



Research Article

Effect of Counselling on Expressing Breastmilk, on the Duration of Exclusive Breastfeeding Among Working Mothers in Kiambu County, Kenya

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Abstract

The prevalence of exclusive breastfeeding (EBF) stands at 41% globally, 43% in Africa, 61% in Kenya. The World Health Organization recommends EBF for six months. About half (49.2%) of Kenyan women are in the work force. These women are entitled to a three-month maternity leave under the Kenyan Constitution. They therefore do not have the privilege of being with their children all day to breastfeed and may require additional support to be able to breastfeed exclusively for 6 months. The purpose of this study was to determine the effect that counselling on expressed breast milk has on the duration of EBF among working mothers in Kiambu County. A cluster-based randomized controlled trial was adopted. The mothers in the intervention group received counselling on the benefits of EBF, breastmilk expression methods, benefits of expressing, storage, and feeding of expressed breastmilk. A researcher administered semi-structured questionnaire was administered to collect baseline data on socio-demographic factors among working mothers. Follow-up questionnaires were administered to both groups to collect information on breastfeeding practices. The data was analyzed using the Statistical Package for the Social Sciences (SPSS). Chi-square tests, odds ratios, and regression analyses were used to determine associations between variables. The prevalence of EBF was 70.4%. Significantly, the prevalence of EBF in the intervention group (86.1%) was higher than in the control group (54.9%). Mothers who received counselling (intervention) were five times more likely to practice EBF than mothers who did not receive counselling ([OR]: 5.105; CI 2.570-10.137; $p < 0.001$). This contributed to the higher rates in EBF in the intervention group. This study established that counselling of working mothers on the use of expressed breastmilk could result in increased rates of EBF in Kiambu County. Therefore, working mothers need to be educated on optimal breastfeeding practices so that the rates of exclusive breastfeeding can improve.

Keywords

Working Mother, Exclusive Breastfeeding, Counselling, Expressed Breastmilk, Expressing, Breastmilk

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1. Introduction

Exclusive breastfeeding (EBF) involves an infant only receiving milk which could be direct from the breast of a mother or a wet nurse, or expressed with the exemption of hospital fluids such as oral rehydration salts and multivitamins [1]. Breastmilk is recommended as the only feed that an infant should consume for the first six months of life because the child's digestive system is not mature enough to digest and assimilate other feeds. It contains immune cells and antibodies that protect the baby as well as enzymes that help in its digestion. The protein in milk is also easy to digest. Breastmilk matures as the baby grows thus accommodating the increasing needs of the baby [2].

The WHO (World Health Organization) and UNICEF (United Nations Children's Fund) acclaim EBF for the initial 6 months after birth with continual breastfeeding, coupled with complimentary feeding for at least 2 years [3]. Breastfeeding is mutually valuable to both mother and child. Women who have breastfed according to the WHO guidelines have longer intervals between births due to the delay in ovulation, reduced risk of maternal morbidity and mortality, reduced risk of breast and ovarian cancer, coronary heart disease and osteoporosis [4]. Children who have been breastfed exclusively for the first 6 months of life have good nutritional outcomes, reduced morbidity rate and good development [5].

Globally, the rate of exclusive breastfeeding is at 44%, and 43% in Africa [1]. EBF rates have remained low in many countries in Africa despite that a lot of efforts have been put in place to promote this practice [6]. East Africa boasts of remarkable trends in EBF with Burundi topping at 83.3%, followed by Rwanda (80.9%) and Uganda (65.5%). Tanzania is the second last at 64.3% and Tanzania last at 61.4% [7]. Though Kenya has increased its EBF rates from 32% (2010) to 61.4% (2022) it is still ranked the second lowest in East Africa [8]. The World Health Assembly has a global target of increasing the global rate of EBF to 50% by 2025 [9]. In Kenya, the Ministry of Health aims at a yearly increase of 3% in EBF rates [10] and so far this has not been achieved.

The government of Kenya also supports continued breastfeeding through The Baby Friendly Hospital Initiative (BFHI) and The Baby Friendly Community Initiative (BFCI). BFHI is a ten-step approach, which ensures timely initiation of breastfeeding in the facility at delivery, and support to continue breastfeeding optimally. BFCI aims to create support groups in the community to improve breastfeeding rates and maternal nutrition. BFCI is supported by (Community Health Promoters) CHPs who have gone through trainings on BFCI and conduct home visits as well as facilitate engagement in the support groups [11].

In the recent years, the percentage of women in the workforce has been gradually increasing. The World Bank reports that 39.2% of women between the ages of 15 and 64 are employed globally. 46.2% of women in the Sub-Saharan Africa and 49.2% in Kenya are employed. This is a rise from 47% in

2010 (Kenya) with a projection that this rate will keep increasing. These are women within the childbearing age [12]. In Kiambu County, more than half (59%) of women are employed [13]. In Kiambu County, using the weight for age score, 3.8% of children are at -3SD and 15.3% at -2SD. About 15% of the children below 5 years are stunted which is classified as medium level stunting (11-20%) [8].

Women in Kenya are allowed to have a three calendar months' maternity leave with pay, with an additional thirty days annual leave [14]. Most mothers start weaning their infants at two months in preparation to their return to work [15]. This has led to the reduced rates of EBF. The Breastfeeding Mother's Bill [14] states that every mother has a right to freely breastfeed or give expressed breastmilk to her baby. The objective of this bill is to encourage EBF among working mothers after resuming work from leave. The bill also mandates the employers of a facility that has more than thirty employees to establish lactation rooms that are equipped with storage facilities such as refrigerators, cabinets, and seats, for the safe expression and storage of milk. With all the government interventions put in place, less than half (47.3%) of working mothers in Kiambu County achieve EBF, which could be worsened by the growing trend of women's participation in the market place [13].

Expressing is an approach to infant feeding which involves a woman pumping breastmilk, which the infant consumes from a feeding bottle or cup. Expressing breastmilk is a way of maintaining EBF when the mother and child are apart for various reasons such as work. If well stored, expressed breastmilk (EBM) provides the same nutritional and immunological properties as direct milk from the breast. This ensures that the infant receives a nutritionally consistent feed necessary for its growth and development [16].

Findings from a study conducted in Ethiopia on the knowledge and attitude towards expressed breastmilk acknowledged that expression of breastmilk allows working women to achieve EBF up to six months. This ensures that infants of the working women receive similar nutrition care with those of stay at home mothers [17]. In addition, a study conducted in the coastal region of Kenya acknowledged that increased knowledge through counselling of mothers and caregivers on the benefits of EBF, the art of expressing breastmilk, safe storage of breastmilk, and feeding of EBM by both mother and the caregiver can help mothers attain the six months target of EBF [15]. Therefore, this study sought to determine whether maternal counselling on expressing breastmilk could have an effect on EBF rates among working mothers in Kiambu, Kenya.

2. Materials and Methods

2.1. Study Design and Population

A clustered randomized controlled trial (RCT) study design

was adopted for this study to determine the effects of expressed breast milk counselling on the prevalence and duration of exclusive breastfeeding. This study utilized a clustered RCT because its main purpose was to evaluate the impact of expressed breastmilk counselling on EBF, which would be difficult to establish when using individual RCTs. It would also reduce the risk of contamination, in which participants in the control group would inadvertently receive treatment. This could be the sharing of information between individuals in the control and intervention groups, if the participants were selected from the same locality. This study was conducted at two level V public health facilities and two level IV private hospitals. Multi stage sampling technique was adopted. The hospitals were chosen from the Kenya Master Health Facility List (KMHFL) in which there were two public level V hospitals in Kiambu County.

The two-level V public hospitals were included in the study; one was randomly allocated to the control group and the other to the intervention group by the statistician. The study aimed to select private hospitals from different sub-counties, which were then categorized into sub-county clusters. Two sub-counties were randomly selected. The level IV private hospitals within the two sub-counties were again randomly selected to obtain two private hospitals. The health facilities were randomly allocated to either the intervention (treatment) or control group. Each group had one private hospital and one public hospital. A researcher administered semi-structured questionnaire consisting of open-ended and close-ended questions was administered to collect data on socio demographic characteristics and prevalence of EBF.

The sample size was calculated using the Epi Info 7 software [18]. The confidence interval was 95% and eighty percent (80%) was the power of the test, with a maximum acceptable type I error of five percent (5%). A 20% correction factor for attrition was applied bringing the sample size to 210. The participants were distributed in the ratio 1: 1 between the two study groups: 105 in the control group and 105 in the intervention group. However, only 203 working mothers, 102 in the control group and 101 in the intervention group completed the study.

2.2. Location of the Study

The study was conducted in Kiambu County, Kenya. Kiambu County is located in the central part of Kenya, bordering Nairobi County to the south, Murang'a to the north, Machakos County to the east, Nyandarua to the northwest, and Nakuru on the western side. The county comprises 15 sub counties. The county has a geographical area of 2,449.2 km² and a population of 2.41 million, of whom 1.23 million are female. Kiambu has 796,241 households, and each household has an average size of three people and boasts of a population density of 952 people/km [19].

The main economic activities in Kiambu County are businesses, agriculture, and governmental institutions, which offer

employment to its constituents as well as goods and services to its population. The population of the county comprises employees in Nairobi County's private and government organizations, which is the capital city of the country.

2.3. Target Population

The target population was working mothers of infants aged 0-5 days post delivery and were willing to participate in the study. Working mothers included those in formal and informal employment, self-employed, as well as those in the agricultural and business sectors. The study was also limited to mothers residing within the county.

2.4. Data Collection Instruments

The researcher administered a semi-structured questionnaire comprising of both closed-ended and open-ended questions. These questions were asked to the mothers and the data collection assistants recorded their responses in the questionnaire. The researcher administered semi-structured questionnaire was used to gather information on socio-demographic characteristics and the prevalence of EBF.

2.5. Validity and Reliability

These research instruments were adapted from the WHO knowledge, attitude and practice questionnaires and from a study conducted in Kenya on the effectiveness of couple counselling versus maternal counselling in promoting EBF [20]. Guidance from Kenyatta University, Department of Foods, Nutrition and Dietetics was sought, which ensured that the research tools were ethical and protected participants' rights.

In terms of reliability, the research assistants were trained to ensure compliance to standard procedures when collecting information. The test re-retest method was used to ensure that the questionnaires and interview guides were consistent in obtaining similar results. The same research assistant gave the questionnaires twice to each participant, three days apart. Cronbach's alpha was utilized to establish the correlation of the two results, yielding a coefficient of 0.86, which was considered acceptable [21].

2.6. Piloting

A pilot study was conducted on twenty-two working mothers at a hospital offering the same level of care offered in the hospitals in the study. The participants selected had similar characteristics to those of the mothers in the study. The purpose of piloting was to validate and standardize the research instruments and the study procedures to be utilized in the study. All the research assistants enlisted for this study participated in the pre-test exercise. They collected data as an opportunity to apply the skills learnt during training. The pilot study was conducted for a duration of one month. After the interviews were completed, mothers' feedback on how the

meeting could be improved was solicited to inform updates to the questionnaires. During piloting, the questionnaire was

tested for validity, consistency, clarity, relevance, comprehensibility, soundness and sensitivity during the pilot study.

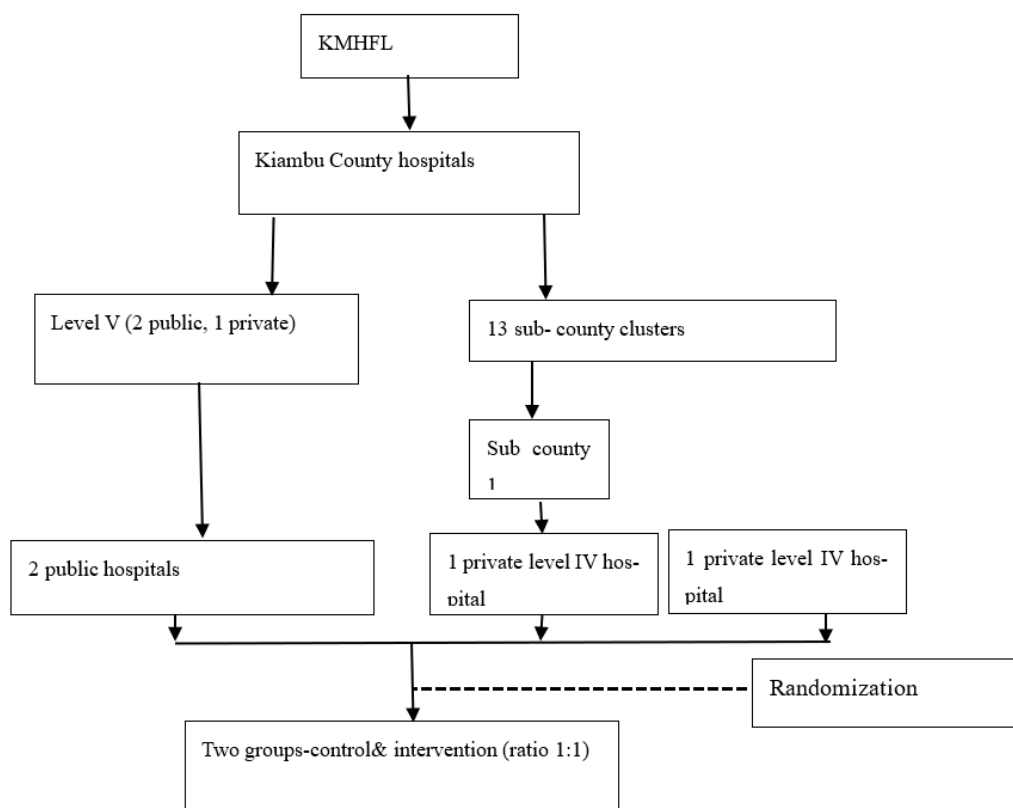


Figure 1. Flow chart of the sampling procedure.

2.7. Recruitment and Interview Procedure

Identification of participants using the eligibility criteria, signing of informed consent forms and admission into the study were conducted between January and February 2024. The participants were recruited from four hospitals in Kiambu County offering level five type of care. The eligibility criteria included; having a maternity leave of 3 months or less, residing within Kiambu County and a mother to a singleton infant. Data was collected between March and September 2024. The mothers in the intervention group received counselling at baseline and six-monthly sessions, that is until the child attained six months of age. The content of counselling included initiation of breastfeeding, benefits of EBF, breastmilk expression methods, benefits of expressing, storage, and feeding of expressed breastmilk. The working mothers were also encouraged to ask questions or seek clarifications on any challenges that they had encountered.

2.8. Data Analysis

The data was analyzed using the Statistical Package for So-

cial Sciences. Descriptive statistics were used to generate information on socio-demographic characteristics, and EBF practices and challenges encountered while breastfeeding. Chi square test was used to analyze and compare EBF rates between the two groups and odds ratio was used to determine the effect of counselling on EBF. Logistical regression was used to determine the association between socio-demographic factors and EBF.

2.9. Ethical Considerations

Authority to carry out this study was sought from Kenyatta University Graduate School. Ethical clearance was obtained from Kenyatta University Ethics Review Committee (PKU/2831/I1954). Approval and licensing of the study was obtained from the National Commission for Science, Technology, and Innovation; license number NACOSTI/P/23/32017. Additional approvals were obtained from Kiambu County Government, as well as the health facilities in which the study was conducted. The study was performed in full compliance with the ethical standards set forth by the Declaration of Helsinki (2024 revision). Written informed consent was a mandatory requirement for participation and all participants signed consent forms.

3. Results

3.1. Socio Demographic Characteristics of Working Mothers at Baseline

The overall mean age of the mothers at baseline was 27.16 ± 4.81 , with the youngest mother being 18 years and the oldest being 42 years (Table 1). Majority (80.3%) of the mothers were married. More than half of the newborn infants were female (52.7%), while less than half (47.3%) were male. In terms of birth number, about a third (39.9%) of the infants were first born, while 39.4%, 15.8% and 4.9% were second, third, and fourth born or

beyond. There was no significant difference in gender ($p=0.830$) and birth number ($p=0.306$) between the two study groups. More than two-thirds of the mothers (71.5%) had a tertiary education, in which 67.0% had college/university education and 3.4% had a postgraduate degree. More than a quarter (28.1%) had attained secondary education, while 1.5% had not gone past primary school. No significant difference was noted ($p=0.364$) in the level of education between the two research groups. About half (51.2%) of the mothers were in the informal sector, while 41.4% were formally employed and 7.4% were in business. There was no significant difference ($p=0.052$) in the level of education between the two study groups. Most of the mothers (98%) had a maternity leave of 3 months.

Table 1. Socio demographic characteristics of working mothers at baseline.

Indicator	Category	Control (N=102)	Intervention (N=101)	Total (N=203)	Chi square P value
Maternal age (mean $\pm$ SD)		27.92 $\pm$ 5.02	27.16 $\pm$ 4.81	27.54 $\pm$ 4.93	0.119
Marital status	Married	83 (81.4)	80 (79.2)	163 (80.3)	0.919
	Single	16 (15.7)	18 (17.8)	34 (16.7)	
	Separated/divorced	3 (2.9)	3 (3.0)	6 (3.0)	
Number of children	1	35 (34.3)	46 (45.5)	81 (39.9)	0.306
	2	45 (44.1)	35 (34.7)	80 (39.4)	
	3	15 (14.7)	17 (16.8)	32 (15.8)	
	≥ 4	7 (5.9)	3 (3.0)	10 (4.9)	
Child's gender	Male	49 (48.0)	47 (46.1)	96 (47.3)	0.830
	Female	53 (52.0)	54 (52.9)	107 (52.7)	
Maternal level of education	Postgraduate degree	4 (3.9)	3 (3.0)	7 (3.4)	0.364
	College/university	69 (67.6)	67 (66.3)	136 (67.0)	
	Secondary (A level)	29 (28.4)	28 (27.7)	57 (28.1)	
	Primary	0	3 (3.0)	3 (1.5)	
Maternal occupation	Formal employment	44 (43.1)	40 (39.6)	84 (41.4)	0.052
	Informal employment	55 (53.9)	49 (48.5)	104 (51.2)	
	Business	3 (2.9)	12 (11.9)	15 (7.4)	
Duration of maternity leave	2 months	2 (2.0)	2 (2.0)	4 (2.0)	0.839
	3 months	100 (98.0)	99 (98.0)	199 (98.0)	

3.2. Expressing Breastmilk

All the mothers (100%) in the intervention group were able to express breastmilk after receiving counselling on expressing and EBF (Figure 2). However a lesser proportion (66.7%)

of the working mothers were able to express in the control group. There was a significant difference between in expressing rates between mothers who received counselling and those who did not ($p<0.001$).

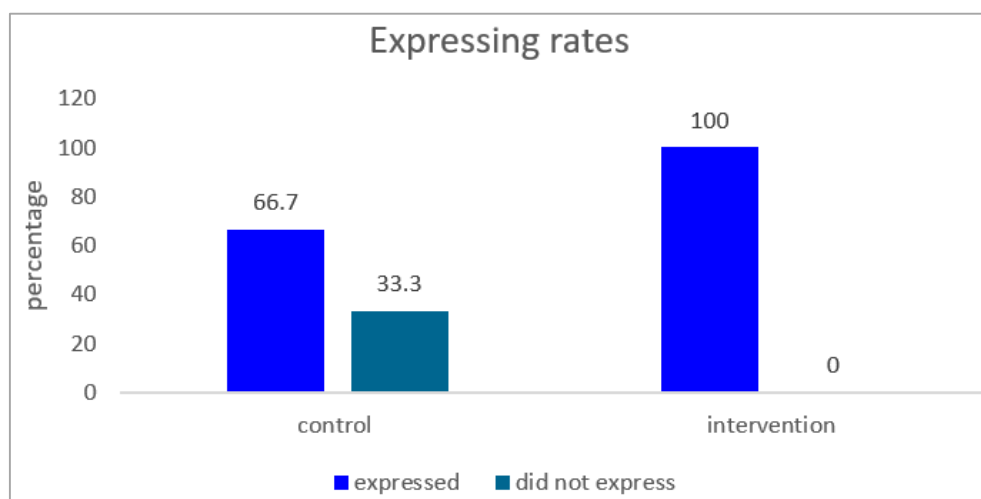


Figure 2. The rates of expressing breastmilk.

Among those who expressed, there was a significant difference in sources of information between those in the control and in the intervention group ($p < 0.001$). The participants of

this study were not restricted from seeking information on expressing breastmilk from other sources (Table 2). Some of the participants received information from more than one source.

Table 2. Rates of expressing and the source of information on expressing breastmilk.

Variable	Control	Intervention	P value
Expressed	68 (66.7)	101 (100)	<0.001
Did not express	34 (33.3)	0 (0.0)	
Source of expressing information (N=169)			
Hospital/health worker	39 (54.9)	46 (45.5)	<0.001
Friend	28 (39.4)	34 (33.7)	
Family/relative	21 (29.6)	30 (29.7)	
Media	44 (62.0)	55 (54.5)	

All the working mothers in the intervention group received counselling, and received information from media (54.5%), health workers (45.5%), friends (33.7%) and family (29.7%). Similarly, those in the control group received information from media (62%), health workers (54.9%), friends (39.4%) as well as from family members (29.6%).

3.3. Duration of Exclusive Breastfeeding

The prevalence of EBF at 6 months was 54.9% for the control and 86.1% for the intervention group (Table 3). This indicated a significant difference in EBF rates between the

control and intervention groups ($p < 0.001$). In the first 2 months post-delivery, excellent rates of EBF were observed in both groups. There was a significant difference in the prevalence of EBF between the third ($p = 0.028$) and fourth ($p = 0.002$) months among the two groups, when most of the mothers' maternity leave ended. A sharp decline in EBF rates was noted in the control group. Continuity of EBF was not as greatly affected in the intervention group. This is because the mothers knew about expressing and were therefore able to express and leave the milk behind for the child to take when they were away.

Table 3. Duration of exclusive breastfeeding.

Age of the infant	Control (N=102)	Intervention (N=101)	Chi square	P value
1 month	102 (100)	101 (100)		
2 months	101 (99.0)	100 (99.0)	0.000	0.994
3 months	91 (89.2)	98 (97.0)	4.826	0.028*
4 months	79 (77.5)	94 (93.1)	9.829	0.002*
5 months	77 (75.5)	91 (90.1)	7.590	0.006*
6 months	56 (54.9)	87 (86.1)	23.783	<0.001*

3.4. Effect of Counselling on Expressing Breastmilk on the Duration of Exclusive Breastfeeding Among Working Mothers

Working mothers who received counselling (all mothers in

the intervention group) were 5 times more likely to exclusively breastfeed their infants up to the six months ([OR]: 5.105; CI 2.570-10.137; $p < 0.001$) mark than those who were not counselled on expressing breastmilk (Table 4). On the benefits of counselling, the mothers expressed that one of the main benefits of participating in the study was getting accurate information on expressing and storing EBM, which gave them the confidence to express.

Table 4. Effect of counselling on expressing breastmilk on the duration of exclusive breastfeeding among working mothers.

Variable	Value (odds ratio)	95% CI		Chi square
		Lower	Upper	
Counselled/not counselled	5.105	2.570	10.137	23.783

*CI is confidence interval

3.5. Factors Influencing Exclusive Breastfeeding Rates

From logistical regression, mothers with a higher level of education were four times more likely to practice EBF up to 6 months ([OR]: 4.625; CI 2.507-8.533; $p < 0.001$) than mothers with a lower education level (Table 5). The type of employment had a significant association with EBF rates ([OR]: 2.555; CI 1.512-4.316; $p < 0.001$). Those in formal employment were more likely to express breastmilk. The age of the mother ($p = 0.629$), marital status ($p = 0.097$), and duration of maternity leave ($p = 0.191$) had no significant relationship

with the practice of EBF at 6 months. For infant factors, children with a lower birth number (firstborn and second born) were one and a half times more likely to be breastfed exclusively for 6 months ([OR]: 1.578; CI 1.131-2.201; $p = 0.007$) than those who had a higher birth number. The gender of the child ($p = 0.687$) had no significant relationship with the practice of EBF at 6 months. Anova was used to determine the relationship between hospitals of delivery and EBF rates at 6 months. Four different hospitals were used as points of contact in the recruitment of participants into the study. The results revealed a significant difference in EBF rates at 6 months among the different hospitals, $F(7.829, 34.437) = [15.081]$, $p = [0.000]$.

Table 5. Socio-demographic factors influencing exclusive breastfeeding and expressed breastmilk.

Independent variable	Prevalence of exclusive breastfeeding			
	Value (odds ratio)	95%	CI	Chi square
Age of the mother	1.017	0.950	1.089	0.629
Marital status	1.785	0.900	3.541	0.097
Level of education	4.625	2.507	8.533	<0.001*
Gender	1.137	0.609	2.122	0.687
Birth number	1.578	1.131	2.201	0.007*
Duration of maternity leave	1.432	1.307	1.568	0.191
Type of employment (occupation)	2.555	1.512	4.316	<0.001*

4. Discussion

4.1. The Impact of Socio-demographic Characteristics on the Prevalence of EBF Among Working Mothers

Various studies have been conducted to establish the relationship between socio demographic characteristics of mothers and the prevalence of EBF. Multiparous mothers have a higher prevalence of EBF than primiparous mothers do. This was observed in a study that compared the knowledge, attitude and prevalence of EBF between mothers of one offspring and mothers who had more than one child in Northern Kenya [22]. In contrast, the current study found that majority of the infants were either firstborns or second-born, and parity had an association with the practice of EBF, with a lesser number of children having a positive association with EBF. This findings were consistent with those of a study conducted among working mothers in the informal settlements of Nairobi, Kenya in which a majority (85.3%) of the respondents had 1-2 children, and contrasted another done in Malaysia that found that majority (71.3%) of the employment women were multiparous [23, 24].

The level of maternal education and employment status has an association with the prevalence of exclusive breastfeeding. A systematic review study conducted in Kenya on factors associated with EBF in Kenya found that unemployed women had a higher prevalence of EBF as compared to the employed and maternal education was significantly associated with EBF rates [25]. A cross sectional survey conducted in Naivasha Kenya among employed women found that at 14 weeks post-partum, women in the formal employment sector were less likely to practice EBF as compared to the ones in the blue collar sector (19.0% compared with 49.6%, respectively; AOR: 0.25; 95% CI: 0.14, 0.44). Similarly, women in the formal

workforce had a lower prevalence of EBF than those in the informal workforce (19.0% compared with 49.6%, respectively; AOR: 0.25; 95% CI: 0.14, 0.44) at 24 weeks [26].

The current study observed that the level of education of the mother had a positive association with the practice of exclusive breastfeeding. Mothers with a higher education level were more likely to practice EBF. A study conducted in Italy on the socio-demographic factors on breastfeeding found that women with a higher level of education were more likely to breastfeed exclusively for 6 months than the less educated women. Similarly, the study observed a positive association between EBF practices and employment status [28]. In contrast, a cross sectional study done in China on the association between maternal education and breastfeeding practices found that there was an inverse association between highly educated mothers and the prevalence of EBF (RR: 0.59; 95% CI: 0.38 to 0.88) [29].

In Sub-Saharan Africa, the level of education has an influence on exclusive breastfeeding practices and initiation of breastfeeding. In a study based on secondary analysis of maternal education on exclusive breastfeeding practices and initiation of breastfeeding, mothers with a primary level of education were 1.37 times more likely to practice EBF as compared to those with no education. However, those with secondary and higher level of education were not significantly different from those with no education in their practice of EBF [27].

Maternal age, infant gender, marital status, and household wealth index were factors that did not influence the exclusive breastfeeding outcome. These findings were similar to those of a study conducted in the United States on factors that influence post-hospital infant feeding practices. In the study, no demographic factor was associated with EBF [30]. These findings were contrasted by findings of a study conducted in rural Kenya [20] on the effectiveness of couple counseling versus maternal counselling on the prevalence of EBF in which maternal age influenced EBF. Another contrasting finding was

obtained from a study conducted in Ethiopia on the determinants of EBF practices among mothers in Ethiopia. The study opined that marital status (AOR=1.26; 95% CI 1.06-1.50), mother's age (AOR=1.74; 95% CI 1.31-2.32), child's age, richer wealth index, paternal level of education had an association with the practice of EBF [31].

Contrasting findings were observed in another study in Ethiopia that sought to find out the sociodemographic factors predicting EBF. A medium quintile in wealth index (OR 1.27; 95% CI 1.05-1.55; $I^2 = 60.9\%$), marital status (OR 1.39; 95% CI 1.05-1.83; $I^2 = 76.96\%$), and primary school education were significantly associated with the rates of EBF [32]. In Nigeria, adolescent women had lower prevalence rates of EBF rates as compared to a bit older women. This finding was established in a study whose aim was to determine the breastfeeding practices among the adolescents and young women in Nigeria [33].

A study conducted in Romania on the determinant factors of EBF among women with children aged 0-23 months found that mothers who gave birth in private hospitals were more likely to practice EBF than those who delivered in public hospitals [34]. In contrast, a study conducted in Italy on factors influencing maternal decisions to breastfeed observed that although women in private facilities received better care, mothers who delivered in public hospitals registered better rates of EBF than they did [35]. The current study observed that the place of delivery had an association with the prevalence of EBF.

4.2. The Effect of Expressed Breastmilk Counselling on Expressing and EBF Rates Among Working Mothers

In Kenya, the prevalence of exclusive breastfeeding is 61% [8]. Among working mothers in Kiambu County, the prevalence of EBF is slightly lower among working mothers at 48.7% [36]. Globally, the rate of EBF is lower at 44% and 43% in Africa [1]. Studies have shown that increased knowledge of EBF and EBM leads to better rates of EBF. Teaching working women on expressed breastmilk increases their knowledge levels, which in turn translates to practice thus improving the prevalence rates of EBF [37].

In this study, media was a major source of information. This shows that advancement in technology has had a weighty impact on breastfeeding knowledge. The findings on the main source of information are a contrast to findings made in a study conducted in rural Kenya on the effectiveness of mother-to-mother support groups in promoting EBF. The main source of information was health care providers, and only a small proportion of mothers received information from the media. This study was conducted among both employed and unemployed mothers [38]. Similar findings were obtained from a study in Zambia [39], which involved working mothers, in which the main source of information was health care staff (64.4%). However, similar findings to those of the current

study were established in a study in Malaysia, in which the most common source of expressing knowledge was social media (85.6%), followed by health care staff (48.5%) [24].

In this study, the prevalence of exclusive breastfeeding was lower among mothers in the control group than in the intervention group. There was a positive association between expressed breastmilk counselling and the duration of exclusive breastfeeding. Expressed breastmilk counselling also improved the rates of expressing breastmilk. High levels of EBF were witnessed in early infancy, and a steady decline was observed after the third month when most mothers resumed in the workforce. Mothers who did not know how to express had to give their infants alternate feeds, marking the end of EBF. The rates of EBF were higher among those who had received education on expressing breastmilk.

A study focusing on the perceptions of breast milk expression practices among working mothers observed that poor knowledge on storage and use of EBM resulted into low rates of breast milk expression as the mothers expressed that they had doubts on their ability to store EBM safely and maintain good hygiene standards [40]. Similarly, breastfeeding support groups, postnatal support for expressing breastmilk positively influences milk expression for pre-term neonates [41]. Poor knowledge scores might lead to poor breastfeeding outcomes. In a study that found only a few (4.1%) participants had satisfactory knowledge on expressed breast milk feeding, about a third (33.7%) had ever expressed their breast milk to feed their babies [42].

5. Conclusions

Factors that influenced the prevalence of EBF were the number of children, maternal level of education and occupation. Counselling of working mothers on how to express breastmilk and exclusive breastfeeding practices had an effect on exclusive breastfeeding rates. The practice of expressing was shown to influence the duration as well as the rates of EBF among working mothers. This shows that if working mothers are well supported with the right information, they would be able to seamlessly continue with EBF after resuming work. Consequently, the rates of EBF in the country as well as worldwide would greatly improve.

Abbreviations

EBF	Exclusive Breastfeeding
WHO	World Health Organization
SPSS	Statistical Package for Social Sciences
UNICEF	United Nations International Children's Emergency
BFCI	Baby-friendly Community Initiative
BFHI	Baby-friendly Hospital Initiative
CHP	Community Health Promoters
KDHS	Kenya Demographic and Health Survey

EBM	Expressed Breastmilk
IYCF	Infant and Young Child Feeding
RCT	Randomized Controlled Trial
CI	Confidence Interval

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Author Contributions

Esther Watetu Wainaina: Conceptualization, Formal Analysis, Investigation, Methodology, Project administration, Software, Writing – original draft

Peter Maina Chege: Supervision, Writing – review & editing

Regina Wangui Kamuhu: Supervision, Writing – review & editing

Data Availability Statement

The data supporting the outcome of this research work has been reported in this manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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Biography



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Research Field

Esther Watetu Wainaina: maternal and child nutrition, breastfeeding

Peter Maina Chege: malnutrition, maternal and child nutrition, agri-nutrition, food security, micronutrients

Regina Wangui Kamuhu: clinical nutrition, maternal and child nutrition, non-communicable diseases, Dyslipidemia, food safety, malnutrition.