Advancing Healthy Eating, Physical Activity, and Breastfeeding Support Practices and Policies Among Family and Independent Child Care Providers

AN EVALUATION OF STATEWIDE HEALTH IMPROVEMENT PARTNERSHIP (SHIP) CHILD CARE TRAINING AND TECHNICAL ASSISTANCE

MDH Minnesota Department *of* Health
OFFICE OF STATEWIDE HEALTH IMPROVEMENT INITIATIVES

Advancing Healthy Eating, Physical Activity, and Breastfeeding Support Among Family and Independent Child Care Providers

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This report is part of a series of reports featuring focused evaluation studies of SHIP strategy areas: Tobacco, Active Living and Healthy Eating.

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Abbreviations:
CACFP - Child and Adult Care Food Program
PSE - Policy, System, and Environment
SHIP - Statewide Health Improvement Partnership

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Contents

Executive Summary

Childhood obesity is a serious health and economic concern in Minnesota, putting children at risk of physical and psychosocial health problems, increasing their chance of becoming overweight or obese as adults, increasing direct medical costs, and disproportionately affecting children from lower income families and racial/ethnic minorities.[1] Childhood obesity often starts even before children enter kindergarten: In Minnesota, 12.3 percent of low-income preschoolers were obese in 2014.[2]

Creating child care environments that support healthy habits is a critical strategy for preventing obesity among young children. The Minnesota Statewide Health Improvement Partnership (SHIP) provides training and technical assistance to child care providers to support the implementation of policy, systems, and environmental (PSE) changes in healthy eating, physical activity and breastfeeding practices in programs where young children spend much of their time. This evaluation focused on family child care providers and small independent child care centers, which serve a disproportionate number of lower income and rural children and often lack access to formal training and resources on practices and policies regarding healthy eating, physical activity, and breastfeeding.[3,4]

The primary purpose of this evaluation was to assess the impact of SHIP's child care training and technical assistance strategy on the adoption and implementation of nationally recommended practices[5] and written policies that promote healthy eating, physical activity, and breastfeeding in child care settings. Secondary purposes of this evaluation were 1) to assess changes in licensed family child care providers' knowledge and attitudes of child care best practices related to healthy eating and physical activity for children; and 2) to identify barriers child care providers face implementing best practices in these areas.

Key Findings

With a sample of over 200 providers who care for infants, toddlers, and preschoolers, this evaluation found that, after participation in SHIP training and technical assistance:

1. Child care providers were significantly more likely to engage in healthy eating, physical activity, and breastfeeding support practices that align with nationally recommended best practices. For example:

- The proportion of providers who offered vegetables to children at least twice per day increased from 40 percent to 53 percent ($p<.01$).
- The proportion of providers who provided toddlers with at least 90 minutes of active play time daily increased from 57 percent to 78 percent ($p<.01$).
- The proportion of providers who met at least six recommended practices for breastmilk storage, labeling, and handling increased from 68 percent to 93 percent ($p<.01$).

2. Child care providers were significantly more likely to have written policies reflecting current practice on these behaviors. However, the proportion of providers with written policies remained below 50 percent.
3. Providers demonstrated increased knowledge of best practices, greater willingness to try new methods to promote healthy behaviors, and greater agreement that child care practices impact the current and lifelong health of children.
4. Providers identified common barriers to practice change, including:

- Children's preferences for less-healthy foods (66 percent), the cost of food used to make nutrition changes (64 percent), and the cost of new materials and equipment (59 percent).
- The weather was a barrier to physical activity (80 percent), the cost of new physical activity materials and equipment (74 percent), and space to perform physical activities (59 percent).
- Parents' not following policies on breastmilk storage and labeling (14 percent).

Conclusions

Healthy eating, physical activity, and breastfeeding in early childhood puts young children on a path to healthy weight as they grow. Results from this evaluation indicate that SHIP training and technical assistance on healthy eating and active living lead to improved practices, knowledge, and attitudes among a group of providers who serve at-risk children throughout Minnesota.

Findings suggest that the SHIP child care strategy of providing training and technical assistance is an effective way to increase adoption of policies and practices that may protect against obesity in early childhood. The results also point to the need for continued technical assistance or refresher trainings to reinforce specific training concepts and provide support and resources to address barriers to change. Given that over two-thirds of Minnesota's young children are enrolled in child care, investing in training and technical assistance to improve healthy eating, physical activity, and breastfeeding support in child care is an important and effective investment in the current and future health of the youngest generation of Minnesotans.

References

1. Centers for Disease Control and Prevention. Childhood Obesity Causes & Consequences. 2015; http://www.cdc.gov/obesity/childhood/causes.html. Accessed September 8, 2016.

2. Pan L, Freedman DS, Sharma AJ, et al. Trends in Obesity Among Participants Ages 2-4 Years in the Special Supplemental Nutrition Program for Women, Infants, and Children-United States, 2000-2014. *Morbidity and Mortality Weekly Report.* 2016;65(45):1256-1260.

3. Chase R, Valorose J. *Child Care Use in Minnesota: Report of the 2009 Statewide Household Child Care Survey.* St. Paul, MN: Wilder Research;2010.

4. Chase R, Valorose J. *Child Care Workforce in Minnesota.* St. Paul, MN: Wilder Research;2012.

5. American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. *Caring for our Children, National Health and Safety Performance Standards: Guidelines for Early Care and Education Programs, 3rd Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association;2011.

Introduction

Childhood obesity is a serious health and economic concern in Minnesota. Being overweight puts children at risk of physical and psychosocial health problems such as type 2 diabetes, asthma, and depression, and increases their chance of becoming overweight or obese as adults.[1] Obese children who become obese adults face more severe health consequences and incur roughly $19,000 more in direct medical costs over the course of their lifetime compared to normal weight children who remain normal weight into adulthood.[2] The difficultly of treating obesity in adulthood underscores the need for children to learn healthy habits early in life.[1]

Childhood obesity often starts even before children enter kindergarten: In the United States, 8 percent of infants and toddlers (under 2 years of age) are at an unhealthy weight, and 23 percent of 3-to-5 year old preschoolers are overweight or obese.[3] The prevalence of obesity is higher among preschoolers from lower income families, such as those enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and some racial and ethnic minorities.[4,5] Even after declining steadily over the past decade, the most recent data available indicate that 12.3 percent of Minnesota children enrolled in WIC were obese in 2014.[6]

What children eat, whether or not they were breastfed as babies, and their activity level have all been shown to affect their weight trajectories.[7-9] In Minnesota, 22 percent of babies are breastfed exclusively for the first six months of life, higher than the national average of 16 percent), but this percentage falls short of the Healthy People 2020 target of 25.5 percent.[10,11] About three-quarters of 2-3 year olds in the U.S. consume levels of saturated fat and sodium that exceed recommended dietary guidelines.[12] About 30 percent do not consume vegetables daily, and the most commonly consumed vegetable among this age group is French fries.[13] Preschoolers also engage in low amounts of moderate or vigorous physical activity and have high levels of sedentary behavior.[8,9,14]

Creating child care environments that support healthy habits is a critical strategy for preventing obesity among young children. In Minnesota, 69 percent of infants and toddlers and 82 percent of 3 to 5 year olds attend child care regularly, spending on average 27 to 31 hours per week in child care.[15] The Minnesota Statewide Health Improvement Partnership (SHIP) provides training and technical assistance to child care providers to support the implementation of policy, systems, and environmental (PSE) changes. These PSE changes support young children to engage in healthy eating and physical activity practices and support families who want to continue breastfeeding their children who attend child care. In 2014, SHIP worked with 768 child care providers that cared for over 9,000 children. This strategy works in tandem with other SHIP strategies that target schools, worksites, health care settings, and community settings to support healthy living across all stages of life. In order to provide equitable access to healthy opportunities in child care settings, SHIP works with center-based providers as well as licensed and unlicensed family providers, who are more likely to serve children with lower household income and those living in rural areas.[15]

Evaluation purpose

The primary purpose of this evaluation was to assess the impact of SHIP's child care training and technical assistance strategy on the adoption and implementation of best practices and written policies that promote healthy eating, physical activity, and breastfeeding in child care settings. Secondary purposes of this evaluation were: 1) to assess changes in child care providers' knowledge and attitudes of child care best practices related to healthy eating and physical activity for children; and 2) to identify barriers that child care providers face when implementing best practices in these areas.

Methods

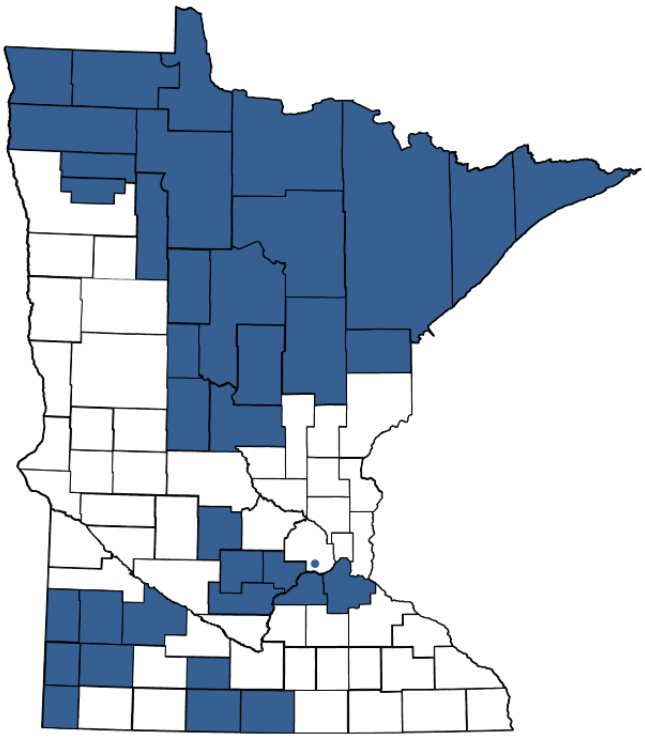
Study Population

The study population of this evaluation consisted of family child care providers and small independent child care centers operating in 13 SHIP regions (Figure 1). These SHIP grantees chose to contract with a single early child care training organization to conduct MDH-approved training on healthy child care practices in 2014. Thus, all providers participating in SHIP in these regions received the same training and curriculum materials.

Compared to providers in large child care centers, family child care providers are less likely to have a bachelor's degree and are less likely to use formal curricula and assessments.[16] They are also more likely to live in Greater Minnesota and experience greater scheduling difficulties in accessing professional development.[16] As a result, family child care providers and small independent centers may lack access to formal training and resources that encourage healthy eating, physical activity, and breastfeeding among children in their care. Compared to child care centers, they are also more likely to report facing barriers to providing physical activity opportunities for children and less likely to provide at least one hour of active play each day.[17]

Family child care providers also serve a disproportionate number of lower income and rural children. Family child care providers are typically licensed to care for up to 10 children in their own homes[18] and are the primary source of care for 25 percent of infants and toddlers and 16 percent of 3-to-5 year olds (16%) in Minnesota.[15] The cost of family child care is much lower than center-based care: According to 2014 statistics from the Minnesota Department of Human Services, the median cost of child care for an infant in a family-based setting is $155 per week less than center-based care in the metro area and about $40 per week less in Greater Minnesota, which translates into thousands of dollars per year.[19]

Figure 1. SHIP Grantee Regions in Study Population[i]



Source: Minnesota Department of Health, 2016

Intervention Description

The SHIP Child Care Strategy used a training and technical assistance model to support child care providers in enacting PSE changes in three behavior areas: healthy eating, physical activity, and breastfeeding support. An early childhood training organization partnered with 13 SHIP grantees to offer a 3-hour workshop curriculum and a set of resources that covered healthy eating, physical activity, and breastfeeding support to child care providers working with SHIP. Thirty-six workshops were held across the state between July and December 2014. Following the training, field representatives from the organization or SHIP staff provided follow-up technical assistance to child care providers in the form of coaching and support delivered

[i] Brown-Nicollet-LeSueur-Waseca Counties; Southwest (Lincoln, Lyon, Redwood, Pipestone, Murray, Rock Counties); Faribault-Martin-Watonwan Counties; Meeker-McLeod-Sibley Counties; Carver County; Scott County; Bloomington-Edina-Richfield; North Country (Lake of the Woods, Beltrami, Clearwater, Hubbard Counties); Dakota County; Healthy Northland (Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, St. Louis Counties); Crow Wing County; Health 4 Life (Morrison, Todd, Wadena, Cass); Quin (Kittson, Marshall, Roseau, Pennington, Red Lake)

through in-person site visits, emails, telephone calls, direct mailings, and online resources. The coaching and support helped providers as they worked to change their current practices and policies to align with best practices learned in the trainings.

Data Collection Procedures

During registration or at the beginning of the training workshop, all child care providers completed an in-person, paper assessment of healthy eating, physical activity, and breastfeeding support practices in effect at their site (hereafter, PSE survey). Staff trainers at some workshops also agreed to administer a survey assessing providers' knowledge and attitudes about the adoption of healthy eating, physical activity, and breastfeeding support in child care settings (hereafter, knowledge and attitudes survey). Six months after the workshops, child care providers were invited to complete the surveys again through a web-based system. Some SHIP grantees chose to offer a $10 gift card to providers for their participation in the survey. A supplemental section was included in the follow-up knowledge and attitudes survey to assess providers' perceived barriers to PSE change.

Sample Size and Characteristics

Child care providers were eligible for this evaluation if they attended the 3-hour training workshop described above between July and December 2014 and completed the PSE survey at the training. Of the 768 child care providers participating in SHIP 3 across the state, 507 providers were eligible for the study. Of these, 242 completed the follow-up PSE survey, for a response rate of 48 percent.

The knowledge and attitudes survey was administered at a subset of the training workshops at baseline. Of the 484 eligible providers who completed the knowledge and attitudes survey at baseline, 163 completed this survey at follow-up, for a response rate of 34 percent.

The vast majority of participants were family child care providers (Table 1). Ninety percent participated in the Child and Adult Care Food Program (CACFP, see Table note), and 60 percent received Tier 1 reimbursement from CACFP, indicating the provider was low-income or that they were located in low-income areas. On average, family child care providers in this study cared for about seven children, while center-based providers cared for about 38 children.

Table 1. Characteristics of Study Sample

	PSE Sample	Knowledge and Attitudes Sub-Sample
Number of Providers	**242**	**163**
Type of Child Care Provider		
Family Child Care	95%	94%
Child Care Center	5%	6%
CACFP		
No	10%	11%
Yes, Tier 1	60%	58%
Yes, Tier 2	30%	31%
Number of Young Children Served	**Mean**	**Mean**
Family Child Care	6.8	6.8
Child Care Center	38.7	37.5

Note: CACFP is Child and Adult Care Food Program, a federally funded program administered by the Minnesota Department of Education to provide reimbursement for meals served in child care settings.[20] Thirty providers excluded from statistics on number of children served because they reported data on total enrollment, which included school-age children.

Measures

The PSE survey assessed adherence to best practices on healthy eating (four items), physical activity (three items), and breastfeeding (one item) based on national guidelines developed by the American Academy of Pediatrics, the American Public Health Association, and the National Resource Center for Health and Safety in Child Care.[21] The PSE survey contained a multiple-choice question assessing the extent to which current practices aligned with each best practice listed in Table 2. Each measure was scored on a scale of 0 to 3, with 3 indicating that the child care provider's current practice aligned with national guidelines. For example, providers were asked how often they offered children fresh, frozen or canned vegetables, cooked or raw, with no added salt or fat, with the following answer choices: two or fewer times per week (score=0), three to four times per week (score=1), one time per day (score=2), and two or more times per day (score=3, best practice level). For each measure, we calculated the proportion of sites that improved their score and the proportion of sites that met best practice levels before and after participation in SHIP.

Table 2. SHIP Child Care Best Practices

Healthy Eating

- Fresh, frozen, or canned vegetables, cooked or raw, with no added salt or fat are offered two or more times per day
- Children are allowed to serve all or most foods with limited help from adults
- Caregivers always or almost always sit with children at mealtimes
- Caregivers always or almost always eat and drink the same foods and beverages that are served to the children

Physical Activity

- Active play time, including both indoors and outdoors, is provided daily to preschoolers for 120 minutes or more
- Active play time, including both indoors and outdoors, is provided daily to toddlers for 90 minutes or more
- Portable play equipment is available to children during active play time, both indoors and outdoors

Breastfeeding

- At least six of these practices are followed almost all of the time when handling breast milk:

1. Milk is stored in the back of the refrigerator or freezer
2. Containers are labeled with the date of milk expression
3. Containers are labeled with the name of the child
4. Containers are labeled with the date thawed (if milk was previously frozen)
5. Warm milk is not added to already cooled or frozen milk
6. The oldest milk is used first
7. Providers wash their hands before handling breast milk

Source: Minnesota Department of Health, based on American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. *Caring for our Children, National Health and Safety Performance Standards: Guidelines for Early Care and Education Programs, 3rd Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association; 2011.

Six items on the PSE survey assessed adoption and communication of written policies on each of these three behaviors (Table 3). In the child care setting, SHIP defines a policy as written documentation of healthy eating, physical activity, and/or breastfeeding support practices in use by the provider. For each measure, we calculated the proportion of providers who met the best practice levels before and after participation in SHIP. Best practices included having a

written policy that reflects current practice and communicating the policy to parents both in written form and verbally.

Table 3. Policy Adoption and Communication

Question	Answer Choices
Written Policy Adoption	
Is there a written policy that includes current… 1. healthy eating practices? 2. physical activity practices? 3. breastfeeding practices?	0. No written policy exists 1. A policy is being drafted 2. A written policy exists, but does not reflect current practices 3. Written policy reflects current practice **(Best Practice)**
Policy Communication	
1. Healthy eating… 2. Physical activity… 3. Breastfeeding… …policy is communicated to current and prospective families in the following way:	0. Practices are not communicated to parents 1. Practices are communicated to parents only verbally 2. Practices are communicated to parents only in written form 3. Practices are communicated to parents both in written form and verbally **(Best Practice)**

The knowledge and attitudes survey consisted of (a) seven multiple choice items assessing providers' knowledge of best practices on encouraging healthy eating (offering vegetables to children, family-style meals, role modeling), encouraging physical activity (active play, equipment), properly storing and handling breastmilk, and written policies; and (b) three items assessing the extent of providers' agreement with statements about their willingness to try new methods to promote healthy behavior and their beliefs about the impact of child care practices on children's health. We calculated the proportion of providers who correctly answered each knowledge question before and after participation in SHIP. For the attitudes measures, we calculated the proportion of providers who increased the extent to which they agreed with each statement and the proportion that agreed to a "great" or "very great" extent with each attitude statement before and after participation in SHIP.

The supplemental section added to the follow-up survey included 31 items that assessed providers' perceived barriers to PSE change affecting healthy eating (n=12), physical activity (n=11), and breastfeeding (n=8). Providers rated each statement as not a barrier (0), somewhat of a barrier (1), or a major barrier (2) (see Appendix). We calculated the proportion of providers reporting that each measure was either "somewhat of a barrier" or a "major barrier." A complete version of the survey with sample sizes for each question appears in the Appendix.

Analysis

Only providers who responded to each item at both time points were included in analysis. The sample size varied across measures because some sites received a modified version of the PSE survey that did not include all of the measures examined in this study. We compared survey results before and after participation in SHIP using McNemar's test, and used a two-tailed alpha = 0.05 to determine statistical significance.

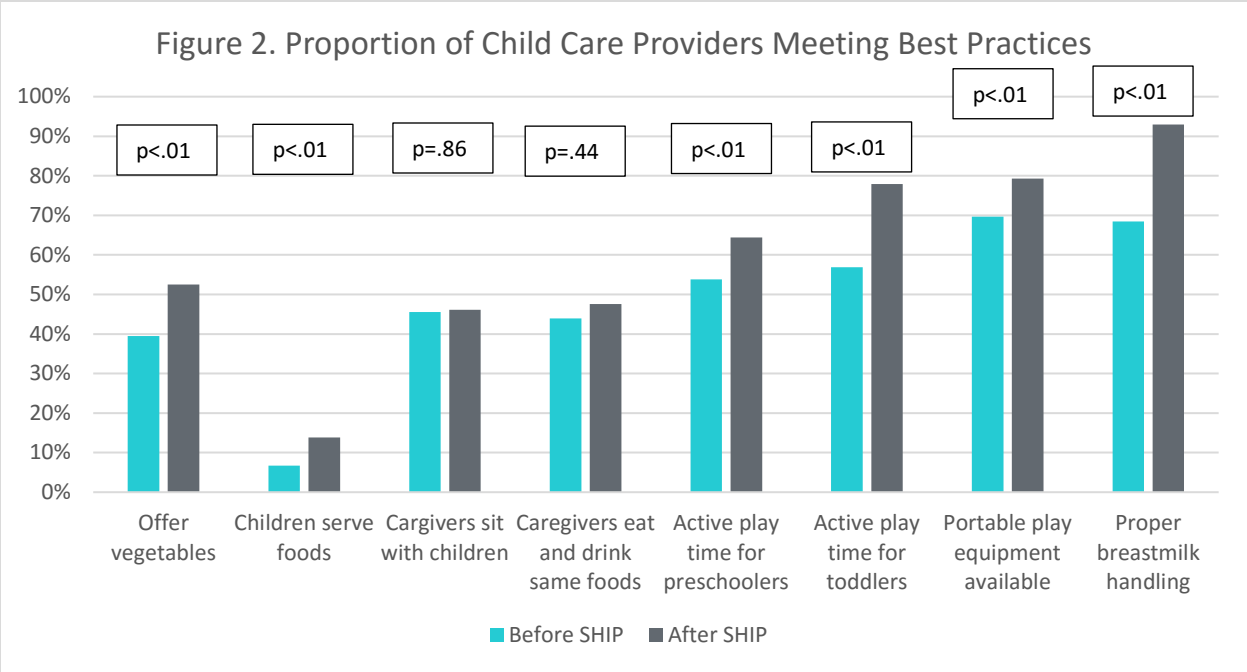
Results

Changes in Eating, Activity, and Breastfeeding Support Practices

The proportion of providers who implemented each best practice increased significantly for six out of eight practice measures examined (Figure 2). Implementation of two healthy eating practices increased significantly: the proportion of providers who served vegetables to children at least twice per day increased by one-third (40 percent before vs. 53 percent after participation in SHIP), and the proportion of providers who allowed children to serve themselves at mealtime doubled (7 percent before vs. 14 percent after participation in SHIP). The proportion of providers who implemented the other two healthy eating practices (caregivers sat with children at mealtimes and caregivers ate and drank the same foods and beverages that were served to children) did not change significantly after participation in SHIP.

Implementation of all three physical activity practices increased significantly. The greatest increases were seen in the proportion of providers who provided at least 90 minutes daily of active play time for toddlers (57 percent before vs. 78 percent after participation in SHIP). Smaller increases were observed for the proportion of providers who provided at least 120 minutes daily of active play time for preschoolers (54 percent before vs. 64 percent after participation in SHIP), and made portable play equipment available both indoors and outdoors (70 percent before vs. 79 percent after participation in SHIP).

The proportion of providers who met at least six recommended practices for breastmilk storage, labeling, and handling increased from 68 percent to 93 percent after participation in SHIP, an increase of more than one-third. After participation in SHIP, the proportion of providers implementing this best practice was the highest out of all the measures examined.

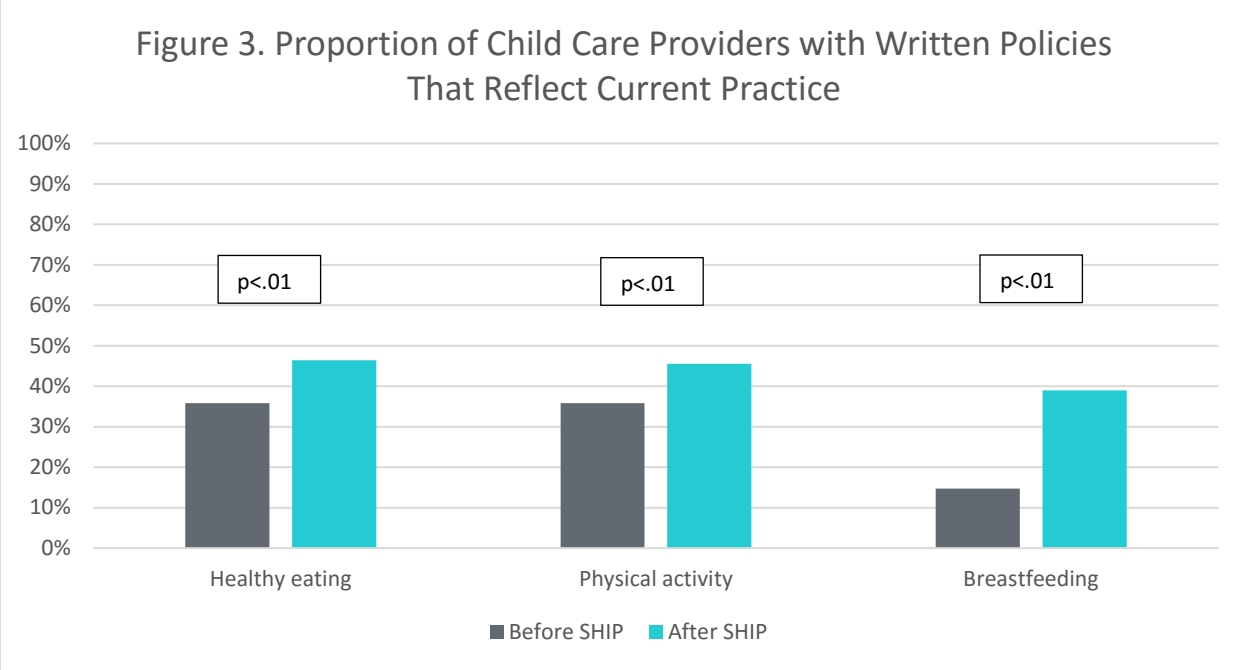


Source: Minnesota Department of Health, 2016

Changes in Written Policies and Communication

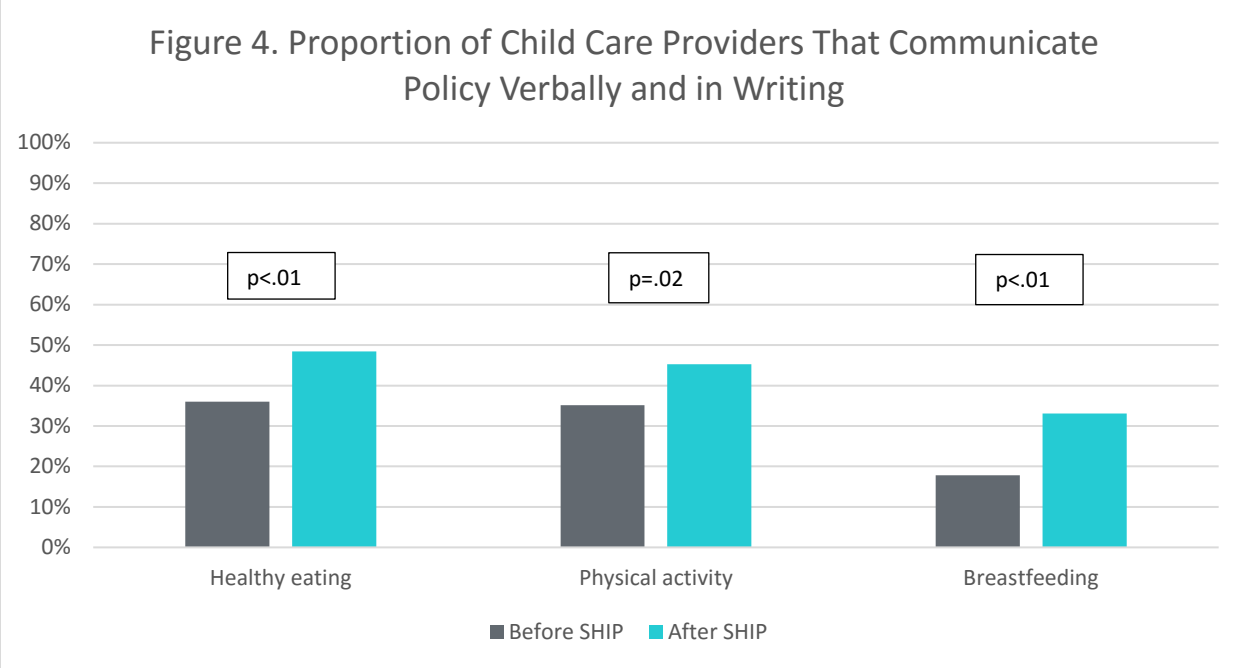
The proportion of providers with written policies that reflected current practice on healthy eating, physical activity, and breastfeeding increased significantly, but remained below 50 percent for each behavior topic (Figure 3). The greatest increase was seen in the proportion of providers with a written breastfeeding policy, which more than doubled from 15 percent before SHIP to 39 percent after SHIP ($p<0.01$). This was also the topic least likely to be included in written policies before participation in SHIP.

The proportion of providers with healthy eating or physical activity policies each increased from 36 percent to 46 percent after participation in SHIP. Only 31 percent of providers had both a healthy eating and a physical activity policy that reflected current practices after participation in SHIP (data not shown).



Source: Minnesota Department of Health, 2016

There were also significant increases in the proportion of providers who communicated written policies to parents in both verbal and written form (Figure 4). Between 45-48 percent of providers met this best practice for communication of healthy eating and physical activity policies after participation in SHIP, while 33 percent did so for breastfeeding policies.



Source: Minnesota Department of Health, 2016

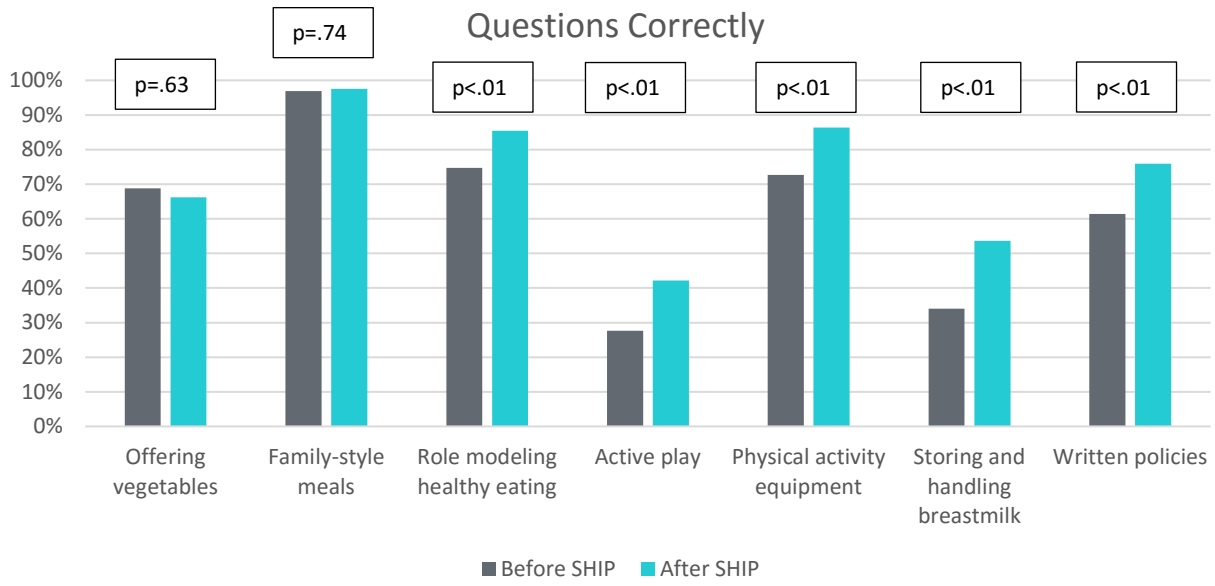
Changes in Knowledge

The proportion of providers who answered each knowledge assessment question correctly increased significantly for five out of seven questions (Figure 5). The two questions least likely to be answered correctly before the training were also among those with the greatest increases in correct answers: storing and handling breastmilk (34 percent before SHIP vs. 54 percent after); active play (28 percent before SHIP vs. 42 percent after). All other questions were answered correctly by two-thirds or more of providers after participation in SHIP.

There were also large increases in the proportion of providers correctly answering questions about physical activity equipment (73 percent before SHIP vs. 86 percent after); and written policies (61 percent before SHIP vs. 76 percent after).

The proportion of providers who correctly answered knowledge questions on family style meals and offering vegetables to children did not change significantly. The question on family style meals was answered correctly by over 96 percent of providers before and after participation in SHIP. About two-thirds of providers correctly answered the question on offering vegetables to children.

Figure 5. Proportion of Providers Answering Knowledge Test Questions Correctly

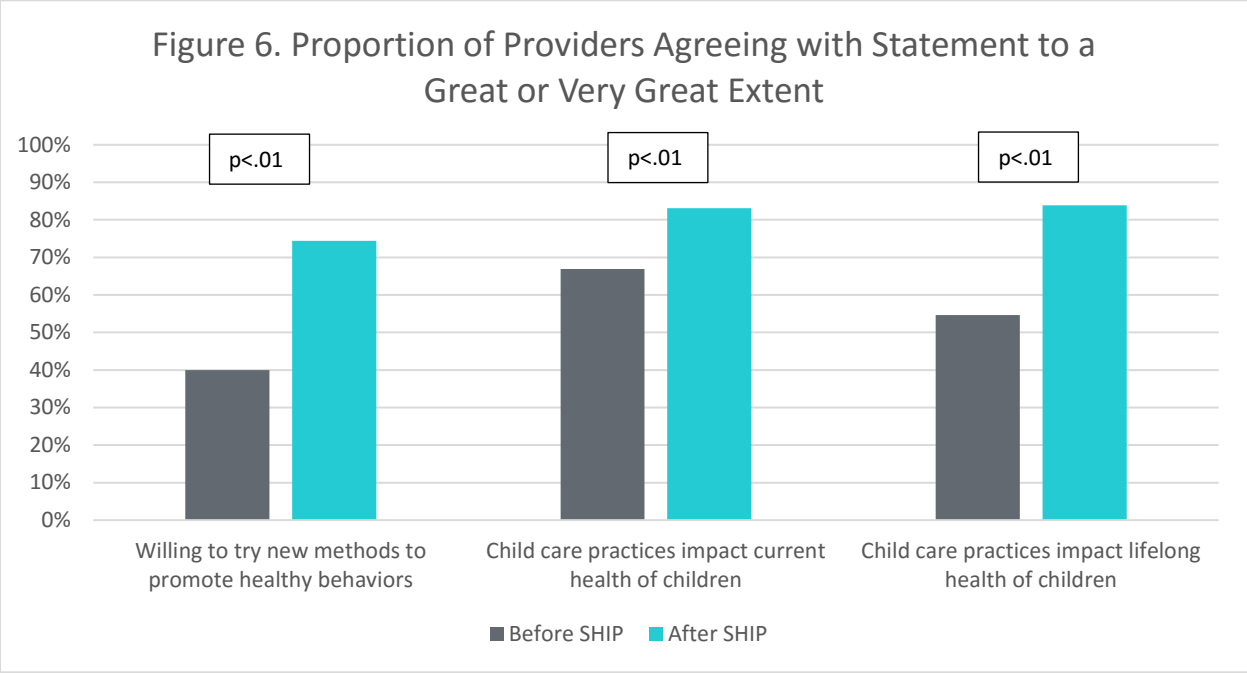


Source: Minnesota Department of Health, 2016

Changes in Attitudes

The proportion of providers reporting that they agreed to a great or very great extent with each attitude question increased significantly for all three measures (Figure 6). At baseline, 40

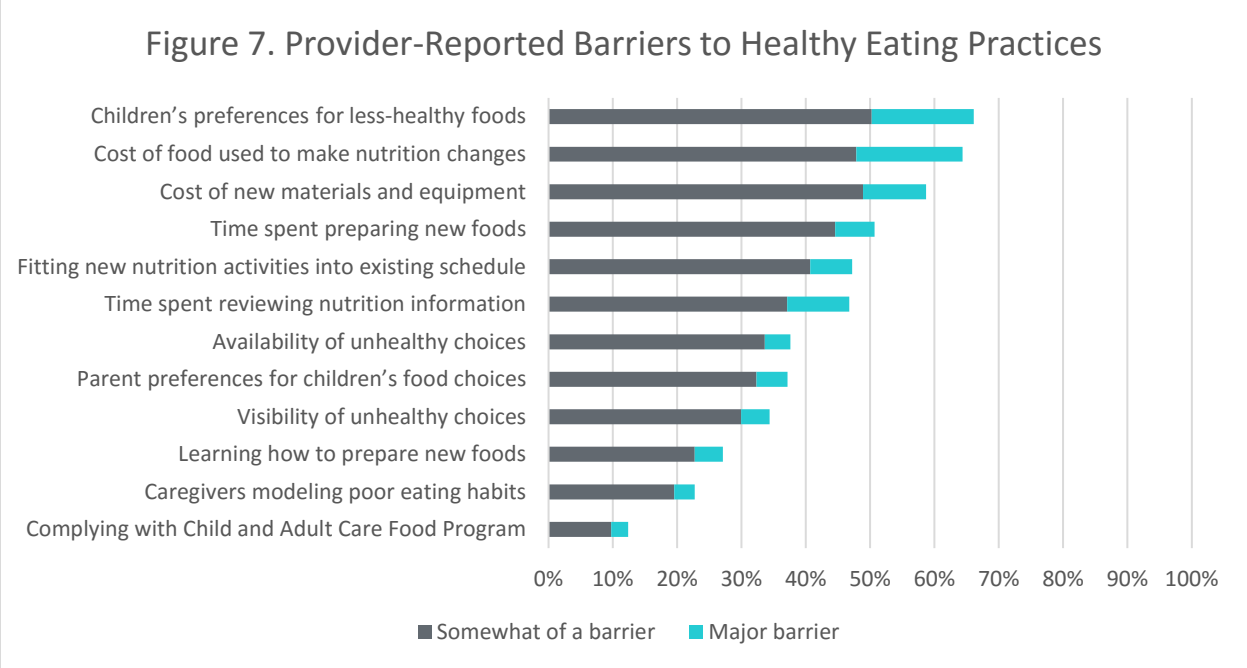
percent of providers agreed that they were willing to try new methods to promote healthy behaviors; this increased to 74 percent of providers at follow-up (p<0.01). Two-thirds of providers at baseline agreed that child care practices impact the current health of children, and 55 percent agreed that child care practices impact the lifelong health of children. These figures increased to 83 percent and 84 percent, respectively, at follow-up (p<0.01).



Source: Minnesota Department of Health, 2016

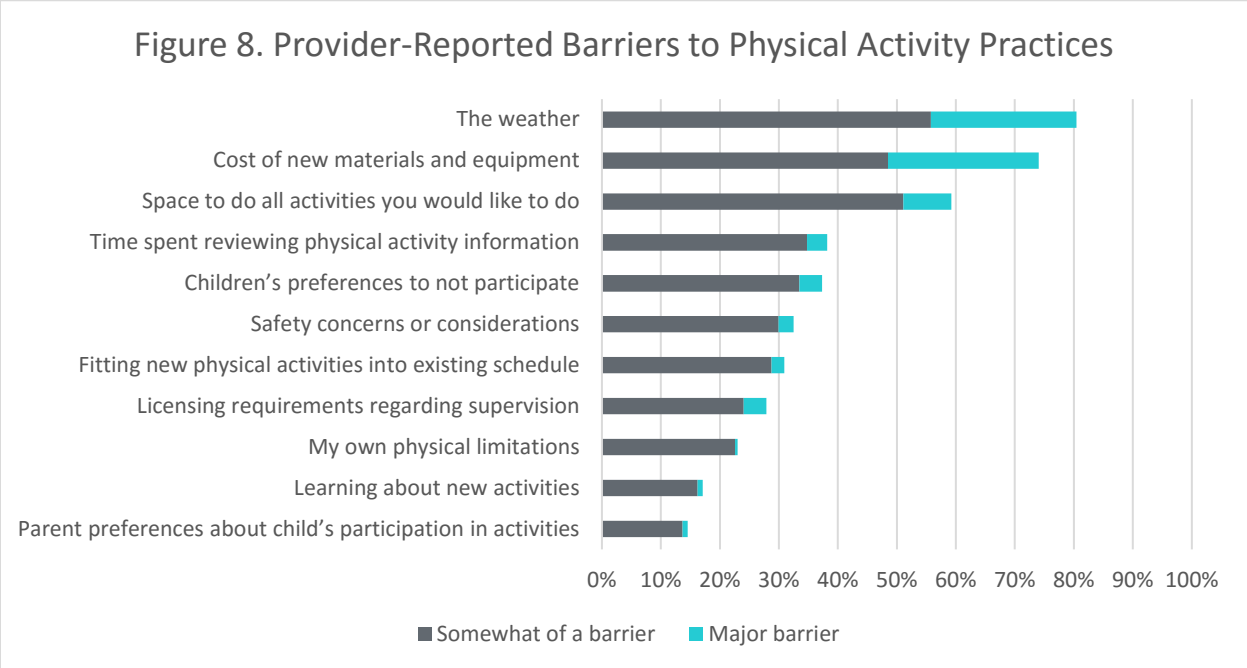
Perceived Barriers to Practice Change

The most commonly reported barriers to implementing new healthy eating practices were children's preferences for less-healthy foods (66 percent), cost of food used to make nutrition changes (64 percent), and cost of new materials and equipment (59 percent) (Figure 7). Just over half of providers also reported that time spent preparing new foods was a barrier.



Source: Minnesota Department of Health, 2016

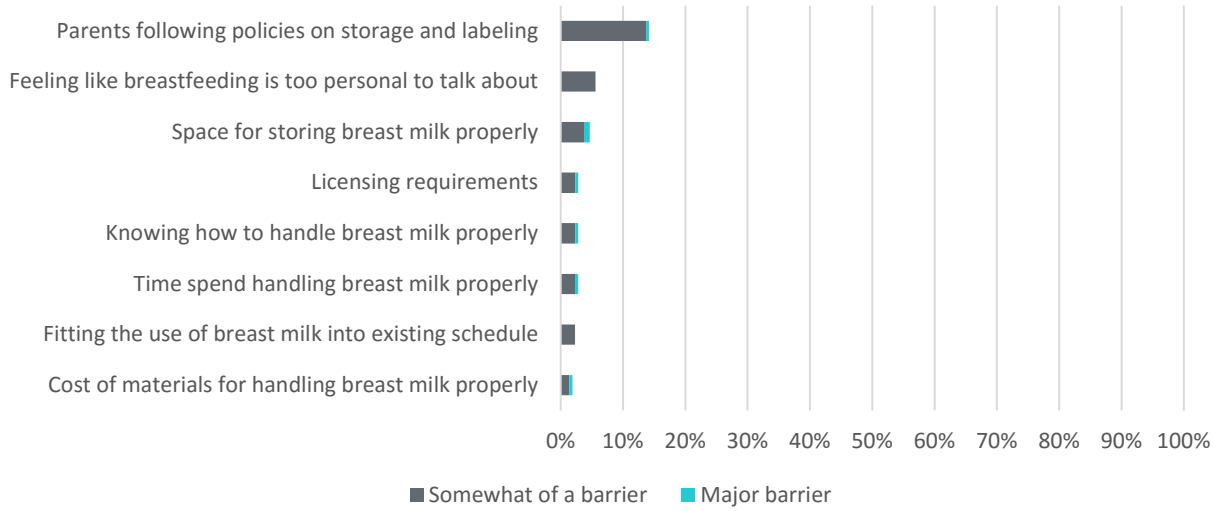
The most commonly reported barrier to physical activity practice change was the weather (80 percent), followed by cost of new materials and equipment (74 percent) (Figure 8). Fifty-nine percent of providers also reported that they didn't have enough space to do all the activities they would like to do.



Source: Minnesota Department of Health, 2016

Providers were much less likely to report barriers to implementing practices to support breastfeeding (Figure 9). The most commonly reported barrier was when parents did not follow policies on breastmilk storage and labeling (14%). All other barriers were cited by ≤6% of providers.

Figure 9. Provider-Reported Barriers to Breastfeeding Support Practices



Source: Minnesota Department of Health, 2016

Discussion

After participation in SHIP, child care providers were significantly more likely to engage in healthy eating, physical activity, and breastfeeding support practices that align with nationally recommended best practices and significantly more likely to have written policies reflecting current practice on these behaviors. However, the proportion of providers with written policies remained below 50 percent. Unlike larger institutional settings where practice change follows policy adoption, in the family child care setting, written policies are generally used as a way of formalizing practice changes that have already taken place. Providers also demonstrated increased knowledge of best practices, greater willingness to try new methods to promote healthy behaviors, and greater agreement that child care practices impact the current and lifelong health of children.

Summary of Healthy Eating Results

Implementation and knowledge of some healthy eating best practices improved after participation in SHIP; however, healthy eating best practices remained the least likely of the three behavior areas to be implemented. For example, only 7 percent of providers allowed children to serve their own food during mealtimes before participation in SHIP. This proportion doubled after providers received SHIP training and technical assistance, the largest percentage increase of all practices, but at 14 percent remained the least-commonly implemented best practice of all those examined.

In addition, six different barriers to healthy eating practices were reported by over 40 percent of providers. These results indicate that practice change in the area of healthy eating is challenging. However, lack of knowledge of healthy eating practices is not likely to be a major barrier to change. Despite relatively small increases in healthy eating knowledge, over two-thirds of providers answered each healthy eating question correctly at both time points, and nearly all correctly answered the question on family-style meals, indicating that knowledge of healthy eating best practices was already high prior to participation in SHIP.

Summary of Physical Activity Results

Child care providers demonstrated large and significant increases in implementation and knowledge of best practices for physical activity. After participation in SHIP, about two-thirds of providers provided at least the minimum recommended time for active play for preschoolers (120 minutes), and nearly 80 percent provided at least the minimum recommended time for active play for toddlers (90 minutes) and made portable play equipment available both indoors and outdoors. However, less than half of the providers correctly answered the knowledge question on active play after participation in SHIP, which asked about the amount of time recommended for active play among preschoolers, indicating that refresher trainings may be needed for specific concepts.

Some barriers to physical activity practice change were the most commonly cited barriers across all behavior areas: three-quarters or more of providers reported that the weather and the cost of new materials and equipment were somewhat of a barrier or a major barrier to practice change. These findings suggest that training on physical activity practices in child care settings should include guidance and suggestions on overcoming these barriers.

Summary of Breastfeeding Support Results

Before participation in SHIP, few child care providers had written policies addressing breastfeeding or could correctly identify breastmilk handling and storage best practices on the knowledge assessment. After participation in SHIP, nearly all providers achieved best practices in storing and handling breastmilk, the proportion with a written policy more than doubled to

39 percent and the proportion correctly answering the knowledge question increased by 20 percentage points to 54 percent. These were among the greatest changes observed in this study; however, there is room for more progress on increasing knowledge and adoption of written policies.

Furthermore, barriers to making changes in breastmilk handling and storage practices were relatively uncommon, which could be because providers experienced few barriers to practice change or because the barriers they experienced were not asked about on the survey. Nevertheless, these findings suggest that targeting breastfeeding support practices and policies may be a good place to start when working with child care providers on practices that influence child health.

Strengths and Limitations

This study collected data from over 200 child care providers in Minnesota before and after participation in the SHIP child care strategy. The participants were mostly family providers caring for children in their own homes, a group that is difficult to reach for both training and evaluation purposes. The study sample was restricted to child care providers who completed one specific training program, which ensured consistency in training methods, materials, and curriculum. As such, the findings reported here cannot be generalized to other types of training programs or large, center-based child care providers.

It was not feasible to collect data from a comparison group of providers who were not participating in SHIP, so it cannot be ruled out that the changes observed in this study were due at least in part to factors other than participation in SHIP. Indeed, a recent study by the University of Minnesota found significant improvements in healthy eating and physical activity practices among a random sample of child care providers in the state between 2010 and 2016, which suggests a general trend toward improved practices among all providers.[17] The large number of statistical tests conducted increases the probability of finding significant results that are due to chance. We therefore encourage readers to consider the overall trends described here, and caution against singling out findings from one particular measure. Another limitation is that providers may not have accurately reported their policies and practices, leading to measurement error.

Finally, the low response rate to the follow-up surveys could have resulted in the providers who participated in the study being different from the providers who did not participate in the study. We compared these groups across two measures for which data was available (location in an urban vs. rural county and having CACFP Tier 1 designation, which indicates serving low income areas). We found that the sample of providers included in the analysis did not differ from the eligible study population in terms of either of these measures. This increases our confidence that the results could be generalized to other family child care providers who did not participate in the study.

Conclusions

Healthy eating, physical activity, and breastfeeding in early childhood puts young children on a path to healthy weight as they grow. Results from this evaluation indicate that training and technical assistance lead to improved practices, knowledge, and attitudes among a group of providers who serve at-risk children throughout Minnesota. After participation in SHIP, child care providers were significantly more likely to engage in healthy eating, physical activity, and breastfeeding support practices that align with national guidelines ("best practices") and to have written policies reflecting current practice on these behaviors.

In addition, providers demonstrated increased knowledge of best practices, greater willingness to try new methods to promote healthy behaviors, and greater agreement that child care practices impact the current and lifelong health of children. These findings suggest that the SHIP child care strategy of providing training and technical assistance is an effective way to increase adoption of policies and practices that may protect against obesity in early childhood. The results also point to the need for continued technical assistance or refresher trainings to reinforce specific training concepts and provide support and resources to address barriers to change.

Continued emphasis on formalizing practice changes in written policies is also important to promote sustainability and institutionalization of practice changes. Given that over two-thirds of Minnesota's young children are enrolled in child care, investing in training and technical assistance to improve healthy eating, physical activity, and breastfeeding support in child care is an important and effective investment in the current and future health of the youngest generation of Minnesotans.

References

1. Centers for Disease Control and Prevention. Childhood Obesity Causes & Consequences. 2015; http://www.cdc.gov/obesity/childhood/causes.html. Accessed September 8, 2016.

2. Finkelstein EA, Graham WCK, Malhotra R. Lifetime Direct Medical Costs of Childhood Obesity. *Pediatrics.* 2014;133(5):854-862.

3. Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the united states, 2011-2012. *J. Am. Med. Assoc.* 2014;311(8):806-814.

4. Anderson SE, Whitaker RC. Prevalence of obesity among US preschool children in different racial and ethnic groups. *Arch. Pediatr. Adolesc. Med.* 2009;163(4):344-348.

5. Centers for Disease Control and Prevention. The prevalence of obesity among low-income children aged 2 through 4 years, by state and income, 2011. 2014; http://www.cdc.gov/obesity/data/prevalence-obesity-childhood.html. Accessed September 8, 2016.

6. Pan L, Freedman DS, Sharma AJ, et al. Trends in Obesity Among Participants Ages 2-4 Years in the Special Supplemental Nutrition Program for Women, Infants, and Children-United States, 2000-2014. *Morbidity and Mortality Weekly Report.* 2016;65(45):1256-1260.

7. Messiah SE, Arheart KL, Lipshultz SE, Bandstra ES, Miller TL. Perinatal Factors Associated with Cardiovascular Disease Risk among Preschool-Age Children in the United States: An Analysis of 1999–2008 NHANES Data. *Int. J. Pediatr.* 2012;2012:157237.

8. Reilly JJ. Physical activity, sedentary behaviour and energy balance in the preschool child: opportunities for early obesity prevention. *Proc. Nutr. Soc.* 2008;67(3):317-325.

9. Nelson JA, Carpenter K, Chiasson MA. Diet, activity, and overweight among preschool-age children enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). *Prev. Chronic Dis.* 2006;3(2):A49.

10. National Survey of Children's Health. Data query from the Child and Adolescent Health Measurement Initiative. NSCH 2011-2012; www.childhealthdata.org. Accessed September 8, 2016.

11. Centers for Disease Control and Prevention. Healthy People 2020 Objectives for the Nation: Breastfeeding Objectives. 2016; http://www.cdc.gov/breastfeeding/policy/hp2020.htm. Accessed September 8, 2016.

12. Butte NF, Fox MK, Briefel RR, et al. Nutrient intakes of US infants, toddlers, and preschoolers meet or exceed dietary reference intakes. *J. Am. Diet. Assoc.* 2010;110(12 Suppl):S27-37.

13. Fox MK, Condon E, Briefel RR, Reidy KC, Deming DM. Food consumption patterns of young preschoolers: are they starting off on the right path? *J. Am. Diet. Assoc.* 2010;110(12 Suppl):S52-59.

14. Oliver M, Schofield GM, Kolt GS. Physical activity in preschoolers: understanding prevalence and measurement issues. *Sports Med.* 2007;37(12):1045-1070.

15. Chase R, Valorose J. *Child Care Use in Minnesota: Report of the 2009 Statewide Household Child Care Survey.* St. Paul, MN: Wilder Research;2010.

16. Chase R, Valorose J. *Child Care Workforce in Minnesota.* St. Paul, MN: Wilder Research;2012.

17. Minnesota Early Care and Education Providers Working to Create Healthy Environments for Children; Continue to Face Barriers [press release]. Eagan, MN: The Center for Prevention at Blue Cross Blue Shield of Minnesota October 25 2016.

18. Minnesota Administrative Rules. Human Services Department, Chapter 9502 Part 0367, Child/Adult Ratios; Age Distribution Restrictions. In: State of Minnesota Office of the Revisor of Statutes, ed2007.

19. Minnesota Department of Human Services. *Results of the 2014 Child Care Market Rate Survey: Minnesota Child Care Provider Business Update.* St. Paul, MN: Minnesota Department of Human Services;2015.

20. Minnesota Department of Education. Child and Adult Care Food Programs. 2016; http://education.state.mn.us/MDE/dse/FNS/prog/. Accessed September 8, 2016.

21. American Academy of Pediatrics, American Public Health Association, National Resource Center for Health and Safety in Child Care and Early Education. *Caring for our Children, National Health and Safety Performance Standards: Guidelines for Early Care and Education Programs, 3rd Edition.* Elk Grove Village, IL: American Academy of Pediatrics; Washington, DC: American Public Health Association;2011.

Appendix

Policy, Systems, and Environment (PSE) Survey Questions

Question	Sample Size
How many of the practices below do you do almost all of the time when handling breast milk? ▪ Milk is stored in the back of the refrigerator or freezer ▪ Containers are labeled with the date of milk expression ▪ Containers are labeled with the name of the child ▪ Containers are labeled with the date thawed (if milk was previously frozen) ▪ Warm milk is *not* added to already cooled or frozen milk. ▪ The oldest milk is used first ▪ Providers wash their hands before handling breast milk ☐ I do not serve infants ☐ None ☐ 1-2 practices ☐ 3-5 practices ☐ 6-7 practices	57
Fresh, frozen or canned vegetables, cooked or raw, with no added salt or fat, are offered: ☐ 2 times per week or less ☐ 3-4 times per week ☐ 1 time per day ☐ 2 or more times per day	238
Meals are served: ☐ Adults serve foods, with little or no input from children	238

Question	Sample Size
☐ Adults serve foods, with input from children ☐ Children are allowed to serve some foods themselves; others are pre-plated or served by adults ☐ Children are allowed to serve all or most foods, with limited help from adults	
Caregivers sit with the children at mealtimes: ☐ Rarely or never ☐ Less than half of the time ☐ Half of the time or more ☐ Always or almost always	169
Caregivers eat and drink the same foods and beverages that are served to the children: ☐ Rarely or never ☐ Less than half of the time ☐ Half of the time or more ☐ Always or almost always	82
Active play time, including both indoors and outdoors, is provided daily to *preschoolers* for: ☐ Less than 60 minutes ☐ 60-89 minutes ☐ 90-119 minutes ☐ 120 minutes or more ☐ Not Applicable (do not currently serve preschoolers)	236
Active play time, including both indoors and outdoors, is provided daily to *toddlers* for: ☐ Less than 45 minutes ☐ 45-59 minutes ☐ 60-89 minutes ☐ 90 minutes or more ☐ Not Applicable (do not currently serve toddlers)	232

Question	Sample Size
Portable play equipment is available to children during active play time, both indoors and outdoors: ☐ Rarely or never ☐ Less than half of the time ☐ Half of the time or more ☐ Always or almost always	237
There is a written policy that includes current healthy eating practices: ☐ No written policy exists ☐ A healthy eating policy is being drafted ☐ Written policy exists, but does not reflect current practices ☐ Written policy reflects current practices	237
Healthy eating policy is generally communicated to current and prospective families in the following way: ☐ Practices are not communicated to parents ☐ Practices are communicated to parents only verbally ☐ Practices are communicated to parents only in written form ☐ Practices are communicated to parents both in written form and verbally	161
There is a written policy that includes current breastfeeding practices: ☐ I do not serve infants ☐ No written policy exists ☐ A breastfeeding policy is being drafted ☐ Written policy exists, but does not reflect current practices ☐ Written policy reflects current practices	218

Question	Sample Size
Breastfeeding policy is communicated to current and prospective families in the following way: ☐ I do not serve infants ☐ Practices are not communicated to parents ☐ Practices are communicated to parents only verbally ☐ Practices are communicated to parents only in written form ☐ Practices are communicated to parents both in written form and verbally	118
There is a written policy that includes current physical activity practices: ☐ No written policy exists ☐ A physical activity policy is being drafted ☐ Written policy exists, but does not reflect current practices ☐ Written policy reflects current practices	237
Physical activity policy is communicated to current and prospective families in the following way: ☐ Practices are not communicated to parents ☐ Practices are communicated to parents only verbally ☐ Practices are communicated to parents only in written form ☐ Practices are communicated to parents both in written form and verbally	168
Note: Some providers received a baseline survey that contained 1 combined question on policy adoption and communication for each behavior, as opposed to the two separate questions outlined above. In these cases, their responses to the 2 separate questions were imputed based on their response to the combined question:	

Question	Sample Size
☐ No written policy; practices are not communicated to parents ☐ No written policy; practices are communicated to parents only verbally ☐ Written policy exists; practices are communicated to parents only in written form ☐ Written policy exists; practices are communicated to parents both in written form and verbally	

Knowledge and Attitudes Survey

Question	Correct Answer	Sample Size
Which of the following is *not* a best practice for storing and handling breast milk? (a) Wear gloves when handling breast milk (b) Label containers of breast milk with the date the milk was expressed (c) Use the oldest milk first (d) Store milk in the back of the refrigerator (e) None of the above (In other words, all of the above are best practices)	(a)	153
According to current expert recommendations, at a minimum, how many times should vegetables be offered to children in child care each day? (a) 0 times (b) 1 time (c) 2 times (d) 3 times	(c)	157
Which of the following is true about serving family-style meals in child care? (a) They are not recommended because children tend to eat too much food. (b) They are not recommended because children tend to eat too little food. (c) They are recommended because they help children develop healthy eating habits.	(c)	162

Question	Correct Answer	Sample Size
(d) They are recommended because providers have more control over the portions that end up on children's plates.		
Which of the following is *not* a way providers can role model and support healthy eating while eating with the children. (a) Eat the same foods as the children (b) Require children to finish all their vegetables before leaving the table (c) Encourage children to try new foods (d) Keep the meal time unhurried (e) None of the above (In other words, all of the above are ways providers can role model and support healthy eating)	(b)	158
How many minutes of active play each day do health professionals recommend for 3–5 year olds (preschoolers)? (a) 30 minutes (b) 45 minutes (c) 60 minutes (d) 90 minutes (e) 120 minutes	(e)	159
Which type of play equipment is associated with higher levels of physical activity? (a) Portable play equipment (b) Fixed play equipment	(a)	161
Which of the following is true about a child care provider's healthy eating, physical activity, and breastfeeding policies? (a) It is required by law in the state of Minnesota (b) It sets a standard for the provider that is clear and consistent (c) It is more complicated than writing down what you currently do (d) All of the above	(b)	158
How much do you agree with these statements?	Not applicable	

Question	Correct Answer	Sample Size
0. Not at All 1. To a Slight Extent 2. To a Moderate Extent 3. To a Great Extent 4. To a Very Great Extent		
▪ I am willing to try new methods developed by experts that promote healthy eating, physical activity, and the use of breast milk in child care.		160
▪ What I do in my child care impacts the current health of the children I care for.		160
▪ What I do in my child care impacts the lifelong health of the children I care for.		161

Supplemental Survey Section on Perceived Barriers to PSE Change

This section was administered only at follow-up.

Question	Sample Size
There are sometimes barriers to putting what you learned about nutrition into action. How much did the following things get in your way? 1. Not a barrier 2. Somewhat of a barrier 3. A major barrier 4. Not Applicable ▪ Learning how to prepare new foods ▪ Time spent reviewing nutrition information ▪ Time spent preparing new foods ▪ Fitting new nutrition activities into existing schedule ▪ Cost of food used to make nutrition changes ▪ Cost of new materials and equipment used to make nutrition changes ▪ Availability of unhealthy choices ▪ Visibility of unhealthy choices ▪ Caregivers modeling poor eating habits ▪ Children's preferences for less-healthy foods ▪ Parent preferences for children's food choices ▪ Complying with Child and Adult Care Food Program (CACFP) requirements	231
There are sometimes barriers to putting what you learned about physical activity into action. How much did the following things get in your way? 1. Not a barrier 2. Somewhat of a barrier 3. A major barrier 4. Not Applicable ▪ Learning about new activities ▪ Space to do all activities you would like to do	235

Question	Sample Size
▪ Time spent reviewing physical activity information ▪ Fitting new physical activities into existing schedule ▪ Cost of new materials and equipment used in activities ▪ Children's preferences to not participate ▪ Parent preferences about their child(ren)'s participation in activities ▪ My own physical limitations ▪ Licensing requirements regarding supervision ▪ The weather ▪ Safety concerns or considerations	
There are sometimes barriers to putting what you learned about breastfeeding into action. How much did the following things get in your way? 1. Not a barrier 2. Somewhat of a barrier 3. A major barrier 4. Not Applicable ▪ Knowing how to handle breast milk properly ▪ Feeling like breastfeeding is too personal to talk about ▪ Space for storing breast milk properly ▪ Time spend handling breast milk properly ▪ Fitting the use of breast milk into existing schedule ▪ Cost of materials for handling breast milk properly ▪ Parents following policies on storage and labeling of breast milk ▪ Licensing requirements	215