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Research Article

Exploring Exclusive Breastfeeding Practices Among Infants: A Comprehensive Analysis at Gambool Maternal and Child Health Facility in Garowe, Puntland, Somalia

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Abstract

Background: In Garowe, Somalia, exclusive breastfeeding practices among mothers at the Gambool Maternal and Child Health Facility significantly impact infant health. This study aims to uncover the varied factors influencing these practices. Understanding these dynamics is essential for tailoring effective interventions and policies promoting optimal infant well-being in this region. *Methods*: This cross-sectional study was conducted at Gambool Maternal and Child Health Facility in Garowe, Somalia, from August to November 2023. The study focused on mothers with infants under six months, with a sample size of 145 participants. Data on socio-demographics, infant feeding practices, and support systems were collected through face-to-face interviews using a structured questionnaire. *Results*: In this study, the majority of mothers were aged 24 or older, married, and unemployed. Notably, 39.3% of children were exclusively breastfed, while 53.8% faced health issues. Exclusive breastfeeding correlated significantly ($p<0.05$) with Antenatal care ANC attendance, counseling, Postnatal care PNC services, colostrum feeding, delivery mode, and child health status. Maternal education [COR (95%CI) =1.690 (1.068-2.670*); AOR (95%CI) =9.220 (2.124-40.014*)] and family income [COR (95%CI) =1.700 (1.150-2.510*); AOR (95%CI) =0.127 (0.025-0.630*)] significantly influenced exclusive breastfeeding. ANC attendance notably impacted exclusive breastfeeding practices [COR (95%CI) =5.833 (3.162-10.761*); AOR (95%CI) =0.013 (0.002-0.074*)]. However, factors like counseling during ANC [COR (95%CI) =2.290 (1.502-3.493*); AOR (95%CI) =0.647 (0.165-2.543)] and PNC services [COR (95%CI) =2.636 (1.614-4.307*); AOR (95%CI) =0.668 (0.161-2.760)] showed varied significance after adjustments. *Conclusion*: In conclusion, this study highlights key factors affecting exclusive breastfeeding in Garowe, Somalia: maternal education, family income, and ANC attendance. To boost exclusive breastfeeding, enhancing ANC counseling, investing in education, improving incomes, and strengthening postnatal care are crucial. Further research on counseling impacts is recommended. Implementing these strategies in policies and community initiatives can elevate exclusive breastfeeding rates, benefiting infant health in Garowe, Somalia.

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Keywords

Exclusive Breastfeeding, Maternal Healthcare, Somalia, Infant Health, Antenatal Care

1. Introduction

Exclusive breastfeeding, defined as providing only breast milk to an infant for the initial six months of life without additional foods or liquids, stands as a fundamental component of optimal infant nutrition [1] It has been identified as one of the most impactful preventive interventions against child mortality [2]. Breast milk, owing to its unique composition, serves as a vital source of nutrition, offering essential antibodies that shield infants from various childhood illnesses [3, 4]. Furthermore, breastfed infants receive optimal nutrition during their first months, with sustained benefits extending into their early years, encompassing improved cognitive development and reduced risks of obesity and chronic diseases [5, 6]. The extensive advantages of breastfeeding, both for infant health and maternal well-being, are unequivocally endorsed by global health authorities [7]. The World Health Organization (WHO) emphasizes that breastfeeding, particularly within the first hour of birth, confers substantial protection against infections and substantially reduces infant mortality [8]. To maximize growth, development, and overall health, WHO recommends exclusive breastfeeding for the initial six months of an infant's life [9].

Despite these proven benefits, exclusive breastfeeding rates remain suboptimal, particularly in developing countries (WHO, 2014). A systematic review involving studies in East Africa reported that only 42% mothers preferred to practice EBF [10]. The repercussions of inadequate nutrition are staggering, contributing significantly to global stunting, wasting, and overweight prevalence among children under five [11]. This emphasizes the critical role of exclusive breastfeeding in mitigating undernutrition-related mortality, accounting for about 13% of global under-five deaths [12]. Somalia has some of the highest rates of neonatal and under-5 mortality in the world, with an under-5 mortality rate of 117 per 1000 live births. In addition, more than 1.8 million children under 5 are currently at risk of severe malnutrition and related health complications due to the ongoing drought crisis. Undernutrition is a global concern associated with 45% of all child deaths annually. If all children between 0 and 23 months are optimally breastfed, over 820 000 children's lives could be saved each year. (Ministry of Health and WHO commemorate World Breastfeeding Week in Somalia 2025) [13]. Indeed, breast milk is lauded as an unparalleled source of essential nutrients crucial for both physical and cognitive development [14]. Research showed that babies who are breastfed exclusively for 6 months' experience less illnesses because breast milk contains nutrients and substances that protect the baby from several infections, some chronic disease and it leads to improved cognitive development [15].

This study aims to establish a baseline understanding of exclusive breastfeeding prevalence and its associated determinants in Garowe, Puntland, Somalia. The insights gleaned from this research will serve as vital groundwork, aiding health ministries, and governmental and non-governmental organizations in formulating effective strategies to enhance exclusive breastfeeding practices in this region. The investigation specifically targets assessing exclusive breastfeeding prevalence and associated factors among mothers with infants under six months at Gambool Maternal and Child Health Facility in Garowe, Puntland, Somalia.

2. Methodology

2.1. Study Design and Setting

This cross-sectional study was meticulously conducted at the Gambool Maternal and Child Health Facility in Garowe, Somalia, Garowe, capital city of Puntland Somalia, is located in the northeast Somalia 785 Km distance away from the Mogadishu capital city of Somalia. spanning a duration from August to November 2023. Garowe, as the administrative capital of the Puntland region, offered a diverse representation of socio-demographic backgrounds, making it an ideal setting for this investigation.

2.2. Participants Selection and Sample Size

The study focused on mothers with infants under six months, acknowledging this critical period in infant feeding practices. A purposive sampling technique was employed to select 160 eligible participants, ensuring representation across diverse socio-demographic strata such as age, education, income, and residential areas.

The sample size to achieve the objective of this particular can be calculated using simple population proportion formula with undertaking the following consideration the proportion of mothers/caregivers who exclusively breastfeed were taken to be "p = 32%" from Puntland report exclusive breastfeeding (Somalia health and demographic survey 2020) margin of error 7%; a 7% of the level of the significance and 93% confidence interval certainty. With an additional 10% contingency for none response rate, the total sample size is:

$$n = [(Z\alpha/2)^2 \, p \, (1-p)]/d^2$$

where;

n- The minimum sample size required,

P- Estimated proportion of infants less 6 months old who are exclusively breastfed,

d- Margin of error,

Zα/2 - Standard normal value at (1- α) 93% confidence level.

$n = [(Z\alpha/2)^2 \, p \, (1-p)]/d^2$

n= [(1.81)2(0.32) *(1-.0.32)]/ (0.07)2

n =145

=145, The final required sample size for the study.

2.3. Data Collection Method

Our main technique for gathering data was doing in-person written interviews with each mother or caregiver at Gambool MCH, which took 20 to 30 minutes. A meticulously designed and culturally sensitive structured questionnaire served as the tool for information gathering. This questionnaire underwent a rigorous process of development, including expert validation and pre-testing among a pilot sample, ensuring clarity, relevance, and cultural appropriateness.

2.4. Data Collection Domains

The questionnaire encompassed comprehensive domains covering socio-demographic information (e.g., age, education, marital status, income), infant feeding practices (including exclusive breastfeeding status, duration, and complementary feeding initiation), and the support systems available to mothers (such as family support, and healthcare guidance).

2.5. Data Analysis

The collected data underwent meticulous analysis using Statistical Package for the Social Sciences (SPSS) Version 21 software. Descriptive statistics were utilized to summarize socio-demographic characteristics, infant feeding practices, and support systems. Furthermore, logistic regression analysis was employed to identify and elucidate the factors significantly associated with exclusive breastfeeding practices among the participants. The significance level was set at $p<0.05$ to ascertain statistically significant associations.

3. Results

Table 1. *Socio-demographic characteristics (n=145).*

Characteristics	Categories	Frequency	Percent
Age (mother)	<24	43	29.7
	≥24	102	70.3
Marital Status	Married	115	79.3
	Unmarried	30	20.7
Occupation (mother)	Unemployed	87	60.0
	Employed	58	40.0
Occupation (father)	Service Holders	63	43.4
	Others	82	56.6
Education (mother)	No formal education	67	46.2
	Primary & above	78	53.8
Family monthly income (USD)	<200	37	25.5
	≥200	108	74.5
Number of children	≤2 children	40	27.6
	>2 children	105	72.4
ANC during pregnancy	Attended	63	43.4
	Not-Attended	82	56.6
Counselling of breastfeeding during ANC	Received	43	29.7

Characteristics	Categories	Frequency	Percent
visit	Not-Received	102	70.3
Get PNC service after birth (within 45 days)	Yes	46	31.7
	No	99	68.3
Counselling for the infant feeding	Received	46	31.7
	Not-Received	99	68.3
Place of child birth	Healthcare facility	109	75.2
	Home	36	24.8
Mode of delivery	C/S	19	13.1
	Vaginal delivery	126	86.9
Exclusively breastfeeding status	Yes	57	39.3
	No	88	60.7
Colostrum feeding	Yes	56	38.6
	No	89	61.4
The child having any sickness	Yes	78	53.8
	No	67	46.2

Table 1 unveils a captivating portrait: over seven-tenths (70.3%) of the mothers were aged 24 or older, with 79.3% bound by matrimony and 60.0% seeking employment. Around 43.4% of the children's fathers were engaged in service professions, while 53.8% of the mothers boasted at least a primary level of education. In the realm of family income, 74.5% earned $200 or more, and 72.4% were blessed with more than two children. The revelations of this study echoed compelling truths: 43.4% of the participants attended ANC sessions, with 29.7% receiving nurturing guidance on breastfeeding during these visits. Post-birth, slightly over three-tenths (31.7%) accessed PNC services within 45 days, where 31.7% were enlightened about infant feeding. Notably, 75.2% of the children entered the world within healthcare facilities, primarily via vaginal delivery (86.9%). Within this narrative, 39.3% of the children were exclusively breastfed, while 38.6% were blessed with the nourishment of colostrum. However, a striking 53.8% of the mothers reported their child suffering from an ailment.

Table 2. *Association between the dependent variable and independent variables (n=145).*

Characteristics	Categories	Exclusive Breastfeeding [Yes (n=57; 39.3%); No (n=88; 60.7%)]		X^2 value
		Yes n (%)	No n (%)	
Age (mother)	<24	17 (39.5)	26 (60.5)	0.102
	≥24	40 (39.2)	62 (60.8)	
Marital Status	Married	47 (40.9)	68 (59.1)	0.566
	Unmarried	10 (33.3)	20 (66.7)	
Occupation (father)	Service Holders	21 (33.3)	42 (66.7)	1.670
	Others	36 (43.9)	46 (56.1)	
Education (mother)	No formal education	28 (41.8)	39 (58.2)	0.321
	Primary & above	29 (37.2)	49 (62.8)	
Family monthly income	<200	17 (45.9)	20 (54.1)	0.917

Characteristics	Categories	Exclusive Breastfeeding [Yes (n=57; 39.3%); No (n=88; 60.7%)]		X^2 value
		Yes n (%)	No n (%)	
(USD)	≥200	40 (37)	68 (63)	
Number of children	≤2 children	19 (47.5)	21 (52.5)	1.550
	>2 children	38 (36.2)	67 (63.8)	
ANC during pregnancy	Attended	52 (70.3)	22 (29.7)	48.200*
	Not-Attended	5 (7)	66 (93)	
Counselling of breastfeeding during ANC visit	Received	26 (60.5)	17 (39.5)	11.500*
	Not-Received	31 (30.4)	71 (69.6)	
Get PNC service after birth (within 45 days)	Yes	35 (53.8)	30 (46.2)	10.400*
	No	22 (27.5)	58 (72.5)	
Counseling for the infant feeding	Received	26 (56.5)	20 (43.5)	8.370*
	Not-Received	31 (31.3)	68 (68.7)	
Place of child birth	Healthcare facility	48 (44)	61 (56)	4.110*
	Home	9 (25)	27 (75)	
Mode of delivery	C/S	13 (68.4)	6 (31.6)	7.770*
	Vaginal delivery	44 (34.9)	82 (65.1)	
Colostrum feeding	Yes	36 (64.3)	20 (35.7)	23.900*
	No	21 (23.6)	68 (76.4)	
The child having any sickness	Yes	25 (32.1)	53 (67.9)	3.730*
	No	32 (47.8)	35 (52.2)	

* Statistically significant ($p<0.05$)

Table 2 unveils the intricate web of associations through the chi-square test, revealing compelling insights into the relationships between dependent and independent variables. Notably, the status of exclusive breastfeeding exhibited intriguing patterns. Surprisingly, it showed no significant correlation ($p>0.05$) with various factors: the age of the mother ($\chi^2=0.102$), marital status ($\chi^2=0.566$), father's occupation ($\chi^2=1.670$), mother's education level ($\chi^2=0.321$), family income ($\chi^2=0.917$), and number of children ($\chi^2=1.550$). However, amidst this tapestry, crucial connections emerged. Exclusive breastfeeding demonstrated a significant association ($p<0.05$) with specific elements: attending ANC sessions during pregnancy ($\chi^2=48.200$), receiving counseling on breastfeeding during ANC visits ($\chi^2=11.500$), accessing PNC services post-birth (within 45 days) ($\chi^2=10.400$), guidance on infant feeding ($\chi^2=8.370$), the place of childbirth ($\chi^2=4.110$), mode of delivery ($\chi^2=7.770$), colostrum feeding ($\chi^2=23.900$), and the child's health status ($\chi^2=3.730$). These findings accentuate the nuanced interplay between certain maternal healthcare practices and the exclusive breastfeeding status of the child.

Table 3. *Unadjusted and adjusted analysis (binary logistic regression) of the dependent (Exclusive Breastfeeding, yes or no) and independent variables.*

Variables	Categories	Unadjusted Model		Adjusted Model	
		OR	95% CI	OR	95% CI
Age (mother)	<24	1.550	1.042-2.310*	0.312	0.075-1.292

Variables	Categories	Unadjusted Model		Adjusted Model	
		OR	95% CI	OR	95% CI
Marital Status	≥24	Ref		Ref	
	Married	2.000	0.936-5.270	1.509	0.381-5.979
	Unmarried	Ref			
Occupation (father)	Unemployed	1.280	0.826-1.980	3.435	0.980-12.027*
	Employed	Ref			
Education (mother)	Primary & above	1.690	1.068-2.670*	9.220	2.124-40.014*
	No formal education	Ref			
Family monthly income (USD)	<200	1.700	1.150-2.510*	0.127	0.025-0.630*
	≥200	Ref			
Number of children	≤2 children	1.763	1.184-2.630*	0.927	0.230-3.736
	>2 children	Ref			
ANC during pregnancy	Attended	5.833	3.162-10.761*	0.013	0.002-0.074*
	Not-Attended	Ref			
Counselling of breastfeeding during ANC visit	Received	2.290	1.502-3.493*	0.647	0.165-2.543
	Not-Received	Ref			
Get PNC service after birth (within 45 days)	Yes	2.636	1.614-4.307*	0.668	0.161-2.760
	No	Ref			
Place of child birth	Healthcare facility	3.000	1.411-6.379*	0.496	0.103-2.376
	Home	Ref			
Mode of delivery	C/S	1.864	1.292-2.688*	2.444	0.478-12.490
	Vaginal delivery	Ref			
Colostrum feeding	Yes	3.238	1.985-5.282*	0.245	0.081-0.742*
	No	Ref			
The child having any sickness	Yes	1.090	0.677-1.770	2.234	0.593-8.419
	No	Ref			

OR = Odds Ratio; CI = Confidence Interval; Ref=Reference Category; *Statistically significant

The rich insights from Table 3 paint a vivid picture of the intricate associations between various factors and the exclusive breastfeeding status. Initially, the mother's age appeared to hold significance in the unadjusted model [OR (95%CI) =1.550 (1.042 – 2.310*)], yet lost its significance after adjustments [OR (95%CI) =0312 (0.075 – 1.292)]. Similarly, marital status didn't exhibit significant associations in either the unadjusted [OR (95%CI) =2.000 (0.936-5.270)] or adjusted models [OR (95%CI) =1.509 (0.381-5.979)]. Occupation initially showed no significant link in the unadjusted model [OR (95%CI) =1.280 (0.826-1.980)], but after adjustment, revealed significance [OR (95%CI) =3.435 (0.980-12.027*)], indicating unemployed fathers were three times more likely to have exclusively breastfed children. Maternal education emerged as a potent factor, showing significant association in both unadjusted [OR (95%CI) =1.690 (1.068-2.670*)] and adjusted models [OR (95%CI) =9.220 (2.124-40.014*)]. Mothers with primary & above education levels were over nine times more likely to exclusively breastfeed. Family monthly income showed significance in both unadjusted [OR (95%CI) =1.700 (1.150-2.510*)] and adjusted models [OR (95%CI) =0.127 (0.025-0.630*)], indicating a crucial link between income and exclusive breastfeeding. The attendance of ANC during pregnancy exhibited strong

association in both unadjusted [OR (95%CI) =5.833 (3.162-10.761*)] and adjusted models [OR (95%CI) =0.013 (0.002-0.074*)], highlighting its pivotal role in promoting exclusive breastfeeding. While counseling during ANC initially showed significance [OR (95%CI) =2.290 (1.502-3.493*)], it lost significance after adjustment [OR (95%CI) =0.647 (0.165-2.543)], suggesting a nuanced impact on exclusive breastfeeding. Accessing PNC services post-birth initially showed significance [OR (95%CI) =2.636 (1.614-4.307*)] but lost it after adjustment [OR (95%CI) =0.668 (0.161-2.760)], revealing a lessened impact on exclusive breastfeeding. Other factors like place of childbirth, mode of delivery, colostrum feeding, and child sickness showed varying degrees of significance in unadjusted models but displayed altered or non-significant associations after adjustments, indicating the complexity of their influence on exclusive breastfeeding.

4. Discussion

The investigation into exclusive breastfeeding practices among infants at the Gambool Maternal and Child Health Facility in Garowe, Puntland, Somalia, unraveled a comprehensive understanding of the multifaceted factors influencing these practices. Demographic characteristics such as maternal age, marital status, father's occupation, mother's education, family income, and number of children surprisingly did not exhibit significant correlations with exclusive breastfeeding rates. These findings are consistent with a range of studies, that similarly found limited associations between certain demographic factors and exclusive breastfeeding practices in diverse settings [16, 17]. However, the study highlighted the pivotal role of antenatal and postnatal care in shaping exclusive breastfeeding rates [18]. Attending antenatal care (ANC) sessions emerged as a significant determinant, strongly associated with higher rates of exclusive breastfeeding. This aligns with a wealth of literature emphasizing the positive influence of ANC on breastfeeding practices [19, 20].

Moreover, receiving dedicated counseling on breastfeeding during ANC visits initially exhibited an association with exclusive breastfeeding, although this significance waned after adjustments. This echoes the nuanced impact highlighted in the work of [21, 22] suggesting varying degrees of influence of counseling during ANC on exclusive breastfeeding practices. Another study reported that breastfeeding counseling during ANC promotes breastfeeding [23, 24] Surprisingly, accessing postnatal care (PNC) services within 45 days post-birth initially showed a link to higher rates of exclusive breastfeeding, but this association diminished after adjustments. Similar complexities in the impact of PNC services on breastfeeding practices were underscored in the study by [25]. Indicating the need for further exploration of the postnatal period's role in sustaining exclusive breastfeeding rates.

Maternal education emerged as a robust predictor of exclusive breastfeeding, consistently exhibiting a significant association. This finding aligns with numerous studies, including those by [26, 27]. emphasizing the pivotal role of maternal education in promoting and sustaining exclusive breastfeeding practices. Additionally, while family income initially demonstrated a significant association with exclusive breastfeeding in the unadjusted model, this link weakened after adjustments. This is consistent with the findings of similar studies [28, 29]. The study's limitations, including potential recall bias and the intricate web of multifactorial influences, emphasize the need for further research. Future studies could delve deeper into understanding the differential impact of ANC counseling and explore strategies to enhance the effectiveness of postnatal care in sustaining exclusive breastfeeding rates.

5. Limitations and Strengths

The study's cross-sectional design constrained the establishment of causal relationships between variables. Efforts were made to minimize bias through rigorous questionnaire development, interviewer training, and meticulous data quality checks. Additionally, the reliance on self-reported data might have introduced recall bias, which was mitigated through structured questioning and rapport-building during interviews.

6. Conclusion

In conclusion, this research underscores the multifaceted influences on exclusive breastfeeding among mothers in Garowe, Somalia. Maternal education, family income, and ANC attendance emerged as pivotal determinants. To promote exclusive breastfeeding practices, it's imperative to enhance healthcare engagement through comprehensive counseling during ANC visits. Simultaneously, investing in educational programs, empowering mothers with knowledge, and implementing measures to improve family incomes are crucial. Strengthening postnatal care services and conducting further research to understand the nuanced impacts of counseling during ANC and postnatal services are recommended steps. Integrating these strategies into healthcare policies and community initiatives can significantly elevate exclusive breastfeeding rates, contributing to enhanced infant health and well-being in Garowe, Somalia.

Abbreviations

EBF	Exclusive Breastfeeding
IYCF	Infant and Young Child feeding
NGO	Non-Governmental Organization
UNICEF	United Nations Children’s Fund
W H O	World Health Organization

Author Contributions

All the authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas, took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the articles has been submitted; and agree to be accountable for all aspects of the work.

Ethical Approval and Consent to Participate

Prior to beginning the study, the Research Ethics Review Committee of the Admas University provided ethical approval (Ethical approval No [AUP/0021/2023]. Furthermore, each study participant obtained clear verbal informed consent prior to participation. To preserve the participants' privacy, the confidentiality of the information acquired from them was strictly maintained throughout the study.

Furthermore, participants were told of their individual results at the start of the study and were given a summary of the findings at the end, assuring transparency and adherence to ethical guidelines.

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Data Availability Statement

The datasets used and analyzed during the current study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The authors declare no conflicts of interest.

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