

Practice-Based Research To Engage Teachers and Improve Nutrition in the Preschool Setting

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Abstract

Background: Improving the diet of preschool-aged children is an important public health goal. Preschool educators may be agents of change for improving children's diets. The objective of this pilot project was to evaluate the feasibility of a research partnership in which teachers collaborated with nutrition researchers to design a research project to promote fruit and vegetable consumption in preschool children.

Methods: Researchers collected data on teachers' perceptions of preschool nutrition through interviews, focus groups, and observations. Teachers and researchers discussed principles of research and identified research questions related to classroom feeding practices. The feasibility of the research partnership was tested by collaborating to design experiments to promote fruit and vegetable consumption in children and examining aspects of the research partnership that facilitated and hindered the fulfillment of the teachers' research goals.

Results: Teachers in child care centers feel responsible for promoting healthy eating for young children. Preschool teachers also tended to view nutrition as more important than obesity among young children. Teachers designed small quasi-experimental studies to test a vegetable promotion strategy. They were engaged in research and the research-teacher partnership, but were uncomfortable with the use of a control group, making formal evaluation of their quasi-experiments difficult.

Conclusions: Preschool teachers can be agents of change for improving young children's nutrition. Engaging teachers through teacher-driven research projects may hold promise. Future collaborations should carefully consider preschool teachers' possible discomfort with disrupting children's routines.

Introduction

Preschoolers' intakes of total fat, saturated fat, sodium, and sugar-sweetened beverages have increased over the last 3 decades, whereas consumption of fruits and vegetables remains low.¹ Lifelong food preferences and habits are formed during the preschool years, and eating behaviors track into adolescence and adulthood.^{2,3} Promoting young children's preferences for fruits and vegetables may have substantial public health impact. Currently, 57% of children aged 3–6 years old in the United States are in center-based child care,⁴ where they may consume one-third to two-thirds of their daily intake.⁵ The preschool environment can have a substantial impact on children's food preferences.^{6–8} Therefore, child care centers can play a major role in promoting healthy eating in young children.⁹

Preschool teachers may be particularly influential in affecting young children's eating habits and are potentially key agents of change in improving the preschool nutrition environment. Some studies have explored the efficacy of obesity prevention interventions for preschool-aged children and have used preschools or child care centers as an intervention setting.^{10–16} However, although these interventions demonstrated efficacy, none demonstrated that they could be sustainably implemented in child care centers and none focused on involving child care staff or educators in improving nutrition or physical activity. The Nutrition and Physical Activity Self-Assessment for Child-Care (NAP SACC) intervention,¹⁶ which was designed to effect sustainable change in child care settings by engaging child care staff in the process of changing policies and practices for nutri-

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tion and physical activity, suggested that focusing on child care staff as key agents of change is a promising approach.

In this exploratory study, we aimed to learn more about the process of engaging preschool teachers in research to improve children's nutrition in the preschool setting. To do this, we set out to build relationships with teachers in a small number of local preschools and collaborate with them on research projects on feeding practices to promote fruit and vegetable consumption in their classrooms. Our goals were two-fold—to describe and learn from preschool teachers' experiences with feeding children in child care, and to build teachers' capacity for conducting their own classroom-based research on feeding practices to promote their use of evidence-based practice.

Methods

Participants

Preschools, for the purposes of this study, were defined as child care or early education centers serving children between the ages of 3 and 5 and providing some type of early educational program. Preschools were recruited via a letter inviting collaboration that was mailed to 24 preschools within an urban area in the northeastern United States. Eligible preschools included all Head Start or School Readiness sites, Catholic Charity sites, small community sites, and participants in the Child and Adult Care Food Program (CACFP). Four preschools expressed interest in participating in this project. Two withdrew due to scheduling conflicts, leaving 2 participating preschools, Preschool A and Preschool B. Informed consent to participate in the project was obtained from preschool directors at both sites as well as all participating teachers. This research project was approved by the Yale Faculty of Arts and Sciences Institutional Review Board.

The project was carried out separately in each preschool. Preschool A had an enrollment of 11 children and 2 full-time teachers, 1 of whom was the director. It was located in a mostly Hispanic, very low-income area. Preschool B, in contrast, was located in a mostly non-Hispanic white neighborhood with one of the highest median incomes in the city. Preschool B had an enrollment of 26 children, 2 full-time teachers, 2 part-time teachers, and 1 director. Both preschools were accredited by the National Association for the Education of Young Children (NAEYC). Both had parents send in lunches; Preschool A, a full-day program (children attended from 8:30 am to 5:00 pm), provided both morning and afternoon snacks, while Preschool B, a part-day program (children attended from 8:00 am to 2:00 pm), provided a morning snack alone. Preschool B was unusual in its approach to snack. Rather than designating a specific time for snack, the preschool offered snack as an optional activity during morning "choice" time.

Project Design

The project was designed to have five phases. First, the researchers aimed to build a collaborative relationship with participating teachers. In the second phase, the researchers documented teachers' and administrators' views about feeding practices and their impact on children's nutrition, whether preschools can play a role in obesity prevention for young children, whether obesity is an issue among young children, and the quality of their preschool's nutrition environment. In the third phase, researchers guided teachers through a brainstorming process to develop ideas for a teacher-directed research project on feeding practices in their classrooms. In the fourth phase, teachers carried out their research projects with technical assistance from the researchers. In the last phase, the teachers and researchers discussed the results of the classroom research project and identified next steps for the teachers, both in terms of future research projects and in terms of plans to improve nutrition at the preschool. The project was designed to be carried out separately at each preschool; the results at each participating preschool were not designed to be compared to one another.

In the first phase, the researchers visited the preschools several times before beginning the teacher-directed research phase, both to build relationships and learn about the environments specific to each preschool. It was essential for the researchers to find common ground with teachers and gauge teachers' expectations for the project and attitudes towards research. To try to build a partnership and emphasize our view of the teachers as colleagues with expertise and knowledge to share (rather than simply research subjects), we focused on two-way sharing of resources and knowledge. The researchers asked teachers for advice and expertise on feeding children and communicating with parents. They also asked for the teachers' evaluations of the feasibility of obesity prevention or healthy eating promotion practices proposed in recent literature, such as repeating exposure to fruits and vegetables and "hiding" fruits and vegetables in familiar foods. In turn, the preschool called upon the researchers for up-to-date training resources related to nutrition and obesity prevention as well as informational materials for parents.

In the second phase, to assess the preschool nutrition environment and document teachers' expertise and perspectives on the feeding of young children, the researchers used a multimethod protocol. This included a semistructured director interview and a focus group with teachers, both developed specifically for this project.

To develop the teacher-directed research project in the third phase, one of the researchers (E.K.) initiated brainstorming with the teachers. The discussion began by focusing on supports and barriers to healthy nutrition in the preschool and teachers' beliefs about their impact on children's food preferences. The researcher presented empirical information on children's food preferences and liking of fruits and vegetables. The teachers discussed how the research supported or differed from their beliefs

and practices. The purpose was to engage the teachers in the information, help them link research to practice, and identify aspects of the published research that did not “ring true” to their experience, with the goal being overall increased engagement in the research process.

During meetings with the teachers at each school, the researcher presented intervention research on modifying children’s food preferences and increasing fruit and vegetable consumption in the classroom. Research on older age groups was included because the literature on preschool interventions is limited. Teachers discussed feeding practices they had tried, and the appropriateness and feasibility of various strategies proposed in the literature, ranging from simple feeding strategies like repeatedly exposing children to fruits and vegetables to more intensive strategies like the delivery of nutrition, physical activity, and screen time curricula to children and parents or the development of a preschool vegetable garden. The purpose was to encourage teachers to brainstorm their own intervention strategies and encourage engagement with the published literature.

Next, teachers proposed ideas to increase fruit and vegetable consumption. The researcher suggested ways to design simple experiments to test these strategies. The teachers and researcher discussed the pros and cons of each plan, and the researcher emphasized the need for a comparison to assess change as well as the need for consistency in measurement. Teachers finalized their choice of experimental strategy and discussed the logistics of working the experiment into existing routines. On the basis of each preschool’s schedule, the researcher prepared a detailed work plan and schedule for the research project within each site, approved by each site’s teachers.

In the fourth phase, teachers carried out their independent research projects at each preschool. At both preschools, the teachers wanted to test whether involving preschoolers in cooking vegetables would increase children’s consumption and liking of vegetables. Teachers at Preschool A believed this strategy could be an educational tool as well as a tool for improving nutrition. Teachers at Preschool B already frequently involved children in cooking projects and wanted to assess their impact when applied specifically to vegetables. The teachers and researcher collaborated on a quasi-experimental design, used separately at both schools, to allow comparison of children’s baseline consumption and liking of teacher-selected vegetables to consumption and liking after participating in cooking the vegetables. Two vegetables were chosen so that a small group of children would cook a vegetable on 1 day and another group would cook at a later date, creating an internal control group for each vegetable while preventing teachers from having to exclude children from cooking activities, which was a major concern. A pre-/postintervention design was also considered, but the teachers and researcher opted not to use this because exposing a child to a vegetable to measure consumption preintervention might have its own effect

on a child’s likelihood of consuming the vegetable again, independent of any impact of the cooking class. Nesting the intervention and control groups within the same preschool is certainly not an ideal study design strategy due to issues of contamination and shared influences. However, this design was chosen because it was the most feasible for the teachers to implement on their own and because the goal of the project was to engage teachers in the research process.

In the fifth phase, the researcher presented the results of the projects to the teachers at the respective preschools. The teachers and researcher discussed the implications for future practices at the preschool. Potential future research projects to be carried out by the teachers on their own were also discussed.

Results

Focus Groups Assessing Teachers’ Views on Feeding and Obesity Prevention

In both preschools, teachers were already committed to providing a healthy nutrition environment. They perceived themselves as playing an important role in keeping children healthy and in the formation of children’s food preferences. As caregivers, they felt responsible for the whole child, for children’s emotional, social, and physical development as much as for academic development. They reported viewing healthy feeding practices as part of their professional role, and that it was their responsibility to model healthy eating, expose children to a wide variety of foods, teach children how to enjoy foods in moderation, help them acquire social skills during mealtimes, and build awareness of hunger cues. While both groups were clearly committed to nutrition, and felt that it was important to instill good habits for the prevention of obesity later on in childhood, none of the teachers believed that overweight and obesity was an issue at the children’s current age.

The teachers also discussed the different policies and practices addressing nutrition and feeding. At Preschool A, the director, using NAEYC accreditation policies as a frame, had recently implemented firmer guidelines for lunch items, requiring lunches to follow the CACFP meal reimbursement requirements. The teachers asserted that the preschool’s strong policies had helped in improving children’s diets; the director noted that having a written policy was especially helpful because it made enforcement with parents easier. In contrast, Preschool B’s nutrition guidelines were more relaxed. Parents are instructed to pack a healthy lunch and are told they cannot pack sweets of any kind. Preschool B’s staff reported having very few problems with parents in nutrition guideline compliance.

Teacher-Directed Research Projects

When the experiments actually took place, despite having agreed in theory to the necessity of at least temporarily withholding their cooking class intervention from some

children to have a comparison group, teachers at both preschools were reluctant to disrupt the children's normal routines and give their chosen interventions to some groups of children at a time and not others. This suggested that the researcher failed to adequately communicate how the process of using a control group would work and that additional conversations on the importance of a control group may have been necessary. It also suggested that, given situations in which administering an experimental intervention at the preschool level is unfeasible, as in this situation, alternative designs might be more appropriate. At Preschool A, when the time came to start their experiment, the teachers did not want to exclude some children from cooking a vegetable while other children cooked; they worried about hurting the children's feelings or discouraging them from taking an interest in cooking. At Preschool B, teachers ultimately did not want to alter their existing snack structure, in which children choose whether or not to eat, and so only a few children actually chose to have snack due to their interest in other activities. This hampered the teachers' and researchers' ability to perform statistical analyses on the vegetable consumption data. However, the researchers learned of the need to be even more explicit in describing the importance of a control group as well as how the research project would unfold, that the potential disruption of routine is a significant concern, and that alternatives to using control groups in the same site as the intervention group that are still feasible for preschools to implement should be considered. The teachers learned firsthand the importance of control groups and adhering to experimental design.

Despite this setback, teachers still expressed interest in future research in the last phase of the project. Teachers at both preschools exhibited a commitment to their own future research on promoting fruit and vegetable consumption. Teachers at Preschool A wanted to test the effect of serving new vegetables alongside regular lunch foods compared to serving them alone for snack. They reported confidence in being able to set up the experiment, but asked for help with analysis. The researcher delivered a food scale so that the teachers could continue performing plate-waste experiments. Teachers at Preschool B wanted to evaluate the impact of deceptive feeding practices ("hiding" vegetable purees in familiar comfort foods) on children's consumption and liking of vegetables. They also planned to write their own article about their unique snack practices to inform other preschool colleagues.

Discussion

This study details one experience of engaging preschool teachers in a research collaboration to improve children's nutrition. Strengths of this study include its collaborative process and involvement of key actors in the preschool environment. There has been a call recently for community input in obesity prevention¹⁷; this study was designed

to involve teachers in setting goals, generating ideas for interventions, and designing their own experiments.

There were several limitations to this exploratory study. Our voluntary recruitment process, which allowed for preschools to self-select into the study, limits the generalizability of our findings, as does the small number of preschools who ultimately participated. Preschools who were interested in participating in such a project may not be representative of preschools in general. In addition, the preschools that opted to participate in our study were already invested in maintaining a healthy nutrition environment. Further, both preschools were quite small, and likely different from larger preschools with more structured food service programs.

Several challenging aspects of the process should be considered by researchers aiming to develop similar partnerships. First, building relationships with teachers is time intensive. Second, preschools vary in administrative structure, teacher preparation, financing, space, size, parent involvement, and food services. These system variations necessitate familiarity by researchers with specific preschool environments and teacher and administrator input.

Additionally, careful consideration should be given to study designs that are feasible and acceptable to teachers to use within their own classrooms as well as able to answer teachers' research questions effectively. In our case, the most appropriate study design to answer the teachers' questions, a multisite controlled experiment, was not a feasible option, nor was a pre/post design. The design used in this project, in which the intervention and control groups were in the same classroom and the control groups would eventually receive a delayed intervention, was not ideal from a research perspective but seemed to be the best solution to balancing the project's objectives. However, it turned out that this design was still not appropriate. The reluctance of teachers to alter normal routines prohibited quantitative evaluation of the experiments. In several community-based studies, community partners have been reluctant to deny some members of the community the potential benefits of an intervention for the sake of a control group,^{18,19} although a delayed implementation has been acceptable in some instances.²⁰ Although we designed the experiments so that every child would eventually participate, and although teachers were involved in the design, they remained uncomfortable with denying children participation, even for 1 day, and were uncomfortable with altering routines. Researchers may need to be more explicit in outlining the importance of comparison groups and consistent research designs, and might supplement the hands-on learning process with informational basic research skill training.

Conclusion

This formative study demonstrated the willingness of preschool teachers to engage in a research partnership to improve the food environment in preschools and the

challenges of translating that partnership into productive practice. The partnership resulted in knowledge acquisition for the researchers and teachers' engagement in and commitment to research in the service of improving their preschools' nutrition environments. For future studies, researchers should be aware that preschool teachers might be unwilling to perform intervention activities that do not include the whole classroom at once and think creatively about flexible designs.

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Author Disclosure Statement

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