Gaps between Breastfeeding Awareness and Practices in Vietnamese Mothers Result from Inadequate Support in Health Facilities and Social Norms1,2

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Abstract

Background: Although gaps between breastfeeding awareness and practices have been described, determinants of the gaps have not been well investigated.

Objective: The aim of this study was to examine determinants of the gap between breastfeeding awareness and practices in Vietnam.

Methods: We interviewed 10,834 mothers with children aged 0–23 mo in 11 of 63 Vietnam provinces about breastfeeding practices, awareness, barriers, and support. A gap between awareness and practice was defined when a mother was aware of the benefit but did not perform the corresponding practice. Logistic regression models were used to examine determinants associated with the gaps.

Results: The percentages of mothers with an awareness-practice gap for early initiation of breastfeeding, exclusive breastfeeding (EBF), continued breastfeeding at 1 y, and continued breastfeeding at 2 y were 34%, 66%, 19%, and 49%, respectively. Mothers had a lower awareness-practice gap in early initiation of breastfeeding if they received breastfeeding support from a health worker during pregnancy (OR: 0.79; 95% CI: 0.69, 0.92) or at birth (OR: 0.73; 95% CI: 0.60, 0.88). This gap was more likely to occur among those with a natural birth in the hospital (OR: 1.92; 95% CI: 1.50, 2.45), cesarean delivery (OR: 28.95; 95% CI: 20.1, 44.7), and breastfeeding difficulties (OR: 1.52; 95% CI: 1.21, 1.90). For EBF, the gap was lower among mothers with a higher social norm (OR: 0.20; 95% CI: 0.15, 0.27) when they received breastfeeding support at birth by a health worker (OR: 0.82; 95% CI: 0.70, 0.95). In addition, intention of feeding infant formula at birth and having breastfeeding difficulties were associated with an increased gap in EBF (ORs 95% CIs): 1.28 (1.08, 1.51) and 1.29 (1.06, 1.57), respectively). For continued breastfeeding at 1 y, social norms were associated with a lower gap (OR: 0.61; 95% CI: 0.41, 0.91), whereas breastfeeding difficulties were associated with an increased gap (OR: 1.70; 95% CI: 1.12, 2.57).


Introduction

Optimal breastfeeding and complementary feeding practices are essential for improving nutrition status and promoting health (1–3). Interventions targeting breastfeeding and complementary feeding practices are among the globally recommended core package of nutrition interventions (4,5). Despite many efforts in the past decades (6), breastfeeding practices in developing countries remain suboptimal (7,8). In Southeast and East Asia in the early 2000s, the prevalence of early initiation of breastfeeding (starting breastfeeding within 1 h after birth) ranged from 32% in Indonesia to 46% in Vietnam (7). Between 1995 and 2010 in Asia, there was only a 3 percentage point increase in the prevalence of exclusive breastfeeding (EBF)6, an increase of 0.2 percentage points/y (8). In Vietnam, although almost all infants were ever breast-fed, EBF prevalence was from 12% to 20% in different surveys from 2000 to 2010 (7,9,10). These rates are lower than the average rate in developing countries (39%) and in most neighboring...
Southeast Asian countries (29–45%) (7,8). As in other countries (7,8), EBF declines substantially after the first month in Vietnam (10,11). Continued breastfeeding at 2 y ranged from 27% in Vietnam to 67% in Myanmar and Mongolia (7).

The determinants of breastfeeding behaviors in developing countries are complex (12,13). Key determinants are maternal choices and opportunities to act on these choices, which are associated with the access to information and support for breastfeeding; familial, medical, and cultural attitudes and norms; and sociodemographic characteristics (12). In several countries, the prevalence of early initiation of breastfeeding was lower among mothers who had a cesarean delivery and with a low-birthweight newborn (14,15). EBF prevalence was higher among those who received postnatal care by a health worker in Sri Lanka (14) or breastfeeding support by family members in Malaysia and China (16,17).

Poor breastfeeding practices may be due to lack of awareness or lack of a supportive environment, each of which requires different intervention strategies. Understanding determinants of the gap between breastfeeding awareness and practices is critical to answering this question, but few studies have examined this. This study was conducted to examine determinants of the gap between breastfeeding awareness and practices in Vietnam on the basis of a conceptual framework describing possible relations (Fig. 1). Specific aims were as follows: 1) to characterize current breastfeeding practices and 2) to examine determinants of the gap between breastfeeding awareness and practices. We hypothesized that the gap between awareness and practice was positively associated with barriers to breastfeeding (e.g., medical complications at birth and perceived breastfeeding difficulty) and negatively associated with support (e.g., breastfeeding support during pregnancy and at birth, social norms, and mass media exposure).

**Participants and Methods**

**Participants.** Data were drawn from a baseline household survey conducted in July and August 2011 under Alive & Thrive (A&T), an initiative to reduce undernutrition and death caused by suboptimal infant and young child feeding practices in Vietnam, Bangladesh, and Ethiopia. In Vietnam, A&T works intensively in 15 provinces with a franchise model to deliver high-quality infant and young child feeding counseling services in health facilities. Four of these provinces were selected for the cluster-randomized evaluation study (with the baseline survey in 2010) (18). We also conducted a less intensive survey in the remaining 11 provinces to provide information for planning and tracking of progress for each province (19).

Breastfeeding practices were assessed by using 4 indicators recommended by the WHO: 1) early initiation of breastfeeding, defined as the proportion of children born in the past 24 mo who were placed at the breast within 1 h of birth; 2) EBF <6 mo, defined as the proportion of infants 0–5 mo of age who were fed exclusively with breast milk in the previous 24 h (no foods, no liquids, with the exception of medications such as drops and syrups); 3) continued breastfeeding at 1 y, defined as the proportion of children 12–15 mo of age who are fed breast milk; and 4) continued breastfeeding at 2 y, defined as the proportion of children 20–23 mo of age who are fed breast milk (20).

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Assessment of outcomes. The gap between breastfeeding awareness and practice was defined as a mother knowing about the recommended practice but not performing the corresponding behavior. We focused on the gaps between awareness and practices in early initiation of breastfeeding, EBF <6 mo, continued breastfeeding at 1 y, and continued breastfeeding at 2 y.

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Maternal breastfeeding awareness was assessed on the basis of mothers’ answers to 3 questions related to breastfeeding: 1) “How long after birth should a newborn start breastfeeding?” (correct answer: 1 h after delivery); 2) “Until what month should a mother give her infant only breast milk and no other foods, water, or infant formula?” (correct answer: 6 mo); and 3) “Until what month should a mother continue to breastfeed?” (correct answer for continued breastfeeding at 1 y is 12 mo and correct answer for continued breastfeeding at 2 y is 20 mo).
Assessment of breastfeeding support and barriers. Mothers were interviewed about their experience with their youngest child to assess if they received breastfeeding support by a health worker (e.g., nurse, doctor, or village health worker) and by a family member, relative, or friend during pregnancy and 3 d after birth. Barriers to breastfeeding included medical complications (indicated by delivery in a tertiary hospital or cesarean delivery), intention of feeding infant formula at birth (indicated by bringing infant formula to the delivery facility), and report of a breastfeeding difficulty. Mothers were also interviewed about their exposure to breastfeeding information and infant formula advertisements on television during the previous 30 d. EBF social norms were assessed by the question “Most people whose opinions are important to me think that I should feed my infant only breast milk, and no other food or water, for the first 6 mo” [scale from 1 (strongly disagree) to 6 (strongly agree); recoded to agree and disagree for the analysis].

Assessment of covariates. Maternal characteristics such as age, ethnicity (Kinh, a major ethnicity vs. other minority ethnicities), education (>9 vs. ≤9 y), and place of residency (living in a city or district town vs. rural commune) were collected. Principal components analysis was applied to create an economic score on the basis of housing condition and assets (21). The score derived from the first principal component (which explained 53% of the variance) was used to categorize subjects into quintiles of socioeconomic status.

Statistical analysis. Data were double-entered into EpiData 3.1 (The EpiData Association); inconsistent values were validated by using original hard-copy questionnaires (19). Analysis was performed by using survey commands in Stata 11.2. We used data from mothers with children 0–23 mo old for overall breastfeeding pattern (n = 10,834), children 0–5 mo old for early breastfeeding and EBF (n = 6068), children 12–15 mo old for continued breastfeeding at 1 y (n = 953), and children 20–23 mo old for continued breastfeeding at 2 y (n = 1040). We compared the mothers who were aware of the benefit with mothers who performed the practice (e.g., early initiation of breastfeeding, EBF, continued breastfeeding at 1 y, and continued breastfeeding at 2 y) by using a 2-sided chi-square test. Furthermore, we compared the mothers who received breastfeeding advice/support from a health worker with those who received it from an untrained person (e.g., by a family member, relative, or friend) by using a 2-sided chi-square test. Logistic regression was used to examine associations of determinants with the gap between awareness and practice, adjusted for child age and nutritional status (weight-for-age Z-score); maternal age, ethnicity, and schooling; household economic status; and place of residency. The logistic regression analyses used a binary dependent variable that differentiated among those expressing awareness: those not practicing (i.e., gap) and practicing (i.e., no gap). Associations were expressed as the exponent of the regression coefficients, interpreted as ORs.

Results
In this sample, 92% of the mothers belonged to the Kinh ethnicity, and 83% of them lived in a rural area. Forty percent of the mothers were farmers, and 40% had ≥9 y of education. With regard to breastfeeding pattern (Fig. 2), EBF prevalence decreased dramatically from ~30% in the first 2 mo to ~10% in 4–5 mo, mainly due to the early introduction of plain water and other milk/formula.

The percentage of mothers who were aware of the benefit but who did not perform the corresponding practice (the gap) was 34% for early initiation of breastfeeding, 66% for EBF, 19% for continued breastfeeding at 1 y, and 49% for continued breastfeeding at 2 y (Fig. 3). Mothers had good awareness about early initiation of breastfeeding[79%, which equals the values of the third (34%) and fourth (45%) bars shown in Fig. 3], but fewer mothers performed these practices [49%, which equals the value of the second (4%) and fourth (45%) bars in Fig. 3; P < 0.05]. Similarly, the percentage of mothers who were aware of the benefit of EBF (85%), continued breastfeeding at 1 y (97%), and continued breastfeeding at 2 y (65%) was higher than the corresponding practice of 20%, 80%, and 18% (P < 0.05 for the comparison between awareness and practice).

The EBF gap between awareness and practice was smaller among those who perceived EBF as the social norm (OR: 0.20; 95% CI: 0.15, 0.27) and being supported by health workers at birth (OR: 0.82; 95% CI: 0.70, 0.95) but was larger with intention of feeding infant formula at birth (OR: 1.28; 95% CI: 1.08, 1.51) and breastfeeding difficulties (OR: 1.29; 95% CI: 1.06, 1.57; Table 1). Mothers had a lower awareness-practice gap in early initiation of breastfeeding if they received breastfeeding support from a health worker during pregnancy (OR: 0.79; 95% CI: 0.69, 0.92) or at birth (OR: 0.73; 95% CI: 0.60, 0.88).

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Discussion
Although awareness among mothers about optimal breastfeeding practices was good, the prevalence of early initiation of...
breastfeeding, EBF, and continued breastfeeding at 2 y in Vietnam was low. The gap between awareness and practice for early initiation of breastfeeding was smaller when mothers received breastfeeding support by a health worker but was larger with medical complications, breastfeeding difficulty, and intention of feeding infant formula at birth. The awareness-practice gap for EBF was smaller among women who believed that EBF was the social norm.

Mothers in this sample had a good understanding of the benefits of appropriate breastfeeding practices. There are several possible reasons. First, young women in Vietnam have a high literacy rate (96%) (22), contribute to household income, and are decision makers in the family (22–24). With these advantages, they are more likely to access health material and mass media. Second, breastfeeding materials are accessible to mothers in Vietnam via books, magazines, newspapers, television, radio, computers, and handheld devices. Third, Vietnam has a reliable health care network from central to village levels, and health education is 1 of the components of National Nutrition Target Programs (25). Fourth, in the past 35 y, Vietnam central and local governments, institutions, and organizations have shown a strong commitment to the improvement of nutrition and health status of the Vietnamese (25,26).

The large gap between breastfeeding awareness and practices has implications for planning and executing effective programs. For this discussion, we focus on potential effects of 1) delivery modes and settings, 2) breastfeeding support, and 3) breastfeeding social norms and difficulties.

First, delivery modes and settings are associated with early initiation of breastfeeding (15). Cesarean delivery, which is often related to maternal and neonatal complications, requires more time for mothers to recover and more breastfeeding support than vaginal deliveries (27). In our sample, a mother with a cesarean delivery was 29 times more likely to have the awareness-practice gap than mothers with a vaginal delivery in commune health centers. Also, compared with findings from the review paper by Prior et al. (15), cesarean delivery in our sample had a stronger negative effect on early initiation of breastfeeding than did almost all of the 53 studies from 33 countries. Hospitals in countries that are more developed than Vietnam (15) may provide better perinatal breastfeeding support, infant-friendly environments, and safer cesarean services, which help mothers with cesarean deliveries start breastfeeding earlier. To date, only ~5% of 1500 hospitals and polyclinics in Vietnam have been certified as infant-friendly health facilities (28).

Delivery settings had a substantial influence on early initiation of breastfeeding. The prevalence of early initiation of breastfeeding among mothers with a vaginal delivery in tertiary hospitals in

![Figure 3](image-url) Breastfeeding awareness and practice matrix in early initiation of breastfeeding (n = 6068) (A), exclusive breastfeeding (n = 6068) (B), continued breastfeeding at 1 y (n = 953) (C), and continued breastfeeding at 2 y (n = 1040) (D). Values are percentages ± SEs. Gap was defined when a mother was aware of the benefit but did not perform the practice. The percentage of mothers who were aware of the benefit equals the sum of the value of the third and fourth bars in the panels. The percentage of mothers who performed the practice equals the sum of the value of the second and fourth bars in the panels.

![Figure 4](image-url) Prevalence of breastfeeding barriers, breastfeeding support, and exposure to breastfeeding and infant formula information in the previous 30 d among mothers with children <6 mo old ( Alive & Thrive baseline survey, 2011 (19)). Values are percentages ± SEs, n = 6068. *Significantly different from support by a family member, relative, or friend, P < 0.06 (2-sided chi-square test). C-section, cesarean section.
Breastfeeding barriers

<table>
<thead>
<tr>
<th></th>
<th>Early initiation of breastfeeding</th>
<th>Exclusive breastfeeding</th>
<th>Continued breastfeeding at 1 y</th>
<th>Continued breastfeeding at 2 y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural birth in hospital</td>
<td>1.92 (1.50, 2.45)**</td>
<td>1.07 (0.86, 1.33)</td>
<td>0.83 (0.51, 1.37)</td>
<td>0.94 (0.59, 1.48)</td>
</tr>
<tr>
<td>Cesarean delivery in hospital</td>
<td>28.95 (20.12, 41.86)**</td>
<td>0.99 (0.78, 1.26)</td>
<td>1.04 (0.86, 1.25)</td>
<td>0.95 (0.53, 1.72)</td>
</tr>
<tr>
<td>Brought infant formula to delivery facility</td>
<td>1.83 (1.53, 2.20)**</td>
<td>1.28 (1.08, 1.51)**</td>
<td>1.26 (0.85, 1.85)</td>
<td>0.76 (0.49, 1.18)</td>
</tr>
<tr>
<td>Reported breastfeeding difficulty</td>
<td>1.52 (1.21, 1.90)**</td>
<td>1.29 (1.06, 1.57)**</td>
<td>1.70 (1.21, 2.57)</td>
<td>1.09 (0.72, 1.67)</td>
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Breastfeeding support

<table>
<thead>
<tr>
<th></th>
<th>Exclusive breastfeeding 0–2 mo (n = 2331)</th>
<th>Exclusive breastfeeding 3–5 mo (n = 2814)</th>
</tr>
</thead>
<tbody>
<tr>
<td>By a health worker during pregnancy</td>
<td>0.79 (0.69, 0.92)**</td>
<td>0.20 (0.15, 0.27)**</td>
</tr>
<tr>
<td>By a family member, relative, or friend during pregnancy</td>
<td>0.99 (0.82, 1.18)</td>
<td>0.61 (0.41, 0.91)**</td>
</tr>
<tr>
<td>By a health worker at birth</td>
<td>0.73 (0.60, 0.88)**</td>
<td>0.79 (0.57, 1.09)</td>
</tr>
<tr>
<td>By a family member, relative, or friend at birth</td>
<td>1.11 (0.91, 1.35)</td>
<td>1.04 (0.73, 1.50)</td>
</tr>
</tbody>
</table>

Social norms: exclusive breastfeeding <6 mo

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<tr>
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<th>Exclusive breastfeeding 0–2 mo (n = 2331)</th>
<th>Exclusive breastfeeding 3–5 mo (n = 2814)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No exposure to breastfeeding information</td>
<td>1.05 (0.98, 1.12)</td>
<td>1.26 (1.07, 1.44)</td>
</tr>
<tr>
<td>Exposure to formula ads daily</td>
<td>0.93 (0.79, 1.08)</td>
<td>0.99 (0.74, 1.33)</td>
</tr>
</tbody>
</table>

1 Data from the Alive & Thrive baseline survey, 2011 (19). The logistic regression analysis predicts the gap between breastfeeding awareness and practice (among those expressing awareness, those not practicing (i.e., gap) and practicing (i.e., no gap)) by breastfeeding barriers, supports and social norms, and mass media exposure, controlled for child age, weight-for-age Z-score, maternal age, ethnicity and schooling, household economic status, and place of residency. Significantly different from the null value (OR = 1; 2-sided t tests): *P < 0.05, **P < 0.01, ***P < 0.001.

2 Compared with natural birth out of the hospital (mostly in commune health centers).
prevalence (~20–30% relative difference), which is consistent with previous studies (10,14,29,30). The support was also associated with a reduction in the awareness-practice gap for early initiation of breastfeeding. In general, health workers were equipped with basic knowledge about breastfeeding and counseling skills through medical training and retraining, which contribute to improved breastfeeding practice. The marginal contribution of support to improved breastfeeding practices could be explained as follows. Although breastfeeding support is more effective before the occurrence of a breastfeeding difficulty (30), it is seldom provided during a medical checkup (25,30) because breastfeeding counseling is not mandatory and health workers are generally occupied with curative activities (10,29).

In addition, not all health workers have adequate breastfeeding knowledge and counseling skills, especially those without proper retraining on the revised WHO guidelines for infant and young child feeding practices (10,29).

Although breastfeeding is perceived as a natural behavior, it is a learning process for both the mother and the newborn (31). Successful breastfeeding practices are attributed to specific skills to ensure right positioning, effective latch, and appropriate solutions for lactation problems (26,31), which could be done effectively through individual counseling and support to mothers and other caregivers (32,33).

Third, EBF social norms were strong determinants of EBF practice. Family members, relatives, and friends influence the mothers on a daily basis. Mothers are likely to be more receptive to EBF if other mothers or older and experienced people they respect support EBF (10,29,34). These others might not have, however, correct information and beliefs about early breastfeeding and EBF (10,29,34). Competing messages from formula companies that are promoted through advertisements, community and school events, and health care facilities might affect perceptions of mothers, their family members, relatives, or friends (10,29,34).

With the use of this data set, we earlier reported that 90% of the mothers overestimated stomach volume of a newborn and underestimated their milk production at birth (35). Previous qualitative studies from rural (29) and urban (34) areas in Vietnam indicated that mothers believed that they did not have enough milk when their infant cried or when “the milk looked thin.” Some mothers thought that “exclusively breastfeeding” was “giving breast milk,” regardless of giving other foods or drinks (29); and some did not have adequate self-efficacy to engage in EBF (34). Similar to other countries (31), common misperceptions in Vietnam are that a big child is a healthy child, it is best to combine both breast milk and infant formula, formula provides vitamins, and formula is as good as or better than breast milk. These observations suggest that an intervention program should create new breastfeeding norms among the whole population so that mothers perceive the practices as the norm. Also needed are breastfeeding knowledge and support skills for other family members and frontline health workers.

The low prevalence of EBF after birth found in this study, which is consistent with other studies worldwide (7–10), along with insufficient breastfeeding support, negative effects of perceived breastfeeding difficulties on breastfeeding practices, high viewership to infant formula advertising, and low viewership to breastfeeding information suggest an opportunity for the improvement of breastfeeding practices in Vietnam. In our study, only a small percentage of women reported milk insufficiency as a reason for not breastfeeding at birth, breastfeeding issues, and cessation of breastfeeding. Vietnam has undergone strong and rapid socioeconomic development and may tend to reject feeding practices that prevail in poorer nations and that were used in the country’s past (12). The trend, however, can be reversed with national and international efforts to promote breastfeeding (12).

Our study examined the determinants of the gap between awareness and practices by using a large, representative sample from 11 Vietnam provinces in 4 ecological regions, in both rural and urban communities. The cross-sectional design cannot be used to conclude causal relations, but plausibility of causality was increased in our study by selecting age ranges for which exposure or covariate variables occurred before or at the same time as the practices. Because it was not the focus of this study, we did not collect information about intermediate stages between awareness and practices (e.g., intentions, trials, adoption, and maintenance). Also, we did not collect information about infant behavior (e.g., crying, fussiness) and thriving (e.g., slow growth, morbidity), which may contribute to difficulty with breastfeeding practices. A more in-depth study is needed to understand the likely complex pathways between awareness and practices.

In conclusion, breastfeeding awareness will not necessarily be translated into practice without strengthening breastfeeding support and minimizing barriers. To reduce the awareness-practice gap in early initiation of breastfeeding, programs should focus on strengthening support by health staff, minimizing unnecessary cesarean deliveries, and ensuring infant-friendly health facilities. Related to the gap for EBF, programs should focus on addressing the sociocultural environment so that mothers see that these practices are normative. Breastfeeding counseling and support should be mandatory in all perinatal checkups at birth for mothers and should be available for mothers/caregivers of children <2 y old. Because behavior changes in developing countries share a similar pattern (32), our findings would be a good reference for other developing countries. Furthermore, they could be a reference for higher-income countries with Vietnamese migrant mothers who tend to retain practices from their home countries (31,36).

Acknowledgments
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References