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PREDICTORS OF EXCLUSIVE BREAST-FEEDING AMONG WOMEN IN FORMAL EMPLOYMENT ATTENDING CHILD WELFARE CLINIC AT JARAMOGI OGINGA ODINGA TEACHING AND REFERRAL HOSPITAL, KENYA

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ABSTRACT

Background: Breast-feeding lays the foundation for healthy growth and child development. Despite the documented benefits of exclusively breast-feeding, studies have found that several predictors influence the duration of breast-feeding and few researches have assessed the predictors of exclusive breast-feeding among women in formal employment in Kenya. The objective of this study was to determine the predictors of exclusive breast-feeding among mothers in formal employment attending child welfare clinic at the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH). **Methods**: Descriptive cross-sectional design was used in the study. Three hundred and ninety one (391) women in formal employment with infants aged one year and below were purposively sampled. **Results:** Fifty one (51%) of the women in formal employment were practicing EBF. The study identified three elements as predictors of EBF; respondents who were more knowledgeable on the benefits of EBF to the mother (aOR=3.22, 95% CI [1.63-6.35], p-0.001) were 3 times more likely to EBF while those who delivered in public hospitals (aOR=12.48,95%CI [1.46-10.7],p-0.021) were 12 times more likely to EBF than those that delivered in private hospitals. The study also revealed that women who were more knowledgeable on risks of failure to EBF their babies had higher odds of EBF (aOR=4.10, 95% CI [2.07-8.12], p<0.001). The major constraints hindering women in formal employment from practicing EBF were resumption to work after delivery, lack of breast-feeding facilities at work place, support and long working hours. **Conclusion:** The predictors of Exclusive breastfeeding among women in formal employment include knowledge and place of delivery. Though the women are knowledgeable on EBF several challenges hinder them from effectively practicing EBF. There is therefore urgent need for strategies that will enhance EBF for women in formal employment.

KEYWORDS: Exclusive breastfeeding, Knowledge, Constraints.

BACKGROUND

Exclusive breast-feeding refers to the practice of feeding the baby with only breast milk (including expressed breast milk) and allows the baby to receive vitamins, minerals or medicine (WHO, 2002). Studies have shown that sub-optimal breast-feeding, especially non-exclusive breast-feeding in the first six months of infancy contribute to 1.4 million deaths and 10% of disease burden in under-fives ((American Academy of Pediatrics AAP, 2012 ;UNICEF/WHO, 2013). It is estimated that universal coverage with general nutritional interventions including EBF promotion could prevent 8% child deaths under the age of six months and 10-15% of stunting (WHO, 2011). To achieve this, mothers and families need support to initiate and sustain appropriate infant and young child feeding practices.

Working mothers find it difficult to meet personal goals and to adhere to the expert recommendations for EBF (Lakati, *et al* ., 2002; Murtagh & Moulton, 2011; Dun-dery & Laar, 2016). Documented factors that affect EBF and duration of breast-feeding include but are not limited to; breast problems such as sore nipples, mother's perceptions that she is producing inadequate milk, societal barriers such as employment and length of maternity leave (Skafida, 2012;Okwy-Nweke, 2014;Hassan *et al* ., 2014).Further studies show that it has become increasingly difficult for women in employment to practice EBF and continued breast-feeding for at least two years after they resume work from maternity leave (Alina *et al* ., 2012; Kimani-Murage *et al* ., 2015). This was attributed to early resumption to work post-delivery and lack of or inadequate facilities to support breast-feeding at work place (Handayani *et al* ., 2013).

The population of women becoming employed during their childbearing years is growing. According to the U.S Bureau of Labor Stastics (BLS,2015), women constituted 52% of all workers employed in management and professional related occupations in 2014. Evidence indicates that approximately 70% of employed mothers

with children younger than 3 years' work full time and a third of these mothers return to work within 3 months after birth while two-thirds return within 6 months. Majority of these women do not benefit from workplace policies that support nursing mothers to continue breast-feeding (ILO,2014). In 2011, Kenyan women represented 47% of the workforce both formal and informal sectors (World Bank, 2011). The number has since increased with evidence from (KDHS), 2014 indicating that 61% of women in Kenya have joined the labor market. While the number of new mothers in the workplace is steadily increasing, an early return to work and inconvenient workplace conditions discourage the women from EBF or worse still leads to early cessation of breast-feeding (Kimani-Murage *et al ., 2015*;Hassan *et al .,* 2014).

Over the years studies have recommended that the provision of facilities to support breast- feeding in the work place should be encouraged so that maternal employment does not hamper breast-feeding (Kosmala-anderson & Wallace, 2006; Murtagh & Moulton, 2011; Hirani & Karmaliani, 2013). Other studies (Lakati, 2002 ; Weber, 2011) revealed that given opportunities to breast-feed their infants during work, majority of the women will continue to breast-feed hence the need for promotion of breast-feeding practices among employed mothers through implementation of powerful workplace interventions which include among others: educating working mothers about management of breast-feeding with employment (Slavit, 2009), enhancing employers awareness about benefits of breast-feeding (NHMRC, 2013), accommodation at the workplace and arranging physical facilities for lactating mothers (Murtagh & Moulton, 2011).

International Labour Organization (ILO) support breast-feeding through the Maternity and Protection Kit under recommendation No 191(ILO, 2000) where it recommends a maternity leave of not less than 18 weeks. The goal of maternity protection legislation is to enable women to combine their reproductive and productive roles successfully and promote equal opportunities and treatment in employment and occupation. The proportion of countries that meet the standard of at least 18 weeks' leave varies between regions. For example while the law in Taiwan provides for eight weeks of maternity leave (Tsai, 2013) Malaysia has a provision of twelve weeks (Alina *et al .,* 2012). According to ILO, 2014, only 66 member States have ratified at least one of the maternity protection Conventions and evidence indicates that nearly all countries in Eastern Europe and Central Asia meet the standard recommendation. Other governments like Nigeria established Baby-Friendly Hospital Initiative (BFHI) in selected centres with the aim of providing mothers and their infants a supportive environment for breast-feeding and to promote appropriate breastfeeding practices (Ekanem, 2012). Despite these efforts studies have shown that breast-feeding support for the working mother has remained unsatisfactory (Hassan *et al .,* 2014;Nkrumah, 2017).

The Kenyan government is among the few countries that has complied with some of the maternity protection recommendations (ILO, 2014). In equity provision, a national maternity protection legislation that makes it possible for employed women to manage both work and breast-feeding was passed in Kenya through EMPLOYMENT ACT CAP.226 (National Council for Law Reporting (NCLR, 2012). In compliance to the act, the government ensures that there is job security after delivery, paid maternity leave for at least 12 weeks after delivery and retention of paid annual leave of 30 working days totaling to 18 weeks. However, evidence indicates that the other benefits including short breast-feeding breaks, flexi-time, space and facilities for mothers to breast-feed and express breast milk are not provided for in the law, and are left at the discretion of the employer (Kimani-Murage *et al .,* 2015). However, some corporate organizations like Safaricom (one of Kenya's largest mobile service providers) and General Motors have provision for rooms where women can express milk and play areas for young children (Irin, 2012) thus ensuring female employees can successfully breast-feed even as they work.

The rate of EBF among infants less than six months remained low at 35% in Sub - Saharan Africa. The rates increased from 24% to 32% 1996-2006 and 37% in 2011(UNICEF, 2013). EBF prevalence increased in almost all regions in the developing world, with the biggest improvement noted in West and Central Africa where the prevalence doubled from 12% to 28% (Cai *et al .,* 2012). More modest improvements were observed in South East Asia where the EBF rates increased from 40% in 1995 to 44% in 2010 (Bora, 2014). A review of infant and young child feeding practices in countries with improvements by more than 20 percentage suggests that the increase in EBF was primarily due to a reduction in suboptimal feeding practices, such as consumption of water, non-milk liquids such as juice and formula milk (Cai *et al .,* 2012). However, the contribution of women in employment in the improved EBF rates is not clear.

Key indicators in the Kenya Demographic Health Survey (KDHS) indicate a marked increase in the proportion of children younger than 6 months who are exclusively breast-fed from 32% in the 2008-9 KDHS to the current 61% against country's target of 80% and global target of 50% (KDHS, 2014). This is attributed to increased awareness by the Ministry of Health through the media and breast-feeding policies, including enactment of the Breast-milk Substitutes Regulation and Control Act, 2012 (Kenya Laws, 2012) which regulates marketing and distribution of breast-milk substitutes and provides for safe and adequate nutrition for infants through promotion of breast-feeding. The law further prohibits the promotion of complementary foods and

forbids health workers from accepting gifts from formula manufacturers.

Despite the success Kenya has made around EBF in the last few years, evidence has shown that approximately 40 % of children aged less than six months are not exclusively breast-fed and about half of the children are stopped from breast-feeding before their second birthday (Kimani-Murage *et al* ., 2015). Consequently, about one-quarter (26 %) of Kenyan children are stunted, while 8 % are severely stunted (KDHS, 2014). Other studies have concluded that women employed full time are less likely to continue breast-feeding upon return to work (Lakati *et al* ., 2002; Nyanga, 2012;Kimani-Murage *et al* ., 2015) and for working mothers, there are more obstacles and barriers for practicing breast-feeding successfully (Handayani *et al* ., 2013); thus more needs to be done to ensure the rights of mothers and children are realised.

MATERIAL AND METHODS

DESIGN

This was a descriptive cross-sectional survey with a mixed method approach using quantitative and qualitative methods.

STUDY AREA POPULATION AND INCLUSION CRITERIA

The study was carried out in Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) a level five hospital located in Kisumu County with a catchment population of 82,000 people. The study site was the Child Welfare Clinic (CWC) located at the outpatients Maternal and Child Health (MCH) Department which serves 2000 mother infant pairs per month. Clinic days operate from Monday to Friday 8 AM to 4.00 PM. Study participants consisted of breast-feeding women in the formal sector of employment. Participants were eligible for the study if they had infants of age 12 months and below, were breast-feeding and had returned to work after delivery.

SAMPLING TECHNIQUE AND SAMPLE SIZE

Purposive sampling technique was used. 401 mother infant pairs who met the inclusion criteria and brought their infants to the Jaramogi Oginga Odinga Teaching and Referral Hospital (JOOTRH) (CWC) for immunization in the months of May and June 2017 were selected to participate in the study and to attain desired sample size, consecutive sampling technique was used.

Sample size for the study was calculated as follows:
$n = Z^2pq/e^2$Where n represents the desired sample size, Z is the standard normal deviate at 95% confidence level (1.96), P the estimated proportion of the target population estimated to be exclusively breast-feeding o.61 (KDHS, 2014); q = 1-p and e = desired level of precision (0.05).The figure was adjusted upward by 10% to cater for possible recording errors and non-respondents. The resultant sample size was 401.

DATA COLLECTION TOOLS AND PROCEDURES

Three tools were utilized for data collection: researcher administered structured questionnaire, key informant interviews (KII′s) and focus group discussions (FGDs). The key indicators in the questionnaire were maternal employee demographic and socio-economic characteristics, maternal level of knowledge on breast-feeding matters, breast-feeding patterns after return to work, support facilities available at work place in support of breast-feeding and constraints to EBF. Knowledge on EBF was assessed through a breast-feeding knowledge assessment tool adapted and modified from (Alina, I, &Zaharah, 2010).

Before the start of the data collection, research assistants were recruited and trained for two days on interviewing and recording skills in order to establish a standard way of asking questions. Participants signed an informed consent prior to commencement of the interviews. The first mother to bring her infant to the CWC and met the inclusion criteria was picked as respondent number one and interviewed and so on until the desired sample size was attained. Clients who had already participated in the study were not included in case they were met in subsequent visits to the clinic during the study period. Codes were used to ensure anonymity. The questionnaires were numbered in that respondent number one was 001,002 in that order till 391.Participants for FGD were purposively selected from the non- sampled participants and were ten in number (five in each group) while KII included the nursing officer and nutritionist in charge of MCH. FGDs were conducted under a tree in the hospitals recreational ground while KII was done in the respective offices if the interviewees. Data collected from FGDs and KII was audiotaped and was reported verbatim.

DATA ANALYSIS

Statistical package for social sciences (SPSS) version 20 was used to enter and analyse data. Data was cleaned, coded and entered into SPSS for analysis. Descriptive statistics was used to present participant socio-demographic characteristics, knowledge levels, work practices and constraints to EBF by use of frequencies and percentages. Chi square test was used to determine whether there was association between exclusive breast-feeding and the study variables of socio-demographics, knowledge, work practices and constraints. Bivariate regression analysis was done to determine if there was relationship between EBF and socio-demographic and knowledge variables. Variables that had a $p < 0.25$ were put in the final multivariate logistic regression. Associations were reported by use of Odds Ratios with their respective 95% Confidence Intervals (CI). Statistical significance was considered if $p < 0.05$. Qualitative data recorded from FGDs and in-depth interviews was transcribed then it was coded. Common themes identified were knowledge on breast-feeding matters, sources of breast-feeding information,

challenges to EBF and breastfeeding support at work place. Inferences were made from each theme and conclusion drawn then triangulated with the data from the questionnaire then it was reported verbatim.

ETHICAL APPROVAL

Authority to carry out the research was sought from Masinde Muliro University (MMUST) Institutional Ethics and Review Committee (IREC), Jaramogi Oginga Odinga Hospital (ERC) and the National Commission for Science and Technology (NACOSTI). Participants signed an informed. Benefits and risks of the study were explained and participants were informed of their right to withdraw from the study whenever they wished to as participation was on voluntary basis.

RESULTS

Descriptive results

A total of 391 breast-feeding mothers in formal employment participated in the study yielding a response rate of 98%. Their mean age (in years) was 29.4(SD 4.3) with slightly more than half (55%) aged between 20-29 years. Majority (73.1%) were married. Almost all the respondents 94.1% had attained college level of education. Employment status was determined by occupation then coded according to where they were employed. Private company was the leading employer (36.3%). Most of the respondents (30.2%) had a salary scale of between Kshs. 25000-35000. Education level p-(0.049) and parity (p-0.014 were significantly associated with the dependent variable other details are detailed in Table 1.

Table 1: Maternal socio-demographic characteristics.

Characteristic	Total (%)	EBF n (%)	Non-EBF n (%)	*p* value
Mothers Age (years)				0.29
20-24	45(11.5)	25(55.6)	20(44.4)	
25-29	170(43.5)	79(46.5)	91(53.5)	
30-34	118(30.2)	66(55.9)	52(44.1)	
Above 35	58(14.8)	26(44.8)	32(55.2)	
Marital Status				0.98
Single	74(18.9)	37(50.0)	37(50.0)	
Married/Cohabiting	286(73.2)	144(50.3)	142(49.7)	
Separated/Widow	31(7.9)	15(48.4)	16(51.6)	
Education level				**0.05**
Primary	2(0.5)	2(100.0)	0(0.0)	
Secondary	21(5.4)	6(28.6)	15(71.4)	
Tertiary	368(94.1)	188(51.1)	180(48.9)	
Employer				0.66
Public Service	113(28.9)	60(53.1)	53(46.9)	
TSC	60(15.4)	30(50.0)	30(50.0)	
Private company	142(36.3)	68(47.9)	74(52.1)	
NGO	55(14.1)	30(54.6)	25(45.4)	
Others	21(5.4)	8(38.1)	13(61.9)	
Salary (KES)				0.38
< 25,000	144(36.8)	68(47.2)	76(52.7)	
25,000 +	247(63.2)	128(51.8)	119(48.1)	
Religion				
Christian	376(96.2)	188(50)	188(50.0)	
Muslim	15(3.84)	8(53.3)	7(46.6)	
Parity				**0.014**
1	123(31.5)	75(60.9)	48(39.0)	
2	135(34.5)	60(44.4)	75(55.6)	
3and more	133(34.1)	61(45.7)	72(54.1)	
Child Age (months)				0.25
≤ 6	204(52.2)	108(52.9)	96(47.1)	
> 6	187(47.8)	88(47.06)	99(52.9)	
Place of Delivery				0.08
Public Hospital	238(60.9)	124(52.1)	114(47.9)	
Private Hospital	145(37.1)	71(48.9)	74(51.0)	
Home	8(2.1)	1(12.5)	7(87.5)	

Exclusive breast-feeding rate

To determine the exclusive breast-feeding (EBF) rate, mothers were asked whether they had given their infants any other feeds besides breast milk while they were below 6 months and reasons for introduction of the feeds. Half (50.1%) of participants practiced EBF. Of those that did not EBF, majority (27.7%) gave formula milk alongside breast milk. The main reasons cited for non-EBF were return to work (29.4%) and lack of enough breast milk (14.3%) as illustrated in Table 2.

Table 2: Exclusive breast-feeding rate.

Characteristic	N(391)	(%)
Breast-feeding practices		
Exclusive breast-feeding	196	50.1
Non-exclusive breast-feeding	195	49.9
Feeds given alongside breast-milk		
Formula milk	109	27.7
Water	23	5.9
Porridge	25	6.4
Cow's milk	35	9
Others	3	0.8
Reason for non-EBF		
Baby not getting enough from breast milk	56	14.3
Advice by family members	11	2.8
Mothers illness	5	1.3
Return to work	115	29.4
Others	8	2

Level of Knowledge

Overall, participants were very knowledgeable. Level of knowledge was determined by calculating overall knowledge score from the cumulative percentage of all questions in the domain for all respondents. The mean was calculated for each and then for all questions where a mean score of 73% was established. Participants that scored above the mean (74-100%) were categorized as being very knowledgeable, that scored between 50-73% were categorized as knowledgeable and those that scored below 50% were categorized having inadequate knowledge. The total knowledge score for all participants revealed a significant association with EBF **p-<0.001** and there was a significant association with EBF on variables in four out of the six tested domains as detailed in Table 3.

Table 3: Maternal Level of Knowledge and Exclusive Breastfeeding.

Knowledge domain	Total n(%)	EBF n(%)	Non-EBF n(%)	p- value
Duration of breastfeeding				**0.004**
Inadequate knowledge	13(3.3)	1(0.5)	12(6.2)	
Quite knowledgeable	89(22.8)	41(20.9)	48(24.6)	
Very Knowledgeable	289(73.9	154(78.6)	135(69.2)	
Colostrum knowledge				0.193
Inadequate knowledge	34(8.7)	149(76)	22(11.3)	
Quite knowledgeable	67(17.1)	35(17.9)	32(16.4)	
Very Knowledgeable	290(74.2)	149(76)	141(72.3	
Benefits of EBF to the mother				**<0.001**
Inadequate knowledge	83(21.2)	17(8.7)	66(33.8)	
Quite knowledgeable	171(43.7)	94(48)	77(39.5)	
Very Knowledgeable	137(35)	85(43.4)	52(26.7)	
Benefits of EBF to infant				**<0.001**
Inadequate knowledge	21(5.4)	1(0.5)	20(10.3)	

Quite knowledgeable	101(25.8)	39(19.9)	62(31.8)	
Very Knowledgeable	269(68.8)	156(79.6)	113(57.9)	
Expressed breast milk				
Inadequate knowledge	110((28.1)	47(24)	63(32.3)	0.187
Quite knowledgeable	100(25.6)	53(27)	47(24.1)	
Very Knowledgeable	181(46.3)	97(49)	85(43.6)	
Risk of failure to breast-feed exclusively				**<0.001**
Inadequate knowledge	84(21.5)	16(8.2)	68(34.9)	
Quite knowledgeable	159(40.7)	89(45.4)	70(35.9)	
Very Knowledgeable	148(37.9)	91(46.4)	57(29.2)	
Total knowledge score				**<0.001**
Inadequate knowledge	26(6.6)	1(0.5)	25(12.8)	
Quite knowledgeable	170(43.5)	75(38.3)	95(48.7)	
Very Knowledgeable	195(49.9)	120(61.2)	75(38.5)	

BREASTFEEDING SUPPORT AT WORK PLACE

Generally, the work place support was very low mean 2.95, SD 2.036. Maternity leave though not significantly associated with EBF emerged as most available form of support. Almost all the participants (90.8%) reported to have been granted maternity leave of twelve weeks. Similar findings were reported in the FGD where most participants indicated to have had maternity leave of 12 weeks though the leave period varied depending on the employer. Besides leave the highest (59.3%) form of support available was from co-workers. A further (53.5%) identified flexi and shorter working hours as a form of breast-feeding support at the work place. Only (7.16%) respondents reported availability of a designated breast-feeding room. A bivariate analysis was done to assess the association between workplace breast-feeding support and EBF. All except two variables tested revealed a statistically significant association with the EBF. Presence of a supportive supervisor (OR-5;CI:3.2-8.0;p<0.01) was associated with an increased likelihood of EBF as compared to availability of a day care nursery as detailed in Table 4.

Table 4: Breastfeeding support at work Place and Exclusive breastfeeding.

Characteristic	Total n(%)	Non EBF n(%)	EBF n(%)	X^2	OR	CI	p-value
Maternity leave				0.5	0.8	.39-1.5	0.47
Below 3 months	36(9.2)	20(10.3)	16(8.2)				
Above 3 months	355(90.8)	175(89.7)	180(91.8)				
On-site day care				0.9	1.3	0.7-2.4	0.36
Yes	46(11.8)	20(43.5)	26(56.5)				
No	345(88.2)	175(50.7)	170(49.3)				
Designated BF room				**6.4**	**2.6**	**1.1-6.1**	**0.02**
Yes	28(7.2)	8(28.6)	20(71.4)				
No	363(92.8)	187(51.5)	176(48.5)				
Refrigerator to store expressed milk				15	3	1.8-6.7	**<0.01**
Yes	52(13.3)	13(6.7)	39(19.9)				
No	339(86.7)	182(93.3)	157(80.1)				
One is allowed to BF at work				**16**	**2.6**	**1.6-42**	**<0.01**
Yes	99(25.3)	32(32.3)	67(67.7)				
No	292(74.7)	163(55.8)	129(44.2)				
BF policy at workplace				3.3	1.6	0.9-2.7	0.07
Yes	70(17.9)	28(40.0)	42(60.0)				
No	321982.1)	167(52.0)	154(47.0)				
Supportive supervisor				**51**	**5**	**3.2-8.0**	**<0.01**
Yes	138(35.3)	35(25.4)	103(74.6)				
No	253(64.7)	160(63.2)	93(36.8)				
Flexible work schedules				**7.2**	**1.7**	**1.2-2.6**	**0.07**
Yes	209(53.4)	91(43.5)	118(56.5)				
No	182(46.6)	104(57.1)	78(42.9)				
Breastfeeding breaks				40	4	2.6-6.5	**<0.01**

Yes	134(34.3)	37(20)	97(49.5)				
No	257(65.7)	158(81)	99(50.5)				
Co-worker support				11	2	1.4-3.0	**0.01**
Yes	232(59.3)	99(50.8)	133(67.9)				
No	159(40.7)	96(49.2)	60(32.1)				

CONSTRAINTS TO EBF

Majority (90%) reported long working hours as the main constraint. In conformity is information collected from FGD and KII. In the FGD most mothers reported to be working away from their young infants for long while the key informant reported that most working mothers don't EBF because they are away from their babies for long periods. Other factors mentioned include short maternity leave (82.35%), maternal illness (73.15%) and difficulties in expressing breast milk (70.8%).

PREDICTORS OF EXCLUSIVE BREAST-FEEDING

Variables that had a $p < 0.25$ in the bivariate regression were put in the final multivariate logistic regression. Education, parity, child age, place of delivery, benefit of EBF to mother and knowledge on risks of non-EBF were fit in the final multivariate model. Three variables were identified as predictors of EBF. Mothers who delivered at public hospitals (aOR=12.48, 95%CI [1.46-106.74], p = 0.021) were more likely to EBF compared to those that delivered in private hospitals (aOR =1.04, 95%CI [1.04-77.87], p=0.046). For mothers who knew the benefits of exclusive breast-feeding to them, those who were quite knowledgeable (aOR=3.22, 95% CI [1.63-6.35], p=0.001) and very knowledgeable (aOR=4.1, 95% CI [2.07-8.12], p<0.01) were more likely to exclusively breast-feed compared to those who had inadequate knowledge. For knowledge on risks, those who were quite knowledgeable (aOR=4.10, 95% CI [2.07-8.12], p<0.001) and very knowledgeable (aOR=3.82, 95% CI [1.84-7.97], p<0.001) were more likely to exclusively breast-feed compared to those who had inadequate knowledge.

Table 6: Logistic regression model of the significant factors associated with exclusive breast-feeding.

Characteristic	uOR	95%CI	*p* value	aOR	95%CI	*p* value
Mothers Age (years)			0.2971			
20-24	1.54	0.70-3.37	0.281			
25-29	1.07	0.59-1.94	0.828			
30-34	1.56	0.83-2.94	0.167			
35-44	*ref.*					
Marital Status			0.9784			
Single	1.07	0.46-2.47	0.88			
Married/Cohabiting	1.08	0.52-2.27	0.836			
Separated/Widowed	*ref.*					
Education			**0.0415**			
Primary	-			-		
Secondary	*ref.*			*ref.*		
Tertiary	2.61	0.99-6.88	0.052	2.5	0.86-7.28	0.92
Parity			**0.0139**			
1	1.95	1.19-3.21	**0.008**	1.52	0.87-2.66	0.141
2	*ref.*			*ref.*		
3	1.06	0.65-1.71	0.815	1.13	0.65-1.96	0.673
Child Age (months)			0.245			
≤ 6	1.27	0.85-1.88		1.25	0.84-1.88	0.275
> 6	*ref.*			*ref.*		
Place of Delivery			0.0626			
Public Hospital	7.61	0.92-62.84	0.059	12.48	1.46-10.74	**0.021**
Private Hospital	6.72	0.81-55.98	0.078	9	1.04-77.87	**0.046**
Home	*ref.*			*ref.*		
Knowledge on benefits of EBFto Mother						
Inadequate Knowledge	*ref.*			*ref.*		
Quite Knowledgeable	4.74	2.54-8.74	<0.001	3.22	1.63-6.35	**0.001**
Very Knowledgeable	6.34	3.36-11.98	<0.001	3.41	1.61-7.25	**0.001**
Knowledge on Risks of non-EBF						
Inadequate Knowledge	*ref.*			*ref.*		

Quite Knowledgeable	5.4	2.88-10.13	<0.001	4.1	2.07-8.12	**<0.001**
Very Knowledgeable	6.79	3.59-12.83	<0.001	3.82	1.84-7.97	**<0.001**

DISCUSSION

Studies in different contexts have identified different factors as predictors of EBF such as maternal level of education, socio-cultural factors, milk insufficiency and resumption of work following birth (Motee *et al* ., 2013, Jessri *et al* ., 2013). This findings are comparable with those of the current study where mothers who had tertiary education were almost 3 times more likely to breastfeed compared to mothers who had secondary education (aOR = 2.50, 95%CI [0.86-7.28], p = 0.092). Similar results were reported by (Diji *et al* ., 2017) and (Al-darweesh *et al* ., 2016). In both studies women who were educated were more likely to EBF than their less educated counterparts. Even though education level has been documented as an important predictor of EBF, the current study failed to demonstrate this association. This finding concurs with that of a study in Australia (Weber, *et al* ., 2011) where there was no association between maternal education and EBF. Unlike the current study majority of participants in the Australia study had university education.

Place of delivery influenced EBF practice. Mothers who delivered at public hospitals (aOR=12.48, 95% CI [1.46-106.74], p = 0.021) were 12 times more likely to exclusively breastfeed compared to mothers who delivered in private hospitals (aOR =1.04, 95% CI [1.04-77.87], p=0.046) and those who delivered at home. The high likelihood of EBF among mothers who delivered at public hospitals could be related to the fact that clients who deliver at private hospitals are of higher socioeconomic status thus more likely to be engaged in jobs that are more demanding and far from home. This finding is supported by that of a study in Nigeria (Akodu *et al* , 2014) which assessed EBF among women delivering in private facilities. The study reported low rates of EBF (3.6%) at six months among these women. Similar findings were reported in India **Saira Mehnaz** *et al* , 2010 where it was noted that majority of the children born at home were not exclusively breast-fed and they received pre-lactal feeds. Contrary to these are results of studies done in the west. A Canadian study (Al-sahab *et al* ., 2010) found that women who gave birth at home were more likely to exclusively breastfeed as compared to those who delivered in health care facilities. Similar findings were reported in Netherlands (Cock *et al* , 2015)where it was noted that women who had a home birth recorded higher success rates of EBF as compared to those who had had a hospital delivery. The differences could be due to different approaches in the health care systems among countries.

Knowledge has been consistently documented as a strong predictor of EBF in many studies (Stuebe, &Bonuck, 2011; Dun-dery &Laar, 2016) while inadequate knowledge and lack of knowledge have been associated with non-EBF (Orabi, 2015, Afrose *et al* ., 2012). Consequently, studies have revealed that higher knowledge is positively associated with the practice of EBF(Thepha *et al* ., 2017,Zhou, Younger, & Kearney, 2010).

In the current study overall knowledge level on EBF was high among working mothers. This finding confirms data from a previous studies in Kenya (Lakat*i et al* ., 2002; Kimani-Murage *et al* ., 2015) and worldwide (Tan KL, 2009,Kever *et al* ., 2014) that there is high knowledge levels on EBF among women in employment . In east Africa a study (Maonga *et al* ., 2016) reported significant associations between maternal level of knowledge and EBF where good knowledge was associated with twice the odds of EBF. Similarly, maternal breast-feeding knowledge was found to influence infant feeding behaviour in a study assessing breast-feeding knowledge among Chinese mothers living in Ireland (Zhou *et al* .,2010). The high level of maternal knowledge on breast-feeding matters can be attributed to consistent antenatal and post-natal teachings on breast-feeding aspects. Despite the high knowledge level on breast-feeding matters the EBF rate among respondents was low.

Although findings of high maternal knowledge levels on breast-feeding in the current study are in conformity with several studies globally (Maonga *et al* ., 2016; Dun-dery&Laar, 2016; Jessri *et al* ., 2013), some studies revealed contrary information. Studies by (Tyndall et,al, 2016 and Afrose *et al* , 2012) reported low knowledge levels on breast-feeding. The difference in these findings is attributed to participant's low level of education. In the study by (Tyndall et,al, 2016, majority of the mothers related EBF to increased respiratory diseases among infants and reported that colostrum and expressed breast milk were stale. Both studies employed both quantitative and qualitative approaches of data collection but all questions addressing knowledge aspects were negatively worded in the Tyndal *et al* , 2016, study. Similarly (Hassan *et al* ., 2014) reported low knowledge on expressed milk. In this study majority of the participants either lacked or had inadequate knowledge on milk expression. Most of the participants in the study had attained primary level of education.

Studies have shown that women often face inflexibility in their work hours and locations and a lack of privacy for breastfeeding or expressing milk, have no place to store expressed breast milk and are unable to find child care facilities at or near the workplace(U.S Department of Human Services, 2011;Nkrumah, 2017;Murtagh & Moulton, 2011). Findings from the current study indicate that there was very low support (27%) at work place for breast-feeding mothers. The study revealed that most of the employers have no provision for facilities in support of breast-feeding mothers while at work. Consistent with

these findings are earlier studies done in Nairobi (Kimani-Murage *et al* ., 2015; Lakati *et al* ., 2002; Wanjiku, 2015). The studies reported unfavourable working conditions hindering the practice of breast-feeding at work. Other studies in Uganda (Engebretsen *et al* ., 2010) and Ghana (Dun-dery&Laar, 2016) concur with the findings of the current study that most work places lack essential breast-feeding facilities to support breastfeeding.

Return to work after delivery is an important factor that may affect EBF practice. Mothers in employment are faced with various challenges in practicing EBF. In most cases breast-feeding for a working mother is a conflict between her ability and desire. While a mother may intend to practice EBF and continue with breast-feeding for up to one year or more, personal and socio-cultural factors could act as constraints (WHO, 2002). The main hindrances to the sustained practice of EBF among working mothers as indicated by this study include; long working hours, short maternity leave and time constraints due to busy schedules. The findings are in corroboration with those of earlier studies in Nairobi (Lakati *et al* ., 2002 and Kimani-Murage *et al* ., 2015) which reported long working hours and resumption of work shortly after delivery as the major barriers to optimum breast-feeding. Other studies in Thailand (Thepha *et al* ., 2017), Uganda (Engebretsen *et al* ., 2010), Ghana (Dun-dery&Laar, 2016) and Nigeria (Agbo *et al* ., 2013) reported similar findings. The Thailand study was a narrative review which revealed shorter breast-feeding periods among working women.

CONCLUSIONS

From the study findings, most of the mothers exhibited adequate knowledge on EBF but only half 50.1% were or had exclusively breast-fed. The study therefore concluded that despite the low EBF rate, working women are quite knowledgeable on EBF. Other findings from the study revealed a positive association between availability of work place support facilities with EBF. The study therefore concluded that though availability of day-care/crèche at work place to cater for the babies and children while the mothers work had no influence on EBF, presence of work place support has a positive influence on EBF thus availability of work place facilities will enhance EBF among women in paid employment. The study further revealed that women in formal employment are faced with various constraints which in turn interfere with their ability to EBF. Work related challenges emerged as the major constraints. Inadequate milk production was the least reported challenge thus a confirmation that given adequate support, women in employment can adequately practice EBF. Three elements were identified as predictors of EBF. Knowledge on benefits of EBF to mothers, knowledge of risks of non- EBF and place of delivery were positive predictors of EBF among working mothers in formal employment.

Based on the findings and conclusions, the study recommend that educational programs such as teaching on milk expression that encourage breast-feeding knowledge into practice should be strengthened to enhance the practice of EBF among women in formal employment, promotion of infant-friendly work environment among employers and enactment of 6 months of mandatory paid maternity leave as well as strengthening policies that encourage women to breast-feed in the workplace. The study further recommends that provision of breastfeeding facilities by employers should be made compulsory.

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