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# Knowledge regarding Breastfeeding among Pregnant Women Attending Tertiary Care Center of Kathmandu: An Observational Study

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## ABSTRACT

**Introduction:** Breastfeeding is the optimal source of nutrition for infant growth and development. It offers nutritional, immunological, behavioral, and economic benefits and strengthens mother–infant bonding. Adequate knowledge during pregnancy is essential to promote breastfeeding practices. This study aimed to assess the breastfeeding knowledge of pregnant women attending a tertiary care center.

**Methods:** A facility-based cross-sectional study was conducted among 350 pregnant women attending the antenatal clinic of a tertiary care center. Women were selected using simple random sampling. Data were collected through face-to-face interviews using a self-developed, structured Nepali questionnaire. Ethical approval and written informed consent were obtained. Data was analyzed using SPSS version 20, with descriptive statistics and chi-square tests.

**Results:** Most of the pregnant women; 303(86.6%) were 20 to less than 35 years of age, 165(47.1%) were Brahman/Chhetri ethnicity, 215(61.42%) live in joint family, 191(54.6%) were homemaker. Nearly half, 162(46.3%), had secondary level education, and 295 (84.28%) had sufficient income for one year. Over 45.1% were primigravida, 218(62.3%) had four or more antenatal checkups, and 270(77.1%) planned their pregnancy. About the level of knowledge, 134(38.3%) had a high level, 113(32.3%) had a moderate level, and 103(29.4%) had a low level of knowledge. Breastfeeding knowledge showed a statistically significant association with residence, ethnicity, women's educational level, husbands' educational level, gravida, number of antenatal care check-ups, and sources of information.

**Conclusions:** About one-third of pregnant women reported an adequate level of breastfeeding knowledge. Therefore, targeted programs and educational interventions are needed to improve breastfeeding knowledge and promote breastfeeding practices.

**Keywords:** Breastfeeding, breast milk, knowledge level, pregnant women

## INTRODUCTION

Breastfeeding plays an important role in child survival and well-being by protecting against childhood illnesses, particularly respiratory and diarrheal infections.[1] Pregnant women's intention to breastfeed exclusively is a strong predictor of breastfeeding initiation, duration, and continuation.[2] Despite global efforts to promote breastfeeding, only 48% of infants are exclusively breastfed during the first six months; however, the global target is 70%. Similarly, 46% of newborns are breastfed within one hour of birth, 71% continue breastfeeding for at least one year, and only 45% up to two years. Inadequate breastfeeding contributes to approximately 16% of annual child mortality globally.[1] In Nepal, 55% of children are breastfed within one hour of birth, and 56% under six months are exclusively breastfed.[3] Though national data report higher

early initiation rates (84.61%), Bagmati Province shows the lowest proportion of 52.41%.[4] Moreover, 54.9% of infants are exclusively breastfed, and 55% received timely complementary feeding.[5] Unfortunately, 43% of children aged 6–23 months consume sweet beverages, and 69% consume unhealthy foods, increasing the risk of childhood obesity, dental caries, and poor growth outcomes.[6] Although evidence suggests that adequate breastfeeding knowledge among pregnant women is critical for improving child health outcomes, existing studies focusing on pregnant women remain limited. Therefore, this study aimed to assess the level of knowledge about breastfeeding and its associations among pregnant women attending a tertiary care center in Kathmandu.

## METHODS

A descriptive cross-sectional research design was employed among pregnant women attending the antenatal clinic of Tribhuvan University (TU) Teaching Hospital, Kathmandu. Ethical approval was obtained from the Institutional Review Board of the TU Research Directorate and the Institutional Review Committee of the Institute of Medicine. Further, approval was obtained from the concerned authorities of the TU Teaching Hospital: the hospital administration, the department of Gynaecology/Obstetrics, and the antenatal clinic. A simple random sampling technique was used to select 350 pregnant women[7] and enrolled those who were willing to participate, without severe illness, in all trimesters. A structured questionnaire developed by the researcher was used to collect data on sociodemographic characteristics and breastfeeding knowledge. Written informed consent was obtained from each respondent before data collection. The respondent's privacy during data collection was maintained by interviewing in a separate place as much as possible within 25 to 30 minutes, and confidentiality was maintained by keeping the completed questionnaire safe. The instrument's content adequacy was maintained by reviewing the literature and consulting with subject experts. Pre-testing of the instrument was done on 10% of the total sample population in the antenatal clinic of TU Teaching Hospital, and that sample was excluded from the study sample. Each correct response was given one score, and a wrong answer did not receive any score. Level of knowledge was measured by calculating the total score of knowledge questions and classified into 3 categories, namely, low level: < 50%, moderate level: 50% to <75%, and high level: >75%. [8,9] Data was entered into Statistical Package for Social Science (SPSS) version 20 for analysis, and analysed using descriptive statistics (frequency and percentage) and inferential statistics (Chi-square and Fisher's exact test).

## RESULTS

A descriptive cross-sectional study was conducted among 350 pregnant women to assess their level of knowledge about breastfeeding.

**Table 1: Socio-demographic Characteristics of Pregnant Women (n=350)**

| Variables | Number (%) |
|---|---|
| **Age** | |
| Less than 20 years | 5(1.42) |
| 20 to less than 35 years | 303(86.57) |
| 35 or more | 42(12.00) |
| **Residence** | |
| Rural Municipality | 47(13.42) |
| urban Municipality | 303(86.57) |
| **Ethnicity** | |
| Brahman/Chhetri | 165(47.14) |
| Janajati | 145(41.42) |

| | |
|---|---|
| Dalit | 22(6.28) |
| Madhesi | 14(4.00) |
| Muslim | 1(0.28) |
| Others | 3(0.85) |
| **Occupation of women** | |
| Homemaker | 191(54.57) |
| Service holder | 87(24.85) |
| Business | 43(12.28) |
| Agriculture | 10(2.85) |
| Daily wage worker | 5(1.42) |
| Foreign employment | 2(0.57) |
| Others | 12(3.42) |
| **Educational attainment of women** | |
| Cannot read and write | 4(1.14) |
| Can only read and write | 14(4.00) |
| Basic level (up to 8th class) | 21(6.00) |
| Secondary level (9-12 class) | 162(46.28) |
| Bachelor level | 96(27.42) |
| Master and above | 53(15.14) |
| **Type of family** | |
| Nuclear | 135(38.57) |
| Joint | 215(61.42) |
| **Occupation of women's husband** | |
| Service holder | 141(40.28) |
| Business | 104(29.71) |
| Agriculture | 10(2.85) |
| Daily wage worker | 21(6.00) |
| Homemaker | 2(0.57) |
| Foreign employment | 54(15.42) |
| Others | 18(5.14) |
| **Education of women's husbands** | |
| Can only read and write | 7(2.00) |
| Basic level (up to 8th class) | 37(10.57) |
| Secondary level (9-12 class) | 167(47.71) |
| Bachelor level | 86(24.57) |
| Master and above | 53(15.14) |
| **Economic status** | |
| Income is enough for less than 1 year | 55(15.71) |
| Income is enough for 1 year | 295(84.28) |

Most of the women (86.57%) were 20 to less than 35 years, less than half (47.14%) belonged to Brahman/Chhetri ethnicity, more than half (54.57%) were homemakers, and a higher proportion (46.28%) had secondary level education. The majority (61.42%) of women belonged to a joint family, 40.28% of their husbands' occupation was service, and 47.71% of their husbands' education was secondary level. Additionally, 84.28% of women had household income enough for 1 year (Table 1).

**Table 2: Obstetrical Characteristics of Pregnant Women (n=350)**

| Variables | Number (%) |
|---|---|
| **Number of pregnancies** | |
| one time | 158(45.14) |
| 2nd to 4th | 173(49.42) |
| 5th and more | 19(5.42) |
| **Duration of pregnancy** | |
| First Trimester | 100(28.57) |
| Second Trimester | 118(33.71) |
| Third Trimester | 132(37.71) |
| **Number of ANC checkups** | |
| 1st | 58(16.57) |
| 2nd and 3rd | 74(21.14) |
| 4th and more | 218(62.28) |
| **Pregnancy planned** | |
| Planned | 270(77.14) |
| Unplanned | 80(22.85) |
| **Received counseling and education on BF** | |
| Received | 285(81.42) |
| Not received | 65(18.57) |
| **Mode of delivery of the last baby (n=187)** | |
| Vaginal delivery | 121(64.71) |
| Cesarean section | 66(35.29) |
| **Previous BF practice (n=187)** | |
| Exclusive breastfeeding | 154(82.35) |
| Nonexclusive breastfeeding | 33(17.65) |

About half (49.42%) of women had two to four pregnancies, and 62.28% had four or more antenatal checkups. The majority (77.14%) planned their pregnancy, 81.42% received counselling and education about breastfeeding. Among 187 pregnant women, 82.35% were exclusively breastfed previously. (Table 2).

**Table 3: Pregnant Women's Knowledge of Breastfeeding (n=350)**

| Variables | Number (%) |
|---|---|
| Knowledge Colostrum feeding to a child | 303(86.57) |
| Not to give additional food or drink at birth in addition to colostrum | 286(81.71) |
| Knowledge of the advantages of colostrum feeding | 310(88.57) |
| Feeding a child with a mother's/human breast milk | 342(97.71) |
| Initiation of breastfeeding within one hour of birth | 242(69.14) |
| Both mother and baby benefited from breastfeeding | 295(84.28) |
| Breastfed whenever the baby wants | 153(43.71) |
| knowledge on exclusive breastfeeding | 265(75.71) |
| Duration for exclusive breastfeeding | 267(76.28) |
| Appropriate time of weaning | 263(75.14) |
| Time to continue breastfeeding the child with food | 215(61.42) |
| Breastfeeding during the child's illness | 322 (92.00 |

Most (86.57%) of women knew about colostrum feeding, and 88.57% knew its advantages. Most (97.7%) of them knew about feeding a child breast milk, and 69.1% knew that initiating breastfeeding within one hour of childbirth. Similarly, 84.3% knew the benefits of breastfeeding, 43.7% knew about breastfeeding on demand, 76.3% knew that only breastmilk for six months, and 92.00% knew that breastfeeding can be done during the child's illness. Likewise, 75.1% responded that after six months is the appropriate weaning time, and 61.4% said the time to continue breastfeeding is up to two years (Table 3).

**Table 4: Pregnant Women's Knowledge of Successful Breastfeeding (n=350)**

| Variables | Number (%) |
|---|---|
| **Signs that show the baby is hungry *** | |
| The baby puts their hand in their mouth | 241(68.85) |
| The baby feels uneasy | 219(62.57) |
| Crying | 296(84.57) |
| Becomes more alert and active | 70(20) |
| **Signs show that the baby is getting enough breast milk*** | |
| The baby gains weight over time | 300(85.71) |
| Baby seems calm and relaxed | 283(80.85) |
| The baby passes urine at least 6 times in 24 hours | 193(55.14) |
| Sound produced during the swallowing of breast milk | 176(50.25) |
| **Maternal inhibiting factors of milk secretion*** | |
| Maternal stress | 226(64.57) |
| Lack of interest in feeding the baby | 154(44.00) |
| Inadequate diet | 277(79.14) |
| Incorrect feeding technique | 151(43.14) |
| Inadequate rest and sleep | 192(54.85) |
| **Ways to produce more milk*** | |
| Adequate rest and sleep | 226(64.57) |
| Drink more fluids | 307(87.42) |
| Feed the baby on demand | 196(56.00) |
| Having a nutritious diet | 295(84.28) |
| **Breast milk can be expressed, stored, and used later** | 241(68.85) |
| **Expressed breast milk can be used (n=241) *** | |
| When the mother cannot breastfeed/sick | 177(50.57) |
| When the mother is away from the baby | 192(54.85) |
| When the baby can't suck | 160(45.71) |
| When the breast becomes engorged | 126(36.00) |

**Multiple Response*

Regarding the signs that show the baby is hungry, 68.85% said the baby puts their hand in their mouth, 62.57% mentioned the baby feels uneasy, and 84.57% said they were crying. Furthermore, about signs of getting enough breast milk, 85.71% said the baby gains weight, 80.85% said the baby seems calm and relaxed, and 55.14% said the baby passes urine at least 6 times in 24 hours. Regarding the inhibiting factors of milk secretion, 64.57% mentioned maternal stress, and 79.14% mentioned inadequate diet. Similarly, 68.85% women knew about expressed breast milk (Table 4).

**Table 5: Level of Knowledge of Pregnant Women on Breastfeeding (n=350)**

| Level of knowledge | Number (%) |
|---|---|
| High level of knowledge | 134(38.28) |
| Moderate level of knowledge | 113(32.28) |
| Low level of knowledge | 103(29.42) |

Regarding breastfeeding knowledge, 38.28% had a high level, 32.28% had a moderate level, and 29.42% had a low level (Table 5).

**Table 6: Association between Sociodemographic Variables and Level of Knowledge on Breastfeeding among Pregnant Women**

| Variables | Low level | Medium Level | High level | x2 | p-value |
|---|---|---|---|---|---|
| | Number (%) | Number (%) | Number (%) | | |
| **Residence** | | | | | |
| Rural Municipality | 22(46.8) | 13(27.7) | 12(25.5) | 7.713 | 0.021[a] |
| urban Municipality | 81(26.7) | 100(33.0) | 122(40.3) | | |
| **Ethnicity** | | | | | |
| Dalit | 10(45.5) | 5(22.7) | 5(22.7) | 17.125 | 0.034[a] |
| Janajati | 53(36.6) | 45(31.0) | 19(13.1) | | |
| Madhesi | 4(28.6) | 4(28.6) | 6(42.9) | | |
| Muslim | 0(0.0) | 0(0.0) | 1(100.0) | | |
| Brahman/Chhetri | 34(20.6) | 95(57.6) | 73(44.2) | | |
| Others | 2(66.7) | 0(0.0) | 0(0.0) | | |
| **Educational of women** | | | | | |
| Cannot read or write | 4(100.0) | 0(0.0%) | 0(0.0) | 32.760 | 0.0001* |
| Can only read and write | 7(50.0) | 2(14.3) | 5(35.7) | | |
| Basic level | 9(42.9) | 7(33.3) | 5(23.8) | | |
| Secondary level | 56(34.6) | 52(32.1) | 54(33.3) | | |
| Bachelor level | 23(24.0) | 29(30.2) | 44(45.8) | | |
| Master and above | 4(7.5) | 23(43.4) | 26(49.1) | | |
| **Husband's education level** | | | | | |
| Can only read and write | 2(28.6) | 2(28.6) | 3(42.9) | 28.940 | 0.0001* |
| Basic level | 20(54.1) | 10(27.0) | 7(18.9) | | |
| Secondary level | 56(33.5) | 48(28.7) | 63(37.7) | | |
| Bachelor level | 20(23.3) | 26(30.2) | 40(46.5) | | |
| Master and above | 5(9.4) | 27(50.9) | 21(39.6) | | |
| **Number of pregnancies** | | | | | |
| One time | 65(41.1) | 53(33.5) | 40(25.3) | 27.477 | 0.0001* |
| 2nd to 4th | 35(20.2) | 50(28.9) | 88(50.9) | | |
| 5th and more | 3(15.8) | 10(52.6) | 6(31.6) | | |
| **Number of ANC checkups** | | | | | |
| 1st | 22(37.9) | 16(27.6) | 20(34.5) | 13.069 | 0.011* |
| 2nd to 3rd | 31(41.9) | 23(31.1) | 20(27.0) | | |
| 4th and more | 50(22.9) | 74(33.9) | 94(43.1) | | |
| **Sources information** | 103(29.4) | 113(32.3) | 134(38.3) | 46.813 | 0.0001* |

**Significance at the P-value < 0.05 (Pearson Chi-Square)*

¤ *Significance at the P-value < 0.05 (Fisher's Exact Test)*

The statistically significant association was found on residence (p=0.021), ethnicity (p=0.034), educational level of pregnant women (p=0.0001), and their husbands' level of knowledge (p=0.0001), number of pregnancies p=0.0001), number of antenatal check-ups(p=0.011), and sources of information (p=0.0001) at the p-value < 0.05 (Table 6).

## DISCUSSION

Among pregnant women, 77.14% women planned their pregnancy. Inconsistently, a study in Brazil found that 59.7% pregnant women reported not having planned a pregnancy.[10] Similarly, in this study, 81.42% women received counseling and education about breastfeeding. Inconsistently, a study in Brazil found that 56.8% had previous breastfeeding experience.[10] Among 187 pregnant women, 64.71% gave last child birth vaginally. A higher result was found in Northwest Ethiopia, that 90.1% gave birth to their last child vaginally.[11] In this study, among 187 women, 82.35% were exclusively breastfed. This is aligned with a study of Northwest Ethiopia, that 86.5% women had prior breastfeeding experience.[11]

In the current study, 86.57% respondents knew about colostrum feeding; 81.71% reported no need for prelacteal feeding. Consistent with a study of Kurdistan, that 79.2% responded the need of colostrum feeding, and 79.2% said no need for prelacteal feeding.[12] Inconsistent with the study of Ethiopia, that 59.8% said colostrum is important to prevent illness, and 33.7% reported for the growth of the baby.[13] According to a study of Kolkata, India, 73.5% believed in colostrum feeding to the child.[14] In this study, 97.71% knew about exclusive breastfeeding, which was aligned with a study in Nigeria, that 86.1% of pregnant women were aware of exclusive breastfeeding.[15] In the current study, 69.14% pregnant women knew to initiate breastfeeding within one hour of childbirth. Nearly consistent with a study of Bhopal, India, that 79.3% knew about initiation of breastfeeding within 1 hour of birth.[16] A study conducted in Nigeria found that 95.5% of the mothers knew the initiation of breastfeeding within one hour after birth.[17]

In this study, 84.28% women knew the benefits of breastfeeding. Nearly consistent with a study of Kerala, that 79% knew the benefit of breastfeeding.[18] In this study, 43.71% said that the baby should be breastfed whenever the baby wants. A study conducted in Bangladesh revealed that 83.4% of the mothers said that breastfed babies were on demand.[19] Regarding exclusive breastfeeding, 75.71% correctly about exclusive breastfeeding. A study of Kolkata revealed that 94.7% pregnant women reported that exclusive breastfeeding is best for six months.[14] In the current study, 75.14% of women responded appropriate time of weaning is six months after childbirth. A study conducted in Ghana found that 90% of the women responded that 6 months or older was the appropriate age to start solid food for babies.[20] A cross-sectional study performed in Kolkata revealed that 91.8% pregnant women reported that they needed supplementary feed with breastmilk after 6 months of birth.[14] In the current study, 61.42% said that the time to continue breastfeeding the child with food was up to two years. A study of India found that 57.1% of women did not know about the duration of breastfeeding.[21]

Furthermore, about signs of getting enough breast milk, 85.71% said that the baby gains weight over time. One study conducted in Karnali Province, Nepal, revealed that all (100.0%) of the pregnant women reported that the baby gains weight over time.[9] Moreover, about the maternal inhibiting factors of milk secretion, 64.57% mentioned maternal stress,44.00% mentioned lack of interest in breastfeeding, 79.14% mentioned inadequate diet, 43.14% mentioned incorrect feeding technique, 54.85% said inadequate rest and sleep. A cross-sectional study in Northwest Ethiopia found that 61.7% of women were unaware of the need for water after each breastfeeding, which is an inhibiting factor of milk secretion.[11] A study conducted in Karnataka, India, showed that 42.8% of pregnant women believe that insufficient milk secretion is due to the baby not getting milk while sucking.[21] A cross-sectional study conducted in Kerala, India, found that 74% pregnant women said tension at home can affect milk production and breastfeeding,

79% of women believed that systemic illness, 72% said that anxiety affects milk production, 63% said that soreness, tenderness, or pain in the nipple can affect breastfeeding, and 77% said the presence of strangers affects breastfeeding.[18]

Similarly, the knowledge of pregnant women regarding ways to produce more milk; 64.57% respond that they need adequate rest and sleep, 87.42% said they need to drink more fluids. The present study shows that 56.00% said to breastfeed the baby on demand, while one study from Karnali Province, Nepal, found that 30.0% responded as feeding the baby on demand to produce more milk.[9] In the current study, 84.3% responded that they need a nutritious diet. One study conducted in Kerala, India, revealed that 91.6% of women knew the importance of nutritious food intake, such as green leafy vegetables, milk, iron rich foods, to increase milk production.[18]

In the current study, 68.85% women were known about express, storing, and using breast milk later. A longitudinal study conducted in India showed that 7.1% women said that if the mother is working, expressed breast milk should be given.[21] A study in Northwest Ethiopia found that 20.7% pregnant women knew breast milk expression.[11] Among 241(68.85%) women who were known about use of expressed breast milk; 50.57% said that when the mother cannot breastfeed/sick, 54.85% said when the mother is away from the baby, 45.71% said when the baby can't suck, and 36.00% said when the breast becomes engorged. A cross-sectional study conducted in Kathmandu Medical College Teaching Hospital showed that 63.9% of the respondents had adequate overall knowledge regarding expressed breastfeeding.[22] A study conducted in India showed that 36% of them knew about expressed breast milk feeding.[23]

In the current study, 29.42% had a low level of knowledge, 32.28% had a moderate level of knowledge, and 38.28% had a high level of knowledge. A study conducted in Thailand showed that 65.7% had good breastfeeding knowledge.[24] A study conducted in Ethiopia showed that 52.4% of the mothers had a high level of knowledge, while 47.6% had a low level of knowledge.[25] One study conducted in Indonesia described that 90.0% pregnant women had good, 10.0% had moderate, and no one had poor knowledge of breastfeeding.[26] A study conducted in Uttar Pradesh, India, showed that 82% of pregnant mothers had adequate knowledge, 10% had moderate knowledge, and 8% had inadequate knowledge regarding breastfeeding.[27]

In the current study, a statistically significant association was found on residence (p=0.021), ethnicity (p=0.034), educational level of pregnant women (p=0.000), and educational level of husbands of pregnant women (p=0.000) at the p-value < 0.05 with the level of knowledge. A study conducted in Odisha, India, showed associations between literacy (p=<0.0001) at p-values <0.05.[28] A study of Lahore, Pakistan, found a statistically significant association in residence (p=0.001) at the p-value < 0.05.[29] Similarly, in this study, a statistically significant association was found in gravida (p=0.000) and the number of antenatal check-ups(p=0.011) at the p-value < 0.05. This is consistent with the study of India, which showed that a significant association between the level of knowledge and gravida at the p <0.05 level.[27] A study conducted in Kerala showed that a statistically significant association between parity and breastfeeding ( p-value 0.001).[18] In the current study, a statistically significant association was found between the level of knowledge and source of information (p=0.0001). This is aligned with a study of Uttar Pradesh, India, that adequate breastfeeding knowledge was associated with the source of information.[30]

## CONCLUSION

About one-third of pregnant women reported an adequate level of knowledge regarding breastfeeding. Knowledge of pregnant women was associated with residence, ethnicity, women's education, their husbands' education, gravida, number of antenatal visits, and sources of information. These findings highlight the need for focused programs and educational interventions to improve breastfeeding knowledge and, subsequently, practices.

## CONFLICT OF INTEREST: NONE

FINANCIAL DISCLOSURE:

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