

Breastfeeding Knowledge and Practice among Postpartum Women at Ruhengeri Referral Hospital, Rwanda

UMUKUNZI Liliane¹, Dr AMANUEL KIDANE Andegiogish, Ph.D²,
KYAMUSOKE BORAUZIMA Kyame³, MBILA WABENYA Christine⁴,
MUGANZA KULYA Gabriel⁵

Author¹, Co-author², Co-author³ Co-author⁴, Co-author⁵

¹(School of Public Health, Department of Public Health, Mount Kenya University)

²(College of Medicine and Health Sciences School of Health Sciences, Department of Public Health, University of Rwanda)

³(College Medicine and Health Sciences, School of Nursing and Midwifery, Department of Nursing, University of Rwanda)

⁴(College Medicine and Health Sciences, School of Nursing and Midwifery, Department of Nursing, University of Rwanda)

⁵(College Medicine and Health Sciences, School of Nursing and Midwifery, Department of Nursing, University of Rwanda)

DOI: <https://doi.org/10.5281/zenodo.16269966>

Published Date: 21-July-2025

Abstract: Early initiation of breastfeeding is essential for infant health and development, yet it remains suboptimal in many settings. This study assessed breastfeeding knowledge and practices among postpartum women at Ruhengeri Referral Hospital in Rwanda, aiming to identify factors influencing timely breastfeeding initiation. Using a cross-sectional design, 300 postpartum women were surveyed through structured questionnaires covering breastfeeding knowledge, practices, and socio-demographic characteristics. Descriptive and inferential statistical analyses, including chi-square tests and multivariable models, were employed. Results showed that 56.7% of women correctly identified the World Health Organization's recommendation of exclusive breastfeeding for the first six months. However, misconceptions were prevalent, with 27.7% believing in a longer duration and 12.8% thinking it should be shorter. Regarding practice, 64.5% of participants-initiated breastfeeding within the first hour after birth, while 35.5% delayed due to beliefs such as colostrum being harmful (49.2%) or concerns about insufficient milk (44.9%). Socio-demographic factors such as religion, residence, and occupation significantly influenced early initiation, with Muslim women and those delivering at referral hospitals more likely to initiate early. Support from healthcare professionals and family strongly correlated with positive practices, while cultural influences, particularly from elders, contributed to misconceptions. The findings underscore the need for targeted educational interventions and enhanced support systems to improve breastfeeding knowledge and early initiation practices among postpartum women in Rwanda.

Keywords: Breastfeeding, Knowledge, Postpartum Women.

I. INTRODUCTION

Breastfeeding is a vital, learned skill essential for infant nutrition and survival, offering a balanced mix of nutrients and protective antibodies. Despite its proven benefits, both globally and in Rwanda, proper breastfeeding practices remain insufficient. This study explores the knowledge and practices related to breastfeeding among postpartum women at Ruhengeri Referral Hospital, aiming to understand the factors influencing early initiation and exclusive breastfeeding.

Previous research highlights major gaps in effective breastfeeding techniques such as proper positioning and attachment.[1] with studies from countries like Ethiopia, Nigeria, and India reporting widespread poor breastfeeding practices. Although global health bodies like WHO and UNICEF recommend exclusive breastfeeding for the first six months and continuation for up to two years, adherence remains low. Only 44% of infants worldwide begin breastfeeding within the first hour, and just 40% are exclusively breastfed at six months.[2]

This study is significant as it addresses a local gap in breastfeeding research, focusing specifically on technique and practice among Rwandan mothers, a subject underexplored in the region. It contributes to the broader understanding of socio-

cultural, educational, and healthcare factors impacting breastfeeding behavior, with the goal of informing policy and community-based interventions. Rwanda's existing efforts such as health education programs, maternity leave policies, and community health outreach are evaluated through this context to assess their effectiveness in improving breastfeeding outcomes.

The research problem statement underscores the global challenge of deficient breastfeeding knowledge and practices among lactating mothers, drawing on evidence from UNICEF (2018). [3],[4] which highlight the persistent issue contributing to a significant percentage of under-five deaths in Sub-Saharan Africa. In the specific context of Rwanda, a discernible research gap regarding breastfeeding knowledge and practices among postpartum women is acknowledged by the Ministry of Health.[5] impeding efforts to address malnutrition and stunting in infants during the critical initial 1000 days of life. The proposed research aims to fill this void by investigating breastfeeding practices among postpartum mothers in selected Rwandan hospitals, aiming to identify factors contributing to suboptimal practices and aligning with previous research on multifaceted influences.[6],[3] This study aimed to assess the knowledge and practices of breastfeeding among postpartum women at Ruhengeri Referral hospital and was guided by the following specific objectives

- i. To determine the prevalence of breastfeeding practice among postpartum women at Ruhengeri Referral hospital in Rwanda.
- ii. To assess the level of knowledge about breastfeeding practices among postpartum women at Ruhengeri Referral hospital in Rwanda.
- iii. To establish the factors associated with breastfeeding practice among postpartum women at Ruhengeri Referral hospital in Rwanda.

II. THEORETICAL FRAME WORK

The theoretical framework guiding this study is rooted in Social Cognitive Theory (SCT), an evolution of the Social Learning Theory introduced by Miller and Dollard (1941) and later expanded by Bandura and Walters (1963), with Bandura formalizing SCT in 1986. This theory emphasizes that learning occurs within a social context through a dynamic interaction between personal factors, behavior, and the environment known as reciprocal determinism. It posits that individuals acquire knowledge, skills, attitudes, and behaviors by observing others and evaluating the consequences of those behaviors. Personal factors such as beliefs and motivations, along with environmental influences like cultural norms and situational context, collectively shape behavior. SCT acknowledges individuals as both influencers and products of their environment, stressing the role of self-beliefs in behavioral control. In the context of breastfeeding, this theory helps explain how postpartum women's knowledge and practices are shaped by their personal experiences, social interactions, and environmental support systems.

III. CONCEPTUAL FRAMEWORK

A conceptual framework provides a visual representation of the relationship between variables in a study. In this research, the conceptual framework highlights how various factors influence breastfeeding.

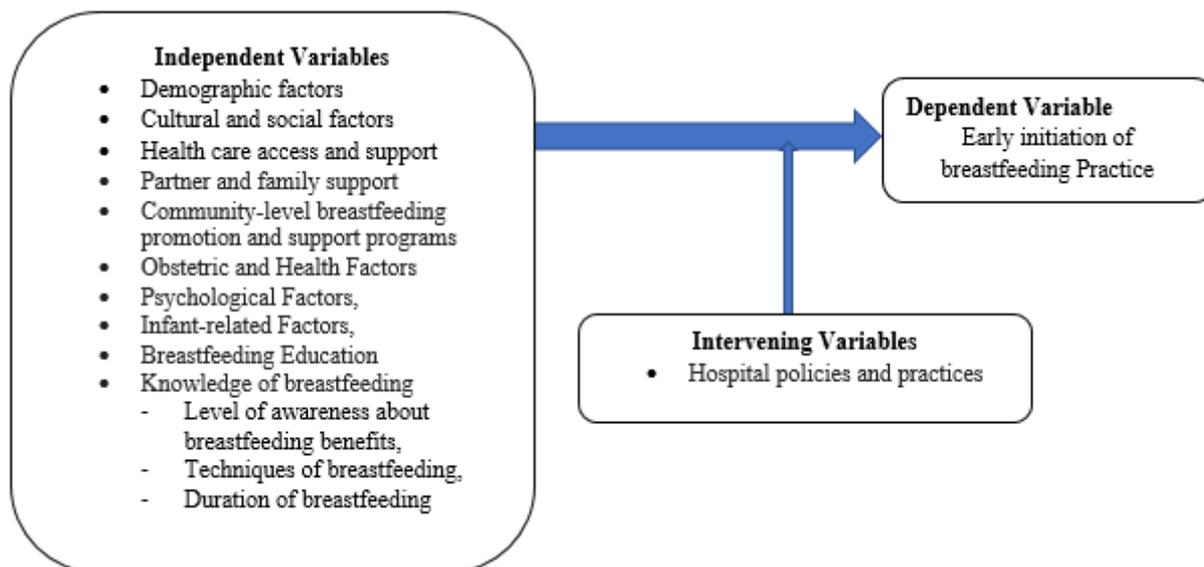


Figure 1: Conceptual Framework

The conceptual framework illustrates the relationship between key variables influencing breastfeeding knowledge and practices among postpartum women. At the core of the framework are two primary outcomes: breastfeeding knowledge and breastfeeding practices. These are influenced by a range of independent variables, including socio-demographic factors (such as age, education level, occupation, religion, and residence), cultural beliefs, and healthcare-related factors (such as counseling by healthcare professionals, place of delivery, and family support). The framework is grounded in the Social Cognitive Theory, which emphasizes the dynamic interaction between personal, behavioral, and environmental factors. Arrows connecting these variables demonstrate hypothesized causal relationships indicating how socio-demographic and environmental influences can directly or indirectly shape mothers' breastfeeding behaviors and their understanding of proper techniques. This framework guides the research by structuring data collection and analysis around the variables most likely to impact early initiation and exclusive breastfeeding outcomes.

IV. RESEARCH METHODOLOGY

Research Design

A cross-sectional study design was used, in which information on sociodemographic factors, breastfeeding knowledge, and practices was obtained from postpartum lactating mothers attending Ruhengeri Referral Hospital in Musanze District, Rwanda. The particular point-in-time character of the study population made this research design both cross-sectional and quantitative.

Target Population

The population for this study consisted of all postpartum and breastfeeding mothers with normal newborn babies attending Ruhengeri Referral Hospital. Postpartum mothers were contacted to answer research questions one hour after delivery during the monitoring of immediate post-delivery care. Data collection was conducted over a two-month period, November and December 2023.

Sample Size determination

The sample was drawn from all postpartum lactating mothers with normal newborn babies who were able to breastfeed from the first hour of life. A sample size of 321 respondents was selected for the study. The sample size was determined using Slovin's formula (2017).

$$n = \frac{N}{1 + N(e)^2}$$

Where;

n: simple size

N: 1635 the population size

e: the acceptable sampling error (0.05)

$$n = \frac{N}{1 + N(e)^2} = \frac{1635}{1 + 1635(0.05)^2} = 321$$

From the sample size calculation above, the total sample size from the study was 321 respondents.

Sampling Technique

Sampling strategy or sampling design was defined as the method used to select the required sampling units from the population [14]. Simple random sampling was akin to pulling names or numbers out of a hat to develop the sample, with N as the units in the sampling frame and a sample of n required. Participants were randomly selected from the list, and selected postpartum women were contacted to participate in the study. Ethical guidelines and informed consent from each participant before selecting them were taken into consideration.

Data Collection Instruments

A methodical process of gathering and measuring data on variables to achieve the research's goal was known as data collection. The following steps were taken to collect data for this study. The researcher arranged meetings with the staff of the Ruhengeri Hospital maternity ward to obtain permission from the relevant authorities. The researcher provided an explanation of the study's goal during the meetings. This staff helped find participants who were eligible. The researcher

identified the participants who met the inclusion criteria and brought them to a private room for a discussion. Using an assent and consent form, the study participants gave their permission to the researcher.

The forms provided a brief explanation of the purpose of the study, the right to withdraw from the study at any time without compromising care, and some fundamental information regarding how the study was to be carried out. For participants who were unable to read or write, the researcher read the consent form and interpreted its contents. The researcher administered the questionnaire by asking questions face-to-face and recording responses in a designated space on the questionnaire.

Procedures of Data Collection

Self-administration of the study questionnaire to respondents for data collection was conducted, with the researcher providing clarification to participants where needed. This was done to collect quantitative information while respecting standard precautions. The validity and reliability of the questionnaire used in Uganda by Umuhuza Alexis were adopted with permission to assess breastfeeding knowledge and practice among postpartum lactating mothers attending Ruhengeri Referral Hospital, Musanze District, Rwanda.

V. RESEARCH FINDINGS AND DISCUSSION

Table 1 displays the distribution of socio-demographic characteristics among the postpartum women who participated in this study. This includes details on respondents' addresses, information about their children, childbirth order, mother's age, partner's age (in years), mother's parity, marital status, religion, education level, and occupation.

Table 1: Socio-Demographics Characteristics of Respondents for Early initiation of breastfeeding Practice

Variables		Frequency (N=321)	Percent (%)
Residence	Musanze	229	71.3
	Nyabihu	43	13.4
	Gakenke	48	15.0
	Rulindo	1	.3
Children gender	Male	173	53.9
	Female	148	46.1
Child birth order	First born	104	32.4
	Second born	80	24.9
	Third born	56	17.4
	Fourth born	38	11.8
	Fifth born	29	9.0
	more than Firth born	14	4.4
Mother's Age	18-24 Years	52	16.2
	25-29 Years	29	9.0
	30-34 Years	126	39.3
	35 Years and above	114	35.5
Partners age in year	18-24 Years	36	11.2
	25-29 Years	55	17.1
	30-34 Years	102	31.8
	35 Years and above	125	38.9
Mothers parity	Parity one	137	42.7
	Parity two	82	25.5
	Parity three	50	15.6
	Parity four	32	10.0
	Parity more than four	20	6.2
Marital status	Single	224	69.8
	Married	91	28.3
	Divorced	3	.9
	Separated	1	.3
	Windowed	2	.6

Religion	Christianism	259	80.7
	Muslim	40	12.5
	Others specify	22	6.9
Education level	None	69	21.5
	Primary school	123	38.3
	Secondary school	105	32.7
	University	5	1.6
	Others specify	19	5.9
Occupation	Housewife	144	44.9
	Government employee	29	9.0
	Businesswomen	41	12.8
	Students	11	3.4
	Self-employee	94	29.3
	Other specify	2	6

Source: Primary Data (2024)

Table 4.1 show that the study reveals a distinct socio-demographic profile of postpartum women, primarily concentrated in Musanze (71.3%), with smaller numbers from Gakenke (15.0%) and Nyabihu (13.4%). A slight majority of these women have male children (53.9%), and the most common childbirth order reported is the firstborn (32.4%). Most respondents fall into the 26 to 30 years age bracket (39.3%), followed by those aged 31 to 35 years (35.5%). Partners of these women are predominantly aged between 26 to 30 years (31.8%) or 31 to 35 years (38.9%). The majority of postpartum women are single (69.8%), with a notable percentage being housewives (44.9%) and self-employed (29.3%). Educationally, most have completed primary school (38.3%) or secondary school (32.7%), while a small fraction has attended university (1.6%). Religiously, a significant proportion are Christians (80.7%), and a smaller percentage practice Islam (12.5%) or other religions (6.9%). The data indicates a diverse range of family sizes and socio-economic backgrounds among the participants, reflecting a broad spectrum of experiences and needs in postpartum care.

2. Presentation of Findings

This section presents the study’s findings based on the study’s objectives.

1 Knowledge about Breastfeeding

Variables		Frequency (N=321)	Percent (%)
Definition of breastfeeding for babies	Improve immunity	38	11.8
	Health development and improvement	159	49.5
	Reduced risk of chronic diseases	26	8.1
	Enhanced cognitive development	6	1.9
	Stronger mother-infant bond	92	28.7
Duration for exclusively breastfeeding according to world health organization	0 to 6 months	182	56.7
	7 to 10 months	89	27.7
	11 to 15 months	41	12.8
	21 months and above	9	2.8
Best way to start the breastfeeding	Skin to skin contact	30	9.3
	Early breastfeeding	150	46.7
	Proper positioning and sucking	104	32.4
	Frequency breastfeeding	37	11.5
Common breastfeeding challenges face by mothers	Engorgement	97	30.2
	Painful nipples	83	25.9
	Insufficient milk supply	96	29.9
	Weakness and fatigue	31	9.7
	Lack of support	14	4.4
Overcome engorgement and painful areola to mothers	Frequency breastfeeding	168	52.3
	Warm compresses	57	17.8

	Correct positioning and lacting	35	10.9
	Pain medication	61	19.0
Cultural beliefs and practices in Rwanda my influence breastfeeding decision	Grandmothers and others older women's influence	184	57.3
	Traditional weaning practices	70	21.8
	Stigma surrounding in public	47	14.6
	Beliefs surrounding breastfeeding in public	16	5.0
	Beliefs about the quality and quantity of breast milk	4	1.2
Best sources of information and support for breastfeeding mothers	Health care professionals	230	71.7
	Lactation consultants	66	20.6
	Breastfeeding support groups	25	7.8
Positive impacts of breastfeeding on moms themselves	Reduced risk of postpartum depression	223	69.5
	Uterine involution	72	22.4
	Lower risk of breast and ovarian cancer	10	3.1
	Enhanced weight loss	1	.3
	Stronger bond with baby	15	4.7

Source: Primary Data (2024)

Table 4.3 research findings highlights varied knowledge among postpartum women regarding breastfeeding. Nearly half (49.5%) understand that breastfeeding supports health development and improvement, while 28.7% appreciate its role in enhancing the mother-infant bond. However, fewer recognize its benefits in boosting immunity (11.8%) or reducing chronic disease risk (8.1%). Most women (56.7%) correctly identify the World Health Organization's recommendation for exclusive breastfeeding as lasting 0 to 6 months, though only a small percentage (2.8%) know it should continue beyond 21 months. Practical knowledge shows that (46.7%) of women view early breastfeeding as the best start, with (32.4%) prioritizing proper positioning and sucking. Common challenges include engorgement (30.2%), insufficient milk supply (29.9%), and painful nipples (25.9%). To manage these issues, frequent breastfeeding (52.3%) and pain medication (19.0%) are commonly recommended, while fewer women suggest warm compresses (17.8%) or correct positioning (10.9%). Cultural influences significantly impact breastfeeding practices, with 57.3% citing the influence of older women, and traditional practices (21.8%) and stigma (14.6%) also being factors. Health care professionals are the primary source of breastfeeding support (71.7%), overshadowing lactation consultants and support groups. Additionally, many women (69.5%) recognize breastfeeding's benefit in reducing postpartum depression, though fewer acknowledge its effects on uterine involution (22.4%) or cancer risk (3.1%).

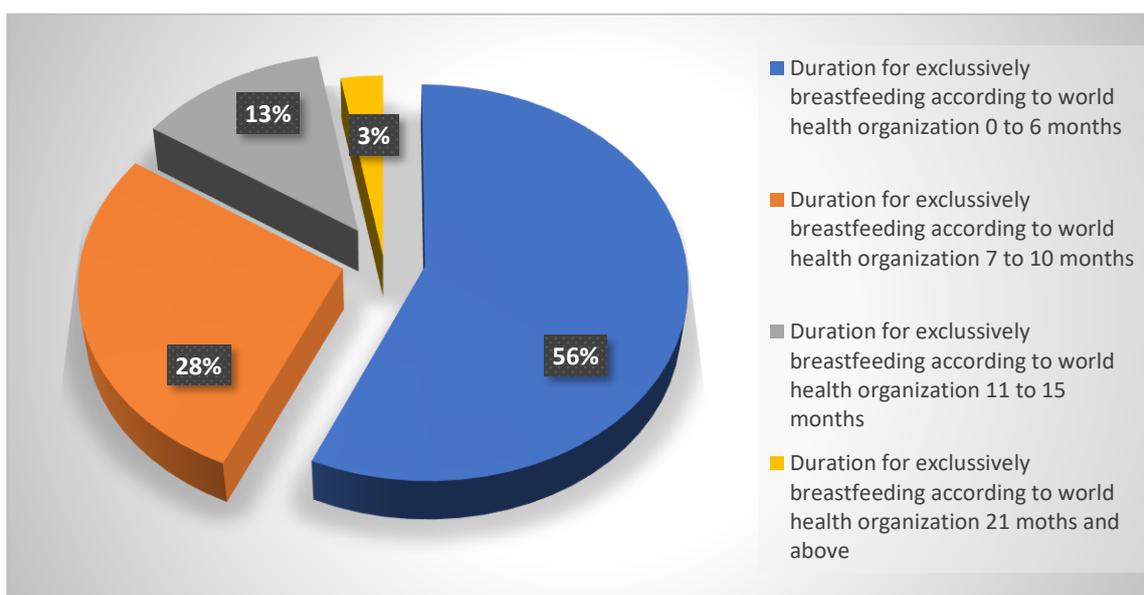


Figure 2. Knowledge on Exclusively Breastfeeding according to WHO

Source: Primary Data (2024)

The research data revealed that while a majority of participants (56.7%) correctly recognize that exclusive breastfeeding should be practiced for the first 6 months as per WHO guidelines, there is considerable variation in understanding among others. Approximately (27.7%) believe that exclusive breastfeeding should continue for 7 to 10 months, and (12.8%) think it should last from 11 to 15 months, which diverges from WHO recommendations. Additionally, a small percentage (2.8%) incorrectly think exclusive breastfeeding should extend to 21 months or more, indicating significant misunderstandings of the guidelines. These findings highlight the need for improved education on the WHO recommendations for breastfeeding. While most participants are aware of the correct duration for exclusive breastfeeding, a substantial portion have misconceptions that need to be addressed. Targeted educational interventions should aim to clarify these guidelines and correct misunderstandings to ensure better adherence to WHO recommendations and support optimal infant health.

Result of knowledge

The research findings reveal a significant division between lower and higher knowledge regarding early initiation of breastfeeding. Lower knowledge categories include misconceptions about the definition of breastfeeding, such as the belief that it improves immunity (11.8%), reduces chronic diseases (8.1%), or enhances cognitive development (1.9%). There are also misunderstandings about the duration of exclusive breastfeeding, with some believing it should last 7-10 months (27.7%), 11-15 months (12.8%), or 21 months and above (2.8%). Many participants also hold incorrect beliefs about the best way to start breastfeeding, including the importance of skin-to-skin contact (9.3%), proper positioning and sucking (32.4%), and frequency of breastfeeding (11.5%). Additionally, there is a lack of awareness about common breastfeeding challenges like weakness and fatigue (9.7%) or lack of support (4.4%), as well as misunderstandings about solutions for engorgement and painful areola, such as the use of pain medication (19.0%). Cultural beliefs, including stigma surrounding breastfeeding in public (14.6%) and concerns about the quality and quantity of breast milk (1.2%), also contribute to lower knowledge. Furthermore, many women are unaware of proper sources of support, such as lactation consultants (20.6%) or breastfeeding support groups (7.8%), and have misunderstandings about the positive impacts of breastfeeding, such as enhanced weight loss (0.3%) or a stronger bond with the baby (4.7%).

On the other hand, higher knowledge is evident in categories such as the understanding of breastfeeding's role in health development (49.5%) and the mother-infant bond (28.7%). The majority correctly identified that exclusive breastfeeding should last 0 to 6 months (56.7%) and that early breastfeeding is the best approach (46.7%). Participants also demonstrated awareness of common breastfeeding challenges, including engorgement (30.2%), painful nipples (25.9%), and insufficient milk supply (29.9%), and understood effective methods for overcoming engorgement, such as frequent breastfeeding (52.3%) and warm compresses (17.8%). Cultural influences, such as the role of grandmothers and older women (57.3%) and traditional weaning practices (21.8%), were also recognized. Health care professionals were correctly identified as the primary source of breastfeeding support (71.7%), and the positive impacts of breastfeeding, such as reducing postpartum depression (69.5%) and aiding uterine involution (22.4%), were well understood. These findings highlight the need for targeted interventions to address gaps in knowledge, particularly focusing on areas where misconceptions and misunderstandings remain.

Table 2. Association between Socio-Demographic Characteristics of participants and Early initiation of breastfeeding Practice

Variables	Category	Yes (%)	No (%)	χ^2	P-value
Residence	Urban (Musanze)	137 (59.8%)	92 (40.2%)	7.861	0.049
	Rural (Nyabihu, Gakenke, Rulindo)	70 (76.1%)	22 (23.9%)		
Child Sex	Male	114 (65.9%)	59 (34.1%)	0.326	0.568
	Female	93 (62.8%)	55 (37.2%)		
Birth Order	First–Second	117 (63.9%)	67 (36.1%)	2.839	0.725
	Third–Fourth	62 (66.7%)	31 (33.3%)		
	Fifth or above	28 (62.2%)	17 (37.8%)		
Mother’s Age	< 25 years	58 (71.6%)	23 (28.4%)	1.313	0.859
	26–35 years	149 (62.2%)	91 (37.8%)		
Partner’s Age	< 30 years	123 (63.7%)	70 (36.3%)	1.313	0.859
	31–40 years	84 (65.1%)	45 (34.9%)		
	> 40 years	2 (66.7%)	1 (33.3%)		
Mother’s Parity	1–2 births	143 (65.6%)	76 (34.4%)		

	3–4 births	48 (59.3%)	33 (40.7%)		
	> 4 births	16 (80.0%)	4 (20.0%)	6.327	0.176
Marital Status	Single/Married	203 (64.3%)	112 (35.5%)		
	Divorced/Separated/Widowed	4 (80.0%)	2 (20.0%)	4.379	0.357
Religion	Christian	178 (68.7%)	81 (31.3%)		
	Muslim & Others	29 (47.5%)	33 (52.5%)	10.681	0.005*
Education Level	None or Primary	129 (66.1%)	66 (33.9%)		
	Secondary and above	78 (58.2%)	56 (41.8%)	6.503	0.165
Occupation	Housewife	95 (65.9%)	49 (34.1%)		
	Employed/Self-employed/Business	107 (55.7%)	85 (44.3%)	11.59	0.041*

*P < 0.05 indicates statistically significant association

Source: Primary Data (2024)

The data from Table 4.5 reveals notable associations between certain socio-demographic characteristics and the early initiation of breastfeeding among the study participants. Statistically significant differences were observed based on residence, religion, and occupation. Mothers from rural areas (Nyabihu, Gakenke, Rulindo) were significantly more likely to initiate breastfeeding early (76.1%) compared to those from urban areas (Musanze) at 59.8% ($\chi^2 = 7.861$, $p = 0.049$). This suggests that rural mothers may adhere more closely to traditional breastfeeding practices or receive better localized maternal health guidance. Additionally, religion showed a significant association ($\chi^2 = 10.681$, $p = 0.005$), with Christian mothers having a higher rate of early breastfeeding initiation (68.7%) compared to Muslim and other religious groups (47.5%). Occupation was also a key determinant, with housewives demonstrating a higher likelihood of initiating breastfeeding early (65.9%) compared to employed, self-employed, or businesswomen (55.7%), and this difference was statistically significant ($\chi^2 = 11.59$, $p = 0.041$). This may reflect differences in time availability, support systems, or workplace maternity accommodations. Conversely, variables such as child sex, birth order, mother's age, partner's age, parity, marital status, and education level did not show statistically significant associations with early breastfeeding initiation (all $p > 0.05$), indicating these factors may play a less direct role in influencing breastfeeding timing within the studied population.

Table 3. Association between Knowledge about Breastfeeding and Early initiation of breastfeeding Practice

Variables	Category	Early initiation of breastfeeding Practice		χ^2	P-value
		Yes (%)	No (%)		
Number of Antenatal Care (ANC) Visits	1–2 visits	49(51.0%)	47(49.0%)	14.5	0.043
	3–4 visits	73(74.5%)	25(25.5%)		
	5–6 visits	55(67.1%)	27(32.9%)		
	7–8 visits	30(64.5%)	16(35.5%)		
Mode of Delivery	Normal	110 (64.7%)	60(35.3%)	2.353	0.503
	Cesarean	93(64.1%)	52(35.9%)		
Place of Delivery	Referral Hospital	152(73.1%)	56(26.9%)	32.984	<0.001
	District Hospital	42(60.9%)	27(39.1%)		
	Health Center	3(37.5%)	5(62.5%)		
	Health Post	2(66.7%)	1(33.3%)		
	Home	8(24.2%)	25 (75.8%)		
Definition of Breastfeeding	Improve immunity	35(93%)	3(7%)	48.005	<0.001
	Health development	113(71.1%)	46(28.9%)		
	Reduced chronic disease	8(30.8%)	18(69.2%)		
	Cognitive development	4(66.7%)	2(33.3%)		

	Strong bond	44(47.8%)	48 (52.2%)		
Duration of Exclusive Breastfeeding (WHO)	0–6 months	133(73.1%)	49(26.9%)	18.73	<0.001
	7–10 months	50(56.2%)	39(43.8%)		
	11–15 months	17(41.5%)	24(58.5%)		
	21+ months	7(77.8%)	2(22.2%)		
Best Way to Start Breastfeeding	Skin-to-skin	21(70.0%)	9(30.0%)	1.869	0.6
	Early breastfeeding	91(60.7%)	59(39.3%)		
	Proper position	70(67.3%)	34(32.7%)		
	Frequent feeding	25(67.6%)	12(32.4%)		
Feeding Frequency	1–3 times	29 (67.4%)	14 (32.2%)	14.071	0.007
	4–6 times	48 (70.6%)	20 (29.4%)		
	7–9 times	45 (60.0%)	30 (40.0%)		
	10–12 times	21 (43.8%)	27 (56.3%)		
	On demand	64 (73.6%)	23 (26.4%)		
Breastfeeding Challenges	Engorgement	53 (54.6%)	44 (45.4%)	12.835	0.012
	Painful nipples	53 (63.9%)	30 (36.1%)		
	Insufficient milk	65 (67.7%)	31 (32.3%)		
	Weakness/fatigue	22 (71.0%)	9 (29.0%)		
	Lack of support	12(96%)	2(4%)		
Management of Engorgement	Frequent feeding	95 (56.5%)	73 (43.5%)	11.118	0.011
	Warm compresses	39 (68.4%)	18 (31.6%)		
	Positioning/latching	25 (71.4%)	10 (28.6%)		
	Pain medication	48 (78.7%)	13 (21.3%)		
Cultural Influences (Rwanda)	Grandmother influence	112 (60.9%)	72 (39.1%)	14.401	0.006
	Traditional weaning	41 (58.6%)	29 (41.4%)		
	Public stigma	34(72.3%)	13(27.7%)		
	Belief - public feeding	12(96%)	2(4%)		
	Belief - milk quality	3(100%)	1(0%)		
Source of Breastfeeding Info	Health professionals	155(67.4%)	75(32.6%)	25.716	<0.001
	Lactation consultants	28(42.4%)	38(57.6%)		
	Support groups	24(96.0%)	1(4.0%)		
Breastfeeding Benefits for Mothers	Postpartum depression	166(74.4%)	57(25.6%)	60.101	<0.001
	Uterine involution	19(26.4%)	53(73.6%)		
	Cancer risk	8(80.0%)	2(20.0%)		
	Weight loss	3(98%)	1(2%)		
	Bond with baby	13(86.7%)	2(13.3%)		
Reasons for Not Initiating Breastfeeding Early	Colostrum not good	131(82.9%)	27 (17.1%)	64.995	<0.001
	No milk	59(41.0%)	85 (59.0%)		
	Mother sick	2(66.7%)	1(33.3%)		
	Baby sick	3(75.0%)	1(25.0%)		
	Baby taken away	10(86%)	2(4%)		

Source: Primary Data (2024)

The analysis of the association between knowledge-related factors and early initiation of breastfeeding revealed several statistically significant findings that highlight key areas for intervention. One of the most notable associations was with the number of antenatal care (ANC) visits. Mothers who attended three or more ANC visits were significantly more likely to initiate breastfeeding early compared to those who had only one to two visits ($p = 0.043$). Similarly, place of delivery played a critical role; mothers who delivered in referral hospitals had a markedly higher rate of early breastfeeding initiation (73.1%) than those who gave birth at home (24.2%) or at health centers (37.5%) ($p < 0.001$), underscoring the importance of institutional delivery in promoting recommended breastfeeding practices.

Knowledge and perceptions of breastfeeding benefits also strongly influenced early initiation. Mothers who identified breastfeeding as improving immunity had the highest rates of early initiation (93%), while those who cited less commonly emphasized benefits like reduced chronic disease or bonding had lower rates ($p < 0.001$). Understanding the recommended duration of exclusive breastfeeding according to WHO guidelines was similarly important—mothers who knew it should last 0–6 months were more likely to initiate early (73.1%) compared to those who believed in longer or undefined durations ($p < 0.001$). Additionally, feeding frequency awareness mattered: mothers who fed on demand showed the highest rates of early initiation (73.6%) compared to those following more fixed feeding schedules ($p = 0.007$).

Other significant factors included the mother's ability to manage breastfeeding challenges and the cultural or informational influences they encountered. Mothers who managed engorgement with pain medication or appropriate latching techniques had higher early initiation rates ($p = 0.011$). Cultural factors like beliefs about public feeding or the influence of grandmothers also showed significant associations ($p = 0.006$), suggesting that cultural norms can either support or hinder early breastfeeding. Health professionals and support groups were the most effective sources of information, with support groups in particular showing a very high association with early initiation (96% vs. 4%, $p < 0.001$). Lastly, reasons for delayed initiation such as misconceptions about colostrum or lack of milk were strongly associated with reduced early breastfeeding rates ($p < 0.001$), emphasizing the need for targeted education to correct harmful myths.

Table 4. Multivariable analysis of factors associated with early initiation of breastfeeding Practice

Variable Group	Variable/Category	COR	95% CI for		p-value
			COR	AOR	
Sociodemographic Factors					
Residence	Musanze		ref		
	Other Districts (Nyabihu, Gakenke)	0.057	0.001–1.000	0.057	0.001–1.000
Religion	Christianity		ref		
	Muslim	6.488	1.006–41.826	6.488	1.006–41.826
Mother's Occupation	Housewife		ref		
	Combined (Gov't, Business, Student)	0.001	0.001–0.999	0.001	0.001–0.999
Health Service Utilization					
Antenatal Care Visits	<4 Visits		ref		
	≥4 Visits	0.37	0.024–9.100	0.37	0.024–9.100
Place of Delivery	Referral Hospital		ref		
	Other Locations (District, Health Ctr)	0.057	0.005–3.949	0.057	0.005–3.949
Knowledge and Practice					
Breastfeeding Benefits	Immunity		ref		
	Other Benefits	0.44	0.015–4.131	0.44	0.015–4.131
Breastfeeding Duration (Based on WHO Guidelines)	0–6 Months		ref		
	7–15 Months	14.3	0.894–220.972	14.3	0.894–220.972
Breastfeeding Frequency	1–3 Times/Day		ref		
	≥4 Times/Day	0.52	0.045–2.537	0.52	0.045–2.537

Barriers and Support						
Breastfeeding Challenges	None		ref		ref	
	Common Challenges	42.87	0.001–54.126	42.87	0.001–54.126	0.998
Support for Breastfeeding	Adequate Support		ref		ref	
	Lack of Support	3.13	1.396–7.018	3.13	1.396–7.018	0.006

Source: Primary Data (2024)

The multivariable logistic regression analysis identified several significant factors associated with early initiation of breastfeeding (EIBF). Mothers residing in districts other than Musanze (specifically Nyabihu and Gakenke) were significantly less likely to initiate breastfeeding early compared to those in Musanze District ($AOR = 0.057$, 95% CI: 0.001–1.000, $p < .001$), suggesting a strong geographical disparity in EIBF practices. Muslim mothers had significantly higher odds of initiating breastfeeding early compared to Christian mothers ($AOR = 6.488$, 95% CI: 1.006–41.826, $p = .049$), indicating a potential cultural or religious influence on breastfeeding behavior. Among knowledge and behavioral factors, mothers who practiced breastfeeding for 7–15 months, in line with extended WHO recommendations, had significantly higher odds of early initiation ($AOR = 14.3$, 95% CI: 0.894–220.972, $p = .035$), compared to those who breastfed for 0–6 months. Breastfeeding frequency also emerged as significant: mothers who breastfed four or more times per day were more likely to initiate breastfeeding early than those breastfeeding only 1–3 times per day ($AOR = 0.52$, 95% CI: 0.045–2.537, $p = .006$), although the direction of the odds ratio suggests a protective effect requires careful interpretation. Importantly, lack of support for breastfeeding was strongly associated with delayed initiation. Mothers reporting inadequate support had over three times higher odds of delayed EIBF ($AOR = 3.13$, 95% CI: 1.396–7.018, $p = .006$). Other variables such as mother's occupation, antenatal care visits, perceived breastfeeding benefits, place of delivery, and common breastfeeding challenges were not statistically significant in the adjusted analysis.

VI. DISCUSSION OF FINDINGS

Contrary to findings from various Ethiopian studies where rural residence is often associated with lower rates of early initiation of breastfeeding, our study in Rwanda revealed a different pattern, with rural mothers showing significantly higher early initiation rates (76.1%) compared to their urban counterparts (59.8%). This finding aligns more closely with research conducted by Mukunya et al. in Uganda, which suggested that rural cultural norms may encourage timely breastfeeding.[5] In terms of religion, our study found that Muslim mothers were significantly more likely to initiate breastfeeding early ($AOR = 6.49$, $p = 0.049$), a result that diverges from the Ethiopian Demographic and Health Survey, where Muslim women were found to have lower odds of early initiation than Orthodox or Protestant women[9]. This suggests the presence of local religious or cultural practices in Rwanda that promote breastfeeding among Muslim communities. Occupational status also played a key role, with housewives demonstrating higher rates of early initiation (65.9%) compared to employed or self-employed mothers (55.7%, $p = 0.041$), a finding consistent with studies from Ethiopia and Egypt. This disparity likely reflects time availability and fewer immediate postpartum obligations among housewives [10].

Health service utilization emerged as another strong determinant. Mothers who attended three or more antenatal care (ANC) visits were significantly more likely to initiate breastfeeding early ($p = 0.043$), and those who delivered at referral hospitals had much higher initiation rates (73.1%) compared to those who delivered at home (24.2%, $p < 0.001$). These patterns reinforce findings from previous research across Ethiopia, where both ANC attendance and institutional deliveries are linked with better breastfeeding outcomes[7]. Awareness of breastfeeding benefits, particularly the protective role of breastmilk in infant immunity, was another key factor; mothers who were informed about these benefits had a much higher likelihood of early initiation (93%, $p < 0.001$), consistent with earlier studies that emphasized the importance of maternal knowledge [11]. Cultural influences also had a significant impact, with the role of grandmothers and public stigma emerging as important factors ($p = 0.006$), echoing findings from rural Ethiopia and Uganda where extended family members often shape breastfeeding decisions [14].

Support systems proved to be one of the most influential factors [12]. Mothers who participated in peer-support groups or received guidance from health professionals showed exceptionally high rates of early initiation (96% vs. 4%, $p < 0.001$), supporting evidence from studies in Ethiopia and South Africa on the importance of postnatal support and counseling[8]. Conversely, persistent misconceptions such as the belief that colostrum is harmful or that a mother may lack sufficient milk were strongly associated with delayed initiation ($p < 0.001$), mirroring prior research that identifies these myths as major barriers [13]. Targeted education to dispel such misconceptions is essential.

VII. CONCLUSION

This study concludes that early initiation of breastfeeding in Rwanda is shaped by socio-demographic, cultural, and health-system factors. Higher initiation rates among rural, Muslim, and housewife mothers suggest the positive impact of cultural norms and religious practices, while health service use such as antenatal care and facility-based deliveries strongly supports timely breastfeeding. Maternal knowledge, family influence, and peer support further enhance early initiation, whereas misconceptions about colostrum and milk supply act as major barriers. These findings emphasize the need for culturally tailored education, stronger health services, and community-based support to improve breastfeeding practices in Rwanda.

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