International Journal of Contemporary Pediatrics
*Sahu B et al. Int J Contemp Pediatr. 2024 Apr;11(4):435-443*
http://www.ijpediatrics.com
pISSN 2349-3283 | eISSN 2349-3291

DOI: https://dx.doi.org/10.18203/2349-3291.ijcp20240733

**Original Research Article**

# Factors associated with exclusive breastfeeding knowledge and practices in a tertiary hospital of central India

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**Received:** 22 February 2024
**Accepted:** 15 March 2024

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## ABSTRACT

**Background:** Breastfeeding is a behavioural act of the mother, one that is affected by demographic, socioeconomic, and faith factors as well as by cultural traditions and beliefs. However, there is little scientific literature on potential gaps between knowledge and standard practices regarding exclusive breastfeeding and its predictors among mothers in central India.
**Methods:** A cross sectional study was conducted to explore the knowledge, perceptions, practices, and the associated factors of exclusive breastfeeding among urban and rural mothers at a tertiary hospital of central India.
**Results:** A total of 500 post-natal mothers at the study hospital were interviewed to assess their knowledge and practices of exclusive breastfeeding. The study revealed that knowledge of exclusive breastfeeding was 47% while breastfeeding practices for up to six months of babies was reported by only 15% of participants. Breastfeeding within one hour of birth was reported by 31% of mothers. About 62% did not feed colostrum, while 57% fed their baby pre-lacteal feed. Mothers belonging to a rural community, living in joint family, literate, employed, better-off economic status, multigravida, having a previous history of vaginal delivery, and male child, and those counselled regarding breastfeeding during ANC visits had higher knowledge and better practices of exclusive breastfeeding.
**Conclusions:** The findings of the study suggest an urgent need for regular counselling in ANC clinics to promote exclusive breastfeeding among women and their family caregivers. Breastfeeding awareness education programs for all pregnant women are recommended to ensure that mothers learn best practices regarding breastfeeding and its benefits.

**Keywords:** Exclusive breastfeeding, Early breastfeeding, Pregnant women, Mothers, Counselling, Knowledge and practices

## INTRODUCTION

Breast milk is the first natural source of nutrition and energy received by new-borns, representing a critical input for healthy growth of babies during the first few months of their lives, as well as an important morbidity and mortality prevention measure during the age of infancy.[1] Optimal breastfeeding practice includes exclusive breastfeeding for the first six months of age

during infancy, with early initiation of breastfeeding within one hour of birth continued for up to and beyond two years of age.[2] Providing colostrum is safe nutritionally; adding solid complimentary food after six months of life is recommended by the World Health Organization (WHO). Exclusive breastfeeding without additional substances helps to protect new-borns from infectious diseases, has many health benefits for both infants and mothers, and also reduces infant mortality. According to global estimates, nearly half of reported under five mortality is attributable to under-nutrition.[3] Optimal breastfeeding has the greatest potential impact on child survival to prevent approximately 13% of all deaths in children under five in the developing world.[4] The WHO and UNICEF also recommend early initiation of breastfeeding within one hour of birth and exclusive breastfeeding to six months.[2,5] However, only 44% of infants aged six months or below worldwide were exclusively breastfed over the period of 2015-2020.[5] Despite many health initiatives to increase optimal breastfeeding, only 63.7% of children under six months of age were exclusively breastfed in India during 2019-2021.[6] Less than half (41.8%) of mothers started breastfeeding within one hour of birth, while 26% began within one day, and 23% began within three days; 11% began breastfeeding after three days of birth. In Madhya Pradesh, exclusive breastfeeding of children under six months of age was 74%, while the proportion of mothers initiating breastfeeding within one hour of birth was 41.3%.[6] Breastfeeding is a behavioural act of the mother, one that is affected by demographic, socioeconomic, and faith factors as well as by cultural traditions and beliefs.[7] Unfortunately, the scientific literature on gaps between knowledge and standard practices regarding exclusive breastfeeding and its predictors in urban and rural mothers from central India is scarce. Therefore, a cross sectional study was conducted to explore knowledge, perceptions, and practices and the associated factors of exclusive breastfeeding among urban and rural mothers at a tertiary hospital in Jabalpur, Madhya Pradesh, India.

## METHODS

A descriptive cross-sectional study was conducted in 2020 to assess the knowledge, perceptions, and practices regarding exclusive breastfeeding among mothers in central India. The study was conducted in the obstetrics and gynaecology department (OGD) of the Netaji Subhash Chandra Bose (NSCB) medical college and hospital, a tertiary care hospital situated in Jabalpur, Madhya Pradesh, India. The NSCB medical college and hospital Jabalpur is one of the referral health facilities situated between 23.18 N Latitude and 79.99 E Longitude in the eastern part of Madhya Pradesh (MP) state, in central India. This health facility caters to the approximately 20 million population of the Mahakaushal and Vindhya region of MP state.

All the mothers with live babies without any major congenital anomaly were included in the study. Mothers whose babies required intensive care or had been advised not to breastfeed for a medical reason were excluded from the study. The study employed a quantitative interview tool to collect data from mothers at their six months postpartum visit to the OGD. Mothers making such visits were systematic randomly selected (every 10$^{th}$ woman) for interviews. The interviews were conducted by a medical post graduate research scholar from the OGD who had undergone training to conduct the interviews.

### *Definition of the variables*

Exclusive breastfeeding was the main outcome variable in the study. The questions asked mothers to assess their knowledge, perceptions, and practices towards exclusive breastfeeding. Demographic, socioeconomic, obstetric history of mothers, number of visits to the antenatal clinic (ANC), and sex of newborn were the independent variables included in the study.

### *Data collection*

A semi structured interview schedule was administered to participants in person following enrolment and provision of written informed consent. The interview was conducted at the OGD, with an effort to provide a comfortable environment to respondents. The interview schedule included questions about household location and education, religion, and employment of the participant. Specific questions also queried breastfeeding knowledge, perception and practices up to six months of life of the babies. Each interview took approximately 90 minutes to conduct. Detailed notes were taken for later analysis.

### *Data analysis*

Data from interview schedule and notes were entered into a Microsoft Excel worksheet and numerically coded. A composite score for knowledge, perception and practices were computed by addition of a subset of responses and further coded into “poor” or “good” categories using the median score as the cut-off. A logistic regression model was applied to analyse associated factors of knowledge, perceptions, and practices regarding exclusive breastfeeding. Statistical analysis was performed using R version 4.2.2 (The R foundation for statistical computing) for Windows interface with the RStudio 2022.12.0 (Posit Software, PBC).

### *Sample size*

The sample size required for the study was determined using the following formula of simple random sampling for an infinite population.

$$n = \frac{z^2 p(1-p)}{e^2}$$

Sample size assumptions included obtaining an adequate sample size at the 95% confidence limit, with a 13% probability of excusive breastfeeding practices which was considered based on the lowest proportion of the exclusive breastfeeding practices earlier reported and 25% relative precision. The derived number was then inflated by 15% to account for non-responses.[7] The resulting calculation indicated a minimum required sample size of 475 mothers. Written informed consent was provided by all study participants prior to their participation in an interview.

## RESULTS

A total of 500 women were interviewed. The mean age of participants was 25.4±4.7 years.

**Table 1: Demographic and socio-economic background characteristics of study participants.**

| Variables | Sub group | N | % |
|---|---|---|---|
| **Age (years)** | <20 | 44 | 8.8 |
| | 21-25 | 276 | 55.2 |
| | 26-30 | 130 | 26 |
| | 31-35 | 42 | 8.4 |
| | > 35 | 8 | 1.6 |
| **Residence** | Rural | 382 | 76.4 |
| | Peri-urban | 118 | 23.6 |
| **Religion** | Hindu | 302 | 60.4 |
| | Muslim | 176 | 35.2 |
| | Christian | 14 | 2.8 |
| | Other | 8 | 1.6 |
| **Family size** | ≤3 | 115 | 23 |
| | >3-5 | 300 | 60 |
| | >5 | 85 | 17 |
| **Marital status** | Married | 496 | 99.2 |
| | Divorced | 0 | 0 |
| | Unmarried | 0 | 0 |
| | Widow | 4 | 0.8 |
| **Educational status** | Illiterate | 175 | 35 |
| | Primary school | 78 | 15.6 |
| | Middle school | 98 | 19.6 |
| | High school | 91 | 18.2 |
| | Graduate | 40 | 8 |
| | Post-graduate | 18 | 3.6 |
| **Employment** | Yes | 334 | 66.8 |
| | No | 166 | 33.2 |
| **Monthly income (Rs.)** | <15000 (Low) | 78 | 15.6 |
| | 15000-30000 (Middle) | 327 | 65.4 |
| | >30000 (High) | 95 | 19 |

About three-fourths (76.4%) of participants belonged to an urban locality; the majority (60.4%) were from Hindu religion. Just over three-fourths (77%) were from a joint family. Approximately two-thirds (65%) of participants were literate, meaning they had attended school up to the high school level. About two-thirds of participants were employed and belonged to the middle economic class (Table 1). Regarding parity status, the results indicated that 37.8, 51.4, and 10.8% of participants were primi, second and multi para, respectively. Just over half (58.2%) reported fewer than three antenatal clinic (ANC) visits during their current pregnancy. Participants' obstetric history data showed that exactly half had delivered their child by caesarean delivery. A little more than 50% (56%) of participants had a male child (Table 2).

**Table 2: Obstetric characteristics of study participants.**

| Variables | Sub group | N | % |
|---|---|---|---|
| **Number of children** | One | 189 | 37.8 |
| | Two | 257 | 51.4 |
| | Three | 44 | 8.8 |
| | >Three | 10 | 2 |
| **Number of ANC Visits** | <3 | 291 | 58.2 |
| | >=3 | 209 | 41.8 |
| **Counselled regarding breastfeeding during ANC visit** | Yes | 202 | 40.4 |
| | No | 298 | 59.6 |
| **Type of delivery** | Normal | 236 | 47.2 |
| | Assisted instrumental | 14 | 2.8 |
| | Caesarean | 250 | 50 |
| **If by caesarean, type of anaesthesia** | Spinal | 332 | 66.4 |
| | Epidural | 0 | 0 |
| | General | 168 | 33.6 |
| **Sex of baby** | Male | 279 | 55.8 |
| | Female | 221 | 44.2 |

Analysis of data regarding knowledge and perceptions towards breastfeeding revealed that 46% of the women knew that early initiation of breastfeeding within one hour of birth is the ideal time to start breastfeeding. The remaining participants believed that 1-4 hours (36.4% of participants) and 4-24 hours (17.6% of participants) post-delivery, respectively, was the best time to start breastfeeding.

A total of 39%, 47%, and 14% of participants reported that the period of exclusive breastfeeding was up to 4 months, up to 6 months, and up to one year of the baby's life, respectively. Further, 14%, 39%, 40%, and 7% believed that it was good to continue to breastfeed their baby up to the age of 6 months, one year, 2 years, and more than 2 years of life, respectively. About 55% of participants knew that breastfeeding is beneficial for baby and mother both, while 61% were aware that breast milk is better than formula milk.

Nearly one-third (29%) of participants knew that breast milk can be kept at room temperature for up to one hour and nearly half (48%) of women agreed that breast milk can be preserved for up to two days in a refrigerator. Additionally, 41% of participants knew that milk secretion increases with repeated breastfeeding (Table 3).

**Table 3: Knowledge and perceptions towards breastfeeding among study participants.**

| Variables | Sub group | N | % |
|---|---|---|---|
| **Ideal time to start breastfeeding after delivery** | <1 hour | 230 | 46 |
| | 1-4 hours | 182 | 36.4 |
| | 4-24 hours | 88 | 17.6 |
| **How long should baby be exclusively breastfed?** | 0-4 months | 194 | 38.8 |
| | 0-6 months | 237 | 47.4 |
| | 0-1 year | 69 | 13.8 |
| **How long do you want to breastfeed the baby?** | ≤6 months | 70 | 14 |
| | ≤12 months | 196 | 39.2 |
| | ≤24 months | 199 | 39.8 |
| | >24 months | 35 | 7 |
| **Is breastfeeding beneficial for both mother and baby?** | Yes | 274 | 54.8 |
| | No | 226 | 45.2 |
| **Do you think breast milk is better than formula milk?** | Yes | 305 | 61 |
| | No | 195 | 39 |
| **How long can you keep breast milk at room temperature?** | 1 hour | 143 | 28.6 |
| | 2-5 hours | 152 | 30.4 |
| | 5-8 hours | 131 | 26.2 |
| | >8 hours | 74 | 14.8 |
| **How long can breast milk be preserved in a refrigerator?** | <24 hours | 0 | 0 |
| | 1-2 days | 239 | 47.8 |
| | 3-6 days | 156 | 31.2 |
| | >6 days | 105 | 21 |
| **Do you know milk secretion increases with repeated breastfeeding** | Yes | 204 | 40.8 |
| | No | 296 | 59.2 |
| **Did you think that additional supplements during antenatal and lactation periods is essentially required?** | Yes | 291 | 58.2 |
| | No | 209 | 41.8 |
| **Would you like to continue breast feeding during sickness yourself?** | Yes | 195 | 39 |
| | No | 305 | 61 |
| **Can a mother continue breastfeeding if she is taking any medication?** | Yes | 193 | 38.6 |
| | No | 307 | 61.4 |
| **Would you like to continue breast feeding during menstruation?** | Yes | 303 | 60.6 |
| | No | 197 | 39.4 |
| **Would you like to continue breastfeeding if baby has fever/cold?** | Yes | 251 | 50.2 |
| | No | 249 | 49.8 |
| **Would you like to continue breastfeeding while baby has diarrhoea?** | Yes | 229 | 45.8 |
| | No | 271 | 54.2 |
| **Would you like to continue breastfeeding if baby is vomiting?** | Yes | 234 | 46.8 |
| | No | 266 | 53.2 |
| **Did you think that breastfeeding should continue if mother is HIV positive?** | Yes | 104 | 20.8 |
| | No | 396 | 79.2 |
| **Do you think breastfeeding increases the bond between mother and baby?** | Yes | 288 | 57.6 |
| | No | 212 | 42.4 |
| **Breastfeeding leads to the loss of figure?** | Yes | 196 | 39.2 |
| | No | 304 | 60.8 |
| **Breastfeeding is old fashioned?** | Yes | 101 | 20.2 |
| | No | 399 | 79.8 |
| **Breastfeeding in public is embarrassing?** | Yes | 218 | 43.6 |
| | No | 282 | 56.4 |
| **Breastfeeding prevents going to work?** | Yes | 284 | 56.8 |
| | No | 216 | 43.2 |
| **Breast milk is pure and costs nothing?** | Yes | 324 | 64.8 |
| | No | 176 | 35.2 |
| **From where did you acquire the knowledge of benefits of breastfeeding?** | Doctor/Health worker | 170 | 34 |
| | Relatives | 201 | 40.2 |
| | Media | 129 | 25.8 |

Continued.

| Variables | Sub group | N | % |
|---|---|---|---|
| **Are you willing to attend educational program on breastfeeding?** | Yes | 421 | 84.2 |
| | No | 79 | 15.8 |

**Table 4: Practices towards breastfeeding among study participants.**

| Variables | Sub group | N | % |
|---|---|---|---|
| **When did you start breastfeeding after delivery? (hours)** | <1 | 156 | 31.2 |
| | 1-4 | 296 | 59.2 |
| | 4-24 | 48 | 9.6 |
| **Reason for delay in breastfeeding?** | Under effect anaesthesia | 176 | 35.2 |
| | Did not know to start early | 202 | 40.4 |
| | Advised by elders | 89 | 17.8 |
| | Others | 33 | 6.6 |
| **Period of exclusive breastfeeding? (months)** | ≤6 | 76 | 15.2 |
| | ≤12 | 219 | 43.8 |
| | ≤24 | 179 | 35.8 |
| | >24 | 26 | 5.2 |
| **Rooming in was practiced?** | Yes | 268 | 53.6 |
| | No | 232 | 46.4 |
| **Frequency of breastfeeding?** | <8 | 74 | 14.8 |
| | 8-12 | 240 | 48 |
| | >12 | 186 | 37.2 |
| **Breastfeeding offered?** | On demand | 302 | 60.4 |
| | Scheduled (2 -4 hours) | 198 | 39.6 |
| **Breastfeeding from both breast during single sitting?** | Yes | 268 | 53.6 |
| | No | 232 | 46.4 |
| **Duration of each feeding?** | <15 min | 284 | 56.8 |
| | 15-30 min | 178 | 35.6 |
| | >30 min | 38 | 7.6 |
| **Reasons for less time (<20 min) of breastfeeding (N=284)?** | Breast milk was inadequate | 173 | 60.9 |
| | Inverted nipple/cracked nipple/breast abscess | 94 | 33.1 |
| | Relative advice | 17 | 6 |
| **Discarded colostrum?** | Yes | 311 | 62.2 |
| | No | 189 | 37.8 |
| **Pre-lacteal feed given?** | Yes | 284 | 56.8 |
| | No | 216 | 43.2 |
| **If pre-lacteal feed given, specify (N=284)** | Water | 63 | 22.2 |
| | Honey | 153 | 53.9 |
| | Ginger water | 0 | 0 |
| | Herbal | 68 | 23.9 |
| **Position of breastfeeding?** | Mostly lying down | 294 | 58.8 |
| | Mostly sitting | 206 | 41.2 |
| **Nipples and most areola inside the mouth?** | Yes | 320 | 64 |
| | No | 180 | 36 |
| **Burping after feedings?** | Yes | 392 | 78.4 |
| | No | 108 | 21.6 |
| **Placing the fingers between the gums and areola to release the suction?** | Yes | 203 | 40.6 |
| | No | 297 | 59.4 |
| **Complete emptying of one breast followed by other?** | Yes | 291 | 58.2 |
| | No | 209 | 41.8 |
| **Complete emptying of both breasts?** | Yes | 265 | 53 |
| | No | 235 | 47 |
| **Cleanliness of breast and hand washing before feeds?** | Yes | 276 | 55.2 |
| | No | 224 | 44.8 |

**Table 5: Factors associated with knowledge and perceptions related to breastfeeding among study participants.**

| Factors | | Knowledge and perception | | | | Odds Ratio (95%CI) | P value |
|---|---|---|---|---|---|---|---|
| | | Poor (N=205) | | Good (N=295) | | | |
| | | N | % | N | % | | |
| **Age group (years)** | ≤25 | 175 | 54.7 | 145 | 45.3 | 6.03 (3.85-9.46) | <0.0001 |
| | >25 | 30 | 16.7 | 150 | 83.3 | | |
| **Residence** | Rural | 87 | 22.8 | 295 | 77.2 | 3.29 (2.67-4.31) | <0.0001 |
| | Peri-urban | 118 | 100 | 0 | 0 | | |
| **Family size** | ≤5 members | 122 | 29.4 | 293 | 70.6 | 0.01(0.002-0.04) | <0.0001 |
| | >5 members | 83 | 97.6 | 2 | 2.4 | | |
| **Educational status** | Illiterate | 55 | 31.4 | 120 | 68.6 | 0.53 (0.36-0.79) | 0.002 |
| | Literate | 150 | 46.2 | 175 | 53.8 | | |
| **Employment** | Yes | 39 | 11.7 | 295 | 88.3 | 7.56 (5.42-10.56) | <0.0001 |
| | No | 166 | 100 | 0 | 0 | | |
| **Monthly income** | <15000 | 0 | 0 | 78 | 100 | - | <0.0001 |
| | 15000-30000 | 110 | 33.6 | 217 | 66.4 | | |
| | >30000 | 95 | 100 | 0 | 0 | | |
| **Number of children** | One | 150 | 79.4 | 39 | 20.6 | 17.90 (11.33-28.28) | <0.0001 |
| | Two or more | 55 | 17.7 | 256 | 82.3 | | |
| **Number of ANC visits** | <3 | 1 | 0.3 | 290 | 99.7 | 0.00 (0.00-0.001) | <0.0001 |
| | ≥3 | 204 | 97.6 | 5 | 2.4 | | |
| **Counselled regarding breastfeeding** | Yes | 194 | 66.7 | 97 | 33.3 | 36.0 (18.7-69.2) | <0.0001 |
| | No | 11 | 5.3 | 198 | 94.7 | | |
| **Type of delivery** | Normal | 0 | 0 | 236 | 100 | - | <0.0001 |
| | Assisted instrumental | 0 | 0 | 14 | 100 | | |
| | Caesarean | 205 | 82 | 45 | 18 | | |
| **Sex of baby** | Male | 0 | 0 | 279 | 100 | - | <0.0001 |
| | Female | 205 | 92.8 | 16 | 7.2 | | |

Regarding other perceptions and beliefs, 58% of women believed that additional food supplements are required during the antenatal and lactation periods. Only 39% of women were willing to continue breastfeeding during the period when they were sick or taking medication; the same proportion was not willing to continue breastfeeding during menstruation. Further, about 50% of women were not willing to continue breastfeeding during a period when their baby was ill. Only 21% believed that breastfeeding may continue if the mother is HIV positive. About 58% of participants agreed that breastfeeding increases bonding between mother and baby. There were some misconceptions regarding breastfeeding, including: breastfeeding leads to a loss of one's figure (39%); it is old fashioned (20%); it is embarrassing to do, particularly in a public place (44%); and it prevents the mother from performing work (43%). Only 65% agreed that breast milk is pure and has no cost. Participants reported that their major sources of information were from: a relative (40%); health professional(s) (34%); or the media (26%). Most women were willing to attend an educational program on breastfeeding (Table 3).

Among study participants, the practice of starting breastfeeding within one hour of birth was reported by only 31%. The major cause of delay in breastfeeding was due to poor awareness of mothers or their elders (58%). In addition, exclusive breastfeeding up to six months of the baby's life was reported by only 15% of participants. Scheduled breastfeeding (every 2-4 hours) was practiced among 40% of participants, most typically for less than 15 minutes in duration. About two-thirds (62.2%) of women reported the practice of discarding colostrum. About 57% had been providing pre-lacteal feeding other than breast milk such as plain water, sugar or glucose water, gripe water, sugar salt water solution, fruit juice, infant formula, tea infusion, coffee, honey, and other items, of which most (54%) provided honey as a pre-lacteal food to the baby. About 55% of women cleaned the breast and washed their hands before breastfeeding (Table 4).

Logistic regression analysis of factors associated with mothers' knowledge and perceptions related to breastfeeding revealed that older women (>25 years) had significantly more; OR=6.03 (95% CI=3.85-9.46; p<0.0001) knowledge of breastfeeding compared to the younger age group (p<0.0001). Women living in rural areas (77.2%), and in small families (86.1%) had better knowledge than their counterparts (p<0.0001). Further analysis revealed that women who were employed (88.3%) had better knowledge (p<0.0001). However, an inverse relation was observed with family income, whereby women belonging to the poor or middle economic status had comparatively better knowledge than those who were better-off economically (p<0.0001).

**Table 6: Factors associated with breastfeeding practices among study participants.**

| Factors | | Practices | | | | Odds Ratio (95%CI) | P value |
|---|---|---|---|---|---|---|---|
| | | Poor (N=205) | | Good (N=295) | | | |
| | | N | % | N | % | | |
| **Age group (years)** | ≤25 | 196 | 61.3 | 124 | 38.8 | 3.79 (2.56-5.60) | <0.0001 |
| | >25 | 53 | 29.4 | 127 | 70.6 | | |
| **Residence** | Rural | 131 | 34.3 | 251 | 65.7 | - | <0.0001 |
| | Peri-urban | 118 | 100.0 | 0 | 0.0 | | |
| **Family size** | ≤5 members | 58 | 50.4 | 57 | 49.6 | - | <0.0001 |
| | >5 members | 85 | 100.0 | 0 | 0.0 | | |
| **Educational status** | Illiterate | 76 | 43.4 | 99 | 56.6 | 0.67 (0.47-0.98) | 0.037 |
| | Literate | 0 | 0.0 | 78 | 100.0 | | |
| **Employment** | Yes | 83 | 24.9 | 251 | 75.1 | - | <0.0001 |
| | No | 166 | 100.0 | 0 | 0.0 | | |
| **Monthly Income** | <15000 | 0 | 0.0 | 78 | 100.0 | - | <0.0001 |
| | 15000-30000 | 154 | 47.1 | 173 | 52.9 | | |
| | >30000 | 95 | 100.0 | 0 | 0.0 | | |
| **Number of children** | One | 189 | 100.0 | 0 | 0.0 | - | <0.0001 |
| | Two or more | 6 | 2.3 | 251 | 97.7 | | |
| **Number of ANC Visits** | <3 | 40 | 13.7 | 251 | 86.3 | - | <0.0001 |
| | ≥3 | 209 | 100.0 | 0 | 0.0 | | |
| **Counselled regarding breastfeeding** | Yes | 0 | 0.0 | 202 | 100.0 | - | <0.0001 |
| | No | 249 | 83.6 | 49 | 16.4 | | |
| **Type of delivery** | Normal | 0 | 0.0 | 236 | 100.0 | - | <0.0001 |
| | Assisted instrumental | 0 | 0.0 | 14 | 100.0 | | |
| | Caesarean | 249 | 99.6 | 1 | .4 | | |
| **Sex of baby** | Male | 28 | 10.0 | 251 | 90.0 | - | <0.0001 |
| | Female | 221 | 100.0 | 0 | 0.0 | | |

Women who had two or more children, those counselled regarding breastfeeding during ANC visits, who had had a non-caesarean birth, and who had delivered a male baby knew more about breastfeeding than others (p<0.0001) (Table 5). Furthermore, analysis of factors influencing breastfeeding practices of mothers revealed that a higher proportion of older women were practicing exclusive breastfeeding OR= 3.79 (95% CI=2.56-5.60); p<0.0001). Women belonging to rural areas (65.7%) also practiced exclusive breastfeeding to a greater degree than women who were urban residents (p<0.0001). Family size, family income, and number of ANC visits were inversely associated with good breastfeeding practices (p<0.001). However, the educational status of women, employment, number of children, and counselling regarding breastfeeding were all positively associated with good breastfeeding practices (p<0.0001). Women who had had a caesarean delivery revealed poorer breastfeeding practices compared to those with a vaginal delivery (p<0.0001), while women who had a male new-born child reported better breastfeeding practices than those with a female child (p<0.0001) (Table 6).

## DISCUSSION

The present study conducted among 500 post-natal women who visited obstetrics and gynaecology department of a tertiary hospital in Jabalpur revealed that knowledge of exclusive breastfeeding among mothers was low, but far higher than actual exclusive breastfeeding practices during the first six months of life for the baby (47% versus 15%). A key finding was that several factors were positively related to optimal breastfeeding practices (e.g., women of the older age group, belonging to a rural area, having smaller family size, being literate and employed, being multipara, and being counselled regarding breastfeeding), while several factors were negatively associated with optimal practices (e.g., young women, being illiterate, having had a caesarean delivery, and having had a female child). This study found that 31% mothers-initiated breastfeeding within one hour of birth and only 15% had exclusively breastfed for six months, far below the national average rate of 65% exclusive breastfeeding for six months of birth.[8]

### *Knowledge and perception of breastfeeding*

Regarding knowledge of ideal breastfeeding, this study found that about 55% women believed that breastfeeding is beneficial to the mother's and baby's health, and 61% knew that breastfeeding is better than formula milk. Previous studies have reported that knowledge of exclusive breastfeeding varies between 13 to 70% of

mothers,[9-11] so the present findings support prior research. This study observed several critical misconceptions. First, about 40% women responded that breastfeeding should not be continued during the mother's sickness or while she is taking a medication. A similar proportion of women thought that breastfeeding should be avoided during menstruation. In contrast to this study, Sowmini et al and Bharani et al reported that 90% and 56% mothers, respectively, believed that breastfeeding should continue during the mother's illness; most (87%) mothers also believed it is appropriate to continue breastfeeding during menstruation.[12,13] Further, about 45-50% of participants in the present study believed that breastfeeding should be avoided during a neonate's sickness, such as from fever, cold, diarrhoea, or vomiting. Nearly four in five (79%) of study participants responded that breastfeeding should not continue if the mother is HIV positive. However, Bharani et al reported that 62% of mothers participating in a study in central India would like to continue breastfeeding even if they were living with HIV.[13] The study also observed the misconception that colostrum is too heavy for new-born babies and hard to digest. Some mothers mistakenly thought that colostrum is decayed material containing germs and other impurities. To the knowledge of the study team, other studies have not reported on this belief, but it seems to underscore the relatively large number of misconceptions regarding breastfeeding in this study population. These findings highlight the need for improved knowledge about exclusive breastfeeding among mothers in central India.

***Practices of breastfeeding***

This study found that early initiation of breastfeeding (within one hour of birth) was practiced by less than one-third (31%) of mothers. A study conducted in a rural community in North India found that only 10% of new mothers practiced exclusive breastfeeding for six months of their infant's life.[7] Conversely, Nishimura et al reported that nearly half (48.5%) of mothers were exclusively breastfeeding in a rural community of south India.[14] Relatively low levels of exclusive breastfeeding have been found in neighbouring countries. Another study, conducted in Bangladesh, found that knowledge and practices of exclusive breastfeeding was 34.5% and 27.9% of mothers, respectively.[15] About 38% of the mothers in this study fed colostrum to their baby, while 57% fed various liquids and foods pre-lacteal. This is higher than findings from most other studies; for instance, Sowmini et al and Rajput et al reported that 16% and 27% mothers, respectively, practiced pre-lacteal feeding.[11,12] A similar study conducted in Northern India observed 13% exclusive breastfeeding, with 53% of mothers feeding colostrum and other items pre-lacteal to their babies.[16-18] In other research, Taja et al found that only 13% of mothers had given colostrum to the babies; while studies conducted by Rajput et al and Ghure et al reported that 97% and 89% of mothers, respectively, had given colostrum to their babies.[11,19,20] This body of research underscores the different practices underway in different areas, perhaps due to varying cultural influences, and reinforces the need for educating new mothers on both the benefit of colostrum and the dangers of pre-lacteal foods. Pre-lacteal feeds can be harmful to new-born babies as they can cause infection, sensitize the gut to foreign proteins, and delay the onset of lactation.

***Factors associated with knowledge and practices of breastfeeding***

Mothers belonging to a rural community, being employed, being multigravida, having a previous history of vaginal delivery, and having a male child had better knowledge and practices of exclusive breastfeeding. The study conducted in a rural community in Bangladesh, also found older mothers and those who were employed or belonging to a higher income group were significant predictors of, and showed better knowledge and practices of, exclusive breastfeeding.[15] In contrast, Ketbi et al and Setegn et al reported that employed mothers were less likely to practice exclusive breastfeeding.[21,22] Inadequate comprehensive maternity leave policies, lack of child care facilities at or near to the workplace, rigid time schedules that do not allow for nursing breaks, lack of facilities providing privacy for breast-pumping, and absence of facilities for refrigeration of pumped breast milk were factors that were found to discourage exclusive breastfeeding among working mothers.

This study revealed that mothers who were counselled regarding breastfeeding during ANC visits had higher knowledge as well as better exclusive breastfeeding practices. Similarly, a study conducted in rural Northern India reported that counselling regarding exclusive breastfeeding during ANC visits was a significant predictor of exclusive breastfeeding.[7] The study conducted in South India described earlier also found that a higher age of the mother, higher education, and receiving counselling during ANC visits were the most significant predictors of exclusive breastfeeding.[14,23] This highlights the potential positive effects of educating mothers during ANC visits regarding the benefits of exclusive breastfeeding and early initiation of breastfeeding, as well as training them in techniques of breastfeeding to the new-born.

## CONCLUSION

The findings of the present study underscore the value of providing counselling programs in ANC clinics to promote exclusive breastfeeding among women and family caregivers of mothers and infants. Breastfeeding awareness education programs for pregnant women should be evaluated to ensure that every mother learns the best practices of breastfeeding and its benefits to both mother and infant. More effective community educational approaches are needed, perhaps starting in schools and concentrated in ANC clinics, to prepare expectant mothers to make informed decisions regarding breastfeeding and lactation management. Myths and

misconceptions should be addressed in a culturally sensitive manner, utilizing various modes and channels of communication, so as to promote the development of healthy babies physically and mentally and hence the further reduction of infant morbidity and mortality globally.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee*

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**Cite this article as:** Sahu B, Thakur A, Gupta D, Singh MP, Shrivastava A, Diwakar P, et al. Factors associated with exclusive breastfeeding knowledge and practices in a tertiary hospital of central India. Int J Contemp Pediatr 2024;11:435-43.