

ORIGINAL RESEARCH ARTICLE

Effect of a breastfeeding educational programme on fathers' intention to support exclusive breastfeeding: A quasi-experimental study

DOI: 10.29063/ajrh2020/v24i3.7

Saratu O Ajike¹, Ololade O Ogunsanmi², Augusta E Chinenye-Julius³, Jonathan M Dangana⁴, Adebayo M Mustapha⁵

Department of Public Health, School of Public & Allied Health, Babcock University, Ilisan-Remo, Ogun State, Nigeria¹⁻⁵

*For Correspondence: Email: suo2009@gmail.com; Phone: +2349077452449

Abstract

Fathers' support towards exclusive breastfeeding (EBF) is fast gaining recognition as a critical ingredient for successful EBF. This study examined the effect of a breastfeeding programme on fathers' intention to support EBF in Ikenne, LGA, Ogun State, Nigeria. This study adopted a pretest-posttest quasi-experimental design. A total of 50 expectant fathers participated in the study. A theory-based questionnaire was used to collect data. Data were analyzed using SPSS version 25 at $p \leq 0.05$. Results revealed a significant effect of the breastfeeding programme on intention ($R^2 = 0.839$, $R^2_{adj} = 0.837$, $F(1,70) = 364.337$, $p = 0.000$). There was significant difference in intention between the post-experimental ($\bar{x} = 6.587 \pm 0.948$) and pre-control ($\bar{x} = 5.444 \pm 1.473$) groups at p -value = 0.025. A breastfeeding programme targeted at fathers had positive impact on intention towards EBF support. Government policies review is required to ensure the inclusion of fathers in maternal and child health service delivery. (*Afr J Reprod Health* 2020; 24[3]:59-68).

Keywords: Health education, Infant, Nigeria, Nutrition, Theory of Planned Behaviour

Résumé

Le soutien des pères à l'allaitement maternel exclusif (EBF) est de plus en plus reconnu comme un ingrédient essentiel à la réussite de l'EBF. Cette étude a examiné l'effet d'un programme d'allaitement maternel sur l'intention des pères de soutenir l'EBF à Ikenne, LGA, État d'Ogun, Nigéria. Cette étude a adopté une conception quasi-expérimentale prétest-post-test. Au total, 50 futurs pères ont participé à l'étude. Un questionnaire basé sur la théorie a été utilisé pour collecter des données. Les données ont été analysées en utilisant SPSS version 25 à $p \leq 0,05$. Les résultats ont révélé un effet significatif du programme d'allaitement maternel sur l'intention ($R^2 = 0,839$, $R^2_{adj} = 0,837$, $F(1,70) = 364,337$, $p = 0,000$). Il y avait une différence significative d'intention entre les groupes post-expérimental ($\bar{x} = 6,587 \pm 0,948$) et pré-contrôle ($\bar{x} = 5,444 \pm 1,473$) à la valeur $p = 0,025$. Un programme d'allaitement ciblé sur les pères a eu un impact positif sur l'intention de soutenir l'EBF. Un examen des politiques gouvernementales est nécessaire pour garantir l'inclusion des pères dans la prestation des services de santé maternelle et infantile. (*Afr J Reprod Health* 2020; 24[3]: 59-68).

Mots-clés: Education à la santé, nourrisson, Nigéria, nutrition, théorie du comportement planifié

Introduction

The first 1000 days beginning at conception and ending at the start of the third postnatal year (two years after birth) are most critical and require keen attention as the most rapid neurodevelopmental processes occur in this time period¹. Maternal nutrition and infant nutrition during the first 1000 days are crucial since failure to supply the brain with needed nutrients can lead to poor cognitive, behavioural and socioeconomic outcomes some of

which may be difficult to recover². Supplying adequate nutrition helps in eliminating these adverse outcomes and results in better physiological elements³ and other behavioural and socioeconomic gains⁴ which are also apparent many years after¹.

Nutrition is one of the many environmental factors that can easily be altered to effect any changes. More so, health workers have the capacity to improve on it by the application of appropriate and effective interventions⁵. Thus,

opportunities to improve early child nutrition, and thus neurodevelopment, are currently focused in the areas of programs to support breastfeeding as the first nutrient source for the newborn. There has been worldwide consensus on the need to promote, support and protect breastfeeding (BF) as the first food for the newborn immediately following birth⁶ since global cognizance of its benefits.

Breast milk is not only a food source but contains immunologic components and various biologically active substances that contribute to efficient nutrient utilization and gives the child active and passive protection against infections⁶. Thus, it has both physiologic and nutritive benefits for the infant and in addition to these, other benefits for the woman and the society. Infants are protected from chronic conditions such as asthma, diabetes and obesity reaching into adulthood⁷. Mothers can be protected from ovarian cancer, premenopausal breast cancer, obesity, type 2 diabetes, and heart disease^{8,9}. Breastfeeding benefits the society by lowering family food and health expenditures, decreasing workforce absence due to decreased infant and maternal illness, lowering health care provider costs due to decreased infant and maternal illness, staff time, kitchen requirements, space, and nursery beds amongst others and may assist in closing the inequality gaps within societies¹⁰.

In order to begin the process of promoting healthy growth and development immediately after birth early initiation and exclusive breastfeeding (EBF) for the first six months have since been recommended and reinforced severally since the innocent declaration of 1991¹¹. EBF occurs when the infant receives only breastmilk from his or her mother or wet-nurse or expressed breast milk and no other liquids or solids, with the exception of drops or syrups consisting of vitamins, mineral supplements, or medicines^{12,13}.

Early initiation of and exclusive and continued breastfeeding are among the most effective interventions to reduce infant and child morbidity and mortality¹⁴. Moreover, when effectively practiced, EBF has the potential to avert 13% to 15% of deaths in under-five children, especially in low- and middle-income economies¹⁵ where infant mortality rates are often the highest.

Despite the magnitude of well-grounded breastfeeding benefits, rates worldwide and in low

and middle-income countries remain poor¹⁶. Worldwide, an estimated 40% of infants aged zero to six months are exclusively breastfed¹⁷. In Africa, the rate of EBF varies from one region to another. In some West African countries exclusive breastfeeding rates are estimated at 40% in Cameroon¹⁸, 23% in Niger¹⁹ and 39% in Senegal²⁰. In Nigeria, breastfeeding is common practice, however breastfeeding initiation rates remain low at 38%²¹ and EBF is still poorly practiced in many parts. The National EBF rate is currently reported at 29%²², an improvement over 17% formerly reported²³ with zonal rates between 21.3% and 43.9%. Within the South West, rates are as high as 55.3%, however two states, Ondo and Ogun are still lagging behind at 23.5% and 20.9% respectively²⁴. The global nutrition target 2025 aims for a 50% rate of EBF. This increase can potentially impact on progress towards addressing the other targets (stunting, anaemia in women of reproductive age, low birth weight, childhood overweight and wasting)²⁵ which are characteristic of maternal and child health indices in Nigeria.

Breastfeeding is a natural phenomenon²⁶, however its initiation and sustenance require support from various sources²⁷. The woman's social network has been recognized as a key determinant of her infant feeding practices which can impact on a mother successfully breastfeeding her child. The family has been noted as the most influential in this process²⁸ and the father the most overriding influence in the family²⁹. Yet, more attention is still often given to the woman alone³⁰⁻³². In Nigeria, women, like in other settings are the primary focus of breastfeeding promotion, and till date rates of EBF remain one of the lowest in the world. Thus, Nigeria may benefit from concerted efforts towards father involved promotion of EBF.

Studies, in settings where EBF rates are still below recommended values have demonstrated the impact of a woman's partner on improving EBF practices³³⁻³⁵. These studies reported significantly higher breastfeeding and EBF rates in groups where fathers were actively engaged through health education strategies to support the infant's mother. However, up till date no focused evidence-based interventions have been carried out to measure the impact of the infant's father on women's EBF practice in Nigeria.

Thus, this study sought to assess the effect of a male-focused breastfeeding programme on fathers' intention to support EBF in a suburban community of South West Nigeria.

Theoretical background and framework

The theory of planned behaviour was adopted in the collection of data to assess fathers' intention. TPB has been commended as the best model to predict intentions^{36,37} and has been used in several breastfeeding studies to predict intention towards breastfeeding behavioural outcomes³⁸⁻⁴¹. Intention is a conscious plan of action, which is actualized by a behavior⁴².

According to the theory of planned behaviour, intention is the immediate antecedent to behaviour and is moderated by other factors such as attitude, subjective norms and perceived behavioural control⁴³. Attitude is referred to as the evaluative effect of positive or negative feeling of individuals in performing a particular behaviour⁴⁴. That is, attitude refers to "a person's overall evaluation of performing the behavior in question"⁴⁵. Subjective norm, according to Fishbein and Ajzen⁴⁴ is 'a sum of the perceived expectations of specific referent individuals and/or groups weighted by the individual's "motivation to comply" with those expectations. It was later also defined as the person's perception of social pressure to perform or not perform the behaviour under consideration⁴⁶. Perceived Behavioural control (PBC) was the component added to derive the Theory of Planned behaviour stemming from the theory of reasoned action^{44,47}. PBC is the extent to which a person feels able to enact the behaviour, that is, how much a person feels confident in his/her ability to perform the desired behaviour given the opportunities and resources.

Methods

Study design

This study was a pretest-posttest quasi-experimental study conducted between two groups of expectant fathers (one experimental group and one control group) in Ikenne LGA, Ogun State. The study consisted of a health education programme based on breastfeeding which was delivered to the experimental group and a placebo programme delivered to the control group. This intervention took place over a 3-week period, in

four sessions lasting for an average of three hours each time. Pre-test data was collected prior to the breastfeeding programme and at 5 weeks post intervention in both experimental and control groups.

Study area

This was an experimental study with intervention and control sites. Intervention sites were Iperu and Ogere communities and control sites were Ikenne and Ilisan communities. Iperu and Ogere share close boundaries and are more distant from Ikenne and Ilisan which share close boundaries. All four communities lie within Ikenne LGA with a population of 118, 735 people and land area of 144 km². All communities are within the rainforest region where the people are predominantly farmers and traders, due to the favorable rainforest weather.

The breastfeeding intervention

The breastfeeding intervention was a father-focused programme targeted at expectant fathers residing in Ikenne LGA. The lay health workers (health workers who work on other health matters in conjunction with the health centers in the area) assisted in identifying expectant fathers and inviting them to a programme at a convenient time and place. The programme adopted a simple lecture/open forum design where participants were engaged in a lecture based on breastfeeding (benefits of breastfeeding and exclusive breastfeeding, rationale for EBF, support skills, motivations from holy writings on breastfeeding support and a move to action). The programme for the control group comprised of a different content. Four programme sessions held within 3 weeks lasted between 2 and 3 hours.

Inclusion and exclusion criteria

In both intervention and control sites men whose wives were in their first, second or third trimester and who gave written or verbal consent were included in the study. Men whose wives were pregnant but did not live with their wives and did not provide consent were excluded.

Sample size determination

Power analysis based on G.Power V. 3.1 for calculating sample size a priori was used to

calculate the study sample size of 50 men to provide statistical power of 80%, 5% level of significance, an effect size of 0.80 and assuming a loss of follow-up of 20%. Faul *et al.*⁴⁸ describe the software analytical tool used. This power analysis gives a statistical test its power in reliably discriminating between the null hypothesis and alternative hypothesis. A sample of 25 persons in each group was obtained. These groups of 25 men who consented to participate were recruited and invited to the programme. On the intervention day, 24 men attended the programme in the experimental group and 21 men in the control group. At follow-up, a loss to follow-up yielded a sample of 21 men in the experimental group and 15 men in the control group.

Sampling procedure

Snowball sampling was used to identify expectant fathers. The first expectant father was identified. Through the first contact, other expectant fathers were identified through referrals. This was carried out by four research assistants (RAs) who covered the four communities that were purposefully selected as no programme of this nature had ever been carried out in the area. At the end of 5 weeks, the RAs attained the desired sample size and invited participants to the programme. The programme date and time was communicated to participants and a reminder sent to each participant twice before the programme date.

Data collection process

Data collection process followed a guide provided by Francis *et al.*⁴⁹ on the development of instrument for a TPB-based study. Accordingly, 25 purposively selected men were first identified to complete a survey on modal beliefs, which are beliefs related to the behaviour of interest (in this study support for 6 months EBF) which were then included in the construction of the questionnaire for each of the constructs on Behavioural Beliefs related to Attitude, Normative Beliefs related to Subjective norms and Control Beliefs related to Perceive behavioral control. The TPB-based questionnaire was then used to collect pre-test data before the programme in the experimental and control groups and used at follow-up 5 weeks after to collect post test data in both. The pre-test survey was conducted over a period of 3 weeks in each

four groups of men and again beginning at the first week for the next 3 weeks accordingly in each of those groups.

Study variables

The breastfeeding programme was the independent variable, intention was the dependent variable.

Validity and reliability

Face, construct and content validity were conducted in a pilot phase. Face validity was carried out by showing the instrument to other faculty and respondents during the pilot study to check for ambiguities. Following the review, (2) sentences were reworded to give a better meaning to the sentences. Construct validity was ensured by following the guide in the construction of a TPB-based instrument as found in Francis *et al.*⁴⁹ and Ajzen⁴⁵. Direct and indirect measures of each of the constructs were used in the instrument development as described by Francis *et al.*⁴⁹ following collection of modal beliefs. All 7-point likert scales used were set at a minimum cut off value of + or – 21.

Generalized Intention was measured with three statements beginning with, I want to....I expect to....and I intend to..... support my wife to breastfeed my infant with only breast milk for up to 6 months. Questions were followed by 7-point likert scale responses.

Attitude (ATT) was measured indirectly using Behavioral beliefs and outcome evaluations respectively in each construct. For instance, questions related to behavioural beliefs and their outcome evaluations respectively included, "Feeling that my child will grow well when fed with only breastmilk for up to 6 months is..." and "If I support up to 6 months of only breastmilk feeding of my newborn baby I will feel that my child is growing well; "Feeling that my newborn baby is strong when fed with only breastmilk for up to 6 months is..." and "If I support up to 6 months of only breastmilk feeding of my newborn baby I will feel that my child will be strong" were followed by response options on a 7-point likert scale of strongly disagree to strongly agree. ATT was then computed by summing up each multiplied value of an items behavioural belief by its outcome evaluation.

Subjective norm (SN) was indirectly measured by constructing both normative beliefs and motivation to comply questions such as “My mother/mother-in-law thinks I should support my infant feeding on only Breastmilk for up to 6 months” and “My mother’s/mother-in law approval of feeding my newborn baby only breastmilk for up to 6 months is ...”; “My friends think I should support my newborn baby feeding on only breastmilk for up to 6 months and “My friends’ approval of me supporting my wife to feed my newborn baby only breastmilk for up to 6 months is...” which were also followed by a 7-point likert scale responses of strongly agree to strongly disagree. SN was then computed by summing up the multiplication of each normative belief by its corresponding motivation to comply item.

Perceived Behavioural Control (PBC) was indirectly measured by constructing questions measuring control beliefs and their perceived power to influence behaviour as follows. For instance, questions on control beliefs and corresponding perceived power were such as, “Having more money would make it more likely to support my newborn baby feeding on only breastmilk for up to 6 months and “The amount of money I have can influence my decision to support my wife to feed my newborn baby only breastmilk for up to 6 months” “The nature of my work would make it difficult to support my wife to be able to feed my newborn baby on only breastmilk for up to 6 months” and “The nature of my work can influence my decision to support my wife to be able to feed only breastmilk for up to 6 months”. These were also followed by 7-point likert scale responses. PBC was then computed by summing up the multiplication of each control belief item by its corresponding perceived power. The constructs were developed to account for cultural appropriateness. All verbal feedback about the instrument were noted and used in the final version.

The programme was measured by including four questions related to the programme content (see supplementary material). Content validity was ensured by including at least all modal beliefs cited from the elicitation survey related to the behavioural beliefs, subjective norms and perceived behavioural control constructs. Furthermore, the modal beliefs were selected based on the following rules by Ajzen and

Fishbein⁴⁷ which involved take the most frequently mentioned beliefs which were cited by at least 10% or 20% (maximum used in study) of the participants

Following an inter-item correlation, the least desirable items were removed from the set of items to develop the final version of the instrument. The behavioural beliefs item “The stress on my wife when she feeds my baby only breastmilk for up to 6 months is...” and its outcome evaluation, “If I support my newborn being fed only breastmilk for up to 6 months I will feel that I am causing my wife stress” were subsequently deleted as it was found to decrease the alpha coefficient following the inter-item correlation.

Reliability

The reliability was computed using Cronbach’s alpha coefficient computed from data collected from 20 expectant men outside of the study group. The results ranged from 0.75 to 0.97.

Data analysis

Data collected during the modal beliefs’ elicitation survey were analyzed using content analysis. The most cited by at least 20% of participants were included in the final questionnaire. Pre-test and post test data were analysed based on the hypotheses. To determine the effect of the breastfeeding programme on intention, a simple linear regression was calculated between the breastfeeding programme as a construct and intention. To determine if there was a difference in intention in the experimental and control groups, one-way ANOVA and Tuckey HSD were calculated. To determine the moderating effect of the predictor variables (attitude, subjective norms and perceived behavioural control) and combined effect of the predictor variables, simple hierarchical linear regression and multiple linear regression analyses were computed respectively. SPSS version 25 was used for the analyses at p-value ≤ 0.05 .

Results

Socio-demographic characteristics of participants

The mean age of participants in the experimental group was 35.24 ± 1.54 , while the mean age of participants in the control group was 32.07 ± 1.55 .

Table 1: Demographic characteristics of the breastfeeding programme participants

Variables	Experimental Group Freq. (%)	Control Group Freq. (%)
Occupation		
Trader	0(0)	0(0)
Teacher	0(0)	1(1.9)
Civil Servant	1(1.4)	5(9.6)
Health Worker	0(0)	1(1.9)
Artisan	10(13.7)	3(5.8)
Businessman	3(4.1)	2(3.8)
Religious Leader	3(4.1)	0(0)
Farmer	3(4.1)	3(5.8)
Administrative worker	1(1.4)	0(0)
Others	0(0)	0(0)
Level of Education		
No formal education	0(0)	0(0)
Primary	5(6.8)	2(3.8)
Diploma	6(8.2)	6(11.5)
Bachelors	3(4.1)	7(13.5)
Masters	4(5.5)	0(0)
Others	1(1.4)	0(0)
Number of Current Children		
None (0)	5(6.8)	1(1.9)
1	4(5.5)	6(11.5)
2-4	10(13.7)	8(15.4)
5 and above	2(2.7)	0(0)

H₀₁= There is no significant effect of the breastfeeding program on fathers' intention to support 6 months EBF following the implementation of the breastfeeding programme

Most of the participants in the experimental group were Artisans (13.7%), while in the control group most were civil servants (9.6%). Both groups had equal number of farmers (3) in each group. Participants in both groups had some level of education with the majority in the experimental group having a post-primary (8.2%) level of education, while in the control group majority had at least a Bachelors degree (13.5%). In both groups the majority had between 2 and 4 children.

A significant regression equation was found, (Table 2b) $F(1,70) = 364.337$; $p < 0.05$ with an R^2 of 0.839 (Table 2a). The breastfeeding programme explained 83.9% of the variance in intention. Hence, the null hypothesis which states that there is no significant effect of the breastfeeding programme on fathers' intention to support 6 months EBF was rejected.

The results in Table 3a shows there was a statistically significant difference between experimental and control groups as determined by

one-way ANOVA ($F(3, 68) = 3.327$, $p = 0.025$). A Tuckey post hoc test revealed that the intention was statistically significantly different between post experimental group (6.597 ± 0.948) and the pre control group (5.444 ± 1.472) at $p = 0.040$. No statistical difference was found between the other groups ($p > 0.05$). Hence, the null hypothesis was not confirmed and hence it was rejected.

Discussion

Men having better knowledge about breastfeeding and how to support has been shown to enable support of optimal breastfeeding practices. One of the most enabling factors prompting support through acquisition of knowledge and skills has been through educational sessions. Breastfeeding education amongst other recommended actions to promote, protect and support exclusive breastfeeding, have been used in settings to assist women gain the knowledge, skills and attitude including improving self-efficacy to practice optimal breastfeeding and these actions have also been recommended to be applied to family members. The current study was conducted to evaluate the effect of a father-focused breastfeeding programme on expectant fathers' intention to support EBF. This study found a significant effect of the breastfeeding programme in fathers' intention to support 6 months EBF. Several studies^{34,50,51} have been conducted using different models of breastfeeding education targeted at fathers. While some researchers have focused solely on fathers during the educational sessions, others, have had mixed groups of mother-father pairs.

In three-consecutive sessions of an educational breastfeeding programme organized by Furman *et al*⁵², fathers were "more likely" to want their next baby to breastfeed. On average, in 62% of all responses (278/450 possible), men endorsed learning "a lot more" about the 10 breastfeeding curriculum topics presented. This study is suggestive of an impact of education on intentions mediated by knowledge which also supports findings in this study. Indeed, participants in this study also endorsed learning more than they previously knew or thought about EBF and breastfeeding. Similarly, Bich and Cuong⁵³ following the implementation of a more comprehensive community-based programme for

Tables 2a: Model summary of regression analysis for effect of breastfeeding programme on fathers' intention to support 6 months EBF

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.916 ^a	0.839	0.837	0.52554

Predictors Constant: breastfeeding program

Table 2b: ANOVA summary showing the interactions between the breastfeeding programme and intention

Model 1	Sum of Squares	Df	Mean Square	F	Sig P. Value
Regression	100.628	1	100.628	364.337	0.000 ^b
Residual	19.334	70	0.276		
Total	119.961	71			

Dependent Variable: Intention

Predictors: (constant), Breastfeeding Program

H₀2= There is no significant difference in intention between groups after the breastfeeding programme**Table 3a:** ANOVA table showing difference intention between groups

GROUP INTENTION					
	Sum of Squares	Df	Mean Square	F	Sig.
BETWEEN GROUPS	15.356	3	5.119	3.327	0.025
WITHIN GROUPS	104.605	68	1.538		
TOTAL	119.961	71			

Table 3b: Difference in group means of intention and p-values

Groups	$\bar{x}$ (SD)	P-Value
Pre- Experimental	6.381(±1.343)	0.949
Post –Experimental	6.587(±0.948)	
Pre- Experimental	6.381(±1.343)	0.125
Pre-Control	5.444(±1.473)	
Pre-Experimental	6.381(±1.343)	0.387
Post-Control	5.711(±1.201)	
Post-Experimental	6.587(±0.948)	0.040
Pre-Control	5.444(±1.473)	

fathers comprising of home and facility-based meetings also reported significant positive effects on breastfeeding initiation and breastfeeding rates at 1, 4 and 6 months post intervention. Indeed, in the current study participants also endorsed learning a lot more during feedback sessions and were more motivated to take action.

Intention as earlier noted is the immediate antecedent to a behaviour and can therefore be used to predict a person's action. Unlike other studies, this study investigated the effect of a programme on intention, but did not measure the actual support. However, given the widely known characteristics of intention, the study also sought to investigate differences in the two groups. This study showed that those in the experimental group were significantly different than men in the pre-control group and had higher mean intention than the comparative group and other non- significant

groups. This difference may be attributed to the unique programme content used for the experimental group. The programme was geared towards prompting support for 6 months EBF. It therefore included content on EBF and the need to breastfeed exclusively for up to six months and supporting information on general benefits of breastfeeding, simple strategies to support based on the social support dimensions and a backup from religious writings. One of the few studies carried in Pakistan by Mithani et al⁵⁴ had shown that most of the men were motivated by religious beliefs to support their spouses to practice proper breastfeeding. Religion, indeed is a cultural universal and like in other health related phenomena can also influence breastfeeding as opined by Mithani et al⁵⁴. This study, therefore utilized the strength of both the Christian and Islamic backdrops of religion in the design of programme content as these two religions make up the majority in the study area. Researchers in other settings have also found significant differences in related indices, but not directly on intention. However, the results can be extrapolated to findings in this study showing the effectiveness of targeted interventions at fathers in support of EBF. Results from a study carried out by Whayutri et al⁵⁵ using a peer support educational approach did not find any difference in intention, although there were differences in knowledge and attitude.

Moreover, intention too was influenced by breastfeeding knowledge, nutrition knowledge, and attitude. Intention had the greatest impact on the attitude. This finding, despite not observing a difference in groups shows the education component had some impact on intention which in turn influenced attitude to practice. Similarly, these studies⁵³⁻⁵⁶ found significantly higher EBF rates, BF knowledge scores and higher attitude reflecting more positive breastfeeding outcomes.

These studies amongst others endorse the relevance of father inclusion in antenatal breastfeeding education to promote better optimal breastfeeding practices.

Strengths and limitations of the study

This research was conducted amongst a typical hard to reach population. However, for various reasons it was successfully conducted.

- Researchers recruited community lay health workers who were well acquainted with the terrain of their communities and understood community behaviour to adequately reach the expectant fathers despite several challenges.
- To engage more effectively with participants, the educational sessions were held in 4 small sessions which allowed for better interaction with the participants.
- The participants were given sufficient time for feedback following each session until a point of saturation was reached.
- Sessions were held at a time generally agreed by each group. This set an enabling environment for full active participation.

Although the findings of this study provide new insights into the father inclusive concept in social aspects of breastfeeding, it also had limitations. The most important being that it focused on intention which is an antecedent to the actual behaviour of interest (offering practical support). However, the theory utilized in this study provided motivation to assess only intentions in this study period.

Ethical Considerations

Ethical clearance for this study was provided by the Health Research and Ethics Committee at Babcock University and permission was provided by the Local Government office of Ikenne LGA,

Ogun State. Participants gave written or verbal consent prior to being recruited into the study.

Conclusion and Recommendation

This study and others highlighted are suggestive of strong associations and causal effects of father-focused breastfeeding education on fathers' involvement in breastfeeding success. Several mechanisms of health education have been highlighted and results show that breastfeeding education for fathers can be effective in producing a number of positive breastfeeding outcomes. This study therefore strongly recommends action be taken in this direction to enable better EBF outcomes in Nigeria and beyond.

Acknowledgements

The researchers would like to thank all expectant fathers who participated in the study and all the Lay Health Workers who assisted in recruitment.

Conflict of Interest

The authors declare no conflict of interest. No external funding was received for the conduct of this study.

Contribution of Authors

Saratu O Ajike conceived, designed and collected data for the study. Ololade O Ogunsanmi analysed and interpreted the data. Augusta E Chinenye Julius, Mustapha M Adebayo and Jonathan M Dangana critically reviewed the content for intellectual meaning. All authors mentioned in the article approved the manuscript.

References

1. Schwarzenberg SJ, Georgieff MK and Committee on Nutrition. Advocacy for Improving Nutrition in the First 1000 Days to Support Childhood Development and Adult Health. *Pediatrics* 2018; 141(2): e20173716.
2. Zambrano E, Ibáñez C, Martínez-Samayoa PM, Lomas-Soria C, Durand-Carbajal M and Rodríguez-González GL. Maternal Obesity: Lifelong Metabolic Outcomes for Offspring from Poor Developmental Trajectories During the Perinatal Period. *Arch Med Res* 2016; 47(1): 1–12.
3. Kerr CC, Rennie CJ and Robinson PA. Model-based analysis and quantification of age trends in auditory evoked potentials. *Clin Neurophysiol* 2011; 122(1): 134–147.

4. Prado EL and Dewey KG. Nutrition and brain development in early life. *Nutr Rev* 2014; 72(4): 267–284.
5. Georgieff MK, Brunette KE and Tran PV. Early life nutrition and neural plasticity. *Dev Psychopathol* 2015; 27(2): 411–423.
6. World Health Organisation, 2019. Breastfeeding. Available from https://www.who.int/nutrition/topics/exclusive_breastfeeding/en/
7. Adewuyi EO, Adefemi K and Adewuyi EO. Breastfeeding in Nigeria: A systematic review. *Int J Community Med Public Health* 2016; 3(2): 385–396.
8. Binns C, Lee M and Low WY. The Long-Term Public Health Benefits of Breastfeeding. *Asia-Pac J Public Health* 2016; 28(1): 7–14.
9. Chowdhury R, Sinha B, Sankar MJ, Taneja S, Bhandari N, Rollins N, Bahl R and Martines J. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatr* 2015; 104(467): 96–113.
10. United Nations Children's Fund. (2011). Improving Exclusive Breastfeeding Practices by using Communication for Development in Infant and Young Child Feeding Programmes, (June 2010), 2011. Available from https://www.unicef.org/C4D_in_EBF_manual__6_1_5_2010_final.pdf
11. United Nations Children's Fund. Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding 2005. Available from https://www.unicef.org/nutrition/index_24807.html
12. Binns C, Lee M and Low WY. The Long-Term Public Health Benefits of Breastfeeding. *Asia Pacific Journal of Public Health* 2016; 28(1): 7–14.
13. World Health Organization. Guideline: protecting, promoting and supporting breastfeeding in facilities providing maternity and newborn services. Geneva: World Health Organization; 2017. Available from <https://www.ncbi.nlm.nih.gov/books/NBK487819/>
14. Victora CG, Bahl R, Barros AJD, França GVA, Horton S, Krasevec J, Murch S, Sankar MJ, Walker N and Rollins NC. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *Lancet* 2016; 387: 475–490.
15. Mgongo M, Mosha MV, Uriyo JG, Msuya SE and Stray-Pedersen B. Prevalence and predictors of exclusive breastfeeding among women in Kilimanjaro region, Northern Tanzania: a population based cross-sectional study. *Int Breastfed J* 2013; 8(12): 2–8.
16. Sholeye OO, Abosede OA, and Salako AA. Exclusive Breastfeeding and Its Associated Factors among Mothers in Sagamu, Southwest Nigeria. *J Health Sci* 2015; 5(2): 25–31.
17. United Nations Children's Fund and World Health Organisation. Tracking Progress towards Universal Coverage for Reproductive, Newborn and Child Health: The 2017 Report, 2017. Available from <https://reliefweb.int/sites/reliefweb.int/files/resource/s/Countdown-2030.pdf>
18. Institut National de la Statistique (INS) et ICF. International Enquête Démographique et de Santé et à Indicateurs Multiples du Cameroun 2019. Yaoundé, Cameroun et Rockville, Maryland USA. INS & ICF, 2019
19. Niger - Exclusive breastfeeding. UNICEF, State of the World's Children, Childinfo, and Demographic and Health Surveys. Available from <https://data.unicef.org/country/ner/>
20. Agence Nationale de la Statistique et de la Démographie (ANSD) [Senegal], and ICF International. Continuous Demographic and Health Survey in Senegal (Continuous DHS) 2012–2013. Dakar, Senegal & Calverton Maryland, ANSD and ICF International, 2013
21. Ogbo FA, Agho KE and Page A. Determinants of suboptimal breastfeeding practices in Nigeria: Evidence from the 2008 demographic and health survey. *BMC Public Health* 2015; 15(1): 1–12.
22. National Population Commission (NPC) [Nigeria] and ICF International. Nigeria Demographic and Health Survey 2018. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International, 2019
23. National Population Commission (NPC) [Nigeria] and ICF International. Nigeria Demographic and Health Survey 2013. Abuja, Nigeria, and Rockville, Maryland, USA: NPC and ICF International, 2014.
24. National Bureau of Statistics (NBS) and United Nations Children's Fund (UNICEF). Nigeria: Multiple Indicator Cluster Survey 2016–17. Abuja, Nigeria: National Bureau of Statistics and United Nations Children's Fund. National Survey Findings Report, 2018.
25. World Health Organization & United Nations children's Fund. Global nutrition targets 2025: breastfeeding policy brief, 2014.
26. Bergmann R, Bergmann K, von Weizsäcker K, Berns M, Henrich W and Dudenhausen JW. Breastfeeding is natural but not always easy: intervention for common medical problems of breastfeeding mothers – a review of the scientific evidence. *J Perinat Med* 2013; 42(1): 9–18.
27. Tohotoa J, Maycock B, Hauck YL, Howat P, Burns S and Binns CW. Dads make a difference: An exploratory study of paternal support for breastfeeding in Perth, Western Australia. *Int Breastfeed J* 2009; 4(15): 1–9.
28. Yang X, Gao L, Ip W and Chan WCS. Predictors of breastfeeding self-efficacy in the immediate postpartum period: A cross-sectional study. *Midwifery* 2016; 41: 1–8.
29. Abbass-Dick J, Stern S, Nelson L, Watson W and Dennis C. Coparenting Breastfeeding Support and Exclusive Breastfeeding: A Randomized Controlled Trial. *Pediatrics* 2015; 135(1): 102–110.
30. Aubel J. The role and influence of grandmothers on child nutrition: culturally designated advisors and caregivers. *Matern Child Nutr* 2012; 8(1): 19–35.
31. Bezner KR, Dakishoni L, Shumba L, Msachi R and Chirwa M. “We Grandmothers Know Plenty”: breastfeeding, complementary feeding and the multifaceted role of grandmothers in Malawi. *Soc Sci Med* 2008; 66(5): 1095–1105.

32. Mukuria AG, Martin SL, Egondi T, Bingham A and Thuita FM. Role of Social Support in Improving Infant Feeding Practices in Western Kenya: A Quasi-Experimental Study. *Global Health: Science and Practice* 2016; 4(1): 55-72
33. Bich TH, Hoa DTP and Målqvist, M. Fathers as supporters for improved exclusive breastfeeding in Viet Nam. *Matern Child Health J* 2014; 18(6): 1444-1453.
34. Su M and Ouyang YQ. Father's Role in Breastfeeding Promotion: Lessons from a Quasi-Experimental Trial in China. *Breastfeeding Med* 2016; 11(3), 144-149.
35. Susin LR and Giugliani ER. Inclusion of fathers in an intervention to promote breastfeeding: impact on breastfeeding rates. *J Hum Lact* 2008; 24(4): 386-453.
36. Yadav R and Pathak GS. Intention to Purchase Organic Food among Young Consumers: Evidences from a Developing Nation. *Appetite* 2016; 96: 122-128
37. Collins SE and Carey KB. The theory of planned behavior as a model of heavy episodic drinking among college students. *Psychol Addict Behav* 2007; 21(4): 498-507.
38. Bai Y, Middlestadt SE, Peng CY and Fly AD. Predictors of continuation of exclusive breastfeeding for the first 6 months of life. *J Hum Lact* 2010; 26(1): 26-34.
39. Guo JJ, Wang TF, Liao JY and Huang CM. Efficacy of the theory of planned behaviour in predicting breastfeeding: meta-analyses and structural equation modeling. *Appl Nurs Res* 2016; 29: 37-42.
40. Ismail TAT, Wan Muda WA and Bakar MI. The extended Theory of Planned Behavior in explaining exclusive breastfeeding intention and behavior among women in Kelantan, Malaysia. *Nutr Res Pract* 2016; 10(1): 49-55.
41. Harwood K. Intent of Expecting Fathers to Encourage Breastfeeding, Perceptions of Support and Barriers to Encouraging Breastfeeding (2011). *Nutrition & Health Sciences Dissertations & Theses*. 22
42. Patch CS, Tapsell LC and Williams PG. Attitudes and intentions toward purchasing novel foods enriched with omega-3 fatty acids. *J. Nutr. Educ. Behav* 2005; 37: 235-241.
43. Ajzen I. The theory of planned behaviour. *Organ Behav Hum Decis Process* 1991; 50(2): 179-211.
44. Fishbein M and Ajzen I. Belief, attitude, intention, and behavior: An introduction to theory and research. Reading, MA: Addison-Wesley, 1975.
45. Ajzen I. Constructing a theory of planned behavior questionnaire. MA: Amherst, 2006.
46. Ajzen I. Attitudes, personality, and behavior. Chicago: Dorsey Press, 1988.
47. Ajzen I and Fishbein M. Understanding Attitudes and Predicting Social Behavior. Englewood Cliffs, NJ: Prentice-Hall, 1980.
48. Faul F, Erdfelder E, Lang A and Buchner, A. G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behav. Res. Methods*, 2007; 39(2): 175-191.
49. Francis J, Eccles MP, Johnston M, Walker AE, Grimshaw M, Foy R, Kaner EFS, Smith L and Bonetti D. Constructing Questionnaires based on the theory of planned behaviour: A manual for health services researchers, Newcastle upon Tyne: United Kingdom, 2004.
50. Bich TH. Changes of knowledge, attitude and practice of fathers regarding supporting six months exclusive breastfeeding: Results of a community-based intervention applying social cognitive theory. *J Health Dev Stud* 2018; 1(02-2017): 19-28.
51. Wahyutri E, Jasmawati J, Dharma KK and Ratnawati R. The effect of infant feeding planning education on nutrition and breastfeeding knowledge, mother's attitude, and husband's support to expectant mother. *Journal of Nursing Education & Practice* 2018; 8(1): 87-93.
52. Furman L, Killpack S, Matthews L, Davis V and O'Riordan MA. Engaging Inner-City Fathers in Breastfeeding Support. *Breastfeeding Med* 2016; 11(1): 15-20.
53. Bich TH and Cuong NM. Changes in knowledge, attitude and involvement of fathers in supporting exclusive breastfeeding: a community-based intervention study in a rural area of Vietnam. *Int. J. Public Health* 2017; 62(1):17-26.
54. Mithani Y, Premani ZS, Kurji Z and Rashid S. (2015). Exploring Fathers' Role in Breastfeeding Practices in the Urban and Semiurban Settings of Karachi, Pakistan. *Journal Perinat Educ*; 24(4): 249-60.
55. Yurtsal ZB and Kocoglu G. The effects of antenatal parental breastfeeding education and counseling on the duration of breastfeeding, and maternal and paternal attachment. *Integrative Food, Nutrition & Metabolism* 2015; 2(4): 222-230.
56. Bich TH, Long TK and Hoa DP. Community-based father education intervention on breastfeeding practice—Results of a quasi-experimental study. *Matern Child Nutr* 2019; 15(Suppl): e12705