Paternal Roles in Breastfeeding in Jakarta, Indonesia: A Mixed-method Approach

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Abstract

We explored paternal roles in timely breastfeeding initiation and exclusive breastfeeding practices in Jakarta using a mixed-methods approach in sequence of focus group discussions (FGDs – phase 1) and a quantitative survey (phase 2). The study population was parents with infants aged below 6 months. Data on paternal roles, maternal attributes, and breastfeeding practices were collected from 43 purposively selected parents in phase 1 and 536 couples in phase 2. FGDs provided insights to finalize the questionnaire for the survey. Nine paternal roles were identified: 1-accompanying the mother during antenatal and postnatal visits, 2-suggesting places for health checkups and delivery, 3-seeking information about child nutrition, 4-accompanying the mother during delivery, 5-facilitating psychological support of the mother, 6-childcare involvement, 7-engagement in childcare discussions, 8-involvement in decisions about infant feeding mode, and 9-enthusiasm for fatherhood. Roles 3 (aOR=1.65; 95%CI=1.07 to 2.54) and 9 (1.59; 1.04-2.44) were positively associated with timely initiation of breastfeeding. Role 8 was positively associated with exclusive breastfeeding (1.69; 1.10-2.60), but roles 2 (0.49; 0.32-0.76) and 5 (0.97; 0.41-0.64) were negatively associated with exclusive breastfeeding. Fathers played roles in breastfeeding practices under study. Fathers need a tailored breastfeeding promotion to stimulate necessary support for breastfeeding mothers.

Keywords: initiation of breastfeeding, exclusive breastfeeding, fathers, mixed-methods approach, Indonesia

INTRODUCTION

The body of literature regarding paternal roles in childcare has been growing. As a result of the shift in the nature of fatherhood from the early 1980s to the present, fathers are expected to be more involved in the care of young children than they used to be. Fathers are expected to be
more nurturing, to develop closer emotional relationships with their children, and to share caregiving-related joys and activities with the mothers [1]. Paternal involvement in caregiving includes their roles in maternal breastfeeding practices. Although fathers are not directly involved in breastfeeding, their opinions and support remain significant [2-4]. Bar-Yam and Darby [5] found that paternal influence on breastfeeding comprises four aspects: decisions about breastfeeding, assistance during first feeding, duration of breastfeeding, and risk factors for bottle feeding. Studies have shown that paternal involvement in the initial method of infant feeding, especially with regard to timely initiation of breastfeeding and exclusive breastfeeding practices, may begin during the prenatal period, at childbirth [6], or during the postpartum period [4].

Breastfeeding is known to have long-term public health benefits [7,8]. The proportion of infants younger than 6 months who are exclusively breastfed in Indonesia in 2018, however, was only 37.3% [9], still below the global target of 41% for that year [10]. Recommended breastfeeding practices are influenced by many factors, such as services provided by the place of delivery and support received by nursing women at home and from their surroundings. Hector et al [11] suggested a conceptual framework of layers of influence on breastfeeding, which includes a family-based component. Nevertheless, quantitative data on the contribution of family-based aspects (e.g., the father) to breastfeeding practices, especially in non-Western settings, have been lacking [12].

Our objective was to explore paternal roles in the timely initiation of breastfeeding and exclusive breastfeeding practices.

MATERIALS AND METHODS

Study Sample

This study, conducted between November 2006 and June 2007, enrolled fathers and mothers living in Jakarta who had infants younger than 6 months old. We included fathers and mothers who were apparently healthy, who were living together, and whose infants were their biological children; the infants were singletons, had been born without complications, and had been breastfed. We excluded families of infants with congenital disorder or low birth weight. The unit of analysis was the family which consisted of father and mother.

Study Design and Data Analyses

In this cross-sectional study, we used a mixed-methods design with sequential strategy [13] in two phases. Phase 1 was a qualitative study, and phase 2 involved a quantitative survey.

Phase 1. In the qualitative phase of the study, focus group discussion (FGD) was used to help finalize the development of the survey instrument to be used in phase 2. Six FGDs were conducted; participants viewed and commented on pretested pictures illustrating the concepts of parenting and paternal roles within the continuum of pregnancy, childbirth, and postpartum. Participants meeting the inclusion and exclusion criteria were approached conveniently with the assistance from local community health volunteers. Each FGD was attended by six to eight purposively selected participants. As much as possible, each FGD was attended by participants with similar socio-economic background, therefore they mostly belonged from the same neighboring area. In addition, the discussion was aided with some pile sorting activities which required group consensus collaboratively. A total of 43 participants attended the FGDs of both sexes with different working statuses, education levels, and parity to
cover richer information from various demographic backgrounds. Each FGD lasted approximately 1.5 to 2 h and was recorded. The first author facilitated all FGDs.

Right after the completion of each FGD, a preliminary analysis was carried out to list all of the important information in a matrix for constant comparison. A trained note-taker transcribed the recorded FGD verbatim. Content analysis for the delineation of specific paternal roles during pregnancy, childbirth, and the postpartum period was performed by the first author and directed toward refining questions and their answer options in the structured questionnaires to be used in phase 2.

**Phase 2.** A cross-sectional survey was designed to identify paternal roles and assess whether they were significant predictors of breastfeeding. The minimum sample size necessary was calculated, as follows:

\[ N = \frac{DEFF \ (Z_{1-\alpha/2})^2 \ p (1-p)}{d^2} \]

\[ = 2 \times 1.645^2 \times 0.43 \times (1-0.43) \]

\[ = 2 \times 2.706 \times 0.43 \times 0.57 \]

\[ = 531 \text{ families} \]

The sample size was based on a formula for proportion estimation [14] to guarantee that 43% of the fathers selected would be involved in discussions about the infant’s nutrition and health (p), according to a previous study [15] with 5% absolute precision (d), a 90% confidence level (\(\alpha = 10\%\)), and design effect of 2 (DEFF) to capture the heterogeneity of the samples in an urban setting. A total of 585 families were interviewed; in 49, only one parent was interviewed (in 33 [67%], the father was not at home; in 13 [27%], it was difficult to make an appointment with the father; in 2 [0.04%], the father was not willing to be interviewed; and in 1 [0.02%], the mother was not at home). Data from the remaining 536 families, consisting of pairs of fathers and mothers, were included in the analysis.

Subjects included in phase 2 were different from those in the FGDs but belonged to the same study population and areas. Because we needed to include as many young infants as possible, we specifically selected subdistricts and villages with the highest numbers of neonatal visits and deliveries, as reported by the local health offices. At the village level, we gathered data from community administrative units that reported the highest numbers of infants born. We included all eligible infants to achieve the number of samples needed. Trained enumerators with education in nutrition collected data in face-to-face interviews with each mother and father separately on different occasions at their respective homes. A pretested structured questionnaire was used to elicit the data, which included sociodemographic characteristics, infant attributes, maternal attributes, paternal roles, exposure to information, and breastfeeding practices.

**Breastfeeding practices**

Timely initiation of breastfeeding was determined by the answer to the question “How long after delivery did you breastfeed your baby?” (1 = yes, if within 1 h after delivery; 0 = no, if more than 1 h after delivery). To determine whether breastfeeding was the exclusive method of feeding the infant, parents were asked about a 24-h food recall (1 = yes, if the infant had received only breast milk in the previous 24 h; 0 = no, if the infant received other sources of milk in the previous 24 h). Current exclusive breastfeeding practice, as
Data Analysis

SPSS software version 16 (SPSS Inc., Chicago, IL) was used for entry, processing, and statistical analyses of quantitative data. Multivariate analyses with logistic regression were performed to assess determinants of breastfeeding practices. The enter method of regression analysis was used in one run to examine the role of all potential determinants of breastfeeding practices. Adjusted odds ratios (aORs) and 95% confidence intervals (CIs) were calculated to determine the association of factors with breastfeeding practices. A p value of less than 0.05 was used to indicate significance.

Paternal roles and other factors, such as maternal attributes, level of exposure to information and health services, and sociodemographic characteristics, were included as the covariates during multivariate analysis. Maternal attributes were maternal employment, experience of lactation-related difficulties, parity, and knowledge of and attitude toward breastfeeding. Types of exposure to information were parental exposure to mass media and interpersonal communication; services received during antenatal care (ANC), delivery, and postnatal care (PNC) from the health service provider (e.g., breastfeeding counseling received during ANC and PNC, rooming-in facilities for the mother and newborn, and whether the infant did or did not receive prelacteal feeding). Sociodemographic covariates included infant’s age, household composition, level of family income, and father’s educational level.

Ethical Clearance

The study procedures were fully approved by the Health Research Ethics Committee of the Faculty of Medicine, Universitas Indonesia (approval no. 225/PT02.FK/ETIK/2006). All participants provided written consent before data collection.
RESULTS

Characteristics of the Study Participants

Table 1 shows the variation in level of education and parity status of the FGD participants. Of the participants in phase 2 (Table 2), the mothers were generally younger than the fathers. Both fathers and mothers were mostly secondary school graduates; 23.3% of the mothers were employed. More than 60% of the subjects had more than one child, and 57.1% lived as a nuclear family. Nearly 90% of the mothers had experienced at least one difficulty with lactation. Approximately one fourth of the mothers demonstrated good knowledge, and slightly fewer demonstrated a favorable attitude. More than half the infants were older than 3 months; the numbers of both sexes were comparable. The frequencies of some breastfeeding practices were suboptimal (Table 2).

| Table 1. Characteristics of the Study Participants in Phase 1 | Percentage (n = 43) |
|-------------------------------------------------------------|---------------------|
| No. of participants                                         |                     |
| Female                                                      | 79.1                |
| Male             | 20.9                |
| Main occupation, by sex                                     |                     |
| Female: housewife                                          | 91.2                |
| Male: private employee                                     | 66.7                |
| Highest education level of all informants                   |                     |
| Primary schooling                                          | 14.0                |
| Secondary schooling                                        | 65.1                |
| College                                                    | 20.9                |
| First-time parents                                         | 51.2                |

| Table 2. Characteristics of the Study Participants Phase 2 | Proportion (n = 536) |
|-----------------------------------------------------------|----------------------|
| Parental socio-demographic characteristics                 | Father | Mother   |
| Median age upon interview (range)                         | 32 (19–55) | 27 (16–48) |
| Highest level of education                                 |         |         |
| Elementary school                                         | 13.6    | 21.1     |
| Secondary school                                          | 68.8    | 67.5     |
| College                                                   | 17.5    | 11.4     |
| Currently employed                                        | 98.1    | 23.3     |
| Average monthly family income above national median       |         | 49.8     |
| First-time parents                                         | 38.2    |          |
| Being in a nuclear family                                  | 57.1    |          |
| Maternal attributes related to infant’s condition and breastfeeding |     |         |
| Experience of lactation difficulties                      | 88.4    |          |
| Good knowledge of breastfeeding (maternal)                 | 27.4    |          |
| Favorable attitude toward breastfeeding (maternal)         | 23.1    |          |
| Infants younger than 3 months                             | 43.5    |          |
| Female infants                                            | 49.8    |          |
| Infant feeding practices:                                 |         |          |
| Breastfed timely (within an hour after birth)             | 31.7    |          |
| Received prelacteal feeding                               | 65.3    |          |
| Exclusively breastfed at time of interview                | 29.1    |          |
| No longer breastfed                                       | 9.1     |          |
Phase 1 - Insights from the FGDs

The FGDs revealed some insights about the concept of fathering: specifically, the quality of the fathers’ support of the mothers during pregnancy, fathers’ involvement during childbirth, forms of father’s psychological support provided that were important to mothers, and participation as the mothers’ discussion partners about childcare in general. These findings were incorporated to improve the structured questionnaire used in phase 2.

Table 3. Patterns and Proportions of Paternal Behaviors

| Paternal Behavioral Patterns | Eigenvalue | % of Variance | Loadings | % of Participants |
|-----------------------------|------------|---------------|----------|------------------|
| Role 1: Accompanying mothers during ANC and immunization/PNC | 3.148 | 15.739 | 0.870 | 84.5 |
| • Accompanying mother during ANC | — | — | — | — |
| • Frequently accompanying mother for ANC | — | — | 0.800 | 69.2 |
| • Entering the examination room for ANC | — | — | 0.735 | 64.9 |
| • Accompanying mother during PNC | — | — | 0.513 | 56.0 |
| Role 2: Suggesting a place for health checkups and delivery | 1.734 | 8.669 | — | — |
| • Suggesting a place for ANC | — | — | 0.790 | 89.0 |
| • Suggesting a place for delivery | — | — | 0.790 | 87.1 |
| • Suggesting a place for PNC | — | — | 0.653 | 85.4 |
| Role 3: Seeking information about child nutrition | 1.526 | 7.631 | — | — |
| • Currently searching for information about breastfeeding and infant feeding | — | — | 0.859 | 43.1 |
| • Ever searching/discussing information about breastfeeding and infant feeding | — | — | 0.821 | 58.8 |
| Role 4: Accompanying mothers during delivery | 1.413 | 7.064 | — | — |
| • Accompanying mothers during delivery | — | — | 0.883 | 81.7 |
| • Entering the delivery room | — | — | 0.856 | 58.6 |
| Role 5: Facilitating psychological support for breastfeeding | 1.191 | 5.953 | — | — |
| • Providing help to ease mother's difficulties | — | — | 0.775 | 82.6 |
| • Noticing that wife is under stress | — | — | 0.569 | 89.2 |
| • Having suggested breastfeeding since pregnancy | — | — | 0.501 | 85.3 |
| Role 6: Active involvement in childcare | 1.128 | 5.638 | — | — |
| • Spending time with the child | — | — | 0.805 | 35.6 |
| • Involvement in several childcare activities | — | — | 0.532 | 56.5 |
| Role 7: Involvement in discussions about child’s well-being | 1.062 | 5.308 | — | — |
| • Discussing infant health/nutrition with the mother | — | — | 0.528 | 30.4 |
| Role 8: Facilitating the decision and initiation of breastfeeding | 1.053 | 5.267 | — | — |
| • Involvement in decision regarding infant feeding | — | — | 0.739 | 23.1 |
| • Encouraging timely initiation of breastfeeding | — | — | 0.668 | 79.5 |
| Role 9: Enthusiasm for fatherhood | 1.004 | 5.020 | — | — |
| • Satisfaction with the marital relationship after having a child | — | — | 0.741 | 60.3 |

Extraction method: principal component analysis. Rotation method: varimax with Kaiser normalization. Rotation converged in 32 iterations. ANC: antenatal care; PNC: postnatal care.

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Phase 2
Paternal Behaviors during the Continuum of ANC, Delivery, and PNC

The range of father’s behavioral supports under studied in phase 2 is presented in Table 3. Nine major paternal behaviors were identified, they were 1) accompanying the mother during antenatal and postnatal visits, 2) suggesting places for health checkups and delivery, 3) seeking information about child nutrition, 4) accompanying the mother during delivery, 5) facilitating psychological support of the mother, 6) childcare involvement, 7) engagement in childcare discussions, 8) involvement in decisions about infant feeding mode, and 9) enthusiasm for fatherhood. Table 3 also shows that majority of the fathers displayed many positive behaviors with regard to pregnancy and childcare: accompanying mothers during ANC and delivery; suggesting places for ANC, delivery, and PNC; suggesting breastfeeding; and providing psychological support for the mothers. However, performance of other behaviors was less optimal: accompanying mothers to the examination room during health checkups and delivery; involvement in acquiring information and discussion about proper infant feeding; involvement in some childcare activities; and enthusiasm for fatherhood. In addition, only 23.1% of the fathers were involved in decisions regarding methods of feeding the child.

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Table 4. Results of Logistic Regression Analysis for Factors Associated with Timely Initiation of Breastfeeding

| Factor                                      | Odds ratio (OR) | 95% Confidence Interval | p     |
|---------------------------------------------|-----------------|--------------------------|-------|
| Paternal behavioral pattern                 |                 |                          |       |
| Accompanying mother during ANC and PNC     | 0.842           | 0.539 - 1.317            | 0.512 |
| Suggesting place for health checks and delivery | 1.281           | 0.831 - 1.974            | 0.220 |
| Seeking information about child nutrition* | 1.648           | 1.068 - 2.544            | 0.014 |
| Accompanying mother during delivery        | 1.060           | 0.693 - 1.622            | 0.321 |
| Providing psychological support for breastfeeding | 1.524           | 0.974 - 2.384            | 0.502 |
| Involvement in childcare                   | 1.318           | 0.863 - 2.013            | 0.347 |
| Involvement in talks about child’s well-being | 1.177           | 0.771 - 1.797            | 0.331 |
| Involvement in decision about method of feeding infant* | 0.633           | 0.413 - 0.970            | 0.031 |
| Enthusiasm about fatherhood*               | 1.590           | 1.036 - 2.440            | 0.026 |
| Maternal attributes                        |                 |                          |       |
| Being a housewife                          | 0.939           | 0.505 - 1.747            | 0.290 |
| Experiencing lactation difficulties        | 1.115           | 0.578 - 2.151            | 0.497 |
| Being first-time mother                    | 0.644           | 0.402 - 1.032            | 0.451 |
| Having good knowledge about breastfeeding  | 0.901           | 0.522 - 1.554            | 0.328 |
| Having positive attitude toward breastfeeding | 1.075           | 0.636 - 1.819            | 0.800 |
| Exposure to information about breastfeeding|                 |                          |       |
| Father’s                                   | 0.854           | 0.538 - 1.354            | 0.405 |
| Mother’s                                   | 0.900           | 0.575 - 1.410            | 0.248 |
| Support from health care facilities*       | 8.644           | 5.207 - 14.351           | 0.000 |
| Sociodemographic characteristics           |                 |                          |       |
| Having younger infant                      | 0.762           | 0.496 - 1.171            | 0.351 |
| Living as a nuclear family                 | 0.971           | 0.632 - 1.494            | 0.423 |
| Good family income level                   | 0.824           | 0.486 - 1.398            | 0.222 |
| Father’s high education level              | 0.552           | 0.287 - 1.063            | 0.199 |
| Constant                                   | 0.232           |                         |       |

*p<0.05
ANC, antenatal care; PNC, postnatal care.

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Paternal Roles in Timely Breastfeeding Initiation

As presented in Table 4, timely initiation of breastfeeding was associated with seeking information about child nutrition (aOR, 1.65; 95% CI, 1.07 to 2.54) and enthusiasm for fatherhood (1.59; 1.04-2.44), respectively. Paternal involvement in decisions regarding infant feeding was negatively associated with timely initiation of breastfeeding (0.63; 0.41-0.97). Another significant positive factor for timely initiation of breastfeeding was the use of supportive health services (8.64; 5.21-14.35).

Table 5. Results of Logistic Regression Analysis for Factors Associated with Exclusive Breastfeeding

| Factor                                      | Odds ratio (OR) | 95% Confidence Interval | p    |
|---------------------------------------------|-----------------|--------------------------|------|
| **Paternal behavioral pattern**             |                 |                          |      |
| Accompanying mother during ANC and PNC      | 0.740           | 0.475 to 1.155           | 0.311|
| Suggesting place for health checks and delivery* | 0.491           | 0.317 to 0.760           | 0.023|
| Seeking information about child nutrition   | 1.036           | 0.673 to 1.594           | 0.766|
| Accompanying mother during delivery         | 0.810           | 0.529 to 1.240           | 0.238|
| Providing psychological support for breastfeeding* | 0.639           | 0.410 to 0.997           | 0.033|
| Involvement in childcare                    | 1.006           | 0.658 to 1.538           | 0.655|
| Involvement in talks about child’s well-being | 1.416           | 0.929 to 2.157           | 0.463|
| Involvement in decision about method of feeding infant* | 1.686           | 1.095 to 2.597           | 0.017|
| Enthusiasm about fatherhood                | 0.917           | 0.598 to 1.407           | 0.230|
| **Maternal attributes**                     |                 |                          |      |
| Being a housewife                          | 1.712           | 0.907 to 3.233           | 0.207|
| Experiencing lactation difficulties         | 1.534           | 0.800 to 2.942           | 0.156|
| Being first-time mother*                    | 0.544           | 0.337 to 0.877           | 0.006|
| Having good knowledge about breastfeeding*  | 1.707           | 1.010 to 2.887           | 0.031|
| Having positive attitude toward breastfeeding* | 1.901           | 1.148 to 3.148           | 0.045|
| **Exposure to information about breastfeeding** |             |                          |      |
| Father's                                   | 0.938           | 0.592 to 1.488           | 0.751|
| Mother's                                   | 1.358           | 0.872 to 2.114           | 0.548|
| Support from health care facilities*        | 1.732           | 1.038 to 2.891           | 0.025|
| **Sociodemographic characteristics**        |                 |                          |      |
| Having younger infant*                      | 3.364           | 2.195 to 5.156           | 0.012|
| Living as a nuclear family                 | 1.334           | 0.862 to 2.063           | 0.561|
| Good family income level                   | 0.824           | 0.491 to 1.382           | 0.244|
| Father’s high education level               | 1.091           | 0.592 to 2.012           | 0.321|
| Constant                                   | 0.135           |                          |      |

*p<0.05

ANC, antenatal care; PNC, postnatal care.

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**Paternal Roles in Exclusive Breastfeeding**

On the other hand, paternal involvement in decisions regarding method of feeding the infants was positively associated with exclusive breastfeeding (1.69; 1.10-2.60). Exclusive breastfeeding was negatively associated with both paternal involvement in suggesting a place for health checkups and delivery (0.49; 0.32-0.76) and provision of psychological support (0.97; 0.41-0.64), respectively. In addition, first-time mothers were less likely to practice exclusive breastfeeding (0.54; 0.34-0.89) than were those who had sufficient knowledge about breastfeeding (1.71; 1.01-2.89) and a favorable attitude toward breastfeeding (1.90; 1.15-3.15). Furthermore, those who received breastfeeding support services from the place of delivery (1.73; 1.04-2.89) and had infants younger than 3 months (3.36; 2.20-5.16) were more likely to breastfeed exclusively (Table 5).

**DISCUSSION**

**Nine Paternal Behaviors during the Continuum of ANC, Delivery, and PNC in a Non-western Setting**

Our study is among the first in which an explorative mixed-methods approach was used, thereby allowing for the identification of contextual perspectives from subjects residing in a non-Western setting such as Indonesia on paternal roles towards breastfeeding. In phase 1 of this study, as found in another study [18], the ideal involvement of fathers entailed their being present during ANC, childbirth, and PNC and their being accessible for discussions about childcare; available to help with childcare; understanding of mothers’ concerns, and willing to learn about fatherhood.

In this study, we identified nine major behaviors of fathers from an urban setting in Indonesia. In a study of paternal roles with a similar but wider scope that was performed two decades ago, Bar-Yam and Darby [5] suggested that fathers’ influence on breastfeeding comprises four aspects: breastfeeding decision, assistance at first feeding, duration of breastfeeding, and risk factors for bottle feeding. The design of our study, enabled us to identify more specific paternal roles during the continuum of pregnancy, delivery, and postpartum which were 1) accompanying the mother during antenatal and postnatal visits, 2) suggesting places for health checkups and delivery, 3) seeking information about child nutrition, 4) accompanying the mother during delivery, 5) facilitating psychological support of the mother, 6) childcare involvement, 7) engagement in childcare discussions, 8) involvement in decisions about infant feeding mode, and 9) enthusiasm for fatherhood.

Although other similar studies have focused mostly on information about fathers alone [12], phase 2 of the present study included an exploration of other factors (i.e., maternal attributes, sociodemographic characteristics, and exposure to information) known to contribute to breastfeeding practice overall. Thus after we controlled for other contributing factors, this study showed evidence of both positive and negative associations between paternal behaviors and breastfeeding practices under study.

**Two Major Environments Mattered in the Present Study**

Our multivariate analyses highlighted the importance of two major environments (health care facility and home), which suggested that support from different environments was likely to play stronger roles in early initiation of breastfeeding and exclusive breastfeeding [11]. Supportive service from health care facilities was 8.6 times more likely to facilitate timely initiation of breastfeeding. These included services received during antenatal care (ANC), delivery, and postnatal care (PNC) from the health care facilities.
service provider such as breastfeeding counseling during ANC and PNC, rooming-in facilities for the mother and newborn, and infant did not receive prelacteal feeding). On the other hand, both fathers’ seeking information about child nutrition and enthusiasm for fatherhood were positively associated with timely initiation of breastfeeding. However, paternal involvement in decisions regarding infant feeding was negatively associated with timely initiation of breastfeeding. A previous study showed that parents often receive a variety of information about infant feeding. Appropriate information is a prerequisite for correct behaviors [4]. Thus fathers clearly need more appropriate and specific information so as to support initiation of breastfeeding [16].

After discharge from the health care facility, the setting of the breastfeeding dyad (mother-infant) becomes the home. Parenting roles, infant care (including breastfeeding), and marital roles are all amplified when new parents arrive home. At this stage, the breastfeeding triad (mother-father-infant) plays more roles. As the family member closest to the breastfeeding dyad, fathers are expected to become increasingly involved in a wide range of activities [19]. We also discovered that paternal involvement in decisions regarding method of feeding infants was positively associated with exclusive breastfeeding, but paternal involvement in suggesting a place for health checkups/delivery and father’s provision of psychological support were negatively associated with exclusive breastfeeding. The reasons for these negative associations were less clear. We speculate that the passivity of fathers’ participation during any contacts with health personnel (data not shown) may have been related to these negative associations and resulted in their lack of knowledge about breastfeeding. As previously discussed with regard to initiation of breastfeeding, support from the health care facility was also found to be strongly associated with exclusive breastfeeding, but the aOR was lower than that of timely initiation of breastfeeding.

### Reasons for Being an Involved Father

Because men are typically less affiliative than women, they tend to be less physically or emotionally involved in parenting, a critical issue, throughout their lives as fathers. Moreover, having been brought up during a time in which men were less involved in birth and childrearing, some men probably lacked a good role model for fatherhood. Such conditions may have resulted partly from societal gender norms [20]. In an exploration of the culture of fatherhood through the analysis of a yearlong Canadian newspaper series dedicated to family issues, Wall and Arnold [1] found that through representations of parental guilt, parental responsibility, work–family balance, and hegemonic masculinity, mothers continue to be positioned as the primary parents. Fathers are viewed as part-time, secondary parents whose relationship with children remains less important than mothers’ [20]. However, nursing women perceive the opinions, views, and support of their partners to be helpful in sustaining breastfeeding [2]. Men want to participate in parenting, but they need information and support [21]. On the other hand, most men have fewer support networks and therefore rely primarily on their partners for such support [16].

The most modifiable factor found in this study was the lack of knowledge about breastfeeding. As we found, only about half of the fathers were actively seeking information. We defined seeking information as not merely searching for information but also discussing and using the information [22]. Support from relevant surroundings for the breastfeeding triad is therefore imperative. Studies have confirmed the role of health care facilities
as the key point of contact between health care providers and the breastfeeding triad and in providing them with appropriate and adequate support for sustaining breastfeeding in Indonesia [23-25], as well as in the Lao People’s Democratic Republic [26] and Brunei Darussalam [27]. In addition, family support, especially from the husband, is an important predictor for adherence to a regimen of iron folic acid supplementation, which suggests the important roles of fathers in maternal and child nutrition programs in Indonesia [28].

Our study had some limitations. The 24-h food recall used to assess the exclusive breastfeeding practice may not have accurately reflected the actual breastfeeding practices. In addition, the cross-sectional study design used in this study limits our conclusion on understanding the causal relationship between paternal roles and breastfeeding practices.

CONCLUSIONS
The present study showed that fathers’ roles were both positively and negatively associated with breastfeeding practices under study. Paternal involvement in decisions regarding infant feeding is central to their other roles for improved breastfeeding practices, provided that they are motivated to seek for proper information and use them. Fathers also need adequate support to sustain their supports throughout the first 6 months postpartum. Breastfeeding promotion needs to be further tailored to equip fathers with necessary support for the breastfeeding mothers.

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REFERENCES
1. Wall G, Arnold S. How Involved Fathering? An Exploration of The Contemporary Culture of Fatherhood. Gend Soc. 2007; 21: 508-27.
2. Hunter T, Cattelona G. Breastfeeding Initiation and Duration in First-time Mothers: Exploring The Impact of Father Involvement in The Early Post-partum Period. Health Promot Perspect. 2014; 4: 132-6.
3. Nickerson LE, Sykes AC, Fung TT. Mothers’ Experience of Fathers’ Support for Breastfeeding. Public Health Nutr. 2012; 15: 1780-7.
4. Rempel LA, Rempel JK. The Breastfeeding Team: The Role of Involved Fathers in the Breastfeeding Family. J Hum Lact. 2011; 27: 115-21.
5. Bar-Yam NB, Darby L. Fathers and Breastfeeding: A Review of Literature. J Hum Lact. 1997; 13: 45-50.
6. Bhatta DN. Involvement of Males in Antenatal Care, Birth Preparedness, Exclusive Breast Feeding and Immunizations for Children in Kathmandu, Nepal. BMC Pregnancy Childbirth. 2013; 13: 14.

DOI: http://dx.doi.org/10.21776/ub.ijhn.2020.007.01.4
7. Binns C, Lee MK, Low WY. The Long-term Public Health Benefits of Breastfeeding. Asia Pac J Public Health. 2016; 28: 7-14.
8. Chomtho S. Breastfeeding to Prevent Double Burden of Malnutrition. Southeast Asian J Trop Med Public Health. 2014; 45: 132-6.
9. Ministry of Health, Republic of Indonesia. Key Findings of National Basic Health Survey 2018 (Hasil Utama Riskesdas 2018). Badan Penelitian dan Pengembangan Kesehatan. Published October 2018. Accessed December 10, 2018. Available from: http://www.depkes.go.id/resources/download/info-terkini/materi_rakorpop_2018/Hasil%20Riskesdas%202018.pdf
10. Development Initiatives. 2018 Global Nutrition Report: Shining A Light to Spur Action on Nutrition. Bristol, UK: Development Initiatives; 2018.
11. Hector D, King L, Webb K. Factors Affecting Breastfeeding Practices: Applying A Conceptual Framework. N S W Public Health Bull. 2005; 16: 52-5.
12. Februhartanty J. Desk Review: Studies on Factors Affecting Breastfeeding Practice in Indonesia. Jakarta: UNICEF Indonesia; 2011.
13. Tashakkori A, Teddlie C. Mixed Methodology: Combining Qualitative and Quantitative Approaches. Applied Social Research Methods Series, Volume 46. California: SAGE Publications Inc., 1998.
14. Lwanga SK, Lemeshow S. Sample Size Determination in Health Studies: A Practical Manual. Geneva: World Health Organization; 1991.
15. Jakarta Provincial Health Office. Rapid Survey on Exclusive Breastfeeding Rate in DKI Jakarta Province. Jakarta: Jakarta Provincial Health Office; 2005.
16. Yourkavitch J, Alvey J, Prosnitz D, Thomas J. Engaging Men to Promote and Support Exclusive Breastfeeding: A Pooled Analysis of USAID’s Child Survival and Health Grants Program, 2003–2013. J Health Pop Nutr. 2017; 36: 43.
17. Field A. Discovering Statistics using IBM SPSS Statistics. London: SAGE Publications Ltd; 2013. 453-55.
18. Alio AP, Lewis CA, Scarborough K, Harris K, Fiscella K. A Community Perspective on The Role of Fathers During Pregnancy: A Qualitative Study. BMC Pregnancy Childbirth. 2013; 13: 60. Accessed May 13, 2019. Available from: http://www.biomedcentral.com/1471-2393/13/60.
19. Falceto OG, Giugliani ERJ, Fernades CLC. Couples Relationships and Breastfeeding: Is here an Association? J Hum Lact. 2004; 19: 2046-55.
20. Lamb ME (ed). The Role of the Father in Child Development 5th edition. Canada: John Wiley & Sons, Inc.; 2010. 323-4.
21. Brown A, Davies R. Fathers’ Experiences of Supporting Breastfeeding: Challenges for Breastfeeding Promotion and Education. Matern Child Nutr. 2014; 10: 510-26.
22. Case DO. Looking for Information: A Survey of Research on Information Seeking, Needs and Behavior. Bingley: Emerald Group Publishing, 2012. In: Khan A and Nisa HU. Gender Difference in Information Seeking of Research Scholars at University of Sargodha, Pakistan. Library Philosophy and Practice (e-journal), 2017: 1597. Accessed January 25, 2019. Available from: http://digitalcommons.unl.edu/libphilp-rac/1597.
23. TitaIy CR, Loh PC, Prasetyo S, Ariawan I, Shankar AH. Socio-
economic Factors and Use of Maternal Health Services are Associated with Delayed Initiation and Non-exclusive Breastfeeding in Indonesia: Secondary Analysis of Indonesia Demographic and Health Surveys 2002/2003 and 2007. Asia Pac J Clin Nutr. 2014; 23: 91-104.

24. Destriatania S, Februhartanty J, Fatmah. Sikap ayah dan jumlah anak serta praktik ASI Eksklusif. Jurnal KESMAS. 2013; 9: 229-34.

25. Februhartanty J, Wibowo Y, Fahmida U, Roshita A. Profiles of eight working mothers who practiced exclusive breastfeeding in Depok, Indonesia: A case report. Breastfeeding Medicine. 2012; 7: 54-9.

26. Phongsavath K. Improvement in Exclusive Breastfeeding in Lao PDR: Role of Communication. Southeast Asian J Trop Med Public Health 2014; 45: 129-31.

27. Taib R. Breastfeeding Initiative in Brunei Darussalam. Southeast Asian J Trop Med Public Health. 2014; 45: 123-8.

28. Wiradnyani LAA, Shankar AH, Khusun H, Achadi EL, Ocviyanti D. Role of Family Support and Women’s Knowledge on Pregnancy-related Risks in Adherence to Maternal Iron–folic Acid Supplementation in Indonesia. Public Health Nutr. 2016; 19: 2818-28

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