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Knowledge Dynamics and Awareness of Long-Term Benefits of Exclusive Breastfeeding Among Antenatal Care Attendees in a Tertiary Healthcare Facility in Southern Nigeria

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ABSTRACT

Background: Exclusive Breastfeeding (EBF) is widely recognized as foundational for infant health, yet generic public health messaging often masks critical gaps in maternal understanding regarding proper execution and long-term health benefits.

Objective: To assess the depth of core EBF knowledge, specific awareness of maternal-infant health benefits, and their socio-demographic predictors among pregnant women attending an urban tertiary healthcare center in Southern Nigeria.

Methods: A descriptive cross-sectional study was conducted among 260 expectant mothers selected via systematic random sampling at the antenatal care clinic of Edo Specialist Hospital, Benin City. Data were collected using a structured, interviewer-administered questionnaire covering core EBF principles and multi-dimensional health benefits. Analysis was performed using SPSS version 26.0, employing descriptive statistics, mean score thresholds, and Chi-square tests to identify demographic associations ($p<0.05$).

Results: While the overall mean indicated satisfactory good knowledge (83.5%), significant specific gaps were identified. Notably, 28.8% of respondents failed to identify immediate post-birth initiation as ideal, 20.8% incorrectly believed water should be administered during the first six months, and 39.6% were unaware of the recommendation to extend breastfeeding up to two years. While awareness of direct infant benefits was high (>91%), a pronounced blind spot emerged regarding long-term maternal protections, particularly its role in preventing postpartum depression (26.5% unaware) and later-life osteoporosis (42.3% unaware). Chi-square analysis revealed that maternal age was a critical, statistically significant driver of both core knowledge ($p=0.003$) and benefit awareness ($p=0.0015$), with younger mothers (18–23 years) exhibiting significantly lower scores.

Conclusion: A profound disconnect exists between broad maternal awareness of EBF and knowledge regarding its clinical timeline and long-term maternal advantages. Antenatal education frameworks must pivot from generic encouragement to targeted, age-specific counseling that explicitly addresses the logistical mechanics of EBF and its lifetime health returns for the mother.

Keywords

Exclusive breastfeeding, Knowledge dynamics, Maternal health, Antenatal care, Southern nigeria.

Introduction

Proper infant nutrition serves as a foundational pillar for child growth, neuro-cognitive development, and overall quality of life [1]. Human breast milk stands as the earliest, safest, and most complete natural source of nourishment available to newborns [2]. It naturally encapsulates a highly specialized balance of lipids, proteins, carbohydrates, and essential immunological components that shield infants against an array of acute and chronic infectious illnesses throughout their crucial first year of life [3]. The World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the American Academy of Pediatrics define optimal infant feeding through a multi-stage regimen: the immediate initiation of breastfeeding within one hour of birth, the maintenance of Exclusive Breastfeeding (EBF) for the first six months of life, and the introduction of safe, culturally appropriate complementary feeding alongside continued breastfeeding up to two years of age or beyond [4,5]. Within this framework, EBF specifies that the infant receives absolutely no other liquid or solid nourishment, not even water and with the explicit exception of medically prescribed syrups, vitamins, or mineral supplements [6].

The immediate health benefits of EBF are well documented. Early-stage breast milk, specifically colostrum secreted immediately post-delivery, contains exceptionally high concentrations of secretory antibodies, protective white blood cells, and immunoglobulins that establish a biological defense mechanism within the newborn's immature immune system [3]. This immunostimulatory effect significantly lowers the clinical incidence of infant diarrhea, vomiting, pneumonia, urinary tract infections, severe respiratory ailments, and necrotizing

enterocolitis in preterm infants [7]. Over the life course, sustained EBF is also epidemiologically linked to a decreased long-term risk of developing childhood obesity, type 1 and type 2 diabetes, asthma, and severe allergies [8].

Crucially, the protective boundary of EBF extends symmetrically to maternal health [7]. The immediate physiological act of suckling triggers the endogenous release of oxytocin, which promotes uterine involution, curbs excessive postpartum haemorrhage, and helps the uterus return to its pre-pregnancy structural state more effectively [9]. Furthermore, EBF stimulates metabolic expenditures that assist the mother in shedding retained gestational weight, induces lactational amenorrhea to act as a form of natural family spacing, and releases neuroendocrine hormones that foster psychological calmness, thereby mitigating postpartum depression [9]. In the long term, mothers who breastfeed exhibit significantly lower risks of developing localized malignancies, including breast and ovarian cancers, as well as lifetime cardiovascular disease, stroke, and osteoporosis [9].

Despite this unequivocal clinical evidence, global adherence to EBF guidelines remains suboptimal. Data from the Nigeria Demographic and Health Survey (NDHS) underscores a stagnant, problematic trend, revealing that the national EBF rate has remained locked at a low 29% [10,11]. This suboptimal practice directly exposes infants to increased risks of preventable infectious morbidity, nutritional adversity, and severe dehydration [8]. In Low- and Middle-Income Countries (LMICs), where poor environmental sanitation compounded by a lack of clean water increases exposure to pathogens, the failure to exclusively breastfeed contributes directly to under-five mortality [12]. It is estimated that scaling up optimal breastfeeding practices could prevent up to 13% to 15% of all neonatal and infant deaths globally, amounting to over 800,000 child deaths averted annually if near-universal coverage were achieved [13,14].

A pervasive challenge in public health infrastructure across Sub-Saharan Africa is the distinct "knowledge-practice gap" or informational disconnect [15]. Public health campaigns routinely measure success by broad, superficial indicators, such as whether a mother has "heard of" breastfeeding [16]. However, raw statistical awareness frequently masks severe underlying deficits in execution-specific knowledge [17]. For instance, while a mother may know that breast milk is beneficial, she may simultaneously hold deep-seated clinical misconceptions, such as believing that newborns require supplementary water during hot weather, that colostrum should be discarded as "dirty," or that EBF cannot realistically sustain an infant for a full six months [18,19].

Furthermore, public health educational frameworks consistently neglect the long-term maternal component of EBF advantages [7]. Expectant mothers are routinely educated on how EBF protects their babies, but they are rarely informed about the lifetime oncological, cardiovascular, and metabolic protections afforded to their own bodies [9]. This one-sided flow of clinical information reduces EBF to an act of maternal sacrifice rather than a mutually beneficial health strategy, diminishing personal motivation and clinical execution among younger, less experienced cohorts [20]. While previous studies in Nigeria have touched upon broad maternal knowledge, substantial regional variations exist driven by varying local healthcare infrastructures, cultural dogmas, and educational profiles [21,22]. Prior research has focused either on strictly rural lactating mothers [15] or general working-class constraints in municipal environments [18], leaving a clear gap in data regarding specialized urban tertiary centers. To date, no study has audited the structural depth of exclusive breastfeeding literacy within the specific patient population of Edo Specialist Hospital [23].

As a premier, state-owned multi-speciality tertiary care centre in Benin City, this institution serves a highly diverse demographic of urban, semi-urban, and educated attendees [24]. Investigating this cohort provides a unique academic opportunity to evaluate "knowledge dynamics" moving entirely beyond basic awareness indicators to rigorously analyze specific blind spots regarding correct clinical timelines and long-term maternal protections [25]. By identifying exactly where maternal understanding breaks down (e.g., immediate post-birth timing, water elimination, or long-term maternal oncology benefits) and analyzing how these dynamics are driven by demographic factors like maternal age, this study provides actionable data [26,27]. The findings are explicitly designed to empower clinicians, hospital administrators, and maternal-child health policymakers to restructure antenatal education from generic public health slogans into targeted, execution-focused counselling interventions [28].

Materials and Methods

Study Area

The research was conducted at the Obstetrics and Gynaecology Department of Edo Specialist Hospital, situated at Plot 1, Sapele Road, Benin City, Edo State, Nigeria. Edo State is located within the South-South geopolitical zone of the Federal Republic of Nigeria. According to the National Population Census, the state's population grew from an officially recorded 3,233,366 in 2006 to an estimated 4,777,000 by 2022, spanning a landmass that ranks 22nd in the country [29]. Benin City serves as both the state capital and a major economic hub.

Edo Specialist Hospital is a prominent, state-owned tertiary healthcare facility managed via a private sector consulting framework to ensure high-quality, comprehensive clinical care [30]. The hospital features a 200-bed multispecialty capacity covering various domains, including General Surgery, Cardiology, and Internal Medicine. The study was specifically nested within the Department of Obstetrics and Gynaecology, which has provided comprehensive family planning, maternal, and reproductive health services since its upgraded inception in September 2020.

Study Design and Duration

The study utilized a descriptive hospital-based cross-sectional study design. The study was conducted over a period of six months from August 1st to December 31st, 2025.

Study Population and Selection Criteria

The target study population comprised all pregnant women presenting for Antenatal Care (ANC) at the outpatient clinic of Edo Specialist Hospital during the study period.

Inclusion Criteria

To be eligible for recruitment, participants had to meet the following criteria:

- All pregnant women officially registered for and attending the antenatal care clinic at Edo Specialist Hospital.
- Expectant mothers who were physically present on the designated days of data collection.

Exclusion Criteria

Individuals matching the following descriptions were excluded from participation:

- Pregnant women who explicitly declined to provide informed clinical consent.
- Expectant mothers who were too critically ill or physically distressed to complete the interview sequence.
- Pregnant women currently admitted to the inpatient maternal wards.

Sample Size Determination

The minimum required sample size was calculated using Cochran's single proportion formula for cross-sectional studies [31]:

Where:

n= the desired baseline sample size.

Z= the standard normal deviate set at 1.96, corresponding to a 95% confidence interval.

p= the estimated prevalence of good EBF knowledge from a statistically comparable baseline study in Southern Nigeria, recorded at 80% (0.80) [25].

q= the complementary probability of p, calculated as 1-p=0.20.

e= the acceptable margin of error or level of precision, set at 5% (0.05).

Substituting the parameters into the equation:

$$n = \frac{1.96^2 \times 0.8 \times 0.2}{0.05^2} = \frac{3.8416 \times 0.16}{0.0025} = 245.86 \approx 246 \text{ participants}$$

Given a finite sampling population framework where the estimated overall target clinic attendance over the 6-month window (N) was 4,800 women, the sample size was adjusted using the finite population correction formula:

$$S = \frac{n}{1 + \frac{n}{N}} = \frac{246}{1 + \frac{246}{4800}} = \frac{246}{1.05125} \approx 234$$

To account for potential non-response, a 10% non-response rate adjustment was integrated into the final value:

$$\text{Final Sample Size} = \frac{234}{1 - 0.10} = \frac{234}{0.9} = 260$$

Consequently, a total sample size of 260 respondents was finalized for active recruitment.

Sampling Technique

A systematic random sampling technique was utilized to select participants for this study. A sampling frame was established based on the outpatient clinic register, which documented an average registration of 800 pregnant women over a recurring 6-month antenatal cycle [30]. The sampling interval (k) was derived by dividing this sampling frame (800) by the target sample size (260), yielding a value of 3.07, which was rounded down to an integer of 3.

On each clinic day, the index participant (the starting point) was selected from the first three registered patients using simple random sampling (balloting). Thereafter, every third subsequent pregnant woman (e.g., 3rd, 6th, 9th) who registered for ANC was systematically approached for recruitment. This systematic progression was strictly maintained daily until the sample size of 260 was fully completed.

Data collection instrument and procedure

Data were gathered using a highly structured, researcher-vetted questionnaire administered via face-to-face clinical interviews to maximize data completeness and minimize literacy barriers. The questionnaire items were designed following an exhaustive literature review of maternal nutrition frameworks and standard breastfeeding assessment standards. To ensure clarity and prevent linguistic misinterpretation, the tool was maintained in standard clear English.

The instrument was compartmentalized into three primary diagnostic vectors analyzed for this paper:

Section A: Socio-demographic Profiling: Documented age, religious affiliation, ethnicity, highest formal educational attainment, employment/occupational grouping, marital status, and total parity (number of children).

Section B: EBF Knowledge Dynamics: Contained 18 distinct items assessing core structural concepts including the true definition of EBF, optimal post-partum initiation timelines, recommendations regarding water exclusion, breast pump usage, and long-term feeding duration up to 2 years.

Section C: Multi-dimensional Benefit Awareness: Featured 18 specific items evaluating maternal literacy across direct infant health benefits (e.g., immunological support, allergy and diarrheal disease mitigation) and long-term maternal protections (e.g., weight reduction, risk reduction for postpartum depression, breast/ovarian cancer prevention, and later-life osteoporosis).

Variables and statistical scoring matrix

Data were entered, cleaned, and statistically modeled using IBM SPSS Statistics version 26.0 [32]. The independent variables focused on maternal socio-demographic indicators. The primary dependent outcomes were the categorized maternal EBF knowledge level and health benefit awareness level.

To quantitatively evaluate the depth of knowledge and awareness, a strict cumulative mathematical scoring index was applied to Sections B and C. Each correct, evidence-based answer was awarded 1 point, while incorrect responses or "I don't know" entries were assigned 0 points. With 18 questions assigned per section, total scores were converted into an ordinal scale of literacy depth:

Scores 1–6: Classified as Poor knowledge/awareness.

Scores 7–12: Classified as Moderate knowledge/awareness.

Scores 13–18: Classified as Good knowledge/awareness.

Continuous clinical variables were summarized using mean values and standard deviations (± SD), while categorical variables were presented via frequencies and percentages (n,%). Bivariate analysis was carried out using Pearson's Chi-

square (χ^2) tests to establish statistical dependencies and cross-tabulate demographics against categorized outcome thresholds. Statistical significance was defined using a p-value less than 0.05 ($p<0.05$) at a 95% confidence level.

Ethical Considerations

The research design was formally presented to and granted full ethical approval by the Health Research and Ethics Committee of Edo Specialist Hospital (ESH/HREC/2025/05/124). Institutional permissions were also obtained from the Head of the Obstetrics and Gynaecology department. The study was conducted in strict adherence to the ethical tenets of the Declaration of Helsinki, ensuring autonomy, beneficence, justice, and non-maleficence [33].

Before interview initiation, each systematically selected expectant mother was given an informed consent form explaining the voluntary nature of the study, the data privacy protocols, and her absolute right to exit the study at any juncture without facing clinical bias or penalty. Absolute anonymity was maintained by using numerical identifiers instead of names on all data capture sheets. All completed data were transcribed onto a single password-protected computer terminal restricted to principal investigators.

Results

Socio-Demographic Characteristics of the Study Population

A total of 260 expectant mothers were recruited for the study, yielding a 100% response rate. The mean age of the cohort was 27.56 ± 5.08 years, with the highest proportion of participants falling within the 24–29 age bracket (43.5%). The participants were predominantly Christians (92.7%) and characterized by a high literacy profile, with 72.3% having attained tertiary-level education. In terms of employment, business and retail activities formed the largest sector (44.2%), while formal civil servants comprised 15.4%. The vast majority of respondents were married (84.6%) and reported a low parity level of 0–2 children (90.4%) (Table 1).

Table 1: Baseline socio-demographic characteristics of expectant mothers.

Variable	Frequency (n=260)	Percentage (%)
Age group (years)		
18–23	38	14.6
24–29	113	43.5
30–35	84	32.3
≥ 36	25	9.6
Marital status		
Married	220	84.6
Single	30	11.5
Others (Divorced/Separated/Cohabiting)	10	3.9
Educational status		
Tertiary	188	72.3
Secondary	63	24.2
Primary/No formal education	9	3.5
Employment status		
Business/Entrepreneur	164	63.0
Civil Servant	40	15.4
Unemployed (Housewife, Student)	35	13.5
Others	21	8.1
Parity		
0–2	235	90.4
≥3	25	9.6

Maternal Knowledge and Awareness of Exclusive Breastfeeding (EBF)

The cumulative knowledge structure regarding EBF was high, with 83.5% (n=217) of the participants demonstrating a "Good knowledge score", while 16.5% (n=43) exhibited "Poor knowledge" (Figure 1). Similarly, a high proportion of participants showed a strong overall awareness of EBF health benefits (80.4%, n=209 vs. 19.6%, n=51). Healthcare institutions served as the primary source of EBF information.

Item-by-item epidemiological analysis, however, revealed critical operational blind spots behind this general awareness. While 91.5% of mothers understood the core definition of EBF, a substantial 28.8% were unaware that breastfeeding must be initiated immediately after birth. Furthermore, 20.8% of the cohort incorrectly believed that water should be introduced within the first six months, and 39.6% lacked knowledge regarding the WHO recommendation to extend breastfeeding for up to two years post-weaning (Table 2).

Regarding health benefits, infant-focused advantages scored exceptionally high, particularly regarding immunologic development (95.8%) and protection against acute diarrheal illness (89.2%). Conversely, maternal health benefits suffered from prominent information gaps; 26.5% of mothers did not know EBF reduces the risk of postpartum depression, and 42.3% were unaware of its protective effect against lifetime osteoporosis (Table 2).

Table 2: Breakdown of EBF knowledge items and benefit awareness.

Knowledge components	Correct (n,%)	Incorrect/Don't Know (n,%)
Core definition of EBF (no water/solids for 6 months)	238 (91.5)	22 (8.5)
Proper duration of exclusive breastfeeding (6 months)	240 (92.3)	20 (7.7)
Nutritional sufficiency of breast milk for 6 months	241 (92.7)	19 (7.3)
Appropriate time to introduce complementary solid foods	235 (90.4)	25 (9.6)
Ability to express/store breast milk using a breast pump	233 (89.6)	27 (10.4)
Avoidance of water within the first 6 months	206 (79.2)	54 (20.8)
Immediate initiation of breastfeeding after delivery	185 (71.2)	75 (28.8)
Sustaining breastfeeding up to 2 years post-solids	157 (60.4)	103 (39.6)
Infant health benefit awareness		
Aids the development of the infant's immune system	249 (95.8)	11 (4.2)
Reduces the risk of the infant getting sick	238 (91.5)	22 (8.5)
Protects the infant against acute diarrheal diseases	232 (89.2)	28 (10.8)
Maternal health benefit awareness		
Provides an essential psychological bonding mechanism	247 (95.0)	13 (5.0)
Serves as a natural contraception/child spacing method	211 (81.2)	49 (18.8)
Reduces maternal risk of breast and ovarian cancers	208 (80.0)	52 (20.0)
Promotes uterine involution/uterine healing after birth	196 (75.4)	64 (24.6)
Reduces maternal risk of Postpartum Depression	191 (73.5)	69 (26.5)
Reduces maternal risk of Osteoporosis later in life	150 (57.7)	110 (42.3)

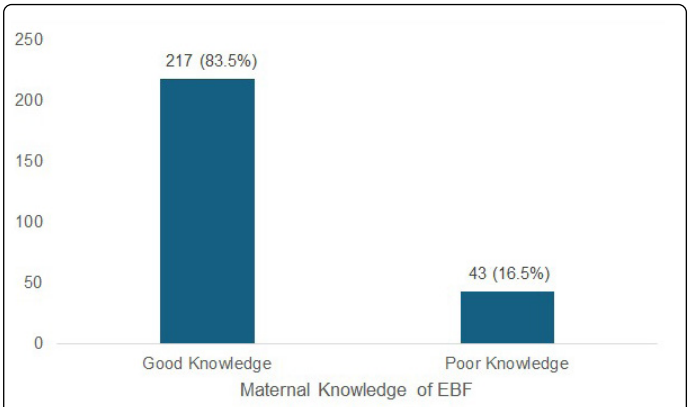


Figure 1: Maternal knowledge of Exclusive Breastfeeding (EBF).

Socio-Demographic Correlates of EBF Knowledge and Benefit Awareness

Maternal age and maternal occupation were statistically associated with EBF knowledge levels. Younger mothers aged 18–23 years, as well as students and entrepreneurs, exhibited significantly higher rates of poor knowledge (p=0.003 and p=0.032 respectively). However, educational attainment (p=0.626), marital status, parity, and religion were not statistically significant (Table 3). When evaluating multi-dimensional health benefit awareness, maternal age emerged as the sole statistically significant socio-demographic driver (p=0.015). Younger expectant mothers (18–23 years) displayed significantly lower rates of adequate benefit awareness compared to older cohorts aged ≥ 36 years (60.5% vs. 88.0%). Other baseline demographics including formal education (p=0.908) and employment status (p=0.225) showed no statistically significant association with health benefit awareness (Table 3).

Discussion

The study revealed that an overwhelming majority (83.5%) of the pregnant women attending the antenatal care clinic at Edo Specialist Hospital possessed a "Good" general knowledge regarding Exclusive Breastfeeding (EBF). This baseline finding aligns closely with previous empirical work in Southern Nigeria by Akhimienho and Uwaibi [34], who documented that 89.4% of their respondents possessed an accurate definition of EBF. It also mirrors the data reported by Cascone et al. [16] in Italy, where generic awareness regarding the programmatic existence of EBF was notably widespread. This high baseline level of literacy is likely attributable to the fact that 70.0% of the respondents cited formal healthcare facilities as their primary informational vector, coupled with the fact that 68.1% had received structured ANC training modules.

However, a critical contribution of this paper is the identification of a knowledge-practice gap hidden beneath these high summary percentages. While mothers routinely display an ability to repeat abstract EBF definitions, their understanding breaks down when assessing specific execution timelines. Specifically, 28.8% of the cohort failed to identify that breastfeeding must be initiated

Table 3: Relationship between maternal socio-demographics against cumulative knowledge and benefit awareness thresholds.

Demographic variables	Good knowledge n=217 (%)	Poor knowledge n=43 (%)	p-value	Good awareness n=209 (%)	Poor awareness n=51 (%)	p-value
Age Group (years)						
18–23	24 (63.2)	14 (36.8)		23 (60.5)	15 (39.5)	
24–29	98 (86.7)	15 (13.3)	0.003*	93 (82.3)	20 (17.7)	0.015*
30–35	72 (85.7)	12 (14.3)		69 (82.1)	15 (17.9)	
≥36	23 (92.0)	2 (8.0)		22 (88.0)	3 (12.0)	
Educational level						
No Formal/Primary	7 (77.8)	2 (22.2)		7 (77.8)	2 (22.2)	
Secondary	50 (79.4)	13 (20.6)	0.626	49 (77.8)	14 (22.2)	0.308
Tertiary	160 (85.1)	28 (14.9)		151 (80.3)	37 (19.7)	
Occupation						
Civil servant	38 (95.0)	2 (5.0)		36 (90.0)	4 (10.0)	
Business	93 (80.9)	22 (19.1)	0.032*	90 (78.3)	25 (21.7)	0.225
Entrepreneur	36 (73.5)	13 (26.5)		34 (69.4)	15 (30.6)	
Housewife/Student	30 (88.2)	4 (11.8)		—	—	
*Statistically significant (p<0.05).						

immediately after birth. This finding echoes systemic diagnostic reviews [17], which observed that despite high abstract support for breastfeeding, actual knowledge concerning early initiation remained highly compromised.

Furthermore, 20.8% of the respondents in this study incorrectly assumed that supplementary water should be administered to an infant during the first six months of life. This operational misconception presents a severe challenge to public health interventions, as it mirrors the findings of Sultana et al. [20] in Bangladesh and Adamu et al. [21] in Nigeria, where substantial portions of the maternal population believed that breast milk alone is insufficient to meet an infant's hydration needs.

This study also highlighted a prominent educational blind spot regarding long-term feeding parameters: 39.6% of the sample were unaware of the WHO and UNICEF recommendation [4,5] to continue breastfeeding for up to two years after the introduction of solid foods. This finding underscores that antenatal education program formats focus heavily on the initial six-month interval while failing to prepare mothers for long-term nutritional adherence.

The empirical findings of this study revealed a distinct divergence between maternal awareness of infant-focused advantages versus mother-focused health returns. Awareness of direct child health benefits was high, with over 91% of participants recognizing that EBF reduces infant infection rates, and 95.8% understanding its role in foundational immune system development. These high scores reflect standard public health messaging, which consistently focuses on infant protection, as emphasised by standard materials from the American CDC [8] and regional studies by Ugwoke et al. in Enugu [11].

Conversely, a pronounced informational blind spot emerged regarding the long-term, multi-dimensional medical protections EBF provides to maternal physiology. Specifically, 26.5% of the pregnant women were completely unaware that EBF acts as a protective mechanism against the development of postpartum depression [9]. This psychological benefit is well documented in clinical neuroendocrine literature, which demonstrates that lactational hormones induce an endogenous state of calmness and relaxation [9].

Even more striking is that 42.3% of the respondents did not know that EBF lowers maternal risk for developing osteoporosis later in life [9]. This finding aligns with the Italian "Mamma & Bambino" cohort study by Magnano et al. [16], which observed that specific chronic metabolic and skeletal health protections are rarely integrated into standard maternal literacy pipelines.

While the cohort displayed a relatively solid understanding of postpartum uterine healing (75.4%) and lactational amenorrhea for natural family spacing (81.2%), the overall data demonstrates that public health messaging continues to present EBF as an act of maternal sacrifice [9]. Failing to educate mothers on how breastfeeding protects their own bodies against breast cancer, ovarian cancer, cardiovascular disease, and bone density loss represents a major missed opportunity to enhance personal motivation.

The inferential analysis of this study provided clear statistical evidence that maternal age is the critical driver of both core knowledge (p=0.003) and multi-dimensional benefit awareness (p=0.015). Younger expectant mothers, specifically those aged 18–23, displayed significantly higher rates of poor knowledge (36.8%) and poor benefit awareness (39.5%) compared to older cohorts.

This strong age dependency is highly consistent with the findings of Otim et al. [35] at Mulago Hospital in Uganda, who demonstrated that intended EBF literacy and adherence scores improve continuously as maternal age increases. Similarly, Atimati et al.'s [22] research within Edo State confirmed that younger mothers face greater barriers and possess less clinical clarity regarding the timing and management of breastfeeding. This empirical reality suggests that younger primiparous women are falling through the informational cracks of standard public

health delivery systems.

Crucially, this study revealed that maternal occupation is another statistically significant predictor of core EBF knowledge (p=0.032). Formal civil servants exhibited the highest knowledge scores (95.0% good), whereas entrepreneurs (73.5%) and students (73.3%) fell significantly behind. This disparity aligns with work by Olorunfemi et al. [18] in Abuja, which highlighted that a mother's day-to-day work environment heavily influences her access to health education and supportive structures. Civil servants often have more consistent access to institutional healthcare updates, whereas self-employed entrepreneurs and students are frequently isolated from comprehensive antenatal counseling pipelines.

Interestingly, the highest formal education level did not show a statistically significant association with knowledge (p=0.626) or awareness (p=0.908) within this cohort. In the context of Edo Specialist Hospital, this variation can be explained by the high overall literacy profile of the sample, where 72.3% of the participants had attained a tertiary education. Because the sample was predominantly educated, formal schooling ceased to be a distinguishing differentiator. Instead, age-specific clinical experience and occupational context emerged as the true drivers of EBF literacy.

Conclusion

This study evaluated the knowledge dynamics and multi-dimensional benefit awareness of exclusive breastfeeding (EBF) among pregnant women attending the antenatal care clinic at Edo Specialist Hospital. The structural demographic profile describes a predominantly young adult, married, and highly literate cohort with widespread access to hospital-led health education channels.

While the data initially demonstrated a highly satisfactory level of general EBF knowledge (83.5% scoring "good"), a detailed itemized analysis revealed substantial operational blind spots regarding correct clinical execution. Critical disconnects were identified regarding the immediate initiation of breastfeeding post-birth, the complete exclusion of water during the initial six months, and the medical recommendation to sustain breastfeeding for up to two years after introducing complementary solid foods. Furthermore, a significant disparity exists between the high maternal awareness of direct infant health benefits and the poor understanding of long-term maternal protections, particularly regarding EBF's role in mitigating postpartum depression and later-life osteoporosis. Inferential analysis proved that maternal age and occupational context are the primary drivers of these literacy variations, with younger expectant mothers showing the highest vulnerability to informational deficits.

Ultimately, these findings suggest that generic public health slogans are insufficient. To optimize maternal and child health outcomes, antenatal education frameworks must transition toward granular, execution-focused counseling tailored explicitly to younger and varied occupational cohorts.

Recommendations

Based on the empirical findings, the following targeted interventions are proposed across institutional and systemic levels to optimize breastfeeding literacy and execution:

Institutional and Healthcare Facility Level

1. **Restructure Antenatal Counseling Frameworks:** Healthcare institutions should transition their antenatal education curriculums from generic promotional slogans to targeted interactive training sessions. Counselling must focus on specific behavioral mechanics, such as techniques for immediate post-birth initiation, rigorous water-elimination strategies, and clear protocols for expressing and storing breast milk using a breast pump.
2. **Incorporate Maternal Health Benefits into Education:** Clinical educators must actively include the long-term oncological, psychological, and skeletal health benefits of EBF for the mother (such as protection against postpartum depression, breast/ovarian cancers, and osteoporosis) within routine instructional packages rather than focusing exclusively on infant health outcomes.
3. **Establish Dedicated Lactation Support Infrastructure:** Hospitals should deploy dedicated lactation consultants and facility-based support groups within the outpatient clinics to provide continuous, practical troubleshooting for young, first-time, or anxious mothers facing early clinical feeding challenges.

Clinical Practitioner Level

1. **Deploy Targeted Counseling for Younger Cohorts:** Healthcare providers—including obstetricians, resident physicians, midwives, and clinic nurses—should dynamically identify and provide customised counselling to younger expectant mothers (aged 18–23 years), who present the highest statistical risk for low knowledge and benefit awareness.
2. **Address Occupational Gaps:** Clinicians should evaluate the occupational backgrounds of ANC attendees during routine assessments, providing specialized, logistically realistic counselling for students and entrepreneurs who lack access to structured workplace maternity protections.

Policy and Government Level

1. **Enact Robust Workplace Accommodations:** Policymakers should strengthen and enforce national maternal welfare policies, mandating paid maternity leave and the integration of dedicated, private lactation rooms within public, corporate, and educational institutions to support working and schooling mothers.
2. **Normalize EBF via Public Campaigns:** Public health authorities should initiate community-level media campaigns focused on normalising public breastfeeding, reducing social discomfort, and engaging family structures (such as partners and mothers-in-law) to build a supportive home environment for the nursing mother.

Suggestions for Further Research

1. **Longitudinal Tracking of Implementation Rates:** Future studies should implement longitudinal designs to track this specific antenatal cohort post-delivery, establishing whether high antenatal knowledge translates directly into verified EBF compliance up to six months.
2. **Qualitative Assessments of Structural Barriers:** Complementary qualitative research should be conducted

1. to explore the specific cultural, regional, and workplace barriers encountered by younger breastfeeding mothers within the South-South geopolitical zone.

Authors' Contributions:

Isaac Newton Omoregbe conceived the study and participated in the Conceptualization of the study; Okparanma Divine Chidiomimi and Pemu Tsoritsonne Amella contributed to data collection, analysis, and manuscript writing. All authors contributed to drafting the manuscript, and they read and approved the final manuscript.

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Conflict of Interest

Authors declared no conflict of interest.

References

1. Aurellia DS, B SK, Kurniawan A. Literature review: exclusive breastfeeding description in Indonesia from social cultural perspective. *Atlantis Press International BV*; 2022. p. 121–142.

2. Ihudiebube-Splendor CN, Okafor CB, Anarado AN, Jisieike-Onuigbo NN, Chinweuba AU, Nwaneri AC, et al. Exclusive breastfeeding knowledge, intention to practice and predictors among primiparous women in Enugu South-East, Nigeria. *J Pregnancy.* 2019;2019:1–8.

3. McCarthy BC. Breastfeeding benefits your baby's immune system: breast milk: healthy nutrition and infection resistance. *J Neonatal Biol.* 2016;5(2):112–118.

4. World Health Organization. The optimal duration of exclusive breastfeeding: report of an expert consultation. Geneva: World Health Organization; 2001.

5. World Health Organization. Breastfeeding brief. WHO Guidelines Scorecard, IRIS Collection; 2024. p. 1–6.

6. World Health Organization. Recommendations & response WHO: global breastfeeding strategy guidelines. Geneva: World Health Organization Press; 2020. p. 8–11.

7. Miolski J. Benefits of breastfeeding for mother and child. *Sanamed*. 2023;18(1):59–63.

8. Center for Disease Control. Health risks of not breastfeeding for mothers & infants. *Matern Child Nutr Sum Ser.* 2020;14–18.

9. Chowdhury R, Sinha B, Sankar MJ, Taneja S, Bhandari N, Rollins N, et al. Breastfeeding and maternal health outcomes: a systematic review and meta-analysis. *Acta Paediatr.* 2015;104(s467):96–113.

10. Akadri A, Akadri A, Odelola O. Breastfeeding practices among mothers in Southwest Nigeria. *Int J Matern Child Health.* 2020;8(3):45–52.

11. Ikobah JM, Uhegbu K, Agbor IE, Udoh E. Predictors of breastfeeding practices among mothers in a developing African country – a tertiary facility based study in Calabar, Nigeria. *Nig J Paediatr.* 2021;48(1):20–25.

12. Sankar MJ, Sinha B, Chowdhury R, Bhandari N, Taneja S, Rollins N, et al. Optimal breastfeeding practices and infant and child mortality: a systematic review and meta-analysis. *Acta Paediatr.* 2015;104(s467):3–13.

13. Nkala TE, Msuya SE. Prevalence and predictors of exclusive breastfeeding among women in Kigoma region, Western Tanzania: a community based cross-sectional study. *Int Breastfeed J.* 2011;6(1):17.

14. Olufunlayo TF, Roberts AA, MacArthur C, Thomas N, Odeyemi KA, Price M, et al. Improving exclusive breastfeeding in low and middle-income countries: a systematic review. *Matern Child Nutr.* 2019;15(s3):e12788.

15. Mogre V, Dery M, Gaa PK. Knowledge, attitudes and determinants of exclusive breastfeeding practice among Ghanaian rural lactating mothers. *Int Breastfeed J.* 2016;11(12):1–8.

16. Cascone D, Tomassoni D, Napolitano F, Giuseppe GD. Evaluation of knowledge, attitudes, and practices about exclusive breastfeeding among women in Italy. *Int J Environ Res Public Health.* 2019;16(12):2118.

17. Abba J, Usman US, Mohammed S, Abdelaliem F. Knowledge, attitude, and practice of exclusive breastfeeding among mothers of childbearing age. *J Public Health Epidemiol.* 2023;15(2):88–95.

18. Olorunfemi O, Awe IR, Ogbeye GB, Oluwagbemi OO, Tijani WA. Factors working against exclusive breastfeeding among working-class women living around Dagiri Gwagwalada Area. *J Adv Med Pharm Res.* 2023;9(1):22–31.

19. Oputa-Uzoukwu UF. Exclusive breastfeeding practices and challenges in Nigeria, Sub-Saharan Africa: an integrative review. *Int Breastfeed J.* 2026;21(1):45–58.

20. Sultana M, Dhar S, Hasan T, Chandra L, Islam A, Das S. Knowledge, attitudes, and predictors of exclusive breastfeeding practice among lactating mothers in Noakhali, Bangladesh. *PLoS ONE.* 2022;17(10):e02753.

21. Adamu A, Isezuo KO, Ali M, Abubakar FI, Jiya BF, Ango UM, et al. Prevalence and factors influencing exclusive breastfeeding practice among nursing mothers. *Nig J Basic Clin Sci.* 2022;19(2):139–144.

22. Atimati AO, Adam VY, Group F. Breastfeeding practices among mothers of children aged 1–24 months in Egor Local Government Area of Edo State, Nigeria. *J Community Med Prim Health Care.* 2020;32(1):15–26.

23. Maynard E. Attitudes towards exclusive breastfeeding among mothers in Igbanke Community in Orhionmwon Local Government Area, Edo State. *J Afr Public Health*. 2021;3(2):74–81.

24. Bureau of Statistics. Edo State population and health systems survey. *Bureau of Statistics.* 2010;2:4–12.

25. Irelosen K. Maternal knowledge and practice of exclusive breastfeeding in a secondary health facility in Southern Nigeria. *Edo J Med Sci.* 2022;4(1):32–39.

26. Jasny E. Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco. *Glob Health Action*. 2019;12(1):162–170.

27. Machila CM, Karonjo J, Mogere D, Kariuki P. Socio-demographic factors influencing practice and awareness of exclusive breastfeeding benefits among women of reproductive age attending maternal and child health clinic in Tudor sub county hospital. *East Afr Med J.* 2021;98(4):1102–1111.

28. Daelmans B. Effective interventions and strategies for improving early child development. *Lancet.* 2013;382(9896):911–913.

29. Edo State Government. Edo State statistical year book: population projections and demographic distributions. Benin City: Ministry of Budget, Economic Planning and Development; 2022. p. 12–18.

30. Edo Specialist Hospital. Institutional operational report and scope of clinical services: focus on obstetrics and gynaecology infrastructure expansion. Benin City: ESH Management Publication; 2020. p. 4–9.

31. Nanjundeswaraswamy TS, Divakar S. Determination of sample size and sampling methods in applied research. *Proc Eng Sci.* 2021;3(2):173–184.

32. IBM Corp. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp; 2019.

33. World Medical Association. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *JAMA.* 2013;310(20):2191–2194.

34. Akhimienho KI, Uwaibi N. Maternal knowledge and exclusive breastfeeding practices in a secondary health facility in southern Nigeria. *Edo J Med Sci.* 2022;4(1):32–39.

35. Otim ME, Omagino EK, Almarzouqi A, Rahman SA, Asante AD. Exclusive breastfeeding in the first six months: findings from a cross-sectional survey in Mulago hospital, Uganda. *Int Breastfeed J.* 2022;17(1):54–63.