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States Lack Physical Activity Policies in Child Care That Are Consistent with National Recommendations

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Abstract

Background: Child care facilities' policies can importantly impact health behaviors of toddlers and preschoolers. Our aim was to assess state regulations promoting physical activity (PA) in child care and compare regulations to national recommendations.

Methods: We reviewed licensing and administrative regulations related to promoting PA for all states and territories for child care centers (centers) and family child care homes (homes). Three reviewers searched two sources (a publically available website and WestlawNext™) and compared regulations with 15 Institute of Medicine recommendations. We used Pearson's and Spearman's correlations to assess associations between geographic region, year of last update, and number of regulations consistent with the recommendations.

Results: The average number and range of regulations in centers and homes was 4.1 (standard deviation [SD], 1.4; range, 0–8) and 3.8 (SD, 1.5; range, 0–7), respectively. Nearly all states had regulations consistent with providing an outdoor (centers, 98%; homes, 95%) and indoor (centers, 94%, homes, 92%) environment ''with a variety of portable play equipment and adequate space.'' No state had regulations for staff joining children, avoiding punishment for being physically active, yearly consultation from a PA expert, or providing training/education on PA for providers.

Conclusions: There is room for improvement in child care regulations around PA for young children; PA promotion should be included with future updates to regulations.

Introduction

Rates of childhood overweight and obesity continue to remain high in the United States, even among the youngest citizens. Recent estimates suggest that roughly 23% of boys and girls 2–5 years of age are considered overweight or obese.[1] Excess weight in toddlers and preschoolers is particularly concerning given its association with numerous adverse health outcomes, including insulin resistance, hypertension, and dyslipidemia.[2–5] Further, habits and behaviors established in childhood, as well as the weight gained in childhood, tend to extend into adolescence and beyond,[6–9] making this a critical period for obesity prevention efforts.[10]

Increasingly, evidence suggests that, even among toddlers and preschoolers, exposure to screen-based sedentary behavior is associated with current[11,12] and future (*i.e.*, from adolescence to adulthood) body fatness[13–20] and that objectively measured sedentary behavior is also associated with unfavorable metabolic risk profiles.[21,22] Many young children are not meeting current physical activity (PA) and sedentary behavior guidelines set forth by groups such as the American Academy of Pediatrics (AAP).[23] Results from the National Health and Nutrition Examination Survey 2001–2006 found that more than one third of children 2–5 years of age spent ≥ 2 hours per day watching television and playing video games.[24] Findings from other cross-sectional[25] and longitudinal studies[8] also reported that $>40\%$ of preschool-aged children watched television for >2 hours per day.

In the United States in 2012, it was estimated that approximately 11 million young children, roughly 23% of those ≤ 5 years old, were cared for outside their homes in a child care setting where many spend a majority of their waking hours.[26,27] As such, the early care and education

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environment has emerged as an important target for obesity prevention interventions and initiatives.[10,28] In 2011, the Institute of Medicine (IOM) released policy-based recommendations aimed at helping to prevent obesity in young children.[29] This report included recommendations and potential actions for state licensing and administrative agencies designed to prevent obesity in infancy and early childhood by promoting healthy environments for young children. To date, the extent to which state licensing standards comply with these recommendations is unknown. The aim of this study was to review state licensing regulations related to promoting PA and limiting sedentary behavior for toddlers and preschoolers in child care, assess their consistency with the IOM recommendations, and explore geographic differences in the states meeting the these recommendations.

Methods

Overview

For this cross-sectional study, we compared existing state licensing and administrative regulations to recent national recommendations aimed at promoting PA in child care settings. Although many of the recommendations also applied to infants, our group completed a similar comprehensive review of infant-specific recommendations; therefore, toddlers and preschoolers are the focus of this review. Because this study was a policy review and did not involve human subjects, ethical approval was not required by Duke University Medical Center (Durham, NC).

Physical Activity and Sedentary Behavior Recommendations

We identified four overarching recommendations from the IOM policy report that related to obesity prevention. Within each of these, the IOM noted several ''potential actions'' that could be adapted to achieve the recommendation. Taken together, these comprise the components that were evaluated in state licensing requirements for this review. The four recommendations put forth by the IOM[29] state that child care regulatory agencies should require: (1) ''child care providers and early childhood educators to provide [infants,] toddlers, and preschool children with opportunities to be physically active throughout the day''; (2) ''the community and its built environment should promote physical activity for children from birth to age five''; (3) ''child care providers and early childhood educators allow [infants,] toddlers, and preschoolers to move freely by…implementing appropriate strategies to ensure that the amount of time toddlers and preschoolers spend sitting or standing still is limited''; and (4) that ''health and education professionals…should be trained in ways to increase children's physical activity and decrease children's sedentary behavior, and in how to counsel parents about their children's physical activity.'' A total of 15 potential actions spanning these four recommendations were evaluated and are detailed in Table 1.

Table 1. Description of the 15 Institute of Medicine PA Recommendations

Recommendation short title	Description of potential actions (recommendations)
Total PA	Providing opportunities for light, moderate, and vigorous physical activity at least 15 minutes per hour while children are in care
Outdoor time	Providing daily outdoor time for physical activity when possible
Type of PA	Providing a combination of developmentally appropriate structured and unstructured physical activity experiences
Join kids	Joining the children in physical activity
Integrate	Integrating physical activity into activities designed to promote children's cognitive and social development
Outdoor Environ	Providing an outdoor environment with a variety of portable play equipment, a secure perimeter, some share, natural elements, an open grassy area, varying surfaces and terrain, and adequate space per child
Indoor Environ	Providing an indoor environment with a variety of portable play equipment and adequate space per child
Disabilities	Providing opportunities for children with disabilities to be physically active, including equipment that meets current standards for accessible design under the Americans with Disabilities Act
No punishment	Avoid punishing children for being physically active
No withholding	Avoid withholding physical activity as punishment
Limit Sitting/Standing	Implement activities for toddlers and preschoolers (2–5 years) that limit sitting or standing to no more than 30 minutes at a time
Limit stroller	Using strollers for toddlers and preschoolers only when necessary
Consult	Encouraging child care and early childhood education programs to seek consultation yearly from an expert in early childhood physical activity
Train	Encouraging child care and early childhood educators to be trained in ways to encourage physical activity and decrease sedentary behavior in young children through certification and continuing education
Screen time	Limiting screen time, including television, cell phones, or digital media, for preschoolers (2–5 years) to less than 30 minutes per day for children in half-day programs or less than 1 hour per day in full-day programs

PA, physical activity.

State Regulations Review

We reviewed each state's licensing and administrative regulations for child care facilities between August and December of 2013. Using primary legal research methods, we searched two sources for regulations: a publically available website maintained by the National Resource Center (NRC) for Health and Safety in Child Care in partnership with the AAP (www.nrckids.org) and the commercial legal research database WestlawNext™. Using the NRC's website, each state's regulations were coded by a trained reviewer (first author) using a combination of Boolean key-word searches and review of the full text, which is consistent with previous policy reviews. Two additional reviewers (second and third authors) conducted separate reviews using the NRC website and WestlawNext; their reviews were collapsed and compared to the first review as a measure of quality control. Agreement between the primary and secondary reviewers was above 85% for each recommendation. Differences were reconciled through a discussion of the regulation until all reviewers were in agreement. To be counted, regulations needed to include clear and specific language embodying the spirit of the IOM recommendations. We reviewed regulations for all 50 US states, the District of Columbia, Puerto Rico, the US Virgin Islands, Guam, and the Department of Defense (DoD), the regulations for which govern facilities in residential areas for US soldiers and their dependents stationed both domestically and abroad. We documented regulations consistent with each of the 15 IOM recommendations for healthy PA and sedentary behavior practices for young children in child care. We also recorded the date of the most recent state revision or update.

We reviewed regulations for both child care centers (centers) and family child care homes (homes). Generally, centers care for larger numbers of children, have more than two staff members, and are located in a dedicated building that is not a residential home. Homes, on the other hand, typically include a single provider who cares for a smaller number of children in his or her home. Some states regulate subcategories of centers and homes, such as infant care centers or large day care homes. Where appropriate, we grouped these types of facilities into either ''centers'' or ''homes'' for the purpose of reporting results of this review. For example, we classified infant care centers as centers and large day care homes as homes.

Analyses

We computed means, frequencies, and standard deviations (SDs) for the number of regulations for each state according to type of facility (center or home). We also categorized states (excluding the District of Columbia, DoD, and US territories) by geographic census region: Northeast; South; Midwest; and West. A list of states included in these census regions can be fond online (https://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf). We used Pearson's chi-squared tests to compute correlations between geographic region and the number of regulations consistent with IOM recommendations, treated as an ordinal variable that ranged from 0 to 15. Next, we used Spearman's correlation tests to explore associations between the dichotomized year variable (before the release of the IOM recommendations vs. after the release) and (1) the number of regulations in each state and (2) the year of last update, treated as a continuous variable, and the number of regulations in each state. Analyses were conducted using Stata software (v.11; StataCorp LP, College Station, TX), with a significance level set to $\alpha = 0.05$.

Results

Child Care Centers

Every state and territory except one (Guam) had at least one regulation related to the promotion of PA in young children in child care centers (Table 2). The average number of regulations for all 55 states and territories was 4.1 (SD, 1.4; range, 0–8). Delaware, New York, Oklahoma, Tennessee, and Texas had regulations for just under half ($n \geq 7$) of the recommendations examined; Tennessee had the largest number ($n = 8$). Three additional states (Arkansas, Massachusetts, and Georgia) had regulations for six recommendations.

The recommendation for which there was the most consistency across state and territory regulations in child care centers was for the provision of ''an outdoor and indoor environment with a variety of portable play equipment and adequate space per child'' (Indoor/Outdoor Environ; Table 2). Ninety-eight percent ($n = 54$) and 94% ($n = 52$) of states and territories had regulations that were consistent with these Outdoor/Indoor Environ recommendations, respectively, with Guam (indoor and outdoor), Idaho (indoor), and Wyoming (indoor) being the only states or territories that did not have these regulations in place. The recommendation that daily outdoor time is provided (Outdoor Time; Table 2) was present for roughly 86% ($n = 47$) of states. Fewer than half (40%; $n = 22$) of the states and territories had child care regulations consistent with the recommendation that screen time should be limited to < 30 minutes per day (half-time program) or < 1 hour per day (full-time program) for toddlers and preschoolers (Screen Time; Table 2).

Fewer than 10% of states and territories had regulations that were consistent with eight of the IOM recommendations. For example, just 7% ($n = 4$) of states and territories had regulations consistent with the recommendation that child care centers provide ''opportunities for light, moderate, and vigorous physical activity at least 15 minutes per hour while children are in care (Total PA).'' Only two states (Texas and Tennessee) had regulations consistent with the recommendation that child care centers ''provide a combination of developmentally appropriate structured and unstructured physical activity experiences (Type of PA).'' No state and territory had regulations consistent with four of the IOM recommendations, including staff joining the children in PAs (Join Kids), avoiding punishing

Table 2. State Regulations for Child Care Centers Consistent with IOM Toddler and Preschoolers' PA Recommendations

State	Year of last update	Total PA	Outdoor time	Type of PA	Join kids	Integration	Environment		Disabilities	No punishment	No withholding	Limit sitting/ standing	Limit strollers	Consultation	Training	Screen time	Total
							Outdoor	Indoor									
AL	2007		X				X	X									3
AK	2007	X	X				X	X	X							X	6
AZ	2010						X	X	X			X					4
AR	2011		X				X	X								X	4
CA	2008		X				X	X	X		X						5
CO	2012		X				X	X								X	4
CT	2013		X				X	X									3
DE	2007	X	X			X	X	X	X							X	7
FL	2010		X				X	X									3
GA	2013		X				X	X	X				X			X	6
HI	2002						X	X	X								3
ID	2011						X										1
IL	2010		X				X	X					X			X	5
IN	2003		X				X	X								X	4
IA	2012		X				X	X	X								4
KS	2012						X	X								X	3
KY	2008		X				X	X					X			X	5
LA	2012		X				X	X				X					4
ME	2008		X				X	X	X							X	5
MD	2012		X				X	X									3
MA	2010	X	X				X	X	X							X	6
MI	2008		X				X	X	X								4
MN	2010		X				X	X								X	4
MS	2009		X				X	X				X					4
MO	2011		X				X	X									3
MT	2012		X				X	X				X	X				5
NE	2013		X				X	X									3
NV	2012		X				X	X									3
NH	2008		X				X	X				X	X				5

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Table 2. State Regulations for Child Care Centers Consistent with IOM Toddler and Preschoolers' PA Recommendations *continued*

State	Year of last update	Total PA	Outdoor time	Type of PA	Join kids	Integration	Environment		Disabilities	No punishment	No withholding	Limit sitting/ standing	Limit strollers	Consultation	Training	Screen time	Total
							Outdoor	Indoor									
NJ	2009		X				X	X			X	X					5
NM	2012	X					X	X			X					X	5
NY	2005		X				X	X	X		X	X	X				7
NC	2013		X				X	X								X	4
ND	2013		X				X	X	X		X						5
OH	2010		X				X	X									3
OK	2010		X				X	X	X			X	X			X	7
OR	2011		X				X	X									3
PA	2009		X				X	X	X								4
RI	1993		X				X	X									3
SC	2005		X				X	X									3
SD	2013		X				X	X									3
TN	2009		X	X			X	X	X			X	X			X	8
TX	2013		X	X			X	X	X				X			X	7
UT	2013		X				X	X				X					4
VT	2001		X				X	X	X							X	5
VA	2012		X				X	X									3
WA	2013		X				X	X									3
WV	2009		X				X	X								X	4
WI	2009		X				X	X								X	4
WY	2013		X				X									X	3
PR	1992						X	X	X								3
USVI	2011		X				X	X	X							X	5
GU	1997																0
DC	2007		X				X	X									3
DoD	1996						X	X	X								3
Total, *n* (%)	—	4 (7.3)	47 (85.5)	2 (3.6)	0 (0)	1 (1.8)	54 (98.3)	52 (94.5)	20 (36.4)	0 (0)	5 (9.1)	10 (18.2)	9 (16.4)	0 (0)	0 (0)	22 (40.0)	—

IOM, Institute of Medicine; PA, physical activity; PR, Puerto Rico; USVI, UStates Virgin Islands; DoD, Department of Defense.

Table 3. State Regulations for Family Child Care Homes Consistent with IOM Toddler and Preschoolers' PA Recommendations

State	Year of last update	Total PA	Outdoor Time	Type of PA	Join kids	Integration	Environment		Disabilities	No punishment	No withhold	Limit sitting/ standing <30 minutess	Limit strollers	Consultation	Training	Screen time	Total
							Outdoor	Indoor									
AL	2007		X				X	X									3
AK	2007	X	X				X	X	X							X	6
AZ	2011		X				X	X	X			X				X	6
AR	2011		X				X	X								X	4
CA	2009						X										1
CO	2012		X				X	X				X				X	5
CT	2013		X				X	X									3
DE	2009	X	X				X	X	X							X	6
FL	2010		X				X	X									3
GA	2012		X				X	X	X							X	5
HI	2002						X	X	X								3
ID	2011						X										1
IL	2010		X				X	X	X								4
IN	2001		X				X	X									3
IA	2012						X	X									2
KS	2012	X	X				X	X								X	5
KY	2008		X					X									2
LA	–																0
ME	2009		X				X	X	X								4
MD	2012		X				X	X									3
MA	2010	X	X				X	X	X	X							6
MI	2009		X				X	X	X							X	5
MN	2007		X				X	X									3
MS	2009		X				X	X				X				X	5
MO	2011		X				X	X									3
MT	2012		X				X	X				X					4
NE	2013						X	X									2
NV	2012		X				X	X									3
NH	2008		X				X	X				X					4

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Table 3. State Regulations for Family Child Care Homes Consistent with IOM Toddler and Preschoolers' PA Recommendations *continued*

State	Year of last update	Total PA	Outdoor Time	Type of PA	Join kids	Integration	Environment		Disabilities	No punishment	No withhold	Limit sitting/ standing <30 minutess	Limit strollers	Consultation	Training	Screen time	Total
							Outdoor	Indoor									
NJ	2009		X				X	X	X			X					5
NM	2012	X					X	X	X							X	5
NY	2005		X				X	X	X	X		X					6
NC	2013		X				X	X								X	4
ND	2013		X				X	X	X		X						5
OH	2011		X				X	X									3
OK	2010		X				X	X				X				X	5
OR	2011		X				X	X								X	4
PA	2009		X				X	X	X								4
RI	2007		X				X	X								X	4
SC	2005		X				X	X								X	4
SD	2013						X	X									2
TN	2009		X	X			X	X	X							X	6
TX	2013		X	X			X	X	X							X	6
UT	2013						X	X				X					3
VT	2001		X				X	X	X							X	5
VA	2013		X	X			X	X	X			X				X	7
WA	2013		X				X	X								X	4
WV	2012		X				X	X									3
WI	2009		X				X	X								X	4
WY	2013		X				X	X									3
PR	1992						X	X									2
USVI	2011		X				X	X								X	4
GU	1997																0
DC	2007		X				X	X									3
DoD	1996			X			X	X								X	4
Total, *n* (%)	—	5 (9.1)	43 (78.2)	4 (7.3)	0 (0)	0 (0)	52 (94.5)	51 (92.7)	18 (32.7)	2 (3.6)	1 (1.8)	10 (18.2)	0 (0)	0 (0)	0 (0)	23 (41.8)	—

IOM, Institute of Medicine; PA, physical activity; PR, Puerto Rico; USVI, US Virgin Islands; DoD, Department of Defense.

children for being physically active (No Punishment), encouraging child care and early childhood education programs to seek consultation yearly from an expert in early childhood PA (Consultation), and encouraging child care and early childhood educators to be trained in ways to encourage PA and decrease sedentary behavior (Training; Table 2).

Family Child Care Homes

Every state and territory except two (Guam and Louisiana) had at least one regulation related to the promotion of PA in toddlers and preschoolers in homes (Table 3). The average number of regulations for all 55 states and territories was 3.8 (SD, 1.5; range, 0–7). Eight states (Alaska, Arkansas, Delaware, Massachusetts, New York, Tennessee, Texas, and Virginia) had regulations for at least six of the recommendations examined; Virginia had the most regulations at seven. Ten additional states (Colorado, Georgia, Kansas, Michigan, Mississippi, New Jersey, New Mexico, Oklahoma, and Vermont) had regulations for five recommendations.

As was observed for centers, the recommendations for which there was the most consistency across state and territory regulations was for homes to provide ''an outdoor and indoor environment with a variety of portable play equipment and adequate space per child'' (Indoor/Outdoor Environ; Table 3). Ninety-five percent ($n=52$) and 93% ($n=51$) of states and territories had regulations that were consistent with these Outdoor/Indoor Environ recommendations, respectively. The recommendation that daily outdoor time is provided (Outdoor Time; Table 3) in homes was present for 78% ($n=43$) of states. Fewer than half (42%; $n=23$) of the states had regulations consistent with the recommendation that screen time be limited to <30 minutes per day (half-time program) or <1 hour per day (full-time program) (Screen Time; Table 3).

Fewer than 10% of states and territories had regulations that were consistent with 9 of the 15 IOM recommendations examined. For example, just 9% ($n=5$) of states had regulations consistent with the recommendation that homes provide ''opportunities for light, moderate, and vigorous physical activity at least 15 minutes per hour while children are in care (Total PA)'' and just 7% had a regulation consistent with including ''combination of developmentally appropriate structured and unstructured physical activity experiences (Type of PA).'' No state or territory had regulations for homes consistent with five of the IOM recommendations, including staff joining the children in PAs (Join Kids), integrating PA into activities designed to promote children's cognitive and social development (Integration), using strollers only when necessary (Limit Strollers), encouraging child care and early childhood education programs to seek consultation yearly from an expert in early childhood PA (Consultation), and encouraging child care and early childhood educators to be trained in ways to encourage PA and decrease sedentary behavior (Training; Table 3).

Geographic and Temporal Analyses

When we examined geographic differences, we found that states in the North had the greatest mean (SD) number of regulations for centers (4.8 [1.3]) and homes (4.6 [1.1]), compared with the Midwest, which had the fewest for centers (3.75 [0.75]) and homes (3.4 [1.2]), but there was no statistically significant correlation between geographic region and number of regulations for centers (Spearman's rho $=0.612$; $p=0.616$) or homes (Spearman's rho $=0.123$; $p=0.372$).

Nineteen states (34%) had child care (center and home) regulations that had been updated after the 2011 IOM recommendations were released. There was no statistically significant difference in the number of regulations meeting the IOM's PA recommendations based on the (binary) year that these regulations were updated for centers ($p=0.419$) or homes ($p=0.834$). Similarly, the number of regulations was not correlated with the year of last update examined as a continuous variable for centers (Spearman's rho $=-0.041$; $p=0.793$) or homes (Spearman's rho $=0.035$; $p=0.801$).

Discussion

In this review of state regulations aimed at promoting healthy PA and sedentary behaviors in young children in child care, we find that states and territories had few regulations consistent with the current IOM recommendations. No state or territory came close to meeting all 15 recommendations and only one state (Tennessee) had regulations for at least 50% (with eight regulations for centers and seven for homes). Most states or territories had just three regulations that were consistent with the IOM recommendations. We did not find statistically significant correlations between geographic location or the year of last update for either centers or homes, which has been shown in previous reviews of state child care regulations.[30,31] However, fewer than 35% of states and territories had updated their regulations since the 2011 release by the IOM. Thus, it is possible that future updating of state regulations would result in a greater concordance with these recommendations.

The findings from the present study are similar to those previously reported, which found considerable variation in state regulations regarding the promotion of PA in the early care and education setting.[28,32,33] In those studies, states fully addressed roughly one third of 17 standards regarding national health and safety standards around PA outlined in ''Caring for our children: National health and safety performance standards: Guidelines for out-of-home child care programs.''[32] Interestingly, Cradock and colleagues[32] found that there was insufficient attention to ''outdoor play area proximity and size,'' whereas in our current review more than 90% of states had regulations related to ''outdoor play areas.''

The effectiveness of interventions in the preschool setting to increase PA is equivocal: Some[34–38], but not all,[35,39,40] report differences in PA between intervention

and control participants. Despite mixed results, there do appear to be some strategies that can successfully increase young children's PA levels. For example, Trost and colleagues[41] found that staff education and training, staff behavior on the playground, lower playground density, and the presence of vegetation, open play spaces, and portable play equipment were the most salient factors predicting moderate-to-vigorous PA (MVPA) in preschoolers. Similarly, Bower and colleagues[42] report that particular facets of the physical and social environment are related to greater PA behavior in preschool children, including opportunities to be active, provision of portable and fixed play equipment, having items that promote sedentary behaviors, and PA training and education.

In the present review, we find that the vast majority of states are meeting IOM recommendations aimed at providing high-quality outdoor play spaces that have been shown to promote MVPA. However, two other recommendations, staff joining children (Join Kids) and providing early care and education providers with training in ways to increase PA (Train), were not met by any state for child care centers or homes. Interventions have been shown to produce significant, if modest, changes in PA levels of children in care, specifically when PA-specific in-service teacher training is included in the intervention.[43] Thus, there is an important disconnect between what states require of child care centers and homes and what has been shown to positively impact toddler and preschooler's levels of PA.

This study has some important limitations. First, because the process of updating regulations is regular and ongoing, this review is only current as of 2013. It is possible that states and territories have already, or are currently, updating their own regulations to be more in line with the IOM recommendations. Second, this review describes the presence of formal state regulations, but does not examine actual practices within child care settings. As such, although child care facilities are required by law to adhere to their state regulations, this does not necessarily translate into regular practice. Individual child care centers or homes may be implementing practices that are in greater alignment with the IOM recommendations, despite their state not requiring these practices for licensing purposes. Penalties associated with not adhering to regulations vary by state, but typically include a written warning to comply and a possible fine for continued noncompliance. Third, it is possible that regulations are present, but were missed in our review. However, we used three independent reviewers and further investigated areas of discordance, which reduces the likelihood of these errors of omission.

A large proportion of young children are not meeting the recommended levels of PA necessary to achieve and maintain health. Many of these children also spend a majority of their waking hours in out-of-home care, either in child care centers or private home care situations. As such, these are important settings for targeted obesity prevention efforts, in particular, promoting healthy levels of PA and reducing sedentary behavior. A recent report from the IOM put forth four recommendations to promote healthy PA behaviors in child care settings. However, we found that many states and territories lacked licensing regulations that were consistent with these recommendations, with no state or territory having more than 8 of 15 regulations present. States and territories should consider including language promoting PA in accord with the IOM recommendations with the next update to their regulations, given that the benefits of increased PA in young children are numerous.

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Author Disclosure Statement

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References

1. Ogden CL, Carroll MD, Kit BK, et al. Prevalence of childhood and adult obesity in the United States, 2011–2012. *JAMA* 2014;311: 806–814.
2. Park MH, Sovio U, Viner RM, et al. Overweight in childhood, adolescence and adulthood and cardiovascular risk in later life: Pooled analysis of three british birth cohorts. *PLoS One* 2013;8:e70684.
3. Nathan BM, Moran A. Metabolic complications of obesity in childhood and adolescence: More than just diabetes. *Curr Opin Endocrinol Diabetes Obes* 2008;15:21–29.
4. Short KR, Blackett PR, Gardner AW, et al. Vascular health in children and adolescents: Effects of obesity and diabetes. *Vasc Health Risk Manag* 2009;5:973–990.
5. Herouvi D, Karanasios E, Karayianni C, et al. Cardiovascular disease in childhood: The role of obesity. *Eur J Pediatr* 2013; 172:721–732.
6. Dubois L, Girard M. Early determinants of overweight at 4.5 years in a population-based longitudinal study. *Int J Obes (Lond)* 2006; 30:610–617.
7. Madruga SW, Araujo CL, Bertoldi AD, et al. Tracking of dietary patterns from childhood to adolescence. *Rev Saude Publica* 2012; 46:376–386.
8. Certain LK, Kahn RS. Prevalence, correlates, and trajectory of television viewing among infants and toddlers. *Pediatrics* 2002; 109:634–642.
9. Pate RR, Baranowski T, Dowda M, et al. Tracking of physical activity in young children. *Med Sci Sports Exerc* 1996;28:92–96.
10. Dattilo AM, Birch L, Krebs NF, et al. Need for early interventions in the prevention of pediatric overweight: A review and upcoming directions. *J Obes* 2012;2012:123023.
11. Jackson DM, Djafarian K, Stewart J, et al. Increased television viewing is associated with elevated body fatness but not with lower total energy expenditure in children. *Am J Clin Nutr* 2009;89: 1031–1036.
12. Mendoza JA, Zimmerman FJ, Christakis DA. Television viewing, computer use, obesity, and adiposity in US preschool children. *Int J Behav Nutr Phys Act* 2007;4:44.

13. Danner FW. A national longitudinal study of the association between hours of TV viewing and the trajectory of BMI growth among US children. *J Pediatr Psychol* 2008;33:1100–1107.
14. Proctor MH, Moore LL, Gao D, et al. Television viewing and change in body fat from preschool to early adolescence: The Framingham Children's Study. *Int J Obes Relat Metab Disord* 2003;27:827–833.
15. Viner RM, Cole TJ. Television viewing in early childhood predicts adult body mass index. *J Pediatr* 2005;147:429–435.
16. Mei Z, Grummer-Strawn LM, Scanlon KS. Does overweight in infancy persist through the preschool years? An analysis of CDC Pediatric Nutrition Surveillance System data. *Soz Praventivmed* 2003;48:161–167.
17. Brophy S, Cooksey R, Gravenor MB, et al. Risk factors for childhood obesity at age 5: Analysis of the millennium cohort study. *BMC Public Health* 2009;9:467.
18. 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:A49.
19. Kimbro RT, Brooks-Gunn J, McLanahan S. Young children in urban areas: Links among neighborhood characteristics, weight status, outdoor play, and television watching. *Soc Sci Med* 2011;72:668–676.
20. Butte NF. Impact of infant feeding practices on childhood obesity. *J Nutr* 2009;139:412S–416S.
21. Sardinha LB, Andersen LB, Anderssen SA, et al. Objectively measured time spent sedentary is associated with insulin resistance independent of overall and central body fat in 9- to 10-year-old Portuguese children. *Diabetes Care* 2008;31:569–575.
22. Ekelund U, Anderssen SA, Froberg K, et al. Independent associations of physical activity and cardiorespiratory fitness with metabolic risk factors in children: The European youth heart study. *Diabetologia* 2007;50:1832–1840.
23. American Academy of Pediatrics. Children, adolescents, and television. *Pediatrics* 2001;107:423–426.
24. Sisson SB, Church TS, Martin CK, et al. Profiles of sedentary behavior in children and adolescents: The US National Health and Nutrition Examination Survey, 2001–2006. *Int J Pediatr Obes* 2009;4:353–359.
25. Vandewater EA, Rideout VJ, Wartella EA, et al. Digital childhood: Electronic media and technology use among infants, toddlers, and preschoolers. *Pediatrics* 2007;119:e1006–e1015.
26. Center for American Progress. Child care fact sheet. 2012. Available at http://www.americanprogress.org/issues/labor/news/2012/08/16/11978/fact-sheet-child-care Last accessed May 28, 2014.
27. Child Care Aware of America. Child care in America: 2012 state fact sheets. Child Care Aware of America: Arlington, VA, 2012.
28. Larson N, Ward DS, Neelon SB, et al. What role can child-care settings play in obesity prevention? A review of the evidence and call for research efforts. *J Am Diet Assoc* 2011;111:1343–1362.
29. Institute of Medicine. Early childhood obesity prevention policies. Institute of Medicine: Washington, DC, 2011.
30. Benjamin SE, Taveras EM, Cradock AL, et al. State and regional variation in regulations related to feeding infants in child care. *Pediatrics* 2009;124:e104–e111.
31. Benjamin SE, Duffey KJ, Slining MM. A review of state regulations to promote healthy sleep practices in child care. *Pediatrics* (in press).
32. Cradock AL, O'Donnell EM, Benjamin SE, et al. A review of state regulations to promote physical activity and safety on playgrounds in child care centers and family child care homes. *J Phys Act Health* 2010;7(Suppl 1):S108–S119.
33. Van Stan S, Lessard L, Dupont PK. The impact of a statewide training to increase child care providers' knowledge of nutrition and physical activity rules in Delaware. *Child Obes* 2013;9:43–50.
34. Fitzgibbon ML, Stolley MR, Schiffer LA, et al. Hip-Hop to Health Jr. Obesity prevention effectiveness trial: Postintervention results. *Obesity (Silver Spring)* 2011;19:994–1003.
35. Hannon JC, Brown BB. Increasing preschoolers' physical activity intensities: An activity-friendly preschool playground intervention. *Prev Med* 2008;46:532–536.
36. Trost SG, Fees B, Dzewaltowski D. Feasibility and efficacy of a ''move and learn'' physical activity curriculum in preschool children. *J Phys Act Health* 2008;5:88–103.
37. Annesi JJ, Smith AE, Tennant GA. Effects of the Start For Life treatment on physical activity in primarily African American preschool children of ages 3–5 years. *Psychol Health Med* 2013;18:300–309.
38. Benjamin Neelon SE, Taveras EM, Ostbye T, et al. Preventing obesity in infants and toddlers in child care: results from a pilot randomized controlled trial. *Matern Child Health J* 2014;18:1246–1257.
39. Fitzgibbon ML, Stolley MR, Schiffer L, et al. Hip-Hop to Health Jr. for Latino preschool children. *Obesity (Silver Spring)* 2006;14:1616–1625.
40. Alhassan S, Sirard JR, Robinson TN. The effects of increasing outdoor play time on physical activity in Latino preschool children. *Int J Pediatr Obes* 2007;2:153–158.
41. Trost SG, Ward DS, Senso M. Effects of child care policy and environment on physical activity. *Med Sci Sports Exerc* 2010;42:520–525.
42. Bower JK, Hales DP, Tate DF, et al. The childcare environment and children's physical activity. *Am J Prev Med* 2008;34:23–29.
43. Mehtälä MA, Sääkslahti AK, Inkinen ME, et al. A socio-ecological approach to physical activity interventions in childcare: A systematic review. *Int J Behav Nutr Phys Act* 2014;11:22.

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