Published in final edited form as:

J Acad Nutr Diet. 2018 November ; 118(11): 2081–2093. doi:10.1016/j.jand.2018.05.003.

How does context relate to nutrition promotion and mealtime practice in early care and education settings?: A qualitative exploration

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Abstract

Background—Early childhood educators have potential to influence children's dietary outcomes through daily interactions. However, existing research suggests that educator practices are often suboptimal. Previous research has often focused on individual characteristics that affect practices. There is less study of contextual influences of practices of early childhood educators.

Objective—The purpose of this study was to understand and describe contextual factors evident in narratives of early childhood educators influencing mealtime and nutrition promotion practices. We use the Promoting Action on Research Implementation in Health Services (PARIHS) framework to consider how contextual factors related to practices of early childhood educators.

Design—This cross-sectional, qualitative study collected data through in-depth interviews with early childhood educators. Analyses of the data reflected a factist perspective and semantic approach to complete thematic content analysis of in-depth interviews.

Participants—The study used a stratified purposive sampling approach to recruit 28 educators to balance across educator role, agency type (Head Start versus state-funded), and obesity prevalence in the community. Early childhood educators were mostly lead teachers (62%), between the ages of 30 and 49 (82.1%), and White (75%) or African American (14.3%).

Results—The coders identified three primary themes: Mealtime Structures, Resources, and Classroom/Center Atmosphere. Mealtime Structures associated with Detrimental Practices included cafeteria meals with rigid schedules. Mealtime Structures associated with Evidence-

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Author Contributions: T.S. is responsible for the conception and design of this research, the coding and interpretation of the data, and leading the writing of this article; J.P. contributed to the data analysis, the interpretation of the data, and writing of the article. All authors have provided approval of the final version and agree to be accountable for all aspects of the work.

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Conflict of Interest: The authors have no financial or other interests in this content to disclose.

Based Practices (EBPs) included classroom meal service. Resources associated with Detrimental Practices included limited funding. Resources associated with EBPs included meals paid for early childhood educators and classroom food experiences. Classroom/Center Atmosphere factors associated with Detrimental Practices included poor food offerings and policies that conflicted (e.g. allowing children to bring in outside foods). Classroom/Center Atmosphere factors associated with EBPs included clarity around meal service rules and healthy food offerings.

Conclusions—This study highlighted that it may be difficult for an early childhood educator to adopt and maintain EBPs in certain contexts.

Keywords

early care and education; childcare; mealtime; nutrition; feeding; qualitative

Introduction

Childcare settings may be a particularly important context for supporting children's development of healthy eating habits. The potential impact of early educators on children is plausible because 59.3% of low-income children 3 to 4 years old spend over 30 hours a week in childcare¹ and these children eat between one-half and two-thirds of their dietary intake in childcare,² likely over 500 meals and snacks per school year. Environmental experiences with food can override genetic dispositions to sweet preferences³ or, conversely, increase preference for salty food.⁴ Habits and preferences established in the classroom can spill over to the home through parent-child interactions, parent-teacher exchanges, and parent outreach efforts. Thus, early childhood educators are in an influential position to promote healthy attitudes and behaviors for children at risk for overweight or obesity.

Recognition for the potential of early childhood educators to impact children at mealtimes has increased in recent years. Through interviews with early childhood educators Mita et al.⁸ conceptualized a positive mealtime environment (PME) as being positive (e.g., relaxed, happy) in tone, having rules and routines (e.g., family-style meal service), as well as providing time for socialization (e.g., asking questions, sharing conversation) and learning (e.g., develop language, nutrition knowledge, motor skills). Expected outcomes of a PME are healthy eating habits and positive relationships with food for children. Empirical evidence on the link between early childhood educators' practices and child outcomes supports this potential.

Empirical studies support potential for early childhood educators' practices to impact children in a constructive fashion. Early childhood educators can use positive feeding practices, model trying new foods, provide exposure to healthy foods, and create a supportive mealtime atmosphere.^{5–7} Proposed positive feeding practices include allowing the child to choose if and how much to eat and cuing the child to internal, rather than external, cues of hunger.^{8,9} Children cued to internal hunger and satiety signals are better able to respond to caloric density,¹⁰ an important correlate of weight for children. Modeling is another way early childhood educators may affect children. Positive effects of modeling were reported by Hendy and Raudenbush.¹¹ Children's food acceptance increased when led by teachers who modeled enthusiastically and audibly. Other strategies linked with increased

food acceptance include making positive comments about food served,¹² fostering children's interest through discussions about food,¹³ and allowing children to assist with meal preparation.¹⁴ Repeated exposures are important for increasing acceptance and long-term food preferences, especially exposures encouraging children to engage their senses.^{12,15–18}

It is likely the positive effects of some EBPs (e.g., repeat exposures) are dependent on the presence or absence of other detrimental practices (e.g., pressure to eat). Detrimental practices not consistent with a PME include pressuring children to eat and firm verbal commands based on external cues. Such practices can lead to decreased acceptance of targeted foods long-term, cause children to ignore their internal cues of hunger and satiety, and contribute to negative child outcomes.^{10,12,13,19} Unfortunately, early childhood educators are significantly more likely to report use of external cues (e.g., “Clean your plate!”) compared to internally-focused cues (e.g., “Are you still hungry?”).²⁰ These kinds of detrimental practices have been linked to worsened self-regulation of energy balance and acceptance of a variety of food.²¹ Based on parallel studies with children and their parents, these feeding practices may predict reduced dietary quality,²² increased neophobia,²² and later disordered eating (e.g., unhealthy/extreme weight control) for children.²³

Researchers have increasingly studied factors associated with adoption of EBPs and detrimental practices at mealtimes in early care and education settings. In addition to characteristics and experiences of educators themselves,^{24,25} environmental or contextual factors may influence practices used by early childhood educators. Aija and colleagues²⁶ identified a range of contextual factors including some that may directly (e.g., menu quality) or indirectly (e.g., policy, teacher training opportunities, meal schedules, and nutrition education curricula) affect the child. In a review by Sisson and colleagues,²⁷ interventions targeting these kinds of contextual factors “seemed to facilitate positive changes (p 65).” Given these outcomes, the influence of context on early childhood educators' practices at childcare mealtimes is of interest.

To date, direct input from early childhood educators documenting contextual-level barriers and facilitators to use of EBPs has been limited. Studies have focused largely on individual-level factors, rather than contextual-level factors, for understanding mealtime practices. For example, Belsky's determinants of parenting model was adapted to guide an exploration of how early childhood educators' developmental food history and beliefs about child nutrition affected teaching interactions at meals and snacks.²⁸ Findings highlighted the pathway from early childhood educators' personal experiences (e.g., rigid rules and routines at their childhood meals), related beliefs (e.g., meals are not for play), and resulting interactions with children in the classroom (e.g., manners are emphasized).^{Blinded} Other studies have also focused on individual-level factors. Lumeng and colleagues²⁹ identified potential personal characteristics and beliefs influencing early childhood educators' nutrition practices (e.g., doubting obesity definitions, feeling uncomfortable talking with parents). Mita, Li, and Goodell³⁰ identified individual barriers (e.g., lack of knowledge, perception of child preference) and facilitators (e.g., viewing self as parent figure) to encouraging children to eat fruits and vegetables. However, these studies did not explore contextual-level factors within the early care and education setting itself that may drive early childhood educator practice or interact with individual-level factors to influence their practices with children.

Dev et al³¹ completed a study addressing both individual-level and contextual-level factors functioning as barriers and facilitators to the practice of allowing children to serve themselves. Individual-level factors functioning as barriers included perceptions of messiness, belief that children cannot self-regulate or serve a correct portion size, and a view that children are too young. A contextual-level factor facilitating the practice of self-service was center standards recognizing the practice as a part of the curriculum. Potential contextual-level factors inhibiting the practice were demands on program resources and conflicts with other guidelines.

An additional area warranting consideration regarding contextual-level factors influencing practice is that individual-level factors may appear as barriers due to contextual deficits, such as a lack of training opportunities. However, studies by Lanigan³² and Freedman & Alvarez³³ stressed that changes in provider knowledge about feeding practices do not necessarily translate into improved behaviors. In other words, increased training opportunities do not necessarily translate into improved practice, suggesting a need to more fully understand contextual factors that may relate to a broad range of early childhood educator practices beyond what has previously been explored.

The Promoting Action on Research Implementation (PARIHS) framework provides a complement to previous studies using individual-level theories (e.g., Belsky) by considering the interaction of the environment with the uptake of evidence-based practices (EBPs).³⁴ Within the PARIHS framework, successful implementation of EBPs is viewed as a function of the strength of evidence regarding the EBPs, characteristics of the context (e.g., resources, leadership), and the facilitation (i.e., external support) provided to those implementing the practices. This framework recognizes that “evidence” to support or refute uptake of an *evidence*-based practice includes the experiences of those implementing (e.g., early childhood educators) and receiving the implementation of a new practice (e.g., patients; families).³⁵ This “local evidence” informs the view of research evidence and conclusions about whether an EBP is a fit for implementation. This framework can be applied to “identify potential and actual influences on the progress and effectiveness of implementation efforts (p. S1).”³⁶ Involvement of representative professionals in soliciting this information (i.e., a participatory approach) is often a useful method.³⁶

Given the potential for early childhood educators’ practices to influence children and the documented gap between EBPs and actual practices, the field needs a better understanding of early childhood educators’ mealtime behaviors and influential factors on these behaviors. With the PARIHS framework guiding design and analysis, the purpose of this qualitative study was to understand perspectives of early childhood educators regarding practices they implement at mealtimes. Aims of the current study were to: (1) characterize the range (and rationale) of nutrition promotion and mealtime practices described by early childhood educators in relationship to use of EBPs and detrimental practices; (2) characterize contextual factors acting as barriers and facilitators to implementation of EBPs described in early childhood educators’ narratives.

Methods

Procedure

A research assistant with a master's degree in public health and training in qualitative interviewing conducted in-person interviews with early childhood educators working with Head Start (HS) and Arkansas Better Chance (ABC) programs across Arkansas between February 2015 and May 2015. ABC programs are state-funded childcare centers serving children in families with incomes at or below 200% of the federal poverty level. HS programs are federally-funded childcare centers serving children in families at or below the federal poverty level.

The research team used a purposive sampling design to recruit early childhood educators with a diversity of perspectives (i.e., maximize variation).^{37,38} Three factors were considered for sampling: rates of adult obesity in the community, the educator's role in the classroom (i.e., lead or assistant teacher), and race/ethnicity. A list of all ABC and Head Start programs in the state was matched with data on the prevalence of obesity by county from databases compiled by the University of Wisconsin Population Health Institute and the Robert Wood Johnson Foundation.³⁹ These data were used to label each county's quartile of obesity prevalence. Then, 8 sites from each obesity prevalence quartile were randomly selected and invited for participation. At invited sites, interested early childhood educators contacted the research assistant to receive additional information and complete a screening interview including information on the teacher's role in the classroom and race/ethnicity. When demographics were a match with the sampling plan, educators were invited on a first-come, first-serve basis. Only one teacher per site was invited to participate; 90% of the 32 selected sites had a teacher that participated. The research team provided all teachers that completed the screening interview free access for three months to an online continuing education platform. Data collection ended when criteria of the purposive sampling design were satisfied. Participants received a \$50 cash incentive. Interviews lasted a maximum of 1 hour 7 minutes and a minimum of 29 minutes

An adapted version of the Belsky model²⁸ reflective of educator's potential for similar influence on children as parents, was used to inform development of the interview guide. Questions for the interview guide were refined through a process of stakeholder input and four pilot interviews. Data analyzed in this study (i.e., data set) represent a subset of data collected in the full interviews (i.e., data corpus), as described by Braun and Clarke.⁴⁰ Table 1 presents interview questions addressing Work Context (contextual characteristics) and Teaching Interactions that guided thematic analysis of this data set. This process was consistent with our interest in the intersection of the PARIHS context construct in relationship to successful implementation (or lack thereof). The [Blinded for Review] Institutional Review Board approved the study protocol, and all participants provided verbal consent per the protocol. The IRB requested and approved a waiver of consent given that it would have been the only record linking participants' identity to participation in the study. Verbal consent was recorded in audio files.

Data Analysis

Research staff (N =4) transcribed interviews verbatim from audio recordings before importing into QSR NVivo 10 for analysis.⁴¹ Analysis efforts reflect a factist perspective; we sought to provide a detailed analysis to the subset of data related to the pre-established research questions (i.e., theoretical thematic analysis).^{40,42} We employed an integrated approach to coding that began deductively and progressed to allow inductive coding.^{43,44} To this end, an a priori template of codes (i.e., a start list)⁴⁵ was developed based on reviews of environmental factors and early childhood educators' practices predicting nutrition outcomes for children.^{12,13,26,27,46,47} First, three interviews were coded by (initials Blinded for review), a researcher trained in qualitative data analysis using this template. Then, coders employed a consensus building process to reach shared understanding of the codes and to modify the coding template to reflect this process. Thereafter, (initials Blinded for review) coded the remaining documents. Throughout this process, (initials Blinded for review) wrote analytic memos documenting potential emergent themes and constructed situational maps^{48,49} for each case to document the relationship of educator practices and contextual factors.^{44,50} Inductive codes were added when there was textual evidence and team member consensus about the salience of emerging themes.

Results

We conducted 28 in-person interviews with early childhood educators from HS (n = 15) and ABC programs (n = 13). Table 2 provides demographics for this sample. As revealed through analysis of interviews, a range of early childhood educators' practices (EBPs and Detrimental Practices) led to development of a number of subthemes and three primary themes (Mealtime Structures, Resources, and Classroom/Center Atmosphere). Figure 1 presents a relational situational map depicting contextual-level factors (barriers and facilitators) overlapping with early childhood educators' practices resulting in a set of mealtime interactions in a given classroom. Figure 1 also includes the range of practices observed in educator narratives. Each primary theme is associated with contextual-level factors not only facilitating and inhibiting use of EBPs, but also facilitating use of detrimental practices. Descriptions of primary themes and subthemes are provided below. Additional evidence in the form of representative quotes supporting development of the relational situational map (Figure 1) is provided in Table 3.

1.0 Mealtime Structures

1.1 Mealtime Structure Barriers to EBPs/Facilitators of Detrimental Practices

1.1.1 Cafeteria Meals: Early childhood educators described cafeteria settings as having a rigid schedule and facilitating detrimental practices such as hurrying children and directing children to eat. Educators described a setting that made role modeling and enjoying the meal for themselves a challenge. Educators reported meals lasted as little as 15 minutes; 30 minutes was the longest amount of time a lunch lasted. Pre-kindergarten children may "eat lunch with the third through sixth graders (ID 22, ABC)" which early childhood educators described as a major barrier to creating a pleasant atmosphere with controlled conversation.

1.2 Mealtime Structure Facilitators of EBPs

1.2.1 Classroom Meals: Early childhood educators described classroom meals as a context for conversation, more likely to co-occur with other contextual factors related to EBPs (e.g., family-style). Some educators were able to contrast a classroom and cafeteria setting because they have experienced both across their career or because they eat in both depending on the meal or snack. An educator who now eats in the cafeteria described how she found eating in the classroom at her previous center as preferable because everyone was “sitting down” together with everything “right at your reach (ID 27, HS).”

1.2.2 Family-Style: Early childhood educators’ narratives touching on family-style meal service described a context conducive to use of EBPs, such as use of supportive conversations and role modeling. Elements of family-style meals differed among educators. Several educators emphasized family-style as when children sit around the table and “can get the food out themselves with assistance (ID 02, HS)” or similarly, “where all the food is in the middle and you just pass it around (ID 21, ABC)” with no one having to leave the table. Others emphasized family-style features the role of the early childhood educator, which is to “sit there and talk with the children and continue you know, encouraging the meals (ID 02, HS)” or simply “modeling how to eat (ID 27, HS).” Interacting like family was another element of family-style dining emphasized.

2.0 Resources

2.1 Resource Barriers to EBPs/Facilitators of Detrimental Practices

2.1.1 Limited Funding: Early childhood educators described decreases or losses of funding as a barrier to EBPs. Limited funding restricts nutrition exposure and education opportunities given to children both at meals and in the classroom. An educator (ID 03, HS) described “in the past we’ve had like raw carrots, celery and ranch dip. And now mainly its crackers or cookies; crackers or cookies every day.”

2.1.2 Food Choices: Deficits in food quality relative to health and taste created situations where educators found it difficult to model eating and engage in EBPs. Educators described a related issue when the foods served, even if perceived to be healthy, were not enjoyed by the educator. When this happens, practices included pretending to eat, telling children the doctor told them not to eat it, cutting the food up into small bits, and allowing the plate to sit in front of them without eating from it. Early childhood educators sometimes agreed with children that foods offered were not appealing: “I just say, ‘But it’s good for us and it’s healthy for us.... You know I didn’t like it either. So, maybe the next time... it will taste a little bit better, or maybe it needed a little more salt.’” (ID 08, ABC)

2.1.3 Limited Training: Early childhood educators described training related to mealtimes in broad terms as relating to “rules and regulations;” state, USDA, and/or program “guidelines,” and safety. Topics mentioned were serving sizes [e.g., “how much to give them” (ID 01, ABC)], general nutrition information [e.g., “what is best for kids and healthy for them”(ID 08, ABC)], food safety [e.g., “your milk is supposed to be this temperature”(ID 12, HS)], hygiene (e.g., handwashing, tooth brushing (ID 19, ABC, HS)], and physical activity. Mentions of training specific to feeding and nutrition education were

more limited although one educator described receiving training in “how to talk about healthy eating (ID 08, ABC).” Notably, trainings relative to increasing use of EBPs (e.g., role modeling, child involvement, facilitating child choice) or decreasing detrimental practices (e.g., coercing/ commanding children to eat) were not mentioned.

2.2 Resource Facilitators of EBPs

2.2.1 Food Experiences: Early childhood educators described food experiences as providing a context in their classrooms supportive of child involvement and use of EBPs, such as child involvement, discussion of trying new foods, and exposure to foods. “Special snack (ID 01, ABC)” and “special cooking activities (ID 06, ABC)” were other terms describing opportunities for children to have hands-on interactions with foods. However, with one exception, educators did not mention any particular curricula or resources used to drive the structure or content of these experiences. Dietary quality of food experiences varied. Examples included rice krispies, scrambled eggs, biscuit pizzas, kiwi, soup, and avocado. Educator goals for these experiences were to provide hands-on exposure to new foods for children where they develop skills (e.g., stir, mix, spread).

2.2.2 Family Resources and Referrals: Resources and referral systems at centers provided a context for communication and engagement with parents. Often, centers provided educators with passive education strategies such as menus, newsletters, and letters with Body Mass Index information sent home to families. Active education efforts at centers, though less prevalent, included hosting parent nights, referring parents to external resources (e.g., food banks), and having food backpack programs. Some educators described more individualized efforts such as one-on-one meetings with parents, family-level assessments, and phone calls to discuss patterns in child eating. Educators mentioned specific center-level programs as supporting their efforts with children and families.

2.2.3 Food Choices: When educators described foods as both healthy and appealing, there were more opportunities for EBPs at mealtimes like role modeling and discussions of trying new foods. Important elements in descriptions of healthy, appealing meals were variety, taste, and balanced food groups [e.g., “your vegetable, your fruit, your meat, your bread, your milk as well (ID 02, HS)”. An educator (ID 23, HS) described that variety allowed children good opportunities to “try different things.” She continued to say the “meals are great here” and “delicious.” These descriptions were a clear contrast to unhealthy meal options, which overlapped with ordering service, coercion to eat the healthier foods, and educators’ excuses to not eat the food.

3.0 Classroom/Center Atmosphere

3.1 Atmosphere Barriers to EBPs/Facilitators of Detrimental Practices

3.1.1 Social Standards: Early childhood educator views of culturally accepted social standards fostered a learning environment facilitating detrimental practices and inhibiting EBPs. Instilling manners took priority to other objectives, which often translated to detrimental practices. An educator explained, “It’s more about manners, you know. I want to teach my children in my preschool some manners (ID 06, ABC).” To this end, she further explained limiting food exploration (e.g., “Dude, you have a spoon right there. Pick your

spoon up....Use your spoon.”), restricting conversation, and directing children to eat. Further, comparisons to social ideals were evident in educator narratives who described goals of getting children to eat more or to eat more quickly. This set of practices involved invoking an external social benchmark upon children at meals to elicit desired behaviors. That is, educators compared children’s behavior to parents’ desires (e.g., “How would mama feel if you she knew you weren’t eating those potatoes?” ID 07, HS) or to other children in the classroom (e.g., “We’ll point out other peers that are eating, and say what a good job they’ve done.” ID 09, HS).

3.1.2 Familial Characteristics: Early childhood educators described how characteristics of the families they serve affect their practices. Familial hardships and perceived lack of readiness to partner impacted educators’ engagement with parents around nutrition issues. Salient examples included an educator who sent “snack packs and little things” home with a child “because the mother was on drugs so bad that I don’t know that she would’ve fed him even if I would have bought something that she had to cook (ID 20, HS).” Less extreme examples included attempts to discuss picky eating or other mealtime issues with parents and not being well received (e.g., “Yeah they don’t eat so much of this stuff (ID 18, ABC”).

3.1.3 Competing Foods: Reflective of funding requirements or center policy, educators described how the center was required to ensure meals and snacks offered to children complied with healthy standards. However, narratives from educators in state-funded agencies (ABC) more often included descriptions of center policies about outside food that seemed to undermine this effort and create an environment where coercion occurred. Specifically, some centers still allowed children to bring food (e.g., “chips and cookies (ID 08, ABC)” from home for lunch. These children receive a double lunch where the foods from the center compete with foods from home. This double lunch scenario sometimes created a situation where an educator felt obligated to try to get children to eat some foods before others (i.e., order food service) or eat more of perceived healthy foods than unhealthy foods.

3.2 Atmosphere Facilitators of EBPs

3.2.1 Whole Day Approach: Early childhood educators described elements of their mealtime approach reflecting skills they might use during other parts of their day to support children. Educator practices included labeling food groups of foods served, discussing foods they eat at home, describing food properties (e.g., texture, taste, temperature), naming food ingredients, and asking questions about growing food and farms. With a whole day approach, practices used during mealtime to foster learning were not limited to a nutrition focus. Perceiving meals as a time for continued education and assessment provided opportunities to “do a lot of education during that time (ID 13, HS).” Educators who engaged in these practices often described the importance of mealtime as an opportunity to support children in their meal experience.

3.2.2 Clear Regulations/Policy: Often educators cited rules and regulations they are required to follow as the backbone guiding their mealtime practices. Commonly, these rules guided portion sizes, mealtime schedules, and foods consumed at the center. Others

described clear policies as a protection for them to create nutrition and mealtime environments with EBPs. Policy (backed by funding) was critical to educators being able to share the same meal with children. In turn, eating with children overlapped with a range of EBPs in educator narratives. Educators described opportunities for modeling of trying novel foods and having food conversations with children when centers provided their meals.

Discussion

This study used real-life experiences of early childhood educators to provide a comprehensive overview of mealtime and nutrition promotion practices as well as the contextual characteristics of an early care and education setting contributing to these practices. Tumilowicz and colleagues⁵¹ described the importance of understanding “populations and communities in which interventions are situated, including knowledge from the ‘emic’ (insider’s) perspective (p 55)” to inform the design, implementation, and evaluation of nutrition interventions. Our study has sought to provide this insider’s perspective.

Educator Descriptions of Practices

Many studies of influential factors on educator practices have focused on individual-level factors such as personal health behaviors/status,^{25,52,53} knowledge and attitudes,^{24,32,54} and ethnic background.^{25,33} Other studies have highlighted that program requirements [e.g., standards and training requirements for Child and Adult Care Food Program/HS (CACFP), center policies] are linked to increased reported use of EBPs, such as sitting with children and role modeling as well as offering healthier foods and teaching about nutrition.^{38,42,71,72} Relative to other research demonstrating gaps between the evidence base and educators’ practices,^{46,47,58} the current study revealed most educators described using EBPs *and* detrimental practices. This study builds on previous work by highlighting specific contextual-level factors contributing to EBPs *and* detrimental practices among educators; perhaps, regardless of inter-individual differences.

The emergence of two subthemes from these practices is consistent with the inclusion of locally-constructed evidence within the PARIHS framework.³⁵ Social Standards were conceived as contextual-level factors contributing to use of detrimental practices due to a focus on external reasons for dietary intake rather than supporting children’s choice⁹ and exploration of foods.^{59–62} Examples from educators within the Social Standards context seemed to be culturally-derived and socially-supported, emphasizing school readiness, developing manners, and conforming to social ideals of physical attractiveness. There has been limited research exploring the priority of educators to uphold social norms at mealtime, how priorities may be shaped or buffered by contextual characteristics, and how this orientation may influence uptake of EBPs. An ethnographic study by Ahn and Nelson⁶³ explored daycare meals as a socialization context where peers and educators act as “socialization agents (p 433)” at meals to impact children’s conversations and food intake. Our subtheme of Social Standards supports that this may be an inherent goal of meals in the early education setting, and this socialization context may not always be supportive of EBPs.

A Whole Day Approach, by contrast, was identified as a constellation of practices consistent with children's development of food literacy^{64,65} and supported use of best educational practices in early childcare mealtime settings. For example, the skill of emotion coaching⁶⁶ – being aware of emotions, seeing emotions as opportunities for learning, helping children to name their emotions, and exploring options together – was mirrored in educators' descriptions of interactions with children at meals (e.g., naming food groups and properties, finding occasions to teach children about the food cycle). Similarly, strategies demonstrated effective in building children's vocabulary, such as open-ended elicitations and extension on children's comments,⁶⁷ were embedded in educators' narratives as ways to increase children's chances of trying target foods and/or to promote learning at mealtimes. The elements of a Whole Day Approach overlapped to some degree with descriptions from educators in the study by Mita et al⁷ of a "cross curricular environment (p 41)." The commonality of educator descriptions of mealtime practices across studies in absence of standardized, wide-scale mealtime training⁵⁷ suggests some educators may be applying skills learned in other areas to meal settings. Future work should explore if reframing nutrition education training as consistent with educational standards for the whole day is more effective for nutrition promotion interventions and increasing adoption of EBPs.

Relational Situational Map of Contextual Characteristics

A relational situational map of contextual characteristics acting as barriers and facilitators to optimal mealtime and nutrition promotion practices is a result of this study. While some of these factors have been studied before, others have not been studied to the same extent. For example, consistent with the model proposed by Carraway-Stage and colleagues,⁶⁸ our study identified resources/funding and educator training as important factors that may limit or enhance nutrition promotion efforts. Further, both studies highlighted the importance of clear policies for supporting educators; and both build on educator descriptions of "food-based learning"/food experiences to highlight a promising, but underdeveloped, opportunity. Our map and the Positive Mealtime Environment framework from Mita and colleagues⁷ highlight value of family-style dining to facilitate a positive meal and use of EBPs by educators. Our map also has distinct features. First, consistent with the PARiHS framework, our analysis recognized the importance of local evidence regarding what educators say works with their own classrooms. Further, a relative strength of our map compared to others is the explicit linkage between specific practices and environmental conditions. Our map suggests a pathway (i.e., A Whole Day Approach) for operationalizing how theoretical elements of both the Mita and Carraway-Stage models (learning operation of PME,⁷ integration of nutrition education⁶⁸) may take place.

The findings of this study also introduces additional factors (e.g., meal location, food choices) that may hinder or promote "mealtime discussions"⁶⁸ and educators' development of a "positive emotional tone"⁷ that have not been discussed in development of other models. Our map provides a counter example to the positive socialization discussed by Mita et al.,⁷ and highlights how some social standards (e.g., physical attractiveness) may be used to influence children in ways that are not consistent with EBP. Finally, narratives of educators in our study provide specific examples of strategies to connect with parents that are absent from other models. Our findings suggest opportunities to study the link between parent

outreach efforts and child outcomes, particularly whether the mode (e.g. standard versus individualized approach) differently affects children's diet and health outcomes.

Study findings illustrate having a rule in place may or may not translate to successful adoption of that rule. In our study, educators illustrated this in their descriptions of food experiences. Food experiences were opportunities for children to have hands-on involvement with foods and positive exposures. However, the quality of the foods and ingredients featured (e.g., biscuit pizzas, rice krispies) may limit the positive impact on children. Evidence-based guidelines and curricula to structure these experiences may be beneficial. Another example of this in our study was the variability in implementation and educators' descriptions of a "family-style" approach to dining. This variability (in definition and practice) may be attributable to the varying emphases of existing recommendations and guidelines from HS, the CACFP, and the National Association for the Education of Young Children.^{69–71} Early care and education settings need consistent, clear policy to guide trainings leading to use-as-intended of EBPs like family-style dining.

Limitations and Strengths

This study was conducted in a southern state among HS and state-funded early care and education settings. Thus, findings may not be representative of experiences in other geographic or cultural contexts. Future research should explore these constructs in different types of childcare settings such as home-based programs. Another limitation is that many educators, particularly those recruited near the beginning of the study, were those that were first to respond from their center. That is, after random selection of the center, we invited an open response from educators at that site. Research staff enrolled educators if the sampling criteria that they met were not filled. Thus, our sample may over represent educators motivated to engage in research. Finally, our study did not include environmental observations, which could be an important strategy to support (or refute) these findings in future research. The strengths of our study include a strategic sampling design, stakeholder engagement to inform the study, and piloting of our interview guide. These strengths allowed us to enhance our recruitment process, improve our interview progression, and represent a diverse group of early childhood educators.

Conclusion

Early childhood educator narratives revealed dilemmas between educators' daily reality and the ideal that researchers have proposed related to mealtime and nutrition promotion practices. Even skilled, trained teachers may not be able to adopt and maintain EBPs under certain environmental conditions. Role modeling may be implausible in a noisy cafeteria or without funding to provide an educator a meal to eat with the children. When foods are not nutrient-dense and appealing in taste, educators may decide to avoid talking about the food, emphasize some foods over others, or provide an excuse for not eating the food with the children. Positively supporting children's exploration and discussion of food requires adequate time; rushed schedules correspond to a loss of these opportunities. These dilemmas are consistent with previous research in which care providers of children under age 6 stated

the feasibility of strategies to promote healthy eating for children “largely depended on the characteristics of the caregiving setting (e.g. infrastructure, policy, p 1).”⁷²

Acknowledgements

We would like to acknowledge and thank the participating educators involved in this work. The authors would like to acknowledge Drs. Reza Hakkak and Tina Maddox for editorial input on drafts of this article as well as Gireesh Sadasivan for his assistance with formatting.

Funding: The project was supported by the Translational Research Institute (TRI), grants UL1TR000039 and KL2TR000063 (T.S.) through the NIH National Center for Research Resources and the National Center for Advancing Translational Sciences as well as NIH K01 DK110141 (T.S.). The content is solely the responsibility of the authors and does not necessarily represent the official views of the funding agencies.

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Research Snap Shot

Research Question

What contextual factors act as barriers and facilitators to implementation of best practices at mealtimes by early care and education teachers?

Key Findings

In this qualitative research study including 28 early care and education teachers, prominent themes were Mealtime Structures, Resources, and Classroom/Center Atmosphere. Participant narratives illustrate that it may be difficult for a teacher to adopt and maintain evidence-based practices in certain contexts.

Figure 1:
Situational Map of Contextual Barriers and Facilitators to Early Childhood Educators' Use of Evidence-Based and Detrimental Practices

Table 1.

Interview Questions Guiding Thematic Analysis of Data Set

Construct	
Contextual Characteristics	<ul style="list-style-type: none">• What are some of the rules your center follows at meals and snacks? What do you think about those?• What do the children like? What do they not like?• What is the hardest part about meals? If you could make changes, what would you change and why?• What kind of training have you had in for your role at meals?
Teaching Interactions	<ul style="list-style-type: none">• Take me through a typical day in your classroom.• Can you tell me more about meals and snacks? What are they like from start to finish?• What are your jobs at meals and snack times?

Table 2.

Demographic of 28 Early Care and Education Teachers participating in interviews on context and mealtime and nutrition promotion practice

Characteristic	%
<i>Years Teaching</i>	
<=6	21.4
7-12	39.3
13-18	28.6
19-24	7.1
25+	3.6
<i>Age</i>	
<=29	3.6
30-29	35.7
40-49	46.4
50+	14.3
<i>Role</i>	
Assistant	32.1
Lead	67.9
<i>Gender</i>	
Female	100.0
<i>Race</i>	
Asian/Pacific Islander	7.1
African American	14.3
White	75.0
Other	3.6
<i>Hispanic</i>	
No	92.9
Yes	7.1
<i>Education Level</i>	
High School/General Education Development	7.1
Some College	32.1
College+	60.7
<i>Child Development Associate</i>	
No	39.3
Yes	60.7

Table 3.

Contextual Factors Influencing Early Childhood Educator Practices: Themes, Subthemes, and Representative Quotes

Themes	Subthemes and Representative Quotes: Factors Facilitating Detrimental Practices and Inhibiting EBP's	Subthemes and Representative Quotes: Factors Facilitating EBP's
Mealtime Structures	<p>Cafeteria Meals</p> <ul style="list-style-type: none"> • "When we're trying to pack up and go, I have kids shoving their mouth full of food because the whole time they've been sitting there, they've been watching all the big kids and not eating lunch." (ID 23, HS) • "What I tell them is that, 'First, we eat. First, I want you to eat, and when you get done eating you can talk quietly to a friend sitting beside you.' But they only gave us 20 minutes to eat." (ID 04, ABC) 	<p>Classroom Meals</p> <ul style="list-style-type: none"> • It's loud and it's rambunctious (in the cafeteria), and there's other people to distract them... Because there are so many in there we have to get out fast, because we are so crowded. We have to get out and get other people room to sit in our spot... We need to eat and, we need to be done. In the (class) room, it's more contained, more controlled. (ID 06, ABC) • Because a lot of kids at home are <i>rushed</i>, <i>rushed</i>, <i>rushed</i> through meals or eating through a drivethrough or eating in the car... So we try to make it a calm down, nice, inviting, pleasant experience where nobody's rushed, everybody can sit together and talk... you know, eat as they choose and eat calmly and quietly. (ID 16, ABC, HS) <p>Family Style</p> <ul style="list-style-type: none"> • The teacher sits with them, sometimes we let them serve themselves; sometimes we do not depending on what it is. But we sit and have conversation like you would if you were a family. We sit and tell, ask what they did last night. (ID 03, HS) • Family style is where you're sitting at the table, not in front of a tv. And you know, we have our plate and all of our silverware even if we don't use the fork and the knife, we still have it... And we sit there and talk like... some families do." (ID 19, ABC, HS)
Resources	<p>Limited Funding</p> <ul style="list-style-type: none"> • "Well, we are to model appropriate behavior at the table... But we have to pay for our lunches, so if it's not something of choice that we want, we're not going to pay for it. So it's hard to then set examples for the kids. And when you look at paying \$3 for lunch and \$2 for breakfast, you know, that's \$5 a day. And a lot of people, they don't make... so they'll bring from home." (ID 09, HS) • "I mean a lot of times during the week I use my own money to buy stuff for my students. Like if I'm going to do a special snack... I am using my own money and I feel like if there was like a budget for that, that I would do that more often in the classroom." (ID 01, ABC) <p>Food Choices</p> <ul style="list-style-type: none"> • "I was doing my fitness pal, where you're watching your calories, and I was entering the stuff in, and it's very high in fat. Because most of the time the fat grams that you're allowed was coming from just my lunch here, you know." (ID 19, ABC, HS) • "We have to fix our plate and eat with them whether we like it or not. But it's not that we got to, you know, eat the whole plate. But they want us to at least, you know, pretend that we're eating with them." (ID 02, HS) <p>Limited Training</p> <ul style="list-style-type: none"> • "You know I haven't really (had training around mealtime)... I would like to do that. It's just kind of one of those things that we know that we all have to eat, you know.... I guess that's just kind of a routine part of the day." (ID 20, HS) • "They train us about nutrition... they have to do it every year... I've been there 18, 19 years, and I said, 'I know that'. Yeah, but you still have to have that training. Every year they have to train us... Even though you heard it last year, you gonna hear it again this year and the years to come." (ID 25, HS) 	<p>Food Experiences</p> <ul style="list-style-type: none"> • We read a book about friendship. And so we made a Friendship salad where everybody had some different type of fruit, and I would let them pour it in. And we stirred it up, and it was just an extra little snack that we had that day. (ID 01, ABC) • We do a unit each week, and then we try to have nutrition experiences where we have a little booklet. It's got different things in there that we can do, and so we try to do one of those at least once a month that relate to whatever unit we're doing. Like we have one that's called log cabins. I like to do that one when we do presidents and money. You know, 'cause we talk about how Abe Lincoln lived in a log cabin. It's a piece of bread with just some honey on it and then they take the pretzel sticks and make a log cabin. (ID 17, HS) <p>Family Resources and Referrals</p> <ul style="list-style-type: none"> • We have a backpack program right now through our main center that goes through the Rice Depot. But all I have to do is send a request into our main office, and they send them backpack to me, and I send it home with a child. (ID 03, HS) • We do this assessment with the parent, and if they're getting a lot of sugary things, then it goes through a referral. And there'll be times where they say, you know, she has a lot of trouble with constipation or whatever. So we put that in there, and the nutritionist sends us back referrals and recommendations to go over with the parents... Then the parent may come in and say, "Here lately I've been having a problem. I can't get them to eat this or whatever." And we can do a new referral then and send it to our nutritionist, and then she sends us recommendations. (ID 17, HS) <p>Food Choices</p> <ul style="list-style-type: none"> • We get more fruit at breakfast, like we have fruit every day. No matter which tray they choose, there's a fruit. And I notice more kids eating fruit. I like that there. You would kind of think that sometimes they are going to be picky, but a lot of them will eat their fruit... I definitely say that I like the extra fruit at breakfast. The kids are eating it. I see them eating. (ID 06, ABC) • If they see me eating it, they're gonna eat it.... Because [if] I think it's nice, it's good, they try it. (ID 25, HS)

Themes	Subthemes and Representative Quotes: Factors Facilitating Detrimental Practices and Inhibiting EBP's	Subthemes and Representative Quotes: Factors Facilitating EBP's
Classroom / Center Atmosphere	<p><i>Social Standards</i></p> <ul style="list-style-type: none"> • And I tell them, I said, "Eat. When you're finished eating, you can have a conversation. Because you cannot eat and talk at the same time." I said, because that's the rule...I tell them, nobody wants to see your food when you're talking, chewing and talking at the same time. That's my main, main job. Make sure my kids are eating right and not playing at the table and making sure they don't choke with nothing. (ID 25, HS) • We try to tell them it will make them beautiful, and it will encourage strong bones, and it will [help them] become good athletes – you know, just things that we think that preschoolers would associate with...She's a little diva, and she likes to wear cute clothes. And we like to tell her, "In order to be beautiful and in order to be in pageants, you need to eat and so your skin will be..." You know, we just try to encourage. (ID 09, HS) <p><i>Familial Characteristics</i></p> <ul style="list-style-type: none"> • When I'm sitting and eating with the kids, and we're talking about food some of them might say, "Well my mom and dad was fighting last night." And it opened up a conversation, and I said, "Well how did you feel about that or what do you think about that?" ...and that kind of...let them know that they can feel comfortable talking to an adult. (ID 08, ABC) • "We had mentioned it to Mom and Dad, and they said, Oh, she just does that [hoarding food, eating food off floor]... They ended up moving because Services were called, but it was just things like that (ID 22, ABC)." <p><i>Competing Foods</i></p> <ul style="list-style-type: none"> • They [children] can bring a lunch box. But with our lunch grant they have to offer them a tray to make sure that they get all the components in the food groups....That's usually what happens unless you get a really picky child but if they bring a lunch then...I try to encourage them to eat something healthy first. (ID 04, ABC) • Then I have one with McDonald's every morning, and dad will stand in the hall with him and let him finish it. And then he comes in (ID 19, ABC, HS). 	<p><i>Whole Day Approach</i></p> <ul style="list-style-type: none"> • Because once you spark a conversation about, "What is that you're eating?" You know, and then it teaches them also the part. They tell you what is on their tray, and if they don't know what it is then, you're introducing them to not only another food but you tell them... "Well this is broccoli, and broccoli is a vegetable, and it's good for our bodies. And what color is that?" You know, so we're interacting, we're teaching colors, you know. (ID 08, ABC) • So I explained to them that it was the texture. That's how they're made, and they would say, "Well, my mom makes them softer." And I'll say, "Well may be that's a different type of meat..." And we discuss the difference between cooked carrots in butter and some of them eat the raw carrots that are whole. And then with pineapple, they wanted to know why it was round not in the chunks. You have to explain to them, you know. So you show them the difference. (ID 03, HS) <p><i>Clear Regulations and Policy</i></p> <ul style="list-style-type: none"> • I try to encourage them to stay a little bit longer, just a little bit. So that they can interact and visit and sometimes if they'll sit there, then they'll think, "Oh, I'll go ahead and eat a little bit more." ...I like for them to share during lunch time, but I want them to have a length of time to give them time enough to know if they're full or not. Some of them want to eat in a hurry. It's like, "Slow down. We have plenty of time. We're gonna stay at the table, you know, 30 minutes. ... Let our food settle and see if, you know, if you want more. Let that digest." And they have to be there for lunch for 30 minutes. It's a rule. (ID 13, HS) • We have a meeting with parents, and I just tell them that is a lot easier if we don't bring our lunch. Because we would have to replace anything that wasn't nutritious for healthy and make sure that they have the right amount they are supposed to have. (ID 01, ABC)

Note: EBP: Evidence based practice, ID: Identification, HS: Head Start, ABC: State-funded childcare