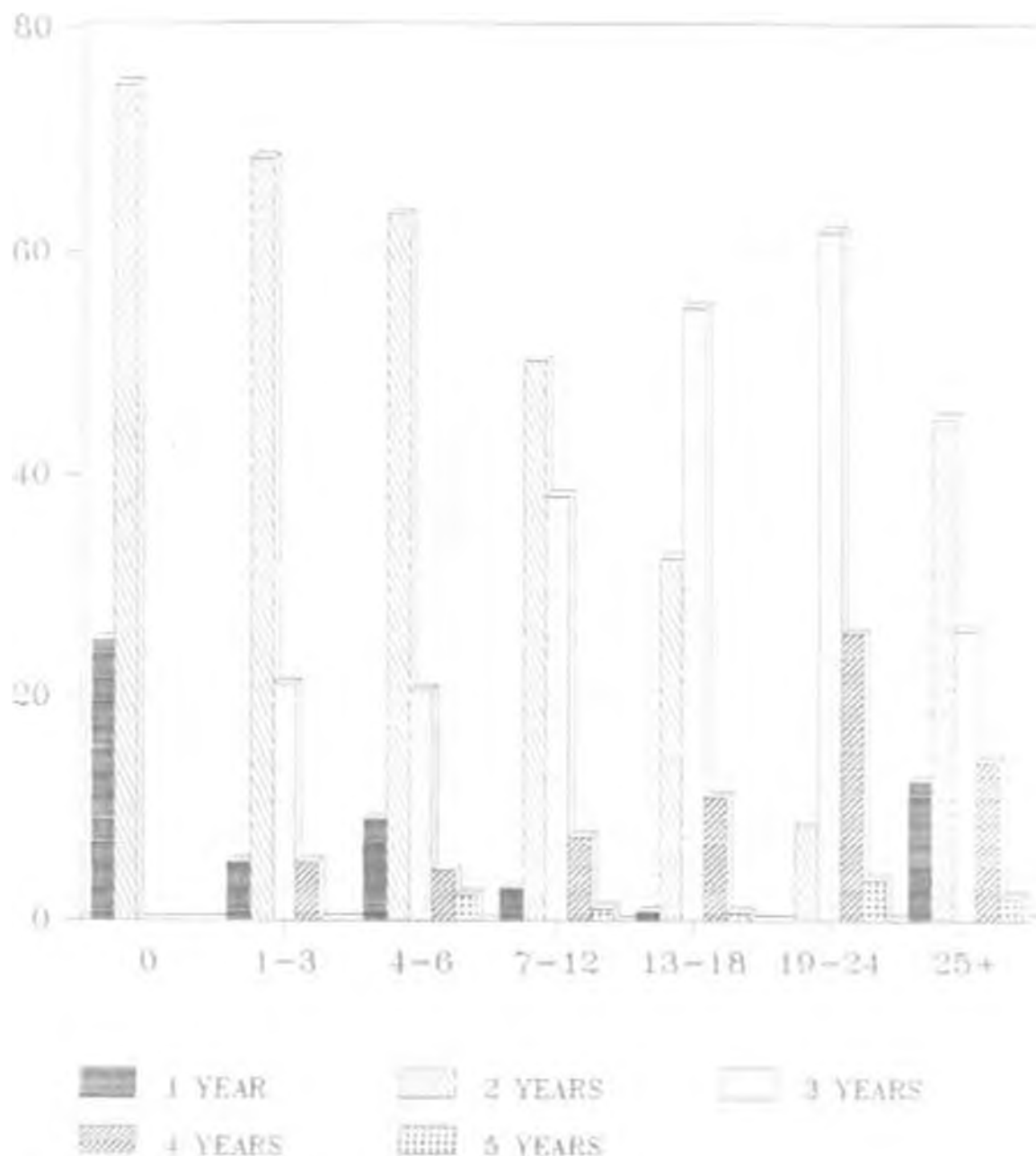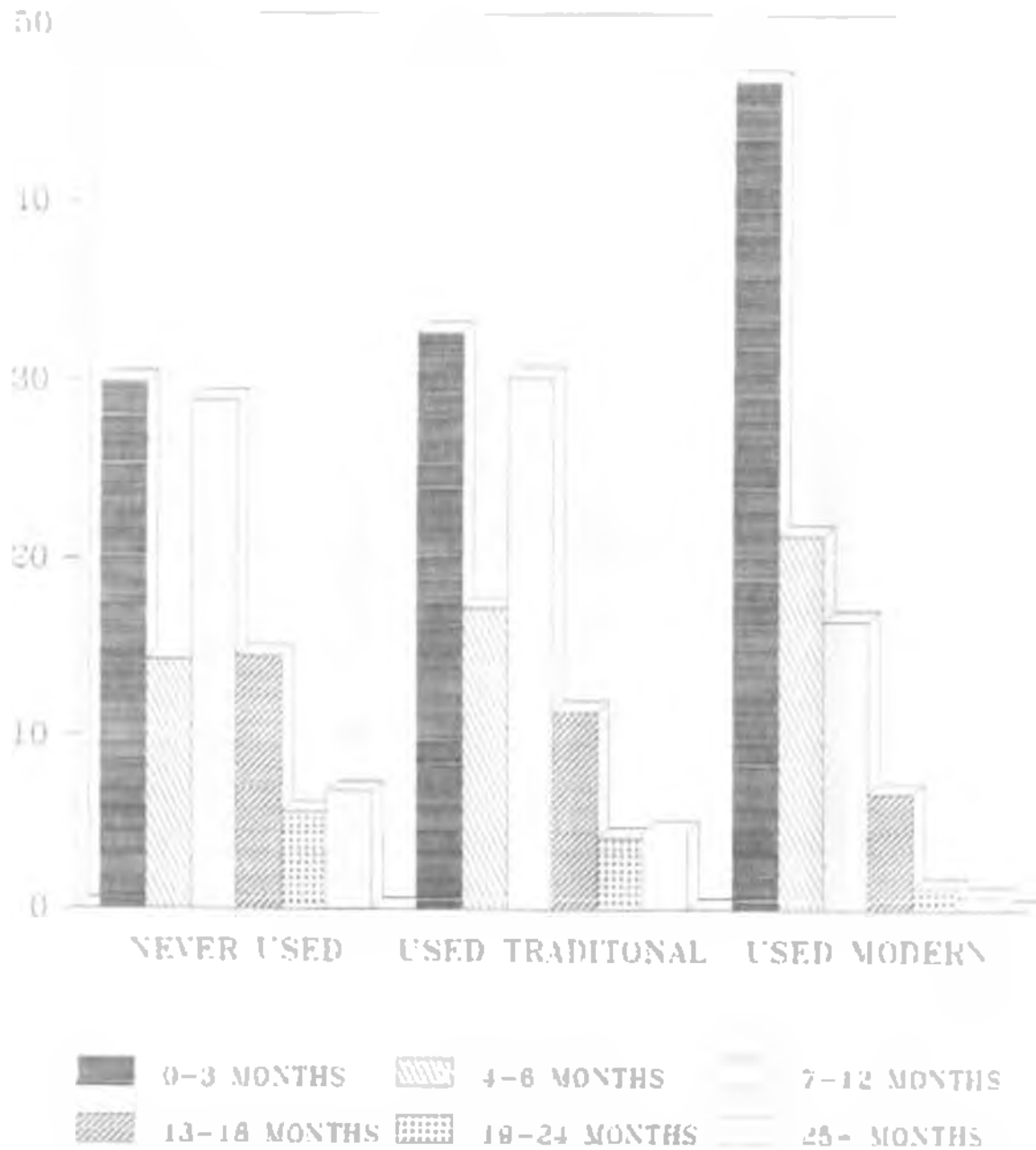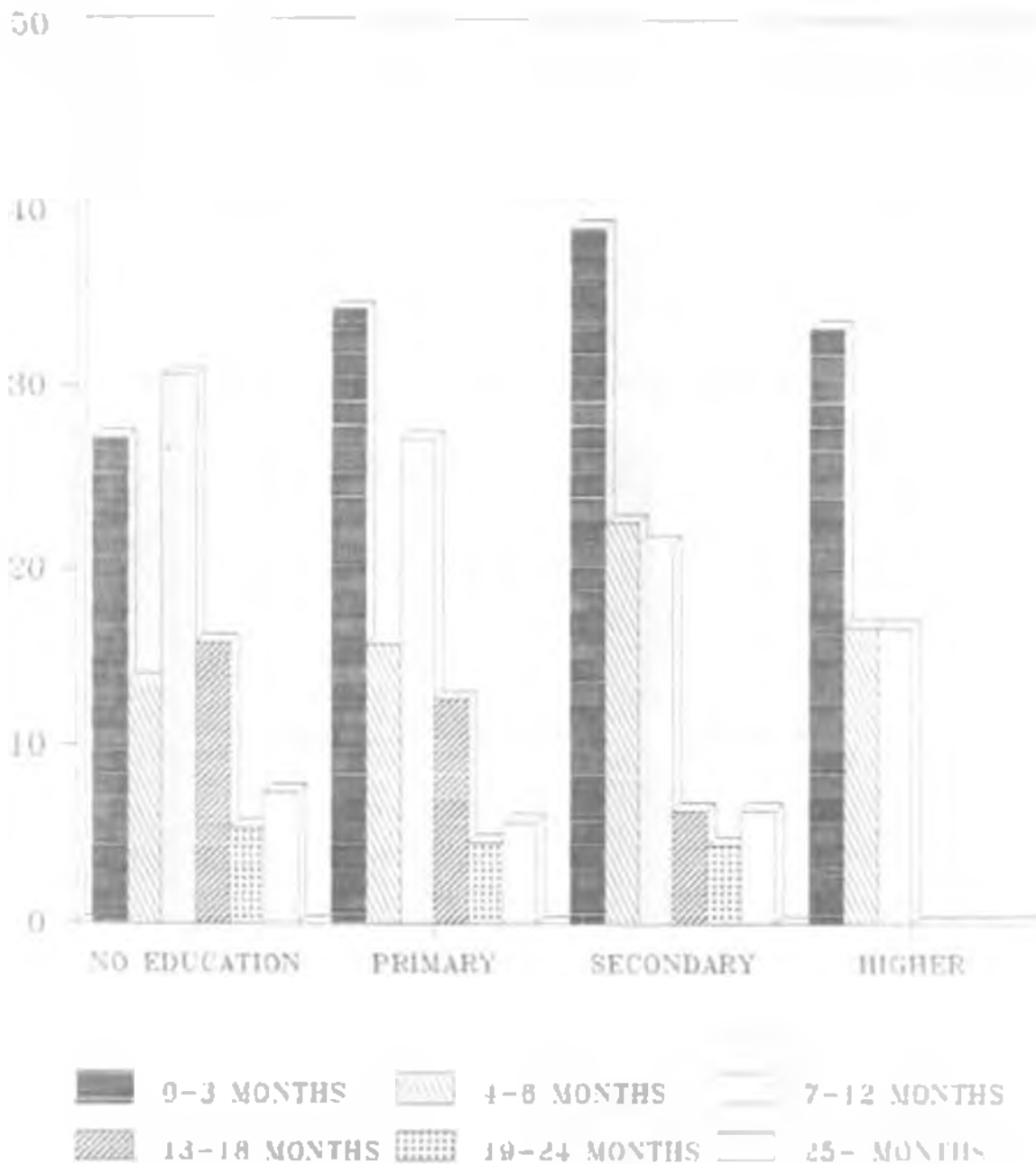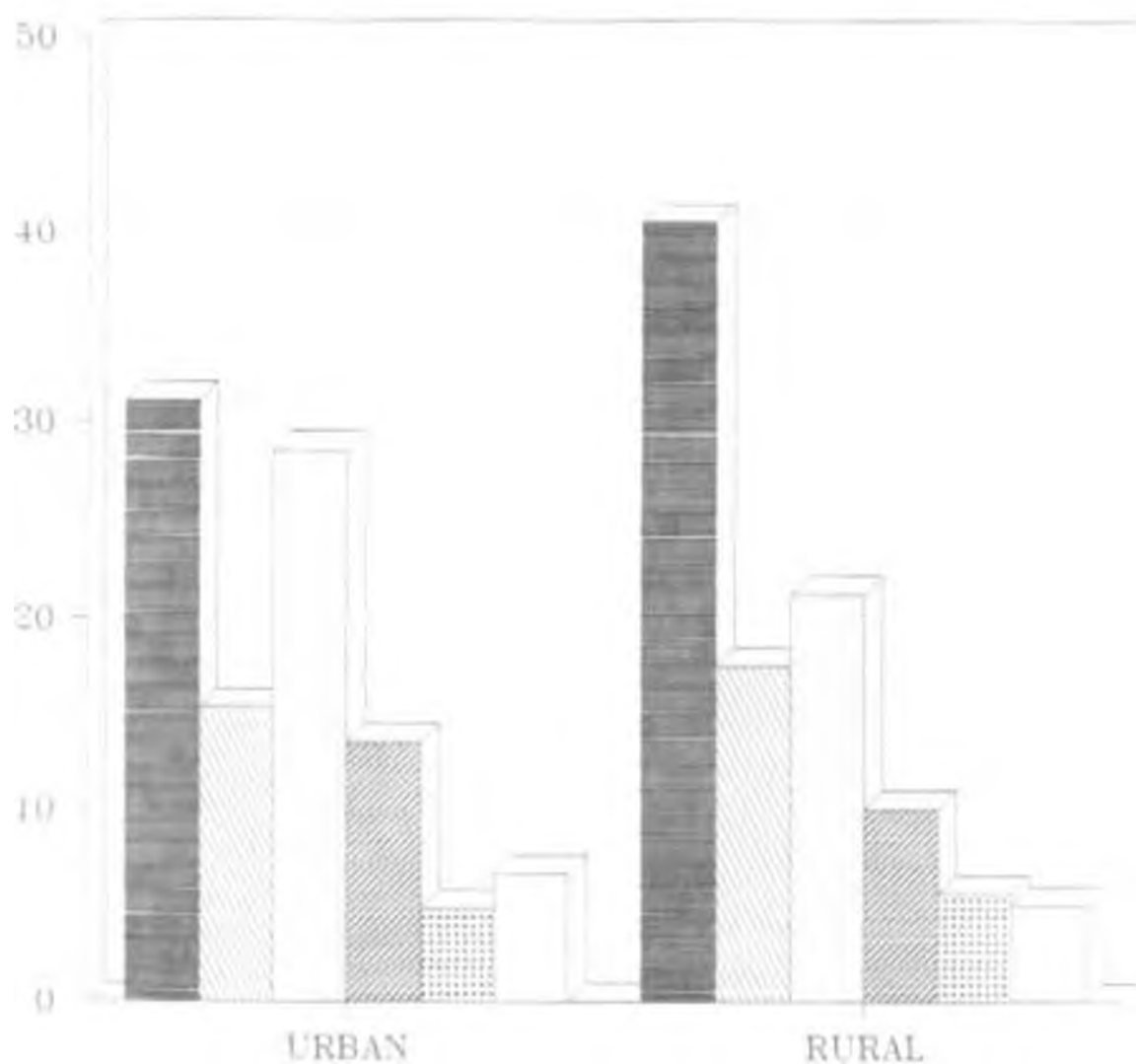
0-3 MONTHS   4-6 MONTHS   7-12 MONTHS
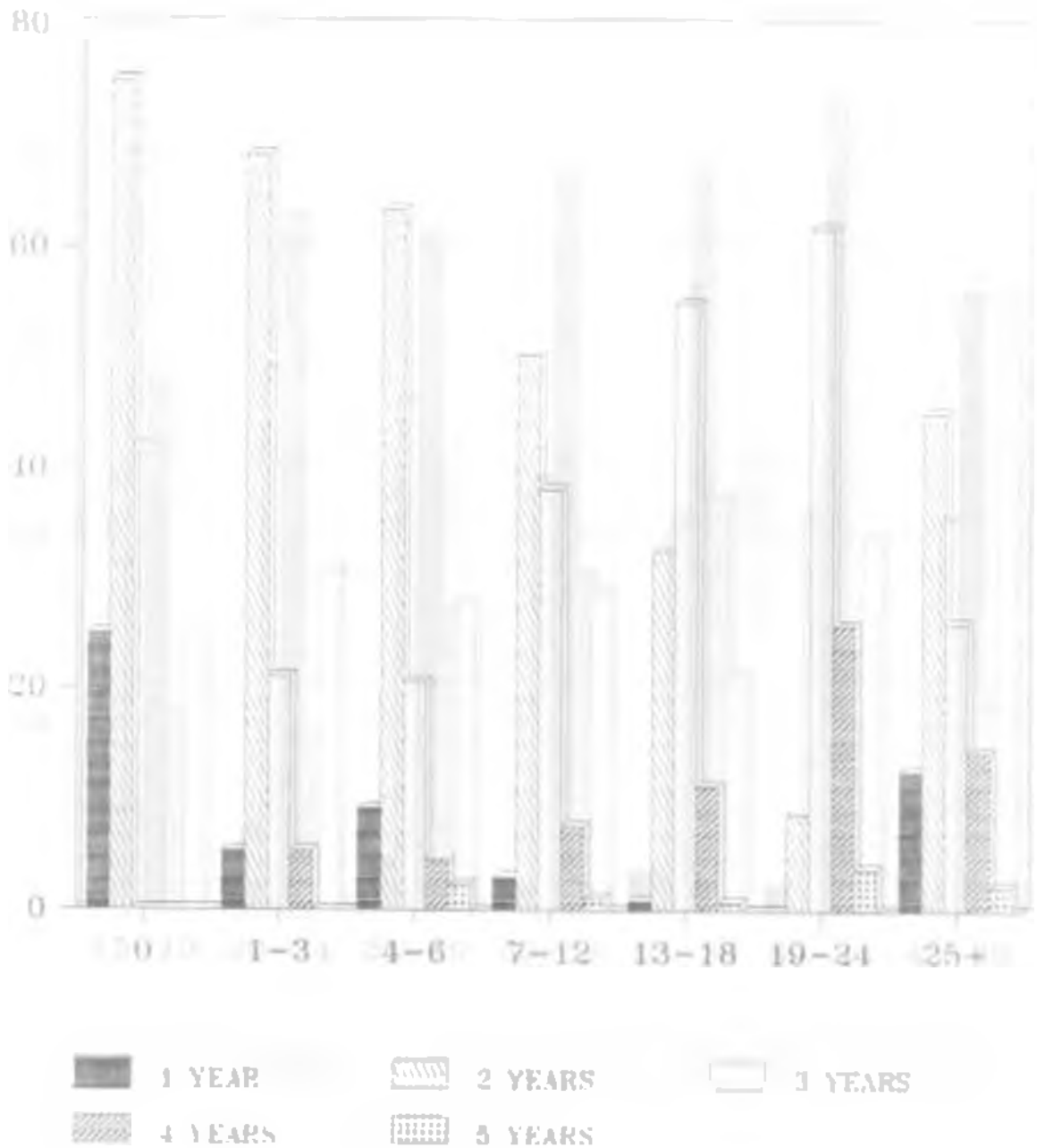13-18 MONTHS   19-24 MONTHS   25-
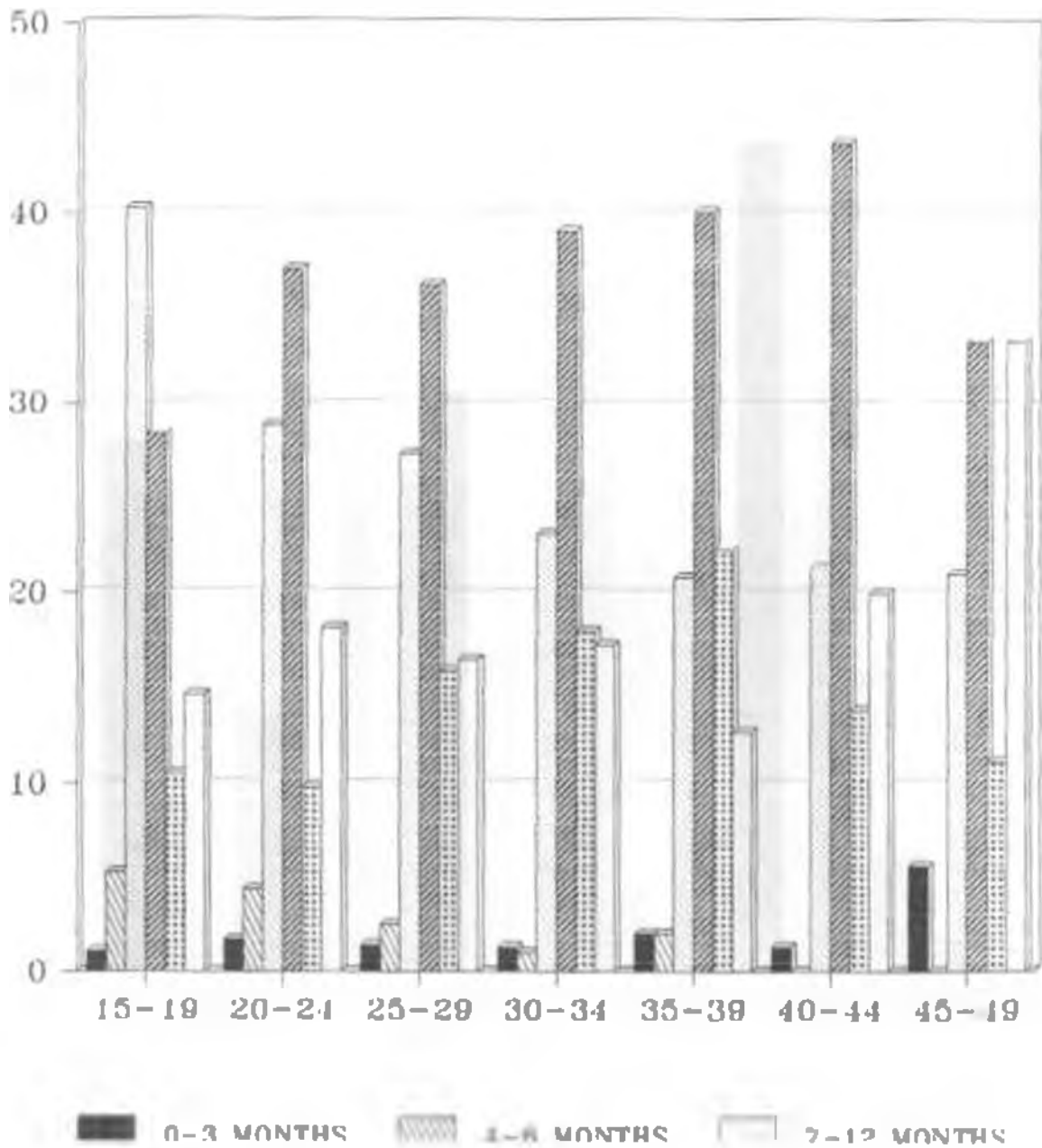
DIFFERENTIALS OF AMENORRHEA BY PLACE OF RESIDENCE
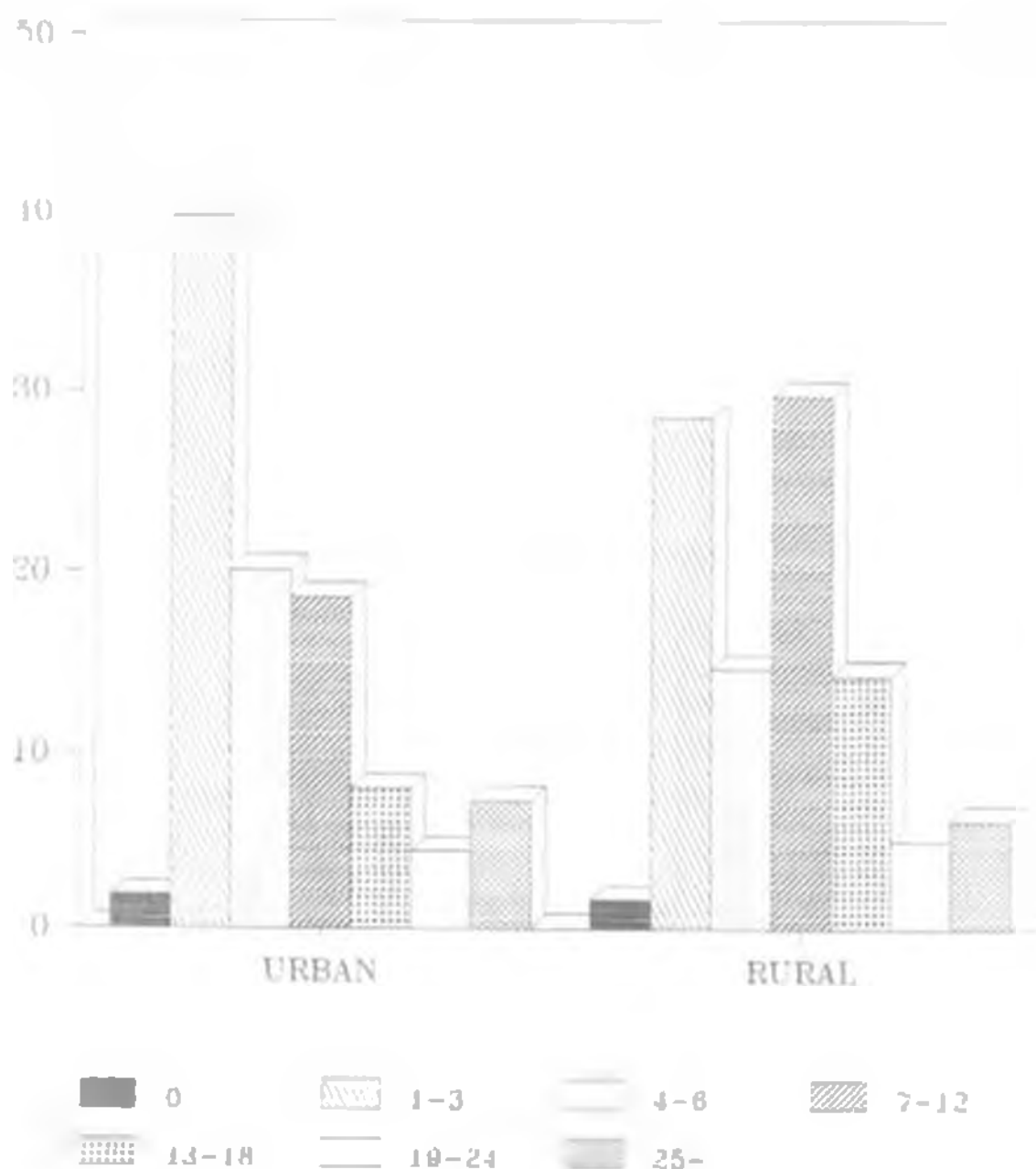
	0		1-3		4-6		7-12
	13-18		19-24		25-		

OF WOMEN BY DURATION OF BREASTFEEDING
AND DURATION OF BIRTH INTERVAL

	1 YEAR		2 YEARS		3 YEARS
	4 YEARS		5 YEARS		
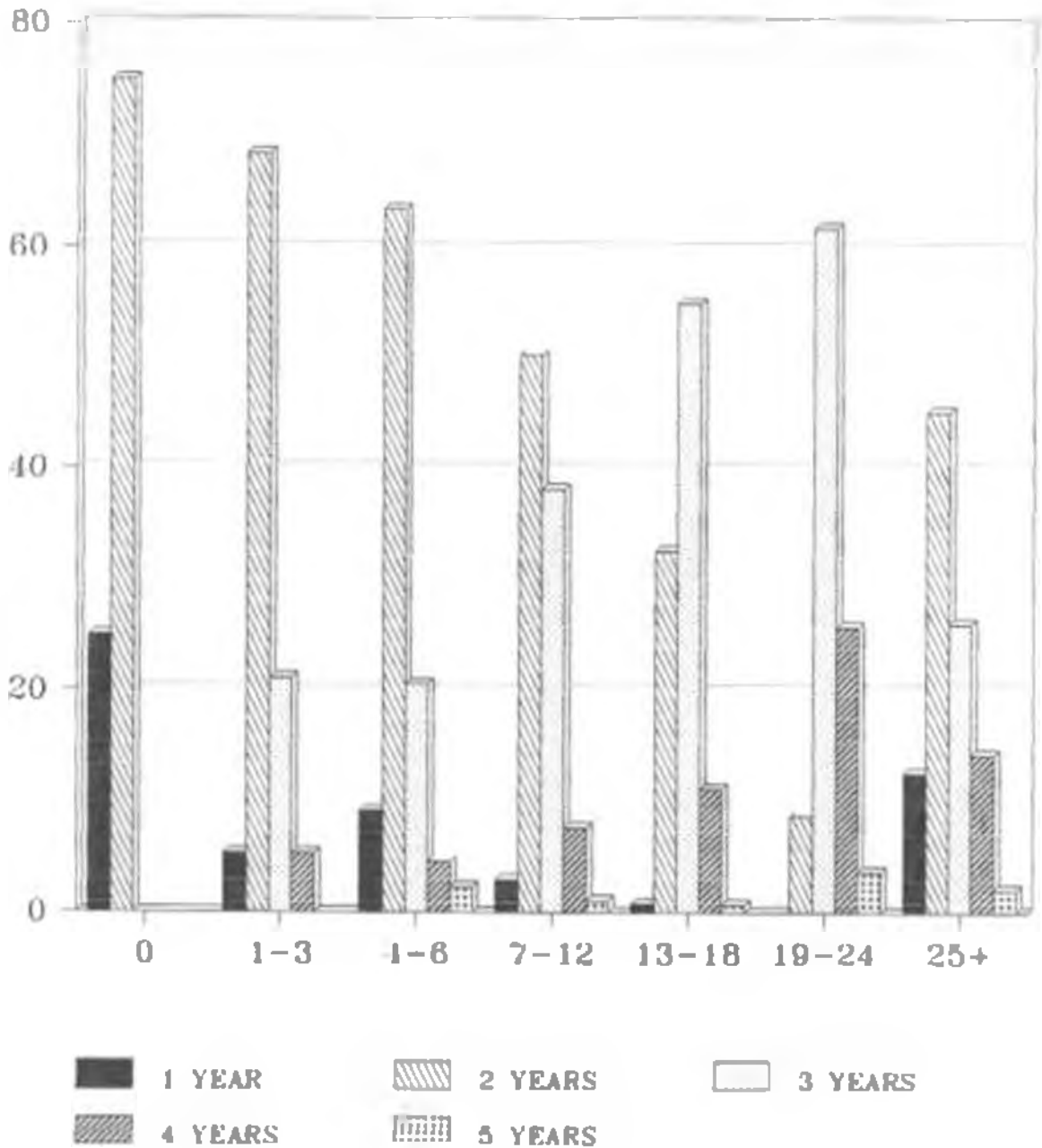
OF WOMEN BY DURATION OF BREASTFEEDIN
AND DURATION OF BIRTH INTERVAL.

BREASTFEEDING DIFFERENTIAL BY AGE

	15-19	20-24	25-29	30-34	35-39	40-44	45-49

Legend: ■ 0-3 MONTHS ▨ 4-6 MONTHS □ 7-12 MONTHS

DIFFERENTIALS OF AMENORRHEA BY
CONTRACEPTIVE USE

0-3 MONTHS	4-6 MONTHS	7-12 MONTHS
14-18 MONTHS	19-24 MONTHS	25- MONTHS

DIFFERENTIALS OF AMENORRHEA BY
LEVEL OF EDUCATION

Legend:
- 0–3 MONTHS
- 4–6 MONTHS
- 7–12 MONTHS
- 13–18 MONTHS
- 19–24 MONTHS
- 25+ MONTHS

Categories: NO EDUCATION, PRIMARY, SECONDARY, HIGHER

DIFFERENTIALS OF AMENORRHEA BY PLACE OF RESIDENCE

	0		1-3		4-6		7-12
	13-18		19-24		25+		

DIFFERENTIALS OF AMENORRHEA BY WORK STATUS

Legend:
- 0-3 MONTHS
- 4-6 MONTHS
- 7-12 MONTHS
- 13-18 MONTHS
- 19-24 MONTHS
- 25+