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Research Article

Effectiveness of Midwife-led Structured Education Intervention on Optimal Breastfeeding Knowledge among Primigravid Women in Nigeria: a Randomised Control Trial

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ABSTRACT

Breast milk is a priceless essential food for the first six months of life and yet sub-Saharan Africa has neonatal deaths attributed to sub optimal breastfeeding. The study assessed the effectiveness of lecture and lecture with demonstration in optimal breastfeeding knowledge among women. The study adopted a quasi-experimental randomized design. A sample of 141 was determined from a population of 191 primigravid women attending antenatal clinics in General Hospitals Enugu Nigeria. A researcher developed validated was used to collect data from 63 intervention and 76 control group. A pretest was conducted and intervention was given to the participants while posttests were conducted at different times after intervention. Data were analyzed using SPSS version 26.0. Descriptive statistics was used to present socio demographic variables and objectives of the study while inferential statistics were used to ascertain the effectiveness of the intervention at 0.05 level of significance. Results showed that most of the participants were in the age range of 21-30 years. The Pre-intervention knowledge level was poor in both groups and after intervention knowledge levels increased over time higher in the intervention than in the control group. Hypotheses tested revealed that educational interventions were effective as those in the intervention groups were significantly more knowledgeable than those in the control group. Antenatal care attendance was a significant predictor of knowledge of optimal breastfeeding. The researcher concluded that lectures with demonstration during antenatal are effective in improving knowledge level of optimal breastfeeding and recommended that authorities implement policy instituting breastfeeding support groups in hospitals.

Keywords: *Breastfeeding Knowledge, Midwife intervention, Nigeria*

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INTRODUCTION

Breastfeeding is one of the most effective ways to ensure a child's health and survival (Nkoka *et al.*, 2019). Despite evidence of breastfeeding benefits, children are sub optimally breastfed with less than fifteen percent of newborns being breastfed within one hour of birth (Atimati & Adam, 2020; Eke *et al.*, 2019). More so, nearly two out of three infants are not exclusively breastfed for the recommended six months, a rate that has not improved in two decades (World Health Organization, WHO, 2019) and Masuke *et al.* (2021) affirms that children who were started complementary feeding early

were stunted, wasted, and underweight as the meal diversity and frequency were low compared to WHO recommendations. Since breastfeeding is a cultural norm and the benefits of breast feeding are known in Nigeria (Ahmad *et al.*, 2022), the existing challenge is to shift breast feeding knowledge closer to optimal breast feeding (Anaba *et al.*, 2022)

Optimal breastfeeding includes early initiation of breastfeeding (within one hour of birth), exclusive breastfeeding (EBF) from birth up to six months after which nutritionally adequate and safe complementary foods are commenced while continuing breastfeeding up to two years

and beyond (WHO, 2018). WHO (2022) further recommended that infants should be breastfed on demand; that is as often as the child wants, day and night, no bottles, teats or pacifiers should be used. Oot *et al.*, (2015) reported that adhering to all three WHO recommendations of optimal breast feeding is critical to reducing both neonatal and child mortality. Hajeebhoy *et al.*, (2014) affirms that there is a higher prevalence of diarrhoea and acute respiratory infections among infants that were sub optimally breast fed.

Despite evidences of beneficial effect of breastfeeding, worldwide, approximately 6700 neonates die every day (WHO, 2022). UNICEF (2023) reports that the neonatal period is a period of highest risk of death at average global rate of 18 deaths per 1,000 live births. Africa's Infant mortality rate stands at 72 per 1000 live births (WHO, Africa 2022). Premium Times Nigeria (2022) reported that Nigeria infant mortality currently stands at 69 per 1,000 live births, while under-five deaths is 128 per 1,000 live births.

Optimistically, various researchers have reported that optimal breastfeeding minimizes neonatal and infant mortality rate. Ware *et al.*, (2019) reported that optimal breastfeeding is associated with a significant reduction in total infant mortality and Phukan, *et al.* (2018) also found that the risk of the neonatal deaths could be reduced to 15% when all babies are exposed to early breastfeeding. Li, *et al.* (2021) reported that breastfeeding reduces post perinatal death by 26% and infant death by more than 40%.

Globally, only 44% of infants initiate breastfeeding within the first hour of birth, 40% of all infants under six months of age are breastfed with only 45% of children on continuous breast feeding for two years of age (WHO, 2019). Sub-Saharan African countries have only 29.2 % of newborn initiating breastfeeding within one hour of birth (Ekholuenetale & Barrow, 2021), while in Nigeria breastfeeding initiation rate is only 42% (Nigeria Demographic & Health Survey (NDHS), 2018). This is very low when compared with other African countries like Tanzania, Ghana and Ethiopia that reported 51% (Moshi *et al.*, 2021) 56.4% (Siedu *et al.*, 2020), and 81.8% (Woldeamanuel, 2020) respectively. Late initiation of breastfeeding subjects the mother to give her newborn pre lacteal feeding; this exposes the newborn to risk of infection which in turn could lower the chances of the child's survival (Yahaya & Adebayo, 2013; Balogun *et al.*, 2017).

Exclusive breastfeeding rate is persistently low in Africa, Oyelana *et al.* (2021) with only 29% of Nigerian infants 0-6 months being exclusively breast fed (NDHS, 2018). More so, complementary feeding practices are low in Africa attributing to 19.2 million stunted children in West Africa and is responsible for half of the child mortality cases (Mitchodign *et al.*, 2018). Early or late introduction of complementary feeding make children more vulnerable to irreversible effects of malnutrition, making them more susceptible to infectious diseases particularly during the first two years of life (Masuke *et al.*, 2021).

Researchers have indicated that suboptimal breastfeeding practices is due to poor knowledge of optimal breastfeeding as Okpala *et al.*, (2020) found that women attending health centers located at urban city in Enugu state do not have optimal knowledge of feeding frequency in children six months to two years. Similarly, Olatona *et al.*, (2017) reported

that only 47.9% of women have knowledge of complementary feeding. Furthermore, majority of women in Enugu (64%) are not aware of WHO recommendations of breastfeeding (Nduagubam *et al.*, 2022). Ogban *et al.*, (2016) found that less than half (43.2%) of the women have unsatisfactory level of knowledge of breastfeeding. Also, Ihudiebube-Splendor *et al.* (2019) reported poor knowledge of exclusive breast feeding among primiparous women in Enugu, Eastern Nigeria. This suboptimal breastfeeding knowledge suggest that a significant gap still exists among mothers regarding information about breastfeeding. Knowledge is a modifiable variable that can be influenced through teaching to provide detailed and correct information about a phenomenon.

Education on breastfeeding can be done verbally in the form of delivering lectures to women or in combination with demonstrative skills. Lecture method provides teaching to students by the teacher, a traditional, teacher-centered teaching planned by the teacher to systematically provide learning experience to the learner to enable him receive and process the information; retain and recall it in order to be able to use it to tackle emerging life tasks and problems (Ibrahim *et al.*, 20218). Demonstration is a fundamental pedagogical tool that enhances the psychomotor skills of learners through development of learners' procedural knowledge and observation of a phenomenon (McLain, 2021). Lecture with demonstration involves educating mothers on breastfeeding by the lactation nurse using audio visual aid and breastfeeding booklet. Souza *et al.* (2020), suggested that education intervention using audiovisual resources, model breast and doll improves breastfeeding outcomes.

An intervention study by Yadav *et al.* (2022) showed that there is a significant knowledge difference among women who receive lactation education and those that receive standard care. However, Nabuisi *et al.*, (2019) study on face to face support of breast feeding intervention given to mothers in the intervention group only showed that there was no significant difference in EBF rates among women receiving routine and standard breast feeding care.

Educational intervention through lecture and lecture with demonstration could raise the consciousness in parents on establishing breastfeeding and sustaining breastfeeding (Mokhtari *et al.*, 2018). There is lack of literature on effectiveness of midwife led educational intervention on knowledge of optimal breast feeding among primigravid women attending general hospitals in Enugu state. It becomes imperative to determine the effectiveness of lecture and lecture with demonstration on optimal breastfeeding knowledge and practice of breastfeeding technique among primigravid women in Enugu.

MATERIALS AND METHODS

Study design and setting: This quasi-experimental two groups before and after design was done in two general hospitals (Poly and Uwani) in Enugu from April 2023 to September 2023. Enugu state is located in south eastern part of Nigeria and has seventeen local government areas with at least one secondary health facility located in each of these local government areas. Random sampling was done in which Enugu North (EN) and Enugu South (ES) Local government

areas were selected and these hospitals were further through random sampling assigned to the control and intervention group respectively.

Study population and sampling: The study population were 191 primigravid women attending these hospitals of which a sample size of 128 was determined using the Krejcie and Morgan (1970) sample size determination formular for a finite population, a 10% attrition rate was added to it, cumulatively giving 141 sample size. Primigravid women in the third trimester of pregnancy from 27 to 29 weeks gestation receiving antenatal care in Poly and Uwani General Hospitals without any medical or surgical conditions that may impede future breastfeeding, willing to participate in the study were randomly selected (balloting) into the study. A multi stage sampling method consisting of four stages was used in selection of the participants. In the first stage second and third stage, simple randomly, two L.G.A s (Enugu north and Enugu South) were selected from Enugu State Nigeria, and randomly (balloting) one general hospital was selected from each L.G.A. State and third stage involves random selection of the hospitals to intervention and control groups . In the fourth stage simple random selection of the primigravid woman in these hospitals participated in the study.

Data collection and analysis

Data collection and analysis: Data was collected using a self-administered questionnaire that was divided into two main parts. The first part included sociodemographic characteristics such as age, ethnicity, marital status, educational level, family income, and antenatal care attendance. The second part assessed the level of optimal breastfeeding knowledge among primigravid women it is a 19 item questions relating to the definition of time of breast milk initiation, meaning, duration and frequency of EBF, meaning duration and frequency of complementary feeding, benefits of breastfeeding to mother and child, Thus, Knowledge scores ranged from 0- 32, a score above 16 indicate good knowledge while a score of 16 or below indicates poor knowledge of optimal breastfeeding. The language of the questionnaire was simple and concise to ensure proper understanding by the study participants. Scores obtained were converted to 100%, a score above 50% indicates good knowledge while a score of 50 or below indicates poor knowledge

The instrument was validated by two experts from the Department of Nursing Sciences, University of Nigeria, Enugu Campus and a clinician in the field of breastfeeding. The instrument was pilot-tested by administering it to 14 primigravid women from the general hospitals with similar characteristics. Data collected were subjected to Cronbach's alpha reliability test which gave a coefficient alpha of 0.84. With introductory, letter, ethical clearance certificate, and informed consent, pre-intervention data was collected. Then intervention was given by teaching women in the control group through the use of lecture methods only whereas those in the control group were taught with lecture as well as demonstration by use of audiovisual aids and breastfeeding booklet shared to the intervention group at the end of intervention. This intervention was done using different intervention packages for intervention and control groups

delivered to women in the antenatal clinic before the women delivered, duration of intervention was eight weeks for each group while post intervention data was collected in the hospital halls of various hospitals. Post tests were given at one, five and nine weeks after intervention. Various participants were lost in the course of data collection this was mainly due to spouse disapproval continue to participate in the study. Two participants were lost in the control group at pre intervention due to decline to continue in the study. Then at post test 1(one week after intervention) three participants were lost in control group due to non-completion of training as a result of child birth. At five weeks post intervention one participant in the intervention was lost due to decline to continue in the study, likewise three participants were lost in the control group mainly due to spousal decline to continue in the study. At nine weeks post intervention, five participants were lost in the control group due to spousal refusal, relocation to another state and one participant was lost in the intervention due to decline to participate in the study. Therefore, 139 participants (76 in the control and 63 in the intervention group) took part in the study at the pre intervention phase while 65 participants in the control and 61 participants in the intervention group were properly returned at nine weeks post intervention giving a total of 126 participants with a return rate of 90.6 %.

Statistical analysis: Data was analyzed using International Business Machine for Social Sciences {IBM SPSS} version 25. Categorical variables (e.g., religion, ethnicity, marital status, educational level and family income) were summarized using frequencies and proportions while quantitative variables (e.g., age, number of antenatal care attendance and optimal breastfeeding knowledge scores) were summarized using mean and standard deviation. Chi-square and logistic regressions were used to determine the effectiveness of the intervention and significant differences among variables studied. A p-value < 0.05 was considered statistically significant

Ethical Considerations: An ethical clearance with protocol number MH/MSD/REC21/365 was obtained from Research and Ethics Committee of Enugu State Ministry of Health. Administrative permit was obtained from the hospital authorities and verbal consent was gotten from each participant after the purpose of the study had been explained by the researcher. The study ensures voluntary participation as the participants had the right to decline participation or to withdraw from the study at any time if they so desired with no penalties or loss of benefits

RESULTS

Table 1 shows a review of the sociodemographic characteristics of the students. The majority of the primigravid women (cont. 64.5%, int.69.1%) were in the age group between 21-30years. Majority are (cont. 89.5%, int.95.2%) from Igbo ethnic group and most of them (cont. 97.4%, int.93.7%) were Christians. Also, majority (cont. 48.7%, int.66.7%) had secondary education, majority were mostly students (cont. 38.2%, int.28.6%), more than half (cont. 57.9%, int.55.5%) had family income less than fifty thousand Naira and below average number of the participants (cont. 47.4%, int.39.7%) had more than four antenatal care visits.

Table one:
Socio-demographic characteristics of the study sample

Variables	Options	Control (n = 76) N (%)	Intervention (n = 63) N (%)
Age	Less than 20	11 (14.5)	12 (19.0)
	21 – 30	49 (64.5)	39 (61.9)
	Above 30	16 (21.1)	12 (19.0)
	Mean(±SD) age	26.0 ± 2.9	25.6 ± 3.1
Ethnic group	Igbo	68 (89.5)	60 (95.2)
	Hausa	6 (7.9)	3 (4.8)
	Yoruba	2 (2.6)	0 (0)
Religion	Christianity	74 (97.4)	59 (93.7)
	Islam	2 (2.6)	4 (6.3)
Marital status	Single	4 (5.3)	1 (1.6)
	Married	65 (85.5)	58 (92.1)
	Separated	7 (9.2)	4 (6.3)
Level of Education	Primary	10 (13.2)	3 (4.8)
	Secondary	37 (48.7)	42 (66.7)
	Higher education	29 (38.2)	18 (28.5)
Occupation	Housewife	12 (15.8)	7 (11.1)
	Student	29 (38.2)	18 (28.6)
	Farmer	2 (2.6)	5 (7.9)
	Artisan	8 (10.5)	8 (12.7)
	Trader	21 (27.6)	15 (23.8)
	Civil Servant	4 (5.3)	10 (15.9)
Income (Monthly)	Less than 50000	44 (57.9)	35 (55.5)
	50001– 100000	3 (3.9)	4 (6.3)
	100000 – 150000	3 (3.9)	23 (36.5)
	Above 150,000	26 (34.2)	1 (1.6)
Number of antenatal visits	1	10 (13.2)	8 (12.7)
	2	10 (13.2)	12 (19.0)
	3	11 (14.5)	5 (7.9)
	4	9 (11.8)	13 (20.6)
	>4	36 (47.4)	25 (39.7)

Table 2 show the knowledge level of optimal breastfeeding among the primigravid women in the control and the intervention group were below average in both groups before intervention. However, it was lower in the control group than in the intervention group [con. (39.1%) int. (41.3%)]. Correct meaning of optimal breastfeeding was low in both groups

Table 2:

Pre-intervention knowledge level of optimal breastfeeding among primigravid women in the control (lecture method) and intervention (lecture with demonstration) group

Characteristics	Control (n = 76)	Intervention (n = 63)	
	N (%)	N (%)	
Meaning of optimal breastfeeding	Breastfeeding in first hour of birth only	23 (30.3)	17 (27.0)
	Exclusive breastfeeding only	21 (27.6)	22 (34.9)
	Breast feeding within second hour and exclusive breastfeeding (EBF) only	4 (5.3)	5 (7.9)
	Breastfeeding in the first hour birth with introduction of age-appropriate complementary food.	2 (2.6)	3 (4.8)
	*Breastfeeding in the first hour of birth, EBF and breast feeding with age-appropriate complementary food up to two years	7 (9.2)	2 (3.2)
	Breastfeeding with age-appropriate complementary food up to three years	0 (0)	0 (0)
	Others (Giving baby pap, milk, soup)	19 (25.0)	14(22.22)
Source of knowledge**	*Antenatal clinic	53 (69.8)	38 (60.3)
	*Postnatal clinic	0(0)	0(0)
	*Community Medical outreach	2 (2.6)	0 (0)

though it was greater in the control group compared to the intervention group [con. (9.2%), int. (3.2%)]. The major source of knowledge for both groups was from the antenatal clinic [con. (69.8%), int. (60.3%)], friends (int 20.6%, cont. 9.2%) and family (int 14.3%, con 15.8 %). Those who knew the time that breastfeeding should commence were more in the intervention group than in the control group [con. (52.6%), int. (71.4%)]. A greater proportion of those in the intervention group were of the opinion that no fluid should be given before breast milk. However, this was low in both groups [con. (28.9%), int. (34.9%)].

Those who knew the correct meaning of exclusive breastfeeding were in the majority [con. (63.2%), int. (58.7%)]. More than half knew that mothers should breast feed their baby daily on demand [con. (69.7%), int. (60.3%)]. A greater proportion stated that duration of exclusive breastfeeding is 6 months. However, it was higher in the intervention group than in the control group [con. (71.1%), int. (77.8%)]. Furthermore, those who knew the correct meaning of complementary feeding were in the minority [con. (22.4%), int. (23.8%)]. Breastmilk, grains, roots and tubers and vitamin A rich foods and vegetables were identified as the major foods given to babies from 6 months and above [con. (25.0%, 26.3% and 31.6%), int. (46.0%, 27.0% and 34.9%)]. The participants showed low knowledge level of complementary feeding in other responses except for materials for feeding a baby and time for introducing family adequate food [con. (36.8% and 38.2%), int. (47.6% and 52.4%)]. Also, findings showed majority of participants in both groups agreed that there were benefits of breastfeeding to the baby [con. (89.5%), int. (93.7%)]. Protection of baby from infection (59.2% and 65.1%), cheapness (55.3% and 58.7%) and convenience (38.2% and 58.7%) were identified as major benefits of breastfeeding to the baby. Also, more than half posited that there were benefits of breastfeeding to the mother [con. (76.3%), int. (63.5%)]. The major benefits of breastfeeding to the mother were: promotes mother-infant attachment [con. (44.7%), int. (36.5%)]; protects from some diseases [con. (42.1%), int. (31.7%)] and helps womb go back quickly [con. (25.0%), int. (34.9%)].

	*Mass Media	4 (5.3)	13 (20.6)
	*Friends	7 (9.2)	13 (20.6)
	*Family	12 (15.8)	9 (14.3)
	*Religious Institution	7 (9.3)	5 (7.9)
Time breastfeeding should commence	*Within 1 hour	40 (52.6)	45 (71.4)
	1-2 hours	32 (42.1)	11 (17.5)
	2 - 24 hours	3 (3.9)	6 (9.5)
	Others (when the mother is ready to breast feed)	1 (1.3)	1 (1.6)
Fluid given before breast milk	*None	22 (28.9)	22 (34.9)
	Plain water	22 (28.9)	5 (7.9)
	Glucose water	12 (15.8)	28 (44.4)
	Coconut Water	14 (18.4)	6 (9.5)
	Infant formula	2 (2.6)	0 (0)
	Others (holy water, blessed oil)	4 (5.3)	2 (3.2)
Meaning of exclusive breastfeeding	Breast feeding a baby with breast milk and water only	18 (23.7)	16 (25.4)
	Breast feeding a baby with milk, water and pap only	8 (10.5)	9 (14.3)
	*Breast feeding a baby with breast milk only	48 (63.2)	37 (58.7)
	Others (breastfeeding with water and liquid family food e.g soup)	2 (2.6)	1 (1.6)
Number of times mother should breast feed baby daily	Every 2 hours	19 (25.0)	14 (22.2)
	Every 4 hours	4 (5.3)	11 (17.5)
	*On demand by baby	53 (69.7)	38 (60.3)
Length of time for exclusive breastfeeding	1 month	1 (1.3)	5 (7.9)
	3 months	3 (3.9)	2 (3.2)
	4 months	11 (14.5)	3 (4.8)
	*6 months	54 (71.1)	49 (77.8)
	Others (12 months)	7 (9.2)	4 (6.4)
Meaning of complementary Feeding	Feeding a baby with breast milk only	13 (17.1)	25 (39.7)
	Feeding a baby with breast milk and formular milk only	42 (55.3)	21 (33.3)
	*Feeding a baby with breast milk and age-appropriate nutritious family food	17 (22.4)	15 (23.8)
	Others (eating local dishes, Drinking pap)	4 (5.2)	2 (3.2)
Food given to babies from six months and above*	Salted water	2 (2.6)	3 (4.8)
	Sugar water	17 (22.4)	7 (11.1)
	*Breast Milk	19 (25.0)	29 (46.0)
	*Grains, roots and tubers	14(18.4)	14(22.2)
	*Legumes and nuts	4 (5.3)	4 (6.3)
	*Dairy Products	20 (26.3)	17 (27.0)
	*Flesh foods	11 (14.5)	11 (17.5)
	*Eggs	16 (21.1)	13 (20.6)
	*Vitamin A rich foods and vegetables	24 (31.6)	22 (34.9)
	*Other fruits and vegetables	10 (13.2)	10 (15.9)
Food given to babies from six months of age*	Semi solid food only	17 (22.4)	14 (22.2)
	Soft food only	34 (44.7)	33 (52.4)
	solid food only	5 (6.6)	3 (4.8)
	*Semi solid, soft food or solid food only	13 (17.1)	12 (19.0)
	Others (Liquid food, water)	1 (1.3)	3 (4.8)
Materials for feeding a baby	Feeding bottle	41 (53.9)	28 (44.4)
	*Plate and spoon	28 (36.8)	30 (47.6)
	Hand feeding	5 (6.6)	1 (1.6)
	Others (Curved spoon)	1 (1.3)	0 (0)
Time for introducing family adequate food	3 months	3 (3.9)	5 (7.9)
	4 Months	5 (6.6)	8 (12.7)
	*6 Months	29 (38.2)	33 (52.4)
	12 Months	38 (50.0)	16 (25.4)
	Others (one month)	1 (1.3)	1 (1.6)
Length of time for complementary age-appropriate family food	12 months	52 (68.4)	39 (61.9)
	*2 years	19 (25.0)	15 (23.8)
	3 years	5 (6.6)	9 (14.3)
Minimum frequency of meal other than breast milk for a child of 6-8months	less than 2times	18 (23.7)	11 (17.5)
	2-3times*	24 (31.6)	19 (30.2)
	4-5times	29 (38.2)	32 (50.8)
	Others (Every time, once the baby cry)	5 (6.6)	1 (1.6)

Minimum frequency of meal other than breast milk for a child of 9-23months	less than 2 times	11 (14.5)	17 (27.0)
	2-3times	37 (48.7)	29 (46.0)
	*4-5times	18 (23.7)	13 (20.6)
Response on benefits of breast feeding to baby	Yes	68 (89.5)	59 (93.7)
	No	8 (10.5)	4 (6.3)
Benefits of breast feeding to baby*	*Very cheap	42 (55.3)	37 (58.7)
	*Convenient	29 (38.2)	37 (58.7)
	*Protects a baby from infections	45 (59.2)	41 (65.1)
	Makes baby to be fat	21 (27.6)	12 (19.0)
	Makes baby to be taller	10 (13.2)	0 (0)
	*Baby are rarely constipated	11 (14.5)	2 (3.2)
Response on benefits of breast feeding to mother	*Yes	58 (76.3)	40 (63.5)
	No	18 (23.7)	23 (36.5)
Benefits of breast feeding to the mother*	*Protects from some diseases	32 (42.1)	20 (31.7)
	*Promotes mother infant attachment	34 (44.7)	23 (36.5)
	*Helps womb go back quickly	19 (25.0)	22 (34.9)
	makes very beautiful and fat	6 (7.9)	13 (20.6)
	Helps in achieving pregnancy early enough	6 (7.9)	3 (4.8)
	*Helps in spacing children	19 (25.0)	14 (22.2)
	Others (happiness, birth to plenty children, improve love from mother-in-law)	5 (6.6)	3 (4.8)
Overall knowledge score		Good knowledge (39.1%) Poor knowledge (60.9%)	Good knowledge (41.3%) Poor knowledge (58.7%)

* Represents the correct options, which indicate good knowledge

**Multiple responses applicable

Table 3:

Post intervention knowledge level of optimal breastfeeding among women in the control and intervention group at one week (post-test 1), five weeks (post-test 2 and nine weeks (post-test 3) post intervention

Post test 1	Intervention (n = 63)	Control (n = 73)	Total	Chi-Square (p-value)	RR (95% C.I.)	OR (95% C.I.)
Overall knowledge				1.825	1.3	0.6
- Good	35 (56.1)	31 (43.1)	66 (48.5)	(> .05)	(0.9 – 1.8)	(0.3 – 1.2)
- Poor	28 (43.9)	42 (56.9)	70 (51.5)			
M±SD	55.6±0.5	42.4±0.5				
Post test 2	Intervention (n = 62)	Control (n = 70)	Total	Chi-Square (p-value)	RR (95% C.I.)	OR (95% C.I.)
Overall knowledge				3.571	1.4	0.492
- Good	46 (73.6)	41 (59.1)	87 (65.9)	(< .05)	(1.0 – 1.9)	(0.2 – 1.0)
- Poor	16 (26.4)	29 (40.9)	45 (34.1)			
M±SD	74.1 ± 0.4	58.6 ± 0.5				
Post test 3	Intervention (n = 61)	Control (n = 65)	Total	Chi-Square (p-value)	RR (95% C.I.)	OR (95% C.I.)
Overall knowledge				6.742	1.7	0.272
- Good	54 (88.6)	44 (68.1)	98 (65.9)	(< .01)	(1.2 – 2.3)	(0.1 – 0.7)
- Poor	7 (11.4)	21 (31.9)	28 (34.1)			
M±SD	88.5 ± 0.3	67.7 ± 0.5				

Good (knowledge score > 50%); Poor (knowledge score ≤ 50%); RR = Risk Ratio; OR = Odds Ratio

Table 3 show comparison of post intervention knowledge level of optimal breastfeeding among women in the control and intervention group at one week (post-test 1), five weeks (post-test 2 and nine weeks (post-test 3) post intervention Post-test 1, the overall knowledge was higher for the intervention group (56.1%) than for the control group (43.1%) and the knowledge score was 55.6±0.5 and 42.4±0.5 respectively. On the effectiveness of the health education on the knowledge level of optimal breastfeeding among the women, knowledge was 1.3 times higher in the intervention

group than the control; the odds was 0.6 times higher, However, the observed difference was not significant at post-test 1.

At post-test 2, the overall knowledge was higher for the intervention group (73.6%) than for the control group (59.1%) and the knowledge score was 74.1±0.4 and 58.6±0.5 respectively. On the effect of the health education on the knowledge level of optimal breastfeeding among the women, there was a significant difference between the two groups ($p <$

.05). Knowledge was 1.4 times higher in the intervention group than the control; the odds was 0.5 times higher. At post-test 3, the overall knowledge was higher for the intervention group (88.6%) than for the control group (68.1%) and the knowledge score was 88.5±0.3 and 67.7±0.5

respectively. On the effect of the health education on the knowledge level of optimal breastfeeding among the women, there was a significant difference between the two groups ($p < .01$). Knowledge was 1.7 times higher in the intervention group than the control; the odds was 0.3 times higher.

Table 4:

Differences in the pre-test knowledge level of optimal breastfeeding among women in the control and the intervention group based on their demographic characteristics

	Variables	Knowledge		B	Df	95% C. I.	P-value
		Good N (%)	Poor N (%)				
Control Group (n = 76)	Age						
	Less than 30	22 (73.3)	38 (82.6)	0.810	1	0.5 – 9.8	0.281
	Above 30 ^a	8 (26.7)	8 (17.4)				
	Education						
	Not higher education	19 (63.3)	31 (67.4)	0.272	1	0.2 – 2.5	0.659
	Higher education ^a	11 (36.7)	15 (32.6)				
Number of antenatal visits							
Less than 4	7 (23.3)	33 (71.7)	2.571	1	3.7 – 46.2	0.000*	
More than 4 ^a	23 (76.7)	13 (28.3)					
Intervention group(n-63)	Age						
	Less than 30	18 (69.2)	33 (89.2)	0.569	1	0.1 – 4.7	0.600
	Above 30 ^a	8 (30.8)	4 (10.8)				
	Education						
	Not higher education	20 (76.9)	25 (67.6)	2.448	1	0.01 – 1.0	0.047*
	Higher education ^a	6 (23.1)	12 (32.4)				
Number of antenatal visits							
Less than 4	8 (30.8)	30 (81.1)	1.786	1	0.04 – 0.8	0.024*	
More than 4 ^a	18 (69.2)	7 (18.9)					

Logistic regression (level of significance at $p < 0.05$) a – reference variable

*Statistically significant

The logistic regression model in Table 4 shows the prediction of the knowledge level of optimal breastfeeding among women in the control group and intervention group based on their age, educational level and the number of antenatal visits. The logistic regression model shows that number of antenatal visits was a significant predictor of the knowledge level of optimal breastfeeding among the women in the control group at the pre-test ($p = 0.00$). The likelihood of participants having good knowledge of optimal breastfeeding at pre-test was 2.6 times higher for participants who had made more than 4 ANC visits than for those who had made less than 4 ANC visits. In the intervention group. Education ($p = 0.047$) and number of antenatal visits ($p = 0.024$) were significant predictors of the knowledge level of optimal breastfeeding among these women at pre-test. The likelihood of participants having good knowledge of optimal breastfeeding at pre-test was 2.5 and 1.8 times higher for participants who had higher education and who had made more than 4 ANC visits than for those in other groups.

DISCUSSION

This present finding showed that the age most women got pregnant for the first time was from twenty one to thirty years. This could be explained that it is at this age that most people enter into an intimate relationship that eventually leads to

pregnancy. Findings are in line with the findings of Asmamaw *et al.*, (2021) and Nduagubam *et al.*, (2021) that reported twenty one to thirty years were the age range that most women get pregnant for the first time. The preponderance of participants being predominantly Igbos and Christians could be explained that the area in which the study was inhabited mostly Igbos and Christians

Findings from this study showed that Primigravid women had below average knowledge level of optimal breastfeeding. This was because the control group showed only thirty-nine percent knowledge level while the intervention group demonstrated forty-one percent knowledge level. Most of the participants in both groups do not know the correct meaning of optimal breastfeeding as the majority believed that optimal breastfeeding is exclusive breastfeeding only while others believe it is breastfeeding within the first hour of birth only. The participants' major sources of information were the antenatal clinic and friends. Although, the majority of participants from both groups knew the time of commencing breastfeeding, only less than one-third of participants from both groups agreed that nothing should be given to the newborn before the first breast milk. More of the participants in the control group knew that exclusive breastfeeding involves breastfeeding with milk only, on demand for a duration of six months.

Furthermore, a greater percentage of participants from both groups did not know the correct meaning of

complementary feeding as they believed, it is breastfeeding with breast milk and formula milk only. This is affirmed by the fact that the majority reported complementary foods should be soft only, given with a feeding bottle, and last for twelve months only. Almost all the participants in the intervention group and the majority in the control group posited that breastfeeding is beneficial to children and mothers.

The possible explanation for the low level of knowledge from both groups were that more participants in both groups wrongly believed that optimal breastfeeding is exclusive breastfeeding of infants and the source of breastfeeding information was mostly antenatal clinic. This may be because it was their first pregnancy and might not have been opportune to consistently get accurate information on the meaning of optimal breastfeeding attributing to the fact that participants in both groups who had less than four antenatal visits were more compared to those that had more than four visits.

This study is similar to a study conducted in Enugu Nigeria by Nduagubam *et al.*, (2022) on breastfeeding knowledge and practices of nursing mothers that showed that the majority of the participants are not aware of the WHO recommendation of breastfeeding. The findings are similar to the study in Enugu by Ihudiebube-Splendor *et al.*, (2019) that showed primigravid women knew the time of commencing breast milk and the duration of EBF. Similarly, findings are also in line with the findings of the study conducted in the Lagos state urban community by Olatona *et al.*, (2017) on complementary feeding knowledge, practices, and dietary diversity among mothers of under-five children. Also, this study concurred with the study conducted by Okpala *et al.*, (2020) on the assessment of knowledge of complementary feeding among nursing mothers in an urban community in Enugu State that showed poor knowledge of women on the age of ending breastfeeding and minimum meal frequency for children. Similarities to these findings may be because they were done in almost the same setting with almost similar methodology.

Findings contradict the findings from the study conducted in Egypt by Mohamed & El- Nemer, (2022) on knowledge of breast milk initiation among mothers attending antenatal clinic in a teaching hospital. This dissimilarity is plausible to different methodologies and settings used in these studies. Information from the findings showed that post-intervention, knowledge level increased steadily from one week, five weeks, and nine weeks post-intervention. The maximum increase in the knowledge level in both groups was at five weeks post-intervention. This may be because at this time women had rested enough from the stress of postpartum and continuously looked out for knowledge of optimal breastfeeding from health researchers, friends, relatives, and neighbours. Additionally, the increase in knowledge of optimal breastfeeding was more in nine weeks after intervention than at one-week post-intervention. This may be because at one-week post-intervention, the participant's knowledge of optimal breastfeeding is basically what they learned from healthcare researchers and other healthcare professionals during their antenatal visits however at nine weeks post-intervention social interaction might have led to an increase in their optimal breastfeeding knowledge. This

suggests that significant others like friends and family members also educate women about breastfeeding

Findings are consistent with a study conducted in Brazil by Dodt *et al.* (2015), which discovered that following an educational intervention, breastfeeding efficacy scores rose in both groups, in the intervention group by 5 points, and in the control group by 2.1 points. The results also align with research conducted in China by Guqin *et al.* (2018), Iran by Moudi *et al.* (2018), and Nigeria by Ogunfowokan *et al.* (2017), which discovered that breastfeeding knowledge levels rose gradually following interventions. The utilization of a comparable questionnaire on breastfeeding may attest to similarities in these findings

This present study finding is in line with the result of a study conducted in Iran by Renuka *et al.*, (2020) on the effectiveness of educational intervention on breastfeeding knowledge. They discovered that breastfeeding knowledge levels increased over time at one week, three months, and six months post-intervention. This suggests women who experience breastfeeding will always seek out adequate knowledge that will enable them to improve their knowledge of breastfeeding.

The findings from this study provide an overall picture that primigravid women had poor knowledge of optimal breastfeeding and this can be improved through effective health education therefore nurses, during antenatal sessions, should educate pregnant women, especially primigravid women about optimal using lectures and audio-visual aids, as these strategies have proven to significantly increase breastfeeding knowledge. Nurses should also develop strategies to motivate women to have more ANC attendance as it plays a key role in good knowledge of optimal breastfeeding.

In conclusion, primigravid women had low knowledge level of optimal breastfeeding and educational intervention through use of lectures and audiovisual aids had improve knowledge level of optimal breastfeeding among these women over time, though it was higher in the intervention than the control group. The number of antenatal visits was a significant predictor of the knowledge level of optimal breastfeeding among these women. Therefore, it was recommended that health education on breastfeeding should be done using various audio-visual aids and dummies to facilitate knowledge of optimal breastfeeding. Intervention study using breastfeeding education should be replicated in the rural setting. Government should institute policy that encourages home visit to provide breastfeeding support to women and policy maker should implement policy instituting breastfeeding support groups in all hospitals to help disseminate appropriate information on breastfeeding.

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