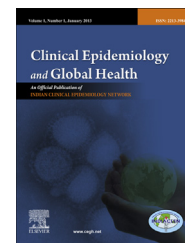


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## Original Article

# Breastfeeding practices for newborns among urban poor in Lucknow, northern India: A prospective follow-up study

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## ABSTRACT

**Objectives:** To describe evidence-based WHO-defined (exclusive, predominant, partial, never breastfed) breastfeeding patterns and the factors associated with them for neonates among urban poor in Lucknow, northern India.

**Methods:** This prospective follow-up study was conducted at two urban public hospitals at Lucknow. Neonates who did not have any morbidity or congenital malformation and were residents of Lucknow were enrolled within 48 h of birth and followed-up once at six weeks at the outpatients' clinic or home to assess established (voluntary) breastfeeding pattern.

**Results:** A total of 1020 neonates were enrolled from March 2007 to April 2008. Follow-up information on established breastfeeding pattern was available for 937 (91.8%) of the enrolled neonates. Rate of exclusive breastfeeding during the neonatal period was 26.4%, predominant breastfeeding was 28.7%, partial breastfeeding was 40.1%, and no breastfeeding was 4.7%. Potentially harmful weaning materials (animals' milk (35.8%), formula feeds (17.6%), water (48.1%) and other substances (teas/herbal drinks/juices/soups/rice water/mashed banana/etc (9.9%)) were being fed to 74% (95% CI: 70.7%–76.3%) of the neonates.

Neonates born to mothers with no formal education, fathers with no formal education, whose mothers had fewer (<3) antenatal care visits, were born in Muslim families, were slum residents or were from low socio-economic status were significantly ( $p < 0.05$ ) less likely to be exclusively breastfed than their counterparts.

**Conclusion:** The proportion of neonates being exclusively breastfed was low at 26.2% (95% CI: 23.7%–29.4%). There is a need for promotion of exclusive breastfeeding for all newborns in urban Lucknow, northern India.

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## 1. Introduction

In the year 2010, an estimated 7.7 million childhood deaths occurred among which 3.1 million occurred in the neonatal period.<sup>1</sup> India contributes to around one-quarter of all neonatal deaths in the World and more than half (52%) of these are estimated to occur due to infections.<sup>2</sup> The state of Uttar Pradesh in India, alone, contributes to about 8% of the global neonatal mortality.

Lack of exclusive breastfeeding for first six months is an important public health concern throughout the developing world.<sup>3</sup> Amidst the limited coverage of interventions promoting breastfeeding and the community's limited knowledge about the benefits of breastfeeding, early and exclusive breastfeeding remains low, both among the institutional births as well as community settings in India.<sup>4–8</sup>

Exclusive breastfeeding has been reported to be significantly protective against infant illnesses as well mortality associated with them.<sup>9–13</sup> Studies have shown that the risk of contracting infections from external sources of feeding gradually diminishes with age<sup>11,13</sup> and thus, protection provided from breastfeeding (particularly exclusive breastfeeding) has been postulated to provide maximum benefit during the neonatal period.<sup>14</sup> Despite this, majority of studies (excluding those which describe early newborn feeding such as, feeding of colostrums, pre-lacteals, time to initiation of breastfeeding) only describe breastfeeding patterns during the infancy and at the best during the first half of infancy, possibly due to World Health Organization's (WHO) recommendations for exclusive breastfeeding at least for the first six months of life. This limits the understanding about the infant breastfeeding practices, particularly during the neonatal period, and the understanding about the critical timing when the external sources of feeding are introduced. There is sparse information on evidence-based WHO-defined (exclusive, predominant, partial, never breastfed) breastfeeding patterns<sup>15</sup> for infants in Uttar Pradesh. This study describes the established neonatal breastfeeding practices (exclusive breastfeeding, predominant breastfeeding, partial breastfeeding and no breastfeeding) and the factors associated with them, among the urban poor in Lucknow, Uttar Pradesh, northern India.

## 2. Methods

### 2.1. Study design

This was a prospective follow-up study of neonates delivered at two public hospitals in urban Lucknow.

### 2.2. Setting

Lucknow is the capital city of Uttar Pradesh, a state in northern India and has a native population of 4.5 million.<sup>16</sup> United Nations Centre for Human Settlements (UNCHS) estimates that more than half of Lucknow's urban population lives in slums.<sup>17</sup> The total literacy rate in Lucknow is 79%<sup>16</sup> and sex ratio is 900 females per thousand males.<sup>18</sup> Institutional delivery rate is 47.3% and antenatal care coverage is 42.3%.<sup>18</sup>

The study was conducted in two public hospitals, an urban Reproductive and Child Health (RCH) center and a district hospital, after obtaining institutional ethical clearance and permission from relevant district authorities. The RCH center is a 12-bedded hospital, with free outpatients' clinic and free normal vaginal delivery care facilities round the clock which caters to mainly slum and low income group population from the adjoining areas. District hospital is a large 150-bedded hospital, which is well equipped in dealing with complicated obstetric cases referred from Lucknow and adjoining areas. While the district hospital has paid as well as free inpatient facilities, for this study we have recruited mothers from the free facility only, which caters to mainly lower income group so that economic status of subjects were similar to those recruited from the RCH center.

### 2.3. Participants and definitions

Neonates were screened within 48 h of delivery on all working days excluding Sundays and holidays. Mothers, most (97.3%) of which were willing to come to the outpatients' department (OPD) with the baby for follow-up on pre-specified dates in the next six weeks for routine immunization were enrolled, after obtaining written informed consent. Excluded were the mothers whose neonates required any resuscitation at birth or presented with any clinically detectable serious congenital malformation. Mothers who were not residents of Lucknow or who were likely to move out of the city within next one month were also excluded.

Neonates were followed-up once at six weeks at the OPD of the respective hospitals or if the mother along with the baby did not turn up in the OPD, home follow-up was done by a trained medical social worker to obtain the same information. At the time of follow-up mothers were probed for established breastfeeding (exclusive, predominant, partial, never breastfed) pattern during the newborn period. Exclusive breastfeeding was defined as feeding of only breastmilk and nothing else, not even water, with the exception of prescribed medicines. Predominant breastfeeding was defined as feeding of breastmilk along with any other non-milk fluids (water/sweetened water/juices/teas/herbal drinks, etc). Neonates who were given breastmilk along with top milk (and/or infant formula) and other non-milk fluids or solids were considered to be partially breastfed. Neonates who received any type of milk or non-milk fluids but never received breastmilk were defined as never breastfed. These definitions were consistent with the WHO's definitions for breastfeeding patterns.<sup>15</sup> A structured and pre-tested questionnaire was used to elaborate the details of feeding pattern.

### 2.4. Data analysis

Per-protocol analysis was performed. We report odds ratios along with and 95% confidence intervals as well as corresponding *p* values. *p* Values <0.05 were considered to be statistically significant. All analyses were conducted using Epi Info 7.

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