

A Collaborative Approach to Providing Best-Practice Childhood Feeding Guidance

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Abstract: *Objective:* To examine whether training on Division of Responsibility, provided to members of a childhood feeding collaborative, increased familiarity, knowledge, and confidence in disseminating information to parents of young children.

Methods: Training was provided to 47 public health nurses and 22 breastfeeding task force members. A within-group pretest, posttest, follow-up design assessed changes in familiarity, knowledge and confidence.

Results: Amongst public health nurses, training resulted in a significant increase in familiarity ($P < .001$); knowledge that restricting amount of food provided to overweight infants and/or children is inappropriate ($P < .05$); and that children need frequent exposure to new foods ($P < .05$). Confidence in disseminating information also significantly increased ($P < .001$).

Conclusions and Implications: Health care providers who counsel parents about childhood feeding practices should be trained to increase familiarity with, knowledge of, and confidence in disseminating best practice feeding guidelines to help ensure provision of consistent, accurate messaging.

Keywords: Child feeding practices, Division of Responsibility, Childhood feeding collaborative.

INTRODUCTION

Parental feeding style is an important determinant of a child's eating behaviors, attitudes toward food, and food exposures [1, 2]. During meals, parent-child interactions and feeding strategies are key factors in the development of childhood feeding problems (e.g. pickiness and food refusal) [3], which may influence the development of pediatric obesity [4]. Authoritarian or controlling parenting/feeding styles, as compared to authoritative styles, have been associated with increased risk for high body weight and diminished ability to self-regulate intake [1, 4, 5]. Overweight children are also found in childcare settings where, during feeding, adults encourage children to eat with verbal cues that do not reference a child's internal cues of hunger and satiation [6].

The high rates of childhood obesity [7], coupled with the fact that weight gain from 0 to 5 y of age strongly predicts childhood and adolescent obesity [8], means that early interventions aimed at reducing childhood obesity rates are needed. One of the Institute of Medicine's early childhood obesity prevention goals is to create healthful eating environments responsive to children's hunger and fullness cues [9]. Early childhood is the ideal time to intervene to improve feeding practices, as important feeding transitions occur during

this developmental period [10]. Childhood feeding guidance is especially important in ethnic minorities, who have high rates of childhood obesity [11], and who have at-risk parental factors [12].

The Division of Responsibility (DOR) in feeding [13, 14] is widely recognized as a best-practice feeding model as it guides parents and caregivers towards a healthful feeding lifestyle for their children [15, 16]. The DOR promotes an authoritative parenting style in which the parent provides a developmentally appropriate level of structure around eating, and the child maintains autonomy over his eating within the parent provided structure [13].

In a large northern California county (comprised of 1.7 million residents, two-thirds of whom are ethnic minorities [17]), child obesity rates exceed the national average [7, 18]. As part of a multi-faceted approach to address these high rates, and building upon research that suggests health care collaboratives are successful in promoting healthful behaviors [19, 20], in 2007, a registered dietitian who works at the Santa Clara County Public Health Department formed the Santa Clara County Childhood Feeding Collaborative (CFC) [21]. The primary mission of the CFC, which follows the Chronic Care Model [22], is to prevent overweight and obesity in early childhood by reducing known risk factors associated with negative childhood feeding practices. The CFC strategy is to create policy and systems change among relevant organizations that serve families with young children in order to support

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countywide provision of synchronized, consistent, and reliable messaging about DOR among collaborative partners. The CFC provides training and support to each of its partners to build child feeding practices expertise within its organizational partners, and it provides a free class on DOR to parents [10].

From 2007 to 2009, the CFC interventions targeted pediatric healthcare providers [10], childcare providers [23], dietitians, and other allied healthcare providers. In 2010, the CFC partnered with Santa Clara County Public Health Nursing and the Santa Clara County Breastfeeding Task Force (groups that reach over 3,000 families) to further expand County capacity for the provision of feeding best practices. This paper reports on the impact of trainings provided to these groups to determine if the target groups increased familiarity with and knowledge of childhood feeding practices, and perceived confidence in disseminating information about DOR to parents of young children.

METHODS

In September 2010, all County public health nurses (PHN) (n=51) (some of whom work in the departments of Child Health and Disability Prevention, Black Infant Health, and Maternal, Child and Adolescent Health), and members of the County Breastfeeding Task Force (BFT) (n=22) (including peer counselors and lactation consultants whose clients are mothers of infants ages 0-6 months) were recruited via email to attend a 2-3 h continuing education seminar sponsored by the Santa Clara County Public Health Department. After receiving information about the CFC, these health care practitioners received tailored information based on their clientele. Training for BFT members specifically focused on DOR methods for the introduction of solid foods while trainings for PHN focused on the DOR for children 5 y and younger with obesity prevention as a subtext. Specifically, PHN were taught the developmental basis for feeding practices and how to apply the DOR to obesity prevention in early childhood. Four 15- to 20-minute child-feeding video vignettes available from Ellyn Satter Associates [24] demonstrating positive and negative feeding interactions for infants through pre-school aged children were shown to participants who engaged in small group discussions, role playing exercises and personal reflections. The Institutional Review Board at San Jose State University provided approval to conduct this research and participants provided written informed consent.

A within-groups pretest, posttest and follow-up design was used. Health care practitioners completed pretests at the start of each workshop and posttests immediately afterwards. Two months later, all those who participated in workshops received an email invitation to complete an online follow-up survey (www.SurveyMonkey.com, Portland, OR). All participants received a unique identifying number that allowed blinded longitudinal analysis. Study participants were a convenience sample of health care practitioners who attended one of the training sessions, completed at least 80% of questions on the pre-, post- and follow-up tests, and had the opportunity to address feeding issues with parents or caregivers as part of their job.

Surveys were developed from validated questionnaires [10, 25, 26]. Familiarity with DOR guidelines (e.g., "How familiar are you with DOR guidelines,") and confidence in disseminating information (e.g., "How confident are you in giving information about DOR guidelines to families with children under 6 y of age") was assessed using a 4-point Likert scale. Choices included "unfamiliar" or "not confident," "somewhat unfamiliar" or "somewhat not confident," "somewhat familiar" or "somewhat confident," and "familiar" or "confident." Responses were assigned ordinal values of 1-4. Differences in familiarity and confidence between pretest and follow-up were assessed using the Wilcoxon signed ranks test. To assess practical knowledge of DOR guidelines, respondents were asked to provide answers to 8 true or false questions (Table 1). Change in knowledge between pretest, posttest and follow-up was assessed using the Friedman test. Differences between those who completed all 3 surveys as compared to those who did not complete 3 surveys were analyzed using the Mann-Whitney U-test. Analysis was conducted using SPSS (version 18.0, SPSS Inc, Chicago, IL, 2009). Missing values were excluded. Relationships were considered statistically significant at the .05 level or less.

RESULTS

Of the 51 PHN who were invited to attend the training, 47 attended. Of these, 9 (19%) who did not address feeding issues with parents or caregivers as part of their job and 12 (26%) who failed to provide follow-up data were excluded. All of the 22 BFT members who were invited to attend the training attended. Of these, 2 (9%) who did not address feeding issues and 11 (50%) who had incomplete surveys or

failed to provide follow-up data were excluded. Analysis indicated that responses of those providing follow-up data, compared to those who did not, were not significantly different. The final sample was thus comprised of 26 PHN and 9 BFT members. Respondents were exclusively women who served a multi-ethnic community comprised of English, Spanish, Vietnamese, Chinese, and "other" speaking clients.

Change in familiarity with DOR guidelines from pretest to follow-up was significant ($P < .001$) in PHN. Less than one-third of PHN (29%, $n = 7$) noted being "familiar" prior to the workshop, as compared to 63% ($n = 15$) who noted familiarity 8 wks later. When the 7 PHN who noted being "familiar" with guidelines prior to the workshop and again at follow-up were excluded from analysis, change in familiarity remained significant ($P < .001$). Exclusion of these 7 PHN further revealed that 54% (7 of 13) of those who originally noted being

"unfamiliar" at pretest all noted being "familiar" at follow-up. For BFT members, familiarity increased but failed to reach statistical significance (Figure 1).

Knowledge of some DOR guidelines was high at pretest amongst respondents (Table 1). However, before the training, 35% ($n = 8$) of PHN and 56% ($n = 5$) of BFT members erroneously responded, "Parents should restrict the amount of food eaten by an overweight child under the age of 6." The same number of PHN responded, "Parents of overweight infants should limit the amount of formula, breast milk or infant food they give their infant." Only 25% ($n = 2$) of BFT members provided this response. At follow-up, there was a decrease in the number of PHN and BFT members who provided these incorrect responses, with significance noted only for PHN ($P < .05$). There was also a significant increase in the number of PHN who correctly responded, "Many children need to be

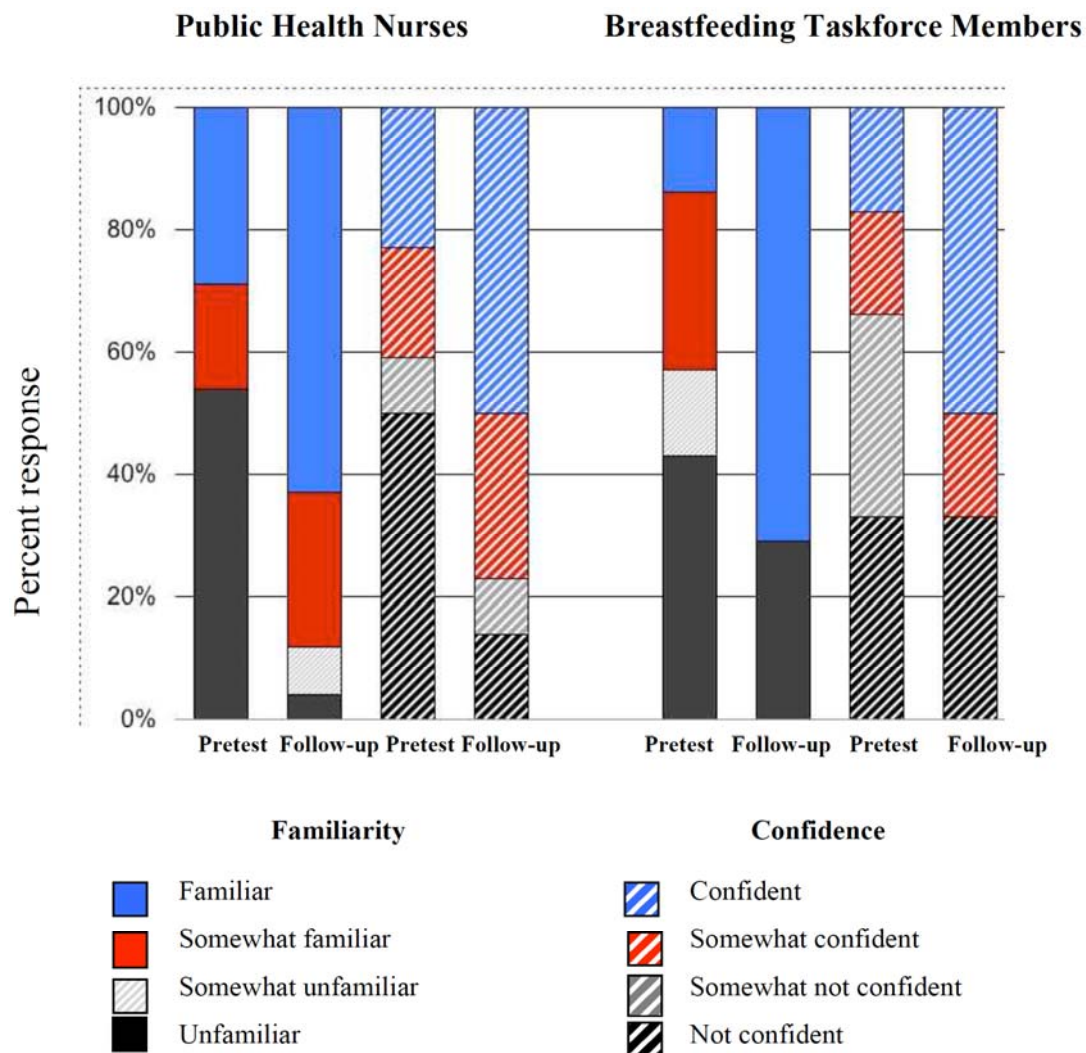


Figure 1: Percentage of Public Health Nurses and Breastfeeding Task Force Members with Noted Responses to Questions about Familiarity with Division of Responsibility (DOR) and Confidence in Disseminating Knowledge of DOR to Clients.

Table 1: Knowledge of DOR Guidelines at Pretest, Posttest, and Follow-up Amongst Public Health Nurses (PHN) and Breastfeeding Task Force Members (BFT)

Question (Correct Response)	Group (n)	Percent Correct (n)			Test Statistic (Asymp. Sig.)
		Pretest	Posttest	Follow-Up	
Parents should restrict the amount of food eaten by an overweight child under the age of 6. (F)	PHN (23)	65 (15)	87 (20)	87 (20)	6.25 (.04)*
	BFT (9)	44 (4)	89 (8)	78 (7)	4.33 (.12)
Parents of overweight infants should limit the amount of formula, breast milk or infant food they give their infant. (F)	PHN (23)	65 (15)	91 (21)	83 (19)	6.22 (.05)*
	BFT (8)	75 (6)	67 (5)	88 (7)	1.20 (.55)
Many children need to be exposed to new foods up to 20 times before they learn to like it. (T)	PHN (23)	78 (18)	87 (20)	96 (22)	6.0 (.05)*
	BFT (9)	78 (7)	100 (9)	100 (9)	4.0 (.14)
Parents of picky eaters should only serve food they know their child will eat. (F)	PHN (23)	96 (22)	100 (23)	100 (23)	2.0 (.37)
	BFT (9)	100 (9)	100 (9)	100 (9)	0.0 (1.0)
A parent should do whatever it takes to get their child to eat (let the child eat whatever he wants, wherever he wants, bribe the child, not let him leave the table, etc). (F)	PHN (23)	83 (19)	100 (23)	91 (21)	4.8 (.09)
	BFT (9)	100 (9)	100 (9)	100 (9)	0.0 (1.0)
A 1-year old should eat meals at the family table. (T)	PHN (24)	92 (22)	100 (24)	100 (24)	4.0 (.14)
	BFT (9)	89 (8)	100 (9)	100 (9)	2.0 (.37)
A parent needs to take leadership over what, when, and where food is served. (T)	PHN (24)	92 (22)	100 (24)	100 (24)	4.0 (.14)
	BFT (8)	88 (7)	88 (7)	88 (7)	0.0 (1.00)
Parents should give their child autonomy over how much and whether to eat what is served. (T)	PHN (23)	100 (23)	100 (23)	96 (22)	2.0 (.37)
	BFT (8)	88 (7)	100 (8)	88 (7)	1.0 (.61)
7 of 8 questions answered correctly	PHN (21)	67 (14)	90 (19)	90 (19)	13.07 (.001)**
	BFT (7)	57 (4)	86 (6)	86 (6)	4.53 (.10)
8 of 8 questions answered correctly	PHN (21)	38 (8)	76 (16)	62 (13)	9.8 (.05)*
	BFT (7)	29 (2)	57 (4)	86 (6)	4.0 (.14)

Note: T = True; F = False; Asymp. Sig. indicates asymptotic difference.

*Significant at the .05 level; ** Significant at the .001 level as determined by the Friedman test.

exposed to new foods up to 20 times before they learn to like it" ($P < .05$). Overall, there was a significant increase in the number of PHN who answered 7 of 8 ($P < .001$) and all 8 questions correctly ($P < .05$).

Reported confidence in providing information on DOR guidelines increased from pretest to follow-up in PHN and BFT members, although the increase was

significant only for PHN ($P < .001$) (Figure 1). Despite overall high levels of familiarity with DOR guidelines at follow-up [87.5%, $n = 21$ of PHN and 71.5% ($n = 5$) of BFT members reported either being "somewhat familiar" or "familiar" with guidelines], fewer PHN (50%, $n = 11$) and BFT members (50%, $n = 3$) reported being "confident" in providing information to clients.

DISCUSSION

The current study supports and extends previous research that has examined the effect of training programs on increasing knowledge of DOR feeding guidelines, and confidence in disseminating this knowledge among physicians [10], parents [10], and childcare providers [23] associated with the Santa Clara County CFC. We report here that even though PHN and BFT members who attended trainings had some basic child-feeding knowledge, many were “unfamiliar” with DOR. Training workshops not only increased familiarity with DOR, they also increased knowledge of best-practice childhood feeding guidance, especially amongst PHN. For example, trainings were of specific benefit in educating collaborative members that it is inappropriate to restrict or limit the amount of food provided to overweight infants and/or children. This is important as consistent evidence indicates that food restriction increases the risk of overeating which may lead to weight gain in children [27-29]. Trainings were also beneficial in educating PHN and BFT members that many children may need to be exposed to new foods up to 20 times before they learn to like them [30]. The Feeding Infants and Toddler Study (FITS) also reported that very young children (aged 4 to 24 months of age) were not repeatedly exposed to new foods [31]. Since early and frequent exposure predicts later food acceptance [32-35], it is important that health care providers who counsel parents and/or caregivers of very young children are provided with this information. Finally, in addition to increasing knowledge, trainings also increased self-confidence in disseminating DOR information. In contrast to PHN (whose confidence significantly increased following trainings), BFT members may need to attend more than 1 workshop in order to develop the confidence necessary to provide DOR information to a multi-ethnic clientele.

LIMITATIONS

Since the study evaluated PHN and BFT members who participated in a county-based intervention, the target population was small. Even though all PHN and BFT professionals who worked for the county were invited to attend the workshop (there were no exclusion criteria), within each target group, there were members who did not directly provide services to families. It thus made no sense to include them in the final analysis, which reduced the sample size. Although response rates of 74% and 50% for PHN and BFT members, respectively, were higher than previously reported

among healthcare providers [36], the resulting small sample size reduces generalizability of the results. Second, due to the short-term nature of the study, whether and to what extent PHN and BFT members incorporated knowledge learned in training into their practices was not assessed.

IMPLICATIONS FOR RESEARCH AND PRACTICE

A county-wide collaborative is able to partner with key organizations providing services to families with young children to promote best feeding practices known to reduce child obesity risk factors. Previous papers and the current study show positive impact on targeted healthcare professionals, childcare providers, and parents [10, 23]. The CFC approach is transferable in that similar partnerships can be made elsewhere. Promotion of a best practice is needed [10, 36].

Future research to measure the downstream impact on families who receive services from all health-care professionals, including PHN and BFT members, is needed to assess whether these types of trainings have the potential to reduce obesity risk factors in early childhood. In the meantime, public health nurses who counsel mothers of young children, breastfeeding peer counselors, and lactation consultants are logical targets for trainings about best-practice childhood feeding guidelines.

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