

# Impact of Number of Prenatal Visits on Breastfeeding Practices

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## ABSTRACT

**OBJECTIVE:** To determine the impact of several prenatal visits on breastfeeding practices during the first six months of infant life.

**METHODOLOGY:** This prospective cohort study was conducted in Darul-sehat Hospital Karachi from August 2021 to July 2022 among pregnant females (36-40 weeks of gestation) regardless of their parity. Multiple pregnancy, intrauterine fetal death and medical disorders were excluded. A Convenient Non-probability sampling technique is used for the selection of participants. Participants were divided into three groups according to their number of prenatal visits. <4, 4-8, >8 and followed three times after childbirth to assess their breastfeeding practices. The first follow-up was done within 48 hours of delivery, the second at three months, and the third after six months of delivery. Each visit is assessed for three breastfeeding practices: exclusive, mixed, or bottle feeding. SPSS version 23 was used for analysis.

**RESULTS:** Two hundred ten participants were interviewed. 78.6% were well-informed about breastfeeding during antenatal visits. Mean antenatal clinic visits of studied samples were 6 (6 -8). 7.1% were found with less than four antenatal visits, 68.1% with 4-8 visits, and only 24.8% had more than eight antenatal clinic visits. The percentage of exclusive feeding is highest in group 3 (>8 visits) i.e; 52.3%, followed by 43% in 4-8 visits and lowest at 4.7% in < 4 antenatal clinic visits samples.

**CONCLUSION:** More antenatal visits favorably influence BF practices regarding the commencement and continuation of breastfeeding.

**KEYWORDS:** Prenatal visits, antenatal care, breastfeeding practices, lactation, exclusive breastfeeding, frequency of ANC

## INTRODUCTION

The World Health Organization (WHO) recommended the following optimal breastfeeding practices: breastfeeding for two years, exclusive breastfeeding (EBF) for the first six months of life, and timely breastfeeding initiation within the first hour of birth, which are regarded as the most important and effective means of addressing childhood malnutrition<sup>1,2</sup>. The UNICEF/WHO Baby-Friendly Hospital Initiative (BFHI) is an essential component of the comprehensive strategy for infant and young child nutrition and breastfeeding<sup>3</sup>.

Due to suboptimal EBF, children worldwide die within the first six months of life, particularly in Asia and Africa. In developing nations, inappropriate or insufficient breastfeeding is responsible for approximately 45% of neonatal infectious deaths, 30% of diarrheal deaths, 18% of acute respiratory deaths, and 10% of infant disease burden<sup>4</sup>. It is estimated that

optimal breastfeeding could prevent approximately 3 million child deaths annually, with 800,000 deaths prevented in underdeveloped nations<sup>5</sup>.

Likewise, EBF practice in Pakistan has not been optimal despite known benefits. It has been found that only 48% of Pakistani babies less than six months of age are exclusively breastfed, and 53% remain breastfed until two years old<sup>6</sup>. Breastfeeding a newborn within an hour of birth can prevent 22% of neonatal deaths in Pakistan, according to the World Breastfeeding Trends Initiatives report. Prolactal feeds and cultural practices, along with less birth spacing and low awareness of breastfeeding techniques, hindered EBF<sup>7</sup>.

It is important to note that antenatal care (ANC) visits provide nutritional and health-related information, which can significantly contribute to exclusive breastfeeding practices and infant care<sup>8</sup>. To start EBF promptly, it is essential to maintain it for the recommended time. The suboptimal EBF rate is found to be attributed to women's lack of knowledge about breastfeeding benefits and their lack of support from relatives and treating doctors. Surprisingly, the negative effect of upgrading socioeconomic status has been found on breastfeeding practices in some areas of the world. It is reported that a woman's intention is crucial for breastfeeding her infants. As a result of antenatal knowledge and awareness, women's intention, planning, and, subsequently, their practice is related<sup>9</sup>.

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doi: 10.22442/jlumhs.2023.01030

Received: 30-03-2023 Accepted: 29-09-2023

Published Online: 22-11-2023



Studies also indicated a positive association between the frequency of antenatal visits and exclusive breastfeeding practices. Both antenatal and postnatal visits are reported to impact the timely initiation of breastfeeding (TIBF) significantly<sup>10,11</sup>. Women must be physically close to their infants, feel confident about their ability to adequately feed their infants for breastfeeding successfully, and have access to all services that protect, promote, and support breastfeeding.<sup>12</sup>

High-quality and focused antenatal visits are essential for health professionals to discuss and educate the mother regarding her newborn's health, nutrition, and breastfeeding. WHO's recent guideline recommends having at least eight antenatal visits to achieve positive pregnancy outcomes. Also, among the four components of antenatal care visits, one main component is to prepare the women for childbirth, breastfeeding, and family planning<sup>13</sup>. The study aims to assess the frequency of prenatal visits and their impact on breastfeeding practices among mothers. Proper counselling and education play an essential role in the early initiation of breastfeeding, and antenatal clinics are the best place for this. To our knowledge, the association between the frequency of antenatal visits and practices of optimal breastfeeding has not been extensively studied in Pakistan. It is imperative to determine present and recent information about the prevalence of EBF in Pakistan and the association of breastfeeding practices with the frequency of antenatal visits.

**METHODOLOGY**

This prospective cohort study was conducted in Darul - sehat Hospital Karachi from August 2021 to July 2022 among pregnant females (36-40 weeks of gestation) regardless of their parity. Multiple pregnancies, intrauterine fetal death, IUD fetuses, active TB, genital herpes, HIV, hypertension, diabetes, and epilepsy were excluded. A Convenient Non-probability sampling technique is used for the selection of participants. Participants were divided into three groups according to their number of prenatal visits. <4, 4-8, >8 and followed three times after childbirth to assess their breastfeeding practices. The first follow-up was done within 48 hours of delivery, the second at three months, and the third after six months of delivery. Each visit is assessed for three breastfeeding practices: exclusive, mixed, or bottle feeding.

Before interviewing with a questionnaire, all respondents provided verbal consent. Female participants were made aware of the study's goal and assured that the patient's medical history would remain confidential.

Contact was made through telephonic calls, which were informed and consented to at enrollment into study and/or neonatal checkup visits in pediatric OPDs. Every time, we asked them about their feeding practices like exclusive, mixed feeding or bottle

feeding and the reason for discontinuing breastfeeding if not feeding.

Information is put on Performa, which contains two parts. Part A has demographic features of females like age, parity, gestational age, mode of delivery, previous breastfeeding practices, current feeding practice, number of prenatal visits, female booking status, and patient's medical condition. Part B contains details of the feeding practices of patients at three different times.

The sample was calculated using the OpenEpi samples calculator by proportion version 3.01, available at [www.openepi.com](http://www.openepi.com). After inserting 65.15% knowledge of mothers towards breastfeeding after intervention<sup>18</sup> at a 6.5% margin of error and 95% confidence interval, we have required at least n=207 samples for this study.

**CALCULATION**

<b>Sample Size for Frequency in a Population</b>	
Population size(for finite population correction factor or FPC)(N):	1000000
Hypothesized % frequency of outcome factor in the population (p):	65.15%±6.5
Confidence limits as % of 100(absolute±%)(d):	6.5%
Design effect (for cluster surveys-DEFF):	1

**Sample Size(n) for Various Confidence Levels**

Confidence Level (%)	Sample Size
95%	207
80%	89
90%	146
97%	254
99%	357
99.9%	582
99.99%	814

**Equation**

$$\text{Sample size } n = [\text{DEFF} * Np(1-p)] / [(d^2 / Z^2_{1-\alpha/2} * (N-1) + p * (1-p))]$$

Data were stored and analyzed using IBM-SPSS version 23.0; counts with percentages were reported on baseline qualitative characteristics of studied samples like literacy rate, working status, socioeconomic status, parity, and other gynae parameters. Medians with 25<sup>th</sup> – 75<sup>th</sup> percentile were reported on age, number of live births, age of last child (days), duration of breastfeeding and antenatal clinic visits due to skewed quantitative parameters. Association of breastfeeding in 48 hours, in three months and six months was tested with the number of antenatal visits, literacy rate and working status of women using the Pearson Chi-Square test. P-values less than 0.05 were considered statistically significant. Bar diagrams and pie charts were also used to present study findings. Qualitative variables were gathered: residence, patient and husband occupation,

breastfeeding practices, prior breastfeeding history, reasons for discontinuation, pertinent descriptive statistics, frequency, and percentages. Quantitative variables like age, gestational age, number of children, and number of prenatal visits were presented by mean standard deviation. The chi-square test was used to find associations between dependent and non-dependent variables;  $p < 0.05$  is considered a level of significance<sup>18</sup>.

## RESULTS

A total of 210 women were interviewed in this study. **Table I** reports the baseline demographic characteristics of the studied samples. The mean age of participants was 28 years (IQR= 25 – 32) 43.3% were undergraduate, 82.9% were housewives, 86.7% belonged to middle socioeconomic status, 69.5% were multipara, the median number of live births was 2 (IQR=1 -3) children, the median age of last child was

42 days (IQR=3 – 330) days 78.6% were well informed about breastfeeding in antenatal visits, 70.5% had the past experience of breastfeed, 56.2% were male gender of last child, 65.2% were cesarean section, 78.6% said they made feeding decision before pregnancy. 10% of samples reported breastfeeding problems, and median antenatal clinic visits of studied samples were 6 with IQR (6-8).

**Bar chart I** show that 7.1% of samples had less than four antenatal clinic visits, 68.1% had 4 to 8 visits, and 24.8% had more than eight antenatal clinic visits.

**Table II** reports the association of breastfeeding with antenatal clinic visits; results showed samples that breastfeeding in 48 hours, 7.8% had less than four antenatal clinic visits, 62.3% had 4-8 visits, and 29.9% had more than eight antenatal visits. For samples that breastfed in the NICU for 48 hours, 2.7% had less than four antenatal clinic visits, 41.1% had 4 to 8

**Table I: Baseline Characteristics of Studied Samples (n=210)**

Characteristics	n	%	
Literacy Rate	Illiterate	11	5.2
	Primary school	10	4.8
	Matric/Intermediate	37	17.6
	Undergraduate	91	43.3
	Graduate and above	61	29.0
Working status	No employment	174	82.9
	Self-employed	9	4.3
	Employed by other	27	12.9
Socioeconomic Status	Low	13	6.2
	Middle	182	86.7
	Higher	15	7.1
Age (years)	Median (25 <sup>th</sup> – 75 <sup>th</sup> Percentile)	28	(25 – 32)
Para	Primipara	64	30.5
	Multipara	146	69.5
Number of live births	Median (25 <sup>th</sup> – 75 <sup>th</sup> Percentile)	2	(1 – 3)
Age of the last child (days)	Median (25 <sup>th</sup> – 75 <sup>th</sup> Percentile)	42	(3 – 330)
Informed about BF in antenatal care?	Not informed	45	21.4
	Well informed	165	78.6
Past breastfeeding experience?	Yes	148	70.5
	No	41	19.5
	No children	21	10.0
Duration of Breastfeeding	Median (25 <sup>th</sup> – 75 <sup>th</sup> Percentile)	10	(10 – 15)
Gender of last-child	Male	118	56.2
	Female	92	43.8
Last child gestational age at delivery	Less than 37 weeks	38	18.1
	More than 37 weeks	172	81.9
Mode of delivery of the last child	Vaginal delivery	73	34.8
	Cesarean section	137	65.2
Feeding decision was made?	Before pregnancy	165	78.6
	During pregnancy	24	11.4
	After the child was born	21	10.0
Brest Feeding problem	No	46	21.9
	Yes	21	10
Antenatal Clinic Visits	Median (25 <sup>th</sup> – 75 <sup>th</sup> Percentile)	6	(6 – 8)

visits, and 56.2% had more than eight antenatal visits. For samples that did exclusive breastfeeding in 3 months, 4.7% had fewer than four antenatal clinic visits, 43% had 4-8 visits and 52.3% had more than eight antenatal visits; for samples that did mixed feeding in 3 months, 1.2% had less than four antenatal clinic visits, 91.4% had 4-8 visits and 7.4% had more than eight antenatal visits, samples that did bottle feeding in 3-months 23.3% had less than four antenatal clinic visits, 74.4% had 4-8 visits and 2.3% had more than eight antenatal visits. For samples that did exclusive breastfeeding in 6 months, 2.4% had less than four antenatal clinic visits, 23.8% had 4-8 visits and 73.8% had more than eight antenatal visits; for samples that did mixed feeding in 6 months, 4.5% had less than four antenatal clinic visits, 80.4% had 4-8 visits and 15.2% had more than eight antenatal visits, whereas samples that did bottle feeding in 6-months 16.1% had less than four antenatal clinic visits, 76.8% had 4-8 visits and 7.1% had more than eight antenatal visits. A significant association was found between breastfeeding in 48 hours, baby in NICU 48 hours, breastfeeding in 3 months and

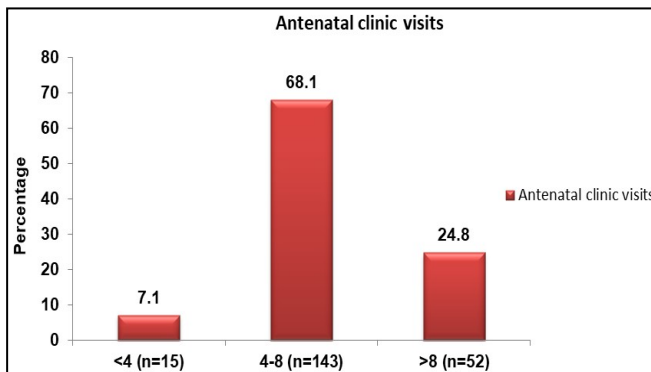
breastfeeding in 6 months with the number of antenatal clinic visits ( $p < 0.01$ ).

When the association of breastfeeding with literacy rate was studied, in samples that did breastfeeding in 48 hours, 44.3% were undergraduate, 24.7% were graduate and above, and in samples that did exclusive breastfeeding in 3 months, 46.5% were undergraduate. For samples that did exclusive breastfeeding in 6 months, 57.1% were undergraduate; for samples that did mixed feeding in 6 months, 29.5% were graduates and above; Pearson Chi-Square test showed only a significant association of breastfeeding in 48-hrs with literacy rate ( $p = 0.03$ ), all other were found statistically insignificant.

Similarly, the association of breastfeeding with working status revealed varying results. Of those who breastfed in 48 hours, 81.4% were unemployed, 5.4% were self-employed, and others employed 13.2%. For women who did exclusive breastfeeding in 3 months, 89.5% were unemployed; for samples that did bottle feeding in 3 months, 65.1% were unemployed, 2.3% were others employed self-employed and 32.6%, samples that did exclusive breastfeeding in 6 months, 90.5% were unemployed, 4.8% were self-employed and 4.8% were employed by other, samples that did mix feeding in 6 months 92.0% were unemployed. Of samples that did bottle feeding in 6 months, 58.9% were unemployed, 8.9% were self-employed and 32.1% were employed by others. Pearson Chi-Square test showed a significant association of breastfeeding in 3 and 6 months with working status ( $p < 0.05$ ).

**Pie chart II** shows the problems that mothers faced during breastfeeding: 33.3% were reported for cracked nipples, 28.6% for mastitis, 13.3% for lump, 9.5% for abscess, 9.5% for nipple soreness, and 4.8% were reported for flat nipples.

**Bar Chart I: Frequency of antenatal visits in three different groups**

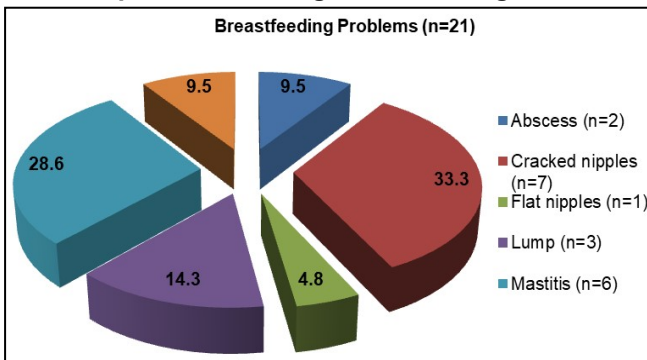


**Table II: Effect of Antenatal Clinic Visits on Breastfeeding**

Breastfeeding	Antenatal clinic visits						P-value	
	<4		4-8		>8			
	n	%	n	%	n	%		
BF in 48 hrs	yes	13	7.8	104	62.3	50	29.9	<0.01*
	no	2	4.7	39	90.7	2	4.7	
Baby in NICU 48 hrs	yes	2	2.7	30	41.1	41	56.2	<0.01*
	no	13	9.5	113	82.5	11	8.0	
BF in 3 months	exclusive	4	4.7	37	43.0	45	52.3	<0.01*
	mix feeding	1	1.2	74	91.4	6	7.4	
	bottle feeding	10	23.3	32	74.4	1	2.3	
BF in 6 months	exclusive	1	2.4	10	23.8	31	73.8	<0.01*
	mix feeding	5	4.5	90	80.4	17	15.2	
	bottle feed	9	16.1	43	76.8	4	7.1	

\* $p < 0.05$  was considered statistically significant using the Pearson Chi-Square test

**Pie Chart II:  
Mothers problems during breastfeeding**



## DISCUSSION

Many researchers have supported that breastfeeding counselling during antenatal visits has a profound effect on postnatal breastfeeding practices and the continuation of breastfeeding<sup>14,15</sup>.

In our study population, the mean age of mothers was 28 years, similar to a study by Girish HO 2013<sup>16</sup> where the mean age was 27.3 years. Among our enrolled subjects, 69.5 % were multiparous, and undergraduate education level and unemployed status were 43.3% and 82.9 %, respectively. Breastfeeding efficacy was linked to women's parity, educational level, occupational status, and prior breastfeeding practices in a Portuguese study<sup>17</sup>.

Our study reported that most of the participants (82.9%) were housewives: an observation consistent with a study done by Piro SS 2020<sup>18</sup> on 130 pregnant women who attended a primary health care centre at Erbil. We observed in our research that undergraduate and unemployed mothers commenced and continued exclusive breastfeeding, even in NICU and maintained it till six months. Campos AP 2022<sup>19</sup> reported that children of working mothers, mainly from high-income status, were less likely to breastfeed till six months of age.

In our study, 78.3% of mothers with > 8 antenatal visits continued exclusive breastfeeding until six months. It has been proven from the literature that maternal intention to breastfeed and breastfeeding self-efficacy were reported to be significant commencement predictors and continuation of EBF till six months of age<sup>20,21</sup>. Arif S 2021<sup>22</sup> studied the data collected from the Pakistan Demographic and Health Survey (PDHS) for 2017-18 and reported that Pakistani women commonly practice EBF.

Studies have reported the significance of antenatal education in developing knowledge regarding BF and promoting BF skills and confidence for commencing and continuing BF till the six months for a healthier baby outcome<sup>23</sup>. In our study, more than half (68.1%) of respondents did 4 to 8 antenatal visits, while

around one fourth (24.8%) had more than eight antenatal visits. Our study has demonstrated that initiating EBF and its continuation in NICU and up to 6 months of life is significantly associated with the number of antenatal visits.

Our study reported that 78.6% of mothers were well-informed about breastfeeding during antenatal care. A study by Mohapatra I 2018<sup>24</sup> in urban slum populations of Bhubaneswar, Odisha, reported that 64% of the mothers knew exclusive breastfeeding. Regular prenatal care throughout pregnancy helps catch potential concerns early, reduce the risk of pregnancy and birth complications, and prepare the mother physically and mentally to welcome the new baby. On the contrary, lack of knowledge, poor attitude or inappropriate BF practice of BF may lead to unfavorable health outcomes for both mother and child<sup>25</sup>. During lactation, 10% of the mothers faced breast problems; in our study, the commonest was cracked nipples. Bangladesh literature reported decreased milk production and breast engorgement as commonly encountered problems<sup>26</sup>.

## CONCLUSION

Our study observed a strong impact of the number of prenatal visits on practices. A more significant number of antenatal visits have a highly favorable influence on BF practices in terms of commencement and continuation of BF in NICU and continuation of EBF till six months of age because it prepares future mothers physically and mentally for effective nurturing of their babies and the family and community at large. In our study, maternal literacy and working status also significantly contributed to BF and EBF. Further research is needed to study the impact of prenatal visits on BF during weaning and until two years of age.

**Ethical Permission:** Liaquat College of Medicine & Dentistry, Darul Sehat Hospital Karachi IRB Approval letter No. DSH/IRB/2021/0035.

**Conflict of Interest:** The authors have no conflict of interest to declare

**Financial Disclosure / Grant Approval:** This research did not receive specific funding from any financially supporting body.

**Data Sharing Statement:** The corresponding author can provide the data proving the findings of this study on request. Privacy or ethical restrictions bound us from sharing the data publically.

## AUTHOR'S CONTRIBUTION

Nasim A: Concept, Critical Review, final approval  
Saeed F: Concept, design  
Azhar F: Drafting, data collection & analysis  
Saboo E: Drafting, critical review

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