



PHYSIOLOGIC FACTORS INFLUENCING EXCLUSIVE BREASTFEEDING AMONG MOTHERS ATTENDING HEALTH FACILITIES IN BUSHENYI DISTRICT, UGANDA.

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Abstract

Background: Exclusive breastfeeding (EBF) is beneficial to infants and lactating mothers. This study sought to determine the level of exclusive breastfeeding compliance, and possible physiologic factors influencing exclusive breastfeeding.

Methods: 201 lactating mothers of children aged 6- 12 months were sampled from eight health centers and hospitals in Bushenyi, Uganda. A structured interview and Focus Group Discussion guide were used to obtain data.

Results: Prevalence of exclusive breastfeeding among infants less than 6 months was 34.3% (69/201). 62.7% (126/201) mothers initiated breastfeeding within one hour of birth; 65.7% (132/201) mothers fed their babies with other supplements than breast milk, and 43.3% (57/201) mothers who introduced other foods to the babies within the first six months, gave them porridge (sorghum or millet drink locally called Bushera). Mothers who had vaginal delivery were twice ($p < 0.001$) more likely to practice exclusive breastfeeding, HIV/AIDS negative mothers were three times ($p < 0.001$) more likely to practice EBF. Mothers who had breast abscess had higher chances ($p < 0.001$) of practicing EBF than mothers with other breast complications.

Conclusion: Exclusive breastfeeding practice in Bushenyi is low. It is influenced by mode of delivery, HIV/AIDS status and maternal breast disorders. It can be improved by special lactation education programs.

Keywords: Exclusive breastfeeding, Lactating mothers, Physiologic parameters, Bushenyi



Background

Breast milk contains all the nutrients necessary for good health and development of infants in the first 6 months of life. Breastfeeding therefore is a significant public health strategy for reducing infant and maternal morbidity and mortality (Kramer, 2012 and Jones 2011).

Breastfeeding is recommended to commence immediately following delivery for the baby to get colostrum. Thereafter, the infant is expected to be breastfed exclusively for up to six months of life, day and night on child's demand, a term referred to as exclusive breastfeeding (EBF). During this period, no fluid including water should be given to the baby except oral medication (WHO, 2007).

However, despite the evidential benefits of EBF, there is a global decline in the practice. Global statistics reveals that just 38% of infants less than 6 months are breastfed exclusively (Black *et al.*, 2013).

In 2015, the Ugandan Government set the EBF targets of 80%. To achieve these targets, initiatives and policies like the labour law on maternity leave, mobilization of male partners to support breastfeeding mothers, and peer counselors to provide support for breastfeeding mothers was promoted. In 2017, Uganda surpassed the global targets of at least 50% of infants exclusively breastfeeding. Despite this feat, the EBF targets still seem too far from being achieved especially in rural areas. Consequently, infant malnutrition and mortality rates remain very high; a situation that can be backtracked to early infant feeding practices (UBOS 2012).

The decline in EBF in most developed and developing countries have been attributed to many factors or determinants among which are physiologic factors. For instance, a study conducted by Jodi and colleagues on influence of mode of delivery on breastfeeding initiation revealed that women who had normal vaginal delivery were 47% more likely to initiate breastfeeding



than women delivered by scheduled repeat cesarean (Jodi R. *et al.*, 2013). Various studies have shown that mode of delivery is one among the obstetric factors for EBF (Coovadia *et al.*, 2012). Findings in Ethiopia by Seidet *et al.*, (2013) reveal that giving birth vaginally was associated with exclusive breastfeeding practices.

In a study conducted by Zanardo *et al.*, (2010) to determine whether elective caesarean delivery have negative effect on breastfeeding they reported that, emergency and elective caesarean deliveries are similarly associated with a decreased rate of exclusive breastfeeding compared with vaginal delivery. Painful or cracked breasts or nipples are also widely described by women as reasons they stop breastfeeding early (Redshaw and Henderson, 2012).

Report of an analytical cross-sectional study conducted by Babirye in 2009 in Bushenyi District, South-Western Uganda shows that among children less than six months who were breastfeeding, 31.5% (34/108) were exclusively breastfeeding.

In the light of the suboptimal exclusive breastfeeding practice rates in developing countries including Uganda, concerted effort through well design study is required to identify factors, especially physiologic factors associated with the declining rates. This study therefore aimed at determining the exclusive breastfeeding rates and the physiologic factors which influences the rates amongst mothers attending health facilities in Bushenyi District, South- Western Uganda.



Methods

Study Design and Geographical scope

The study recruited lactating mothers in selected health centres and hospitals of Bushenyi District, Western Uganda. Bushenyi District is bordered by Rubirizi District to the northwest, Buhweju District to the northeast, Sheema District to the east, Mitooma District to the south and Rukungiri District to the west. The District is made of one County (Igara), twelve sub counties, one Municipal Council, four Town Boards, three Wards, 64 Parishes and 565 villages. According to the 2014 census statistics, the total population size of Bushenyi District is 234,443(UBOS, 2017).

The major Economic activities include; semi intensive agriculture, fishing, trade and commerce, transport, stone quarrying, sand mining, mineral mining, construction industry, tourism and lumbering. Bushenyi District mainly comprises of Banyankole, Bachiga, Baganda and Bakonzo.

Bushenyi district has thirty eight (38) health centers and hospitals. Fourteen (14) of these health facilities which were used for this study are at the levels of Health center III (HCIII), HCIV and hospital. Of this 14 health centers and hospitals 50% (7 health centers and hospitals) were sampled for the study. Some of these health Centers and hospitals are government, NGO and privately owned.

Sampling

The study population comprised of breastfeeding mothers aged 15-49 years whose infants or children are aged 6-12 months attending or seeking health clinics and services from any of the sampled health facilities in Bushenyi District. The sample size of the responding mothers was determined using the Kish Leslie (1965) formula. Proportion of a characteristic in a sample



84.5% (Babirye, 2009), sampling margin of error is 5% and a Confidence Interval for 95%.

The estimated sample size was 201. Seven health centers were by simple random sampling method picked from the fourteen (14) health centers and hospitals at the level of HCIII, HCIV and hospitals. This was done using a lottery where the names of the fourteen health facilities were written on A6 size papers, folded and put in an opaque bag from which seven (7) were picked. The names of the health facilities contained on the seven pieces of paper picked were considered the sampled facilities while others in the opaque bag were discarded.

The sampled health centers for this study include; Bitooma HIII, Kakanju HCIII, Kyeizoba HCIII, Bushenyi HCIV, Kyabugimbi HCIV, Ishaka Adventist Hospital and Bishop Comboni Hospital. The 201 breastfeeding mothers attending Maternal and Child Health (MCH) clinics, pediatric wards and other clinics were selected by simple random sampling technique after gaining their consent. The mothers were asked to pick from a container containing papers with two written choices 'Yes' and 'No' in the ratio of 7: 3. The mothers who picked the "Yes" response were included in the sample.

Data collection

A pretested structured questionnaire and open ended focus group discussion (FGD) guide was used to collect the quantitative and qualitative data respectively. Four research assistants (2 nurses and 2 Clinical officers) were recruited based on their profession and the local dialect proficiency to assist the principal researcher achieved the set objectives of the study. The research assistants were trained on the objectives of the study and the right translation of the



operational terms in the local dialect (Runyankore). The questionnaire was then administered through face to face interview by the researcher and the research assistants to the study respondents. Using a FGDs guide, three focus group discussions (FGDs) were conducted on separate days with 5 participants in each group at two of the sampled health facilities (Bushenyi HCIV and Ishaka Adventist hospital).One was done with pregnant mothers during their Ante Natal Clinic (ANC) visits; another was with mothers of infants 0 – 6 months at Mother and Child Health (MCH) clinics and lastly at Labour wards. The participants gave their opinions and answers on probes about exclusive breastfeeding and the physiologic factors influencing the practice of exclusive breastfeeding which helped to verify information collected with the structured questionnaires.

Data Analysis

The quantitative data collected through questionnaire interviews were entered and statistically analyzed using the Statistical Package for Social Sciences (SPSS) (version 12.0). Basic descriptive analysis was done using frequency distributions. Qualitative data was sorted, categorized and conceptualized systematically to see the patterns of exclusive breastfeeding. Measures of central tendency were used to give expected summary statistics of variables studied. Association between independent variables were analyzed using the univariate logistic regression analysis, variables which had influence on exclusive breastfeeding were analyzed by bi-variate logistic regression, and multivariate logistic regression was carried out



on variables which significantly influenced at the bi-variate logistic regression. Findings were presented using frequency distribution tables and data tables.

Results

Socio-demographic characteristics of respondents

Table 1 shows that majority of the mothers 114(56.7%) that participated in this study were within the age bracket of 18-25 and were married 172 (85.6%). Also, majorities 106 (52.7%) of the mothers had attained primary level of education and were peasants 116 (57.7%). Majority 175 (87%) of the respondents were residing in rural areas and were Catholics 118 (58.7%).



Table 1: Socio-demographic characteristics of the lactating mothers in Bushenyi District.

Variable	Category	Frequency (n = 201)	Percentage
Age	Less than 18	20	10.0
	18-25	114	56.7
	26-33	54	26.9
	34-41	10	5.0
	42-49	3	1.5
Marital status	Married	172	85.6
	Single	19	9.5
	Separated	7	3.5
	Divorced	3	1.5
Level of education	No formal education	42	20.9
	Primary school	106	52.7
	Secondary school	39	19.4
	Post-secondary education	14	7.0
Occupation	Employed	26	12.9
	Self employed	44	21.9
	Peasant	116	57.7
	House wife	15	7.5
Area of Residence	Rural	175	87.1
	Urban	26	12.9
Religion	Catholic	118	58.7
	Protestants	70	34.8
	Muslim	11	5.47
	Others	2	0.99



Exclusive breastfeeding (EBF) practices Analysis

Information on EBF practices of the respondents is shown in Table 2. Majority (62.7%) of the responding mothers had initiated breastfeeding after birth within the first hour of birth; however, during the first six months after birth of their babies, majority (65.7%) of the mothers had fed their babies with other supplements (food) than breast milk. Most (43.3%) of the mothers who introduced other foods to the babies within the first six months, gave them porridge (millet or sorghum drink locally known as Bushera). The result of the study shows 34.3% of mothers who attended health facilities in Bushenyi district exclusively breastfed their infants. Comments made by mothers during the FGDs on their experience during the first six months with their infants confirmed the responses gathered using the questionnaires;

Table 2: Exclusive breastfeeding practices analysis of breastfeeding mothers in Bushenyi District

Variable	Category	Frequency n = 201	Percentage
Initiation of breastfeeding after birth	<1 hour after birth	126	62.7
	1-3 hours after birth	59	29.4
	4-11 hours after birth	9	4.5
	12-23 hours after birth	3	1.5
	24 hours or more after birth	1	0.5
	Don't know/don't remember	3	1.5
	During the first six months after birth, this baby was fed anything		



other than breast milk	Yes	132	65.7
	No	69	34.3
If yes, what was fed to your baby	Cow's milk	56	42.4
	Glucose (sugar) water	18	13.6
	Porridge	57	43.2
	Mashed bananas	1	0.8

Physiologic factors of mothers influencing exclusive breastfeeding practice.

Table 3 shows the information of the univariate analysis of physiological factors of lactating mothers attending health facilities in Bushenyi district. Majority 180(89.6%) of mothers were delivered of their infants vaginally whereas among mothers who caesarian sections majority 13(61.9%) breastfed their children for the first time between 1-3 hours after birth. Majority 179(89.1%) of the mothers were HIV negative as well 123(61.2%) did not experience breast problems during breastfeeding. However, most 26(33.3%) who had breast problems experienced sore / cracked nipples and mastitis. Majority of the mothers rated their breast milk production for their infant sufficient. The most frequent postpartum complications experienced by the mothers were postnatal pain 146(72.6%) and severe bleeding 78(38.8%).

The bivariable and multivariable logistic regression analysis shows that the mode of delivery, the HIV status of the mothers and the breastfeeding problems influenced exclusive breastfeeding among the lactating mothers. One of the postpartum complications which



significantly influenced exclusive breastfeeding was high blood pressure. Mothers who had high blood pressure never practiced EBF according to the cross tabulation results. (table 4)

Table 5 revealed that mothers who had delivered vaginally were twice (OR = 2, $p < 0.000$) more likely to practice exclusive breastfeeding, HIV/AIDS negative mothers were three times (OR = 3, $p < 0.000$) more likely to practice EBF compared to the HIV/AIDS positive mothers. Compared to mothers who had other breast complications, mothers who had breast abscess had higher chances (OR = 1, $p < 0.001$) of practicing EBF. The mothers who reported that they had hypertension were less (OR = 0.441, $p < 0.037$) likely to breastfeed exclusively.

Focus Group Discussion (FGD)

The groups discussed how breast feeding is done in the first six months of the child by women in their communities as well the physiologic factors of mothers that can affect the practice of EBF. Some of the mothers had this to say: *“I cannot see my child thirsty so I will give him water some times. Although we were told not to introduce water to the babies until after 6 months, but I cannot imagine my child crying always and continue to remain light weighted.”* *“For me I just felt like I should give the baby amate (cow’s milk) because for us at home we rear cows so we have a lot of cow’s milk”*. *“My child’s demand for breast milk is much and because my milk is insufficient, I give him water and little Bushera (porridge) sometimes because I can see him crying all the time. “I could not practice exclusive breastfeeding because I had a nipple problem which hurts so sometimes I am afraid to let him suck for long”*?(quotes are researchers’ translation from the Runyankore language used by the mothers).



Table 3: Physiologic factors of the mothers at univariate analysis.

Variable	Category	Frequency (n=201)	Percentage
Mode of delivery	Vaginal birth	180	89.6
	Caesarian section	21	10.4
If caesarian section, When did you breast feed your child for the first time	Less than 1 hour after birth	5	23.8
	1-3 hours after birth	13	61.9
	4-11 hours after birth	3	14.3
HIV status	Negative	179	89.1
	Positive	22	10.9
Experienced any breastfeeding problems	Yes	78	38.8
	No	123	61.2
Breastfeeding problem Experienced	Engorgement	16	20.5
	Sore/cracked nipples	26	33.3
	Mastitis	26	33.3
	Breast abscess	10	12.8
Postpartum complications			
Postnatal pain			



Yes		146		72.6	
	No	55			27.4
High blood pressure					
	Yes		8	3.98	
	No		193	96.02	
Severe bleeding					
	Yes	78			38.8
	No	123			61.2



Table 4:bi-variate analysisof the physiological factors influencing exclusive breastfeeding among lactating mothers in Bushenyi district.

		Exclusive breastfeeding		X ²	df	P value
Variable	Category	Yes n = 69	No n = 132			
Mode of delivery	Vaginal birth	69(38.3%)	111(61.7%)	12.258	1	0.000*
	Caesarian section	0(0.0%)	21(100.0%)			
HIV status	Negative	69(38.5%)	110(61.5%)	12.913	1	0.000*
	Positive	0(0.0%)	22(100.0%)			
Experienced any breastfeeding problems	Yes	23(29.5%)	55(70.5%)	1.325	1	0.250
	No	46(37.4%)	77(62.6%)			
Breastfeeding problems experience	Engorgement	7(43.8%)	9(56.2%)	16.538	3	0.001*
	Sore/cracked nipples	5(19.2%)	21(80.8%)			
	Mastitis	0(0.0%)	26(100.0%)			
	Breast abscess	5(50.0%)	5(50.0%)			
Severe bleeding	Yes	23(29.5%)	55(70.5%)	1.35	1	0.250
	No	46(37.4%)	77(62.6%)			
Infections	Yes	11(36.7%)	19(63.3%)	0.06	1	0.770
	No	58(33.9%)	113(66.1%)			
High blood pressure	Yes	0(0.0%)	8(100.0%)	4.35	1	0.037
	No	69(35.8%)	124(64.2%)			
Postnatal pain	Yes	51(34.9%)	95(65.1%)	0.06	1	0.769
	No	18(32.7%)	37(67.3%)			
	Total	69(34.3%)	132(65.7%)			



Table 5: Multi-variate logistic regression for the physiologic factors influencing exclusive breastfeeding among lactating mothers in Bushenyi district.

Variable	Category	Sig	AOR	Confidence Interval	
				Lower	Upper
Mode of delivery					
	Vaginal birth	0.696	2.400	0.259	7.582
	Caesarian section		1.000		
HIV/AIDS status					
	Negative	0.238	3.049	1.153	0.238
	Positive		1.000		
Breastfeeding problems experience					
	Engorgement	0.756	0.778	0.159	3.795
	Sore/cracked nipples	0.075	0.238	0.049	1.153
	Mastitis	0.998	0.000	0.000	.
	Breast abscess		1.000	1.000	
High blood pressure					
	Yes		0.441	0.255	1.091
	No		1.000		

Discussion

Prevalence of exclusive breastfeeding among lactating mothers.

The objectives of this study were to assess the prevalence of exclusive breastfeeding and physiologic factors influencing Exclusive breastfeeding among mothers who attended health facilities in Bushenyi District, Western Uganda. The findings of this study showed that



prevalence of EBF among lactating mothers with infants aged 6–12 months attending health facilities in Bushenyi District was 34.3% which is low compared to the WHO recommended EBF coverage of 90 % (WHO / UNICEF, 2003) and the national target of EBF coverage (80%). The results of this study on the prevalence of EBF were similar with some other studies but higher than those reported in previous studies in Kilimanjaro (20.7%) and in Uganda (24%). Although compared with the EBF prevalence shown by the Tanzania demographic health survey (TDHS) of 2010 (50%) and for developing countries (35%) it was lower. The differences in the EBF prevalence observed between this study and TDHS may be due to methodologies used in the estimation.

Initiation of breastfeeding within 1 hour by the women was offset by early introduction of water, cow's milk and semi-solids. Between birth and one month cereal porridges and cow's milk was the main addition making predominant breastfeeding a common practice. From one to third month after birth, cow's milk, porridge and mashed bananas were introduced leading to a predominant mix feed group of children. This is almost the similar to the TDHS report 2004/05 and 2010 which showed that 33%-37% of infants below six months had receive complementary foods a day proceeding the interview day (NBS, 2010). This implies that some children born to women in Bushenyi district are prone to mortality since mixed feeding is responsible for frequent risk of infections like diarrhea and pneumonia, increased mortality and higher risk of HIV transmission to infants (WHO, 2009).



The physiological factors influencing exclusive breastfeeding among lactating mothers attending Bushenyi district health facilities

The results of this study show that mothers who had delivered vaginally were twice more likely to practice exclusive breastfeeding. This is in line with a study by Jodi.et al (2013), Coovadia, 2007), Zanardo (2010) and Coovadia *et al.*,(2012) who also revealed that women who had normal vaginal delivery were 47% more likely to initiate breastfeeding than women delivered by scheduled repeat cesarean (adjusted relative risk 1.47; 95% confidence interval 1.35, 1.60).

Women who underwent cesarean sections take a long time to regain consciousness depending on the anesthetic techniques used. Given that the baby naturally has to feed after birth, the situation of the mothers inevitably makes the caretakers of the baby to opt for prelacteal feeds which can continue for a considerable time thus hindering EBF practice. In addition, undergoing cesarean section procedure is usually associated with postnatal pain and in some cases postnatal depression for mothers who had initially desired SVD. The Symptoms of this may include sadness, low energy, changes in sleeping and eating patterns, and reduced desire for sex, crying episodes, anxiety, and irritability. Postpartum depression can interfere with normal maternal-infant bonding and adversely affect breastfeeding. Postpartum depression may lead mothers to be inconsistent with childcare and thus limits the chances of practicing exclusive breastfeeding.



In this study, HIV negative mothers were three times more likely to practice EBF compared to the HIV positive mothers. The study therefore is in agreement with other numerous studies. For example; In a cross-sectional study in Mbale district, Uganda, the HIV-infected women had less favourable infant feeding practices compared to the HIV-negative ones with regards to giving prelacteal feeds, less EBF of infants under six months, and the early introduction of solids (Fadnes, 2009).

Until recently, the World Health Organization (WHO) advised HIV-positive mothers to avoid breastfeeding if they were able to afford, prepare and store formula milk safely. But research has since emerged, particularly from Uganda showing that a combination of exclusive breastfeeding and the use of antiretroviral treatment can significantly reduce the risk of transmitting HIV to babies through breastfeeding. WHO is recommending that HIV-positive mothers or their infants take antiretroviral drugs throughout the period of breastfeeding until the infant is 12 months old. This means that the child can benefit from breastfeeding with very little risk of becoming infected with HIV. However, despite this recommendation, the HIV positive mothers in Bushenyi did not seem to practice EBF. This could be due to fear of disclosure and stigma felt by HIV-infected mothers, which makes some to end up practicing mixed breastfeeding for their babies in an effort to keep their HIV sero-status secret from their spouses and families. Feelings of shame and stigmatization because of their HIV status could have affected the ability of some of the mothers to make informed infant-feeding choices. Another reason is that the mother could be unaware of the fact that breastfeeding HIV



exposed infant exclusively is safer than replacement or mixed feeding and could have as such been afraid of transmitting the virus to their children through exclusive breastfeeding.

The findings of this study further showed that mothers who had breast abscess had higher chances of practicing EBF compared to mothers who had other breast complications like mastitis, engorged breasts or sore nipples.

The mothers who reported that they had hypertension were less likely to breastfeed exclusively. This is mainly due to the effects of hypertension on the body of the lactating mother which include severe headaches, severe anxiety and shortness of breath and nosebleeds all of which can hinder the pattern of breastfeeding.

Conclusion

Majority of lactating mothers in Bushenyi district, Western Uganda fed their babies with other food substances (mostly Bushera and cow's milk) in addition to breast milk, hence accounting for the low exclusive breastfeeding practice. Among the physiologic factors of mothers in the region which influenced their exclusive breastfeeding practices include mode of delivery, place of delivery, HIV status and breast conditions. Routine breast check and examination of lactating mothers should be encouraged during post-natal visits in all the health facilities as an intervention measures to detect early signs of breast disorders in order to address the factor influencing exclusive breastfeeding.



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