Coparenting Breastfeeding Support and Exclusive Breastfeeding: A Randomized Controlled Trial

Jennifer Abbass-Dick, PhD*, Susan B. Stern, PhD*, LaRon E. Nelson, PhD*, William Watson, MD*, Cindy-Lee Dennis, PhD*

Abstract

Objective: To evaluate the effectiveness of a coparenting intervention on exclusive breastfeeding among primiparous mothers and fathers.

Methods: A randomized controlled trial was conducted in a large teaching hospital in Toronto, Canada. Couples were randomized to receive either usual care ($n = 107$) or a coparenting breastfeeding support intervention ($n = 107$). Follow-up of exclusive breastfeeding and diverse secondary outcomes was conducted at 6 and 12 weeks postpartum.

Results: Significantly more mothers in the intervention group than in the control group continued to breastfeed at 12 weeks postpartum (96.2% vs 87.6%, $P = .02$). Although proportionately more mothers in the intervention group were exclusively breastfeeding at 6 and 12 weeks, these differences were not significant. Fathers in the intervention group had a significantly greater increase in breastfeeding self-efficacy scores from baseline to 6 weeks postpartum compared with fathers in the control group ($P = .03$). In addition, significantly more mothers in the intervention group than in the control group reported that their partners provided them with breastfeeding help in the first 6 weeks (71% vs 52%, $P = .02$) and that they were satisfied with their partners’ involvement with breastfeeding (89% vs 78.1%, $P = .04$). Mothers in the intervention group were also more satisfied with the breastfeeding information they received (81% vs 62.5%, $P < .001$).

Conclusions: The significant improvements in breastfeeding duration, paternal breastfeeding self-efficacy, and maternal perceptions of paternal involvement and assistance with breastfeeding suggest that a coparenting intervention involving fathers warrants additional investigation.

What’s Known on This Subject: Fathers’ attitude and support affects breastfeeding outcomes. Fathers are currently not targeted in breastfeeding support and care provided by health care professionals. Breastfeeding interventions delivered to fathers have been shown to increase breastfeeding exclusivity and duration.

What This Study Adds: A coparenting breastfeeding support intervention delivered to mothers and fathers in the postpartum period showed beneficial effects on breastfeeding duration, paternal breastfeeding confidence, breastfeeding help provided by fathers, and mothers’ satisfaction with fathers’ involvement with breastfeeding.

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Dr Abbass-Dick conceptualized and designed the study, collected and analyzed data, and drafted the initial manuscript; Drs Stern, Nelson, and Watson were consulted throughout all phases of study completion and reviewed the manuscript; Dr Dennis supervised all elements of the study, including the conceptualization and design of the study and data analysis, and reviewed and revised the manuscript; and all authors approved the final manuscript as submitted.

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All leading health authorities recommend that infants be exclusively breastfed for the first 6 months of life1–3 because of the well-documented health-promoting and disease-preventing effects for both infants and mothers.4 Despite this recommendation, North American breastfeeding rates are suboptimal.5–7 The reasons for these poor breastfeeding outcomes are multifaceted and include demographic, biologic, psychosocial, and social factors.8,9 To address this long-standing clinical issue, effective interventions that target modifiable risk factors for the premature discontinuation of breastfeeding are needed, and 1 such modifiable factor that has not been sufficiently examined is partner support for breastfeeding.10,11

Fathers’ attitude and support for breastfeeding have consistently been found to positively or negatively affect maternal infant feeding intentions12–15 and breastfeeding initiation,16–19 duration,14,20–24 and exclusivity rates.25–27 This research highlights the importance of fathers in improving breastfeeding outcomes. Fathers are in an ideal position to assist breastfeeding mothers, with qualitative research indicating they also want to be involved and often feel ignored.28,29 However, to date little is known about how best to include fathers in improving breastfeeding outcomes because few studies have incorporated them in breastfeeding support interventions.24–27 Four studies have evaluated breastfeeding interventions with fathers and found positive breastfeeding outcomes. In a study conducted in Italy (N = 280), the mothers who had partners that received education and printed material about breastfeeding had significantly higher rates of exclusive breastfeeding at 6 months postpartum than those in the control group (25% vs 15%; P < .05).25 In a Brazilian study (N = 586), mothers and fathers who received education about breastfeeding had a significantly higher rate of exclusive breastfeeding at 16 weeks (16.4%) compared with the mother-only group (11.1%) and the control group (5.7%, P < .00) and a lower risk of discontinuing exclusive breastfeeding before 24 weeks.26 In another study (N = 492), Vietnamese fathers who received breastfeeding education, materials, and professional support had partners who had significantly higher exclusive breastfeeding rates at 4 (20.6% vs 11.3%, P = .006) and 6 (n = 16, 6.7% vs n = 2, 0.9%; P = .001) months compared with those in the control group.27 Lastly, in an Australian randomized controlled trial (N = 699) that evaluated the effects of an antenatal breastfeeding session and postpartum support provided to fathers, the rate of any breastfeeding at 6 weeks was significantly higher in the intervention group (81.6%) than the control group (75.2%).24

These studies together provide preliminary evidence that the inclusion of fathers in breastfeeding interventions may improve breastfeeding outcomes; however, all studies were atheoretical, and none specifically evaluated the effect of coparenting breastfeeding support. Coparenting refers to the manner in which parents worked together to achieve their parenting and child health goals.30 It consists of 4 elements: jointly determined goals, coparenting support, joint parental involvement, and fair division of labor.30 The core skills for effective coparenting consist of effective communication, problem solving, and conflict resolution.31 Coparenting has been previously shown to positively affect family relationships and emotional well-being,31 so it is hypothesized that teaching couples about coparenting may also be effective in improving breastfeeding outcomes. The purpose of this trial was to evaluate the effect of a coparenting breastfeeding support intervention on exclusive breastfeeding among primiparous mothers and fathers. We hypothesized that among couples who received the multicomponent coparenting intervention, mothers would have increased breastfeeding duration and exclusivity rates and be more satisfied with the support and assistance received from their partner than mothers who did not receive the intervention.

**METHODS**

**Participants**

Participants were recruited from a large teaching hospital in Toronto, Canada between March and July 2012. The hospital has >6000 deliveries a year and provides services to a culturally and economically diverse population. Eligible women were all primiparous mothers in the first 2 days postpartum who had a singleton birth and were ≥18 years old, ≥37 weeks’ gestation at delivery, able to speak and read English, and living with a male partner. Women were excluded if they shared a hospital room with a current study participant, had a medical problem that could interfere with breastfeeding, had an infant who would not be discharged from the hospital with them, did not have access to the Internet or a telephone, were planning to breastfeed <12 weeks, and had a partner who would not be available to participate in the study.

**Design and Procedure**

A randomized controlled trial was conducted (Fig 1) after ethics approval was obtained from both the University of Toronto and the North York General Hospital. Eligible and consenting couples were provided with a detailed trial description. After informed consent procedures were completed, baseline data were collected and couples were randomly assigned to either a control group or...
an intervention group by sequentially numbered, sealed, opaque envelopes containing randomly generated numbers. These envelopes were constructed by a research assistant who was not involved in any other trial procedure. Couples assigned to the control group received usual care, which included standard in-hospital breastfeeding support and any breastfeeding assistance that was proactively sought in the community. Couples allocated to the intervention group also had access to usual care, in addition to receiving the coparenting breastfeeding support intervention. Follow-up data were collected from mothers and fathers at 6 weeks postpartum and mothers at 12 weeks postpartum via a self-report web-based questionnaire or a telephone interview conducted by a trained research assistant blinded to group allocation. The method of follow-up was determined by participant preference.

**Intervention**

The trial intervention was a multifaceted coparenting breastfeeding support intervention (Table 1). The intervention was provided face to face on the postpartum unit, at which time the couples were provided with breastfeeding information, the information package was reviewed, and couples were given the option of watching the video. The session took ~15 min in the majority of cases. The couples were followed up at home with e-mails at 1 and 3 weeks postpartum and a telephone call at 2 weeks postpartum. A coparenting workbook, video, and Web site were developed by the first author and contained extensive information on breastfeeding and coparenting. The intervention was adapted from a previous coparenting intervention trial that evaluated the effects of coparenting on the parental relationship, parental mental health, the parent–child relationship, and infant emotional and physiologic regulation. The elements included in the coparenting breastfeeding support intervention were designed to help couples work cooperatively toward meeting their jointly determined child health outcomes. The intervention was piloted with 10 couples, and slight modifications were made based on maternal and paternal feedback. For example, the in-hospital viewing of the video was often rushed or interrupted, and so couples were given the option of watching the video at home.

**Outcome Measures**

**Baseline Demographic Variables**

All participants completed a baseline questionnaire before randomization that included demographic,
Breastfeeding, and delivery variables such as age, ethnicity, educational status, income, paternal employment, breastfeeding intentions, breastfeeding self-efficacy, prenatal education, mode of delivery, and in-hospital infant feeding.

Exclusive Breastfeeding

The primary outcome for this trial was exclusive breastfeeding, defined as no food or liquid other than breast milk given to the infant in the last 24 hours and included feeding expressed breast milk and undiluted drops or syrups consisting of vitamins, minerals, supplements, or medicines.32,33 Exclusive breastfeeding was assessed in hospital and at 6 and 12 weeks postpartum.

Breastfeeding Duration

A secondary outcome for this trial was breastfeeding duration, defined as the infant receiving any breast milk in the past 24 hours. Breastfeeding duration was assessed at 6 and 12 weeks postpartum and included questions about frequency of breast milk feeds and the quantity of formula fed.

Maternal Perception of the Coparenting Relationship

We assessed this outcome at 12 weeks postpartum by using the Coparenting Relationship Scale (CRS), a 35-item self-report instrument.34 This scale was developed to assess the elements of coparenting, which include jointly determined goals, coparenting support, joint parental involvement, and fair division of labor. Items are rated on a 7-point scale to produce a summative score ranging from 0 to 210, with higher scores indicating higher degrees of positive coparenting. The CRS was developed based on exploratory and confirmatory factor analysis and established reliability and validity with mothers and fathers.34 For this trial the Cronbach’s α ranged from .73 to .88.

Maternal Perceptions of Breastfeeding Support

We assessed this outcome at 6 and 12 weeks postpartum by using the Postpartum Partner Support Scale, a 25-item self-report instrument designed to assess partner postpartum-specific perceptions of support. Items are rated on a 4-point scale to produce a summative score ranging from 25 to 100, with higher scores indicating higher levels of postpartum-specific partner support. This measure has been used with postpartum women and has good reliability and validity.35,36 The Cronbach’s α for this trial ranged from .95 to .97.

Paternal Breastfeeding Self-Efficacy

We assessed this outcome at baseline and at 6 weeks postpartum by using an adapted version of the Breastfeeding Self-Efficacy Scale—Short Form (BSES-SF).36 The BSES-SF is a 14-item self-report instrument designed to assess maternal breastfeeding self-efficacy, defined as a mother’s confidence in her ability to breastfeed her infant. Paternal breastfeeding self-efficacy was defined as the father’s confidence in his ability to assist the mother with breastfeeding. Items were reworded to capture the father’s role in assisting the breastfeeding mother. Items were rated on a 5-point scale to produce a summative score ranging from 14 to 70, with higher scores indicating higher levels of breastfeeding self-efficacy. Although this scale has not been used with fathers before, it has well-established reliability and validity in maternal populations.37 The Cronbach’s α for this trial was .90 for mothers and ranged from .91 to .92 for fathers.

Paternal Infant Feeding Attitude

We assessed this outcome at baseline and 6 weeks postpartum by using the Iowa Infant Feeding Attitude Scale,
a 17-item self-report instrument. This scale was developed to assess attitudes toward various dimensions of infant feeding. Items were rated on a 5-point scale to produce a summative score ranging from 17 to 85, with lower scores reflecting a preference for formula feeding and higher scores reflecting a preference for breastfeeding. This measure has been used postpartum, has well-established reliability and validity, and has previously been used with fathers. The Cronbach’s α in this study ranged from .55 at baseline to .72 at 6 weeks postpartum.

**Intervention Use**

Among couples randomly assigned to the intervention group, use of the intervention materials (eg, coparenting workbook, breastfeeding book, coparenting video, Web site, and e-mails) was assessed at 6 weeks with both mothers and fathers and at 12 weeks among mothers only in the intervention group. Couples were asked to indicate the degree to which they had used the intervention components over the previous 6 weeks, and the items were rated on a 4-point scale that ranged from “I used the resource frequently” to “I was not interested in using the resource.”

**Maternal Breastfeeding Support**

This outcome was assessed at 6 and 12 weeks. Mothers were asked to identify individuals (both professional and lay) who supported their breastfeeding and the frequency with which the support was provided. Overall satisfaction with breastfeeding supports such as the breastfeeding information received and partner’s involvement with breastfeeding was measured on a 5-point scale ranging from dissatisfied to satisfied.

**Data Analysis**

A sample size of 214 couples (107 per study group) was needed at 80% power and a 2-tailed error of .05 to detect a 15% difference in breastfeeding exclusivity at 12 weeks postpartum between groups, with a 25% attrition rate. Local health professionals were consulted and indicated that a 15% increase in breastfeeding exclusivity rates would warrant implementing this intervention in a practice setting. We analyzed data with SPSS version 21 (IBM SPSS Statistics, IBM Corporation) by using an intention-to-treat approach. A 2-sided significant level of .05 was used for all study outcomes. For dichotomous data, the frequencies and percentages were calculated and differences between groups examined using Pearson χ² tests, supplemented where necessary by Fisher exact test. Relative risks and corresponding 95% confidence intervals were estimated. For continuous data, means and SDs were calculated, and differences between groups were examined with independent 2-sample t tests and Mann–Whitney U tests as appropriate. One-way repeated-measures analysis of variance were conducted to assess group differences in mean scores over time.

**RESULTS**

**Participant Characteristics**

Of the 713 primiparous mothers screened, 315 (44.2%) were ineligible (Fig 1). Of the 398 potentially eligible mothers, 130 (32.7%) declined to hear a detailed study explanation. Of the 268 mothers who heard a detailed explanation, 54 (20.1%) declined participation. The most common reason for declining was not interested (n = 43, 79.6%). Overall, 53.8% of eligible mothers agreed to trial participation, representing 79.9% of those who received a detailed explanation. The majority of mothers and fathers were married, had some university education, were born outside Canada, had an annual household income >$60 000, and planned to exclusively breastfeed for 6 months (Table 2).

There were no significant differences in baseline characteristics between the groups except for prenatal education. In particular, more couples in the intervention group than in the control group attended a prenatal class (n = 74, 69.2% compared with n = 57, 53.3%). However, there was no significant difference between the 2 groups in attendance at a prenatal breastfeeding class (n = 43, 40.2% vs n = 41, 38.1%).

**Table 2** Demographic Characteristics

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Maternal Data</th>
<th>P</th>
<th>Paternal Data</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Intervention (n = 107), n (%)</td>
<td>Control (n = 107), n (%)</td>
<td></td>
<td>Intervention (n = 107), n (%)</td>
</tr>
<tr>
<td>Age, y</td>
<td>Mean 30.4 (SD 3.7)</td>
<td>Mean 30.7 (SD 3.8)</td>
<td>.80</td>
<td>Mean 33 (SD 5.2)</td>
</tr>
<tr>
<td>≥30 y</td>
<td>62 (57.9)</td>
<td>68 (63.5)</td>
<td>.40</td>
<td>85 (79.4)</td>
</tr>
<tr>
<td>Born in Canada</td>
<td>37 (34.6)</td>
<td>40 (37.5)</td>
<td>.67</td>
<td>38 (35.5)</td>
</tr>
<tr>
<td>Attended university</td>
<td>78 (72.9)</td>
<td>78 (72.9)</td>
<td>1.0</td>
<td>79 (73.8)</td>
</tr>
<tr>
<td>Plan to exclusively breastfeed</td>
<td>95 (88.8)</td>
<td>95 (88.8)</td>
<td>1.0</td>
<td>75 (70.1)</td>
</tr>
<tr>
<td>Plan to exclusively breastfeed &gt;6 mo</td>
<td>75 (70.1)</td>
<td>65 (60.7)</td>
<td>.15</td>
<td>57 (53.3)</td>
</tr>
<tr>
<td>Married</td>
<td>98 (91.6)</td>
<td>94 (87.8)</td>
<td>.57</td>
<td>98 (91.6)</td>
</tr>
<tr>
<td>Annual household income &gt;$60 000</td>
<td>87 (81.3)</td>
<td>77 (72.0)</td>
<td>.13</td>
<td>87 (81.3)</td>
</tr>
<tr>
<td>Employed</td>
<td>103 (96.3)</td>
<td>98 (91.6)</td>
<td>.15</td>
<td>103 (96.3)</td>
</tr>
</tbody>
</table>
Complete follow-up data were collected from 87.9% (n = 188) of fathers at 6 weeks and 88.3% (n = 189) of mothers at 6 weeks and 91.6% (n = 196) at 12 weeks. No differences were found between those who were lost to follow-up and those for whom outcome data were collected.

**Intervention Details**

The coparenting intervention was delivered to all of the 107 couples randomly assigned to the intervention group. In the majority of cases (n = 104, 97.2%), both mothers and fathers were present for the in-hospital discussion, at which time the information package was explained. Of the 3 fathers who were not present for the in-hospital discussion, 1 reviewed the information package at home, resulting in 105 (98%) fathers receiving a portion of the intervention. All mothers were present for the in-hospital discussion, and 98 (98%) of the mothers indicated at follow-up that they had reviewed the intervention package at home.

**Outcomes**

More mothers in the intervention group (n = 102, 98.1%) were practicing any breastfeeding at 6 weeks compared with those in the control group (n = 94, 92.2%); however, these differences were not statistically significant (P = 0.06). Similarly, more mothers in the intervention group (n = 75, 72.1%) were exclusively breastfeeding than in the control group (n = 62, 60.8%), yet the 11% difference was not statistically significant (P = 0.09). At 12 weeks, significantly more women in the intervention group (n = 100, 96.2%) were breastfeeding than in the control group (n = 92, 87.6%; P = 0.02). Although more mothers in the intervention group (n = 70, 67.3%) were exclusively breastfeeding than in the control group (n = 63, 60.0%), this 7% difference was not statistically significant (P = .27). Table 3 shows the differences in formula supplementation of breastfed infants between the 2 groups.

Table 4 shows the mean scores related to secondary outcomes at 6 and 12 weeks postpartum. Although there were no significant differences between groups in maternal perception of the coparenting relationship, maternal perception of support, paternal breastfeeding self-efficacy, or paternal infant feeding attitude, all mean scores were higher for the intervention group than for the control group. When group differences in mean paternal breastfeeding self-efficacy scores were examined over time, there was a significantly greater increase over the first 6 weeks postpartum in mean BSES-SF scores in the intervention group compared with the control group (P = .03).

Additionally, significantly more mothers in the intervention group (n = 76, 71%) than in the control group (n = 56, 52%) reported receiving help from their partners in the first 6 weeks postpartum (P = .02). When asked to rate their overall satisfaction with their breastfeeding support received, significantly more mothers in the intervention group (n = 89, 89%) than the control group (n = 75, 78.1%) were satisfied with their partners’ involvement with breastfeeding (P = .04) and with the breastfeeding information they received (n = 81, 81% vs n = 60, 62.5%; P < .001).

**DISCUSSION**

The purpose of this randomized controlled trial was to evaluate the effect of a coparenting intervention on breastfeeding outcomes among primiparous mothers and fathers. Overall, the coparenting intervention increased breastfeeding duration rates by ∼9% at 12 weeks. The breastfeeding duration rate at 6 weeks postpartum and exclusivity rates at 6 weeks and at 12 weeks postpartum were higher for mothers in the intervention group compared with the control group, but these differences were not statistically significant. There was significantly greater improvement in paternal breastfeeding self-efficacy over the first 6 weeks postpartum in the intervention group than in the control group. Furthermore, significantly more mothers in the intervention group compared with the control group received breastfeeding help from the fathers in the first 6 weeks and were satisfied with the fathers’ involvement with breastfeeding and the breastfeeding information they received. These research findings suggest that including fathers in a coparenting breastfeeding support intervention may have a potential beneficial effect for first-time mothers and fathers and warrants additional investigation.

The increase in exclusive breastfeeding rates among mothers in the intervention group is consistent with previous studies. For example, Pisacane et al,25 Susin and Giugliani,26 and Bich et al27 found that the inclusion of fathers in the breastfeeding interventions increased exclusive breastfeeding at 1626,27 and 2425,27 weeks. These studies measured their outcomes at a later time point, and it is possible that we measured the outcome too early to

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**Table 3** Differences in Quantity of Formula Supplementation Between Groups at 6 and 12 Weeks

<table>
<thead>
<tr>
<th>Quantity of Formula Supplementation</th>
<th>Control Group, n (%)</th>
<th>Intervention Group, n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>6 Wk (n = 91)</td>
<td>12 Wk (n = 97)</td>
</tr>
<tr>
<td>More than half of the feeds</td>
<td>8 (7.5)</td>
<td>5 (2.8)</td>
</tr>
<tr>
<td>Half of the feeds</td>
<td>8 (7.5)</td>
<td>5 (4.7)</td>
</tr>
<tr>
<td>Less than half of the feeds</td>
<td>8 (7.5)</td>
<td>10 (9.3)</td>
</tr>
<tr>
<td>1 time per day</td>
<td>5 (4.7)</td>
<td>5 (4.7)</td>
</tr>
<tr>
<td>≥1 time per week</td>
<td>4 (3.7)</td>
<td>3 (2.8)</td>
</tr>
<tr>
<td>&lt;1 time per week</td>
<td>0</td>
<td>1 (0.9)</td>
</tr>
</tbody>
</table>
detect a significant difference in exclusive breastfeeding between our study groups. Unfortunately, in our trial the sample was highly motivated to breastfeed, and the exclusive breastfeeding rates in both groups was higher than the national breastfeeding exclusivity rate of 51.7% at 3 months postpartum. More mothers in the intervention group than in the control group continued to breastfeed to 12 weeks postpartum, suggesting that the intervention helped couples work together as coparents to meet their breastfeeding goals and to overcome breastfeeding challenges. This finding is consistent with the randomized controlled trial conducted by Maycock et al., who found that the inclusion of fathers in a breastfeeding intervention increased breastfeeding duration at 6 weeks postpartum, and Pisacane et al., who found that significantly fewer mothers in the intervention group stopped breastfeeding because they experienced problems.

For both groups, paternal breastfeeding self-efficacy levels increased over time from baseline to 6 weeks postpartum, with greater increases found among those who received the coparenting intervention. This self-efficacy finding suggests the intervention may have a potential beneficial effect for first-time fathers. The fathers in the intervention group were provided with support and detailed information about how they could be involved with breastfeeding. These fathers indicated that the information was very helpful and that they particularly enjoyed the in-hospital discussion. This finding is noteworthy because fathers are often not targeted and included in breastfeeding support programs. The high follow-up rate with fathers in both groups (n = 188, 87.9%) also indicates they valued being involved and having an opportunity to share their experiences in the postpartum period.

There are numerous strengths of this trial. A power analysis was included to determine the sample size, and data were analyzed using an intention-to-treat approach. The trial incorporated randomized procedures, and sequentially numbered, sealed, opaque envelopes were used to determine group allocation. Attrition was low, and no differences were found between those who were lost to follow-up and those for whom outcome data were collected. The web-based questionnaire was an effective means of collecting follow-up data from mothers and fathers during the postpartum period, and 96.7% (n = 557) of participant surveys were completed online. Finally, the sample was multicultural, with less than half of the population born in Canada.

Despite these strengths, the sample was highly motivated to breastfeed. The mothers in both groups were committed to breastfeeding and to doing so exclusively, which limited the variability and decreased our ability to detect differences. The enrollment rate of potentially eligible mothers may have added selection bias. The intervention package was provided in the postpartum period, and this may have limited the time parents had available to review the information. The intervention was also multifaceted, with materials provided to the couple in a variety of formats. Therefore, it is not known which specific component of the intervention was related to the increased breastfeeding duration or paternal breastfeeding self-efficacy.

**CONCLUSIONS**

The coparenting intervention increased breastfeeding duration rates by 9% at 12 weeks. The improvement in paternal breastfeeding self-efficacy and maternal perceptions of paternal involvement and assistance indicate that coparenting breastfeeding support programs may be beneficial for fathers as well as mothers. Although not all outcomes were statistically different between study groups, the numerous positive trends favoring the intervention group in relation to breastfeeding duration and exclusivity, as well as higher mean scores on outcome measures, support the overall findings of the study.
levels may indicate the coparenting intervention has clinical importance. Although this study adds to the literature on the effectiveness of including fathers in breastfeeding interventions, additional research is warranted. Future studies should be conducted with more vulnerable couples, in multiple sites, and the intervention should be delivered over the prenatal and postnatal period to allow couples sufficient time to review the coparenting and breastfeeding material.

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**POTENTIAL CONFLICT OF INTEREST:** The authors have indicated they have no potential conflicts of interest to disclose.

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**FROM FARM TO TABLE:** While I like fish for dinner, I tend not to buy them very often. I worry that by purchasing swordfish or tuna I am contributing to overfishing and the dwindling supply of large predator fish in the oceans. Occasionally, I will purchase salmon labeled “wild caught” as I think the taste is better than farm raised salmon. To date, however, I have never seen any labeling of tuna in our supermarkets. Evidently, that could change.

According to The Wall Street Journal (November 14, 2014), after decades of trial and error, researchers in Japan are finally cultivating Pacific Bluefin tuna successfully. Fish farming is a huge, expanding business. In 2012, farmed fish accounted for 42% of global fish output – up from 13% in 1990 and 26% in 2000. Although nearly 99% of Atlantic salmon consumed have been raised in farms, cultivating Pacific Bluefin tuna represents a remarkable challenge. In the wild, the fish can grow to almost a thousand pounds, swim at speeds that approach 30 miles per hour, and travel thousands of miles across the Pacific Ocean. The fish swim in a straight line – which in the ocean is safe, but not in captivity with other large fish. However, the natural population has declined by 50% in the past decade, while the demand for tuna has continued to soar.

After decades of trial and error, entrepreneurs and researchers in Japan have developed processes so that the entire life cycle of the Pacific Bluefin tuna could be completed in special pens. Currently, approximately 1-2% of baby tuna hatching from eggs in the facilities survive to adulthood, which compares favorably to less than one in a million in the wild. Challenges remain, however. The farm-raised fish are fatty, consume more than 15 pounds of protein for each pound of tuna produced, and are prone to fatal collisions. Farm-raised tuna only commands about half the price of wild caught tuna but could ease the pressure on the wild population. As for me, while I am impressed by the efforts of the Japanese researchers, I will probably continue to purchase other types of fish for dinner.

*Noted by WVR, MD*
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