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Short communication

Examining physical activity policies to practice implementation: Results from the Texas Early Childhood Physical Activity Survey in non-Head Start childcare centers

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ABSTRACT

Ensuring young children have adequate opportunities for physical activity (PA) is important, and policies at childcare centers may help to ensure children have adequate opportunities. The purpose of this study is to examine the associations between center policies and odds of meeting best practices for PA in non-Head Start Texas early care and education (ECE) centers. Licensed centers with publicly available email addresses on the Texas Department of Family and Protective Services website were invited to participate in an online survey in February 2016. A total of 10 PA-related policies and 11 best practices were assessed. Logistic regression models assessed the odds of meeting best practices with each written policy (vs. no written policy). Covariates included center enrollment size. Exclusion criteria yielded a cross-sectional sample of 481 center respondents. Centers reported, on average, 3.92 (SD = 3.00) policies and meeting 4.55 (SD = 1.99) best practices. Each policy was associated with higher odds of meeting at least one best practice. Education policies and structured, adult-led active play policies were associated with meeting most PA best practices. No policies were associated with meeting best practices for seated time or for providing preschoolers recommendation daily minutes of indoor and outdoor PA. Texas ECEs report a low number of written policies and best practice implementation. The findings suggest policies alone may not be enough for implementation of best practices. There are opportunities for enhancement in mandated licensing, policy development, and best practice implementation surrounding PA.

1. Introduction

Physical activity (PA) behavior in toddlers (1–2 years) and preschoolers (3–5 years) is important for development of motor skills, physical and mental health, and the prevention of obesity (Timmons et al., 2012). Despite the benefits, most children have low activity (Reilly, 2010). As nearly 70% of U.S. children attend center-based care (Snyder et al., 2016), supporting PA policies and practices in early care and education (ECE) centers are crucial in shaping healthy behaviors in young children (Dowda et al., 2004) and those who attend non-parental care are more active and less sedentary than children who do not attend childcare (Hesketh et al., 2015).

While national U.S. recommendations for children's PA during childcare exist (American Academy of Pediatrics and American Public Health Association, 2019; Hagan et al., 2007, National Association for Sport and Physical Education, 2009; Let's Move! Child Care., 2017; Ward et al., 2014), childcare is regulated at the state-level. Due to this, differences between state regulations for children's PA vary widely (Duffey et al., 2014). Current Texas Child Care Licensing Minimum Standards (Texas Department of Family and Protective Services Licensing Division, 2017) require: 1) daily morning and afternoon outdoor play; 2) small and large muscle development; and 3) active play both indoors and outdoors throughout the day. However, there are no requirements for duration or frequency of these opportunities, only recommendations for two or more short (5–10 min) structured activities daily and children over 18 months should be allowed 60–90 total minutes of daily outdoor time. Additional Standards state that active play must never be withheld from children who misbehave, only

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allowing a few minutes break for behavioral issues.

As part of these Standards, Texas ECEs must develop a written activity plan that includes: 1) details for providing a variety of activities; 2) outdoor play that includes small and large muscles; 3) a balance of active and quiet play including group and individual activities both indoors and outdoors; 4) child-initiated and caregiver-initiated activities; and 5) no prolonged waiting between activities where children stand or sit. While these Standards exist, ultimately the individual centers are responsible for writing and implementing their own policies.

The ambiguity in standards and potential lack of translation of these policies into practice can be problematic. One study (Erinosho et al., 2016) found in centers with an outdoor written policy, children had fewer minutes of PA than centers with no policy. However, this study only examined three policies related to active, outdoor, and teacher-led playtime. It may be that the presence of other PA-related polices are associated with best practice implementation. Additionally, with the state-level regulation of ECEs, it is important to examine the association between policy and practice across other states. Thus, the purpose of this study is to examine the association between ten center PA policies and meeting 11 best practices for PA in non-Head Start ECE centers in Texas.

2. Methods

A cross-sectional analysis of the Early Childhood Physical Activity Survey administered by the Texas Department of State Health Services (DSHS) (Early Childhood Health and Nutrition Interagency Council, 2016). The details of the research protocol of the survey have been reported elsewhere (Byrd-Williams et al., 2019). Briefly, the survey was developed by the DSHS Early Childhood Health and Nutrition Interagency Council to collect data of PA policies and practices in childcare facilities in Texas. A total of 6,568 ECEs were sent an anonymous online survey available in English and Spanish. The survey was to be completed by someone responsible for overseeing PA of the children (e.g., teacher, director, or administrator). Each participant represents a different childcare center – duplicate email addresses (e.g. one owner/director of several facilities) were removed prior to distribution. The institutional review board at The University of Texas Health Science Center at Houston approved this study.

A total of 827 surveys were returned. Exclusion criteria included: a) employment in a childcare home, Head Start, Early Head Start, or state-funded pre-k program (due to differences in PA performance and licensing standards) (n = 232); b) enrollment of only children over age 6 or missing ages (n = 9); and c) > 60% of missing survey items (n = 105).

Questions were derived from the Nutrition and Physical Activity Self-Assessment for Child Care (Ward et al., 2014) (NAPSACC). There were two questions regarding PA policies. The first question was an adaptive yes/no question, "*Does your facility have a written policy on physical activity and/or screen time?*". If "yes", then 10 items were assessed (Table 1). Policy options were dichotomized into reported/not reported. An aggregate policy score was calculated as the total number of policies reported, range 0–10. There were 11 questions regarding PA practices. Each question had four unique, practice-specific response options, including the NAPSACC (Ward et al., 2014) best practice recommendation. Questions were dichotomized into whether the best practice was reported (met/not met). An aggregate best practice score was calculated as the total number of best practices reported, range 0–11.

Logistic regression models assessed the odds ratio of meeting the best practice recommendation for PA when having a written policy (vs not having a written policy). Covariates included the center enrollment size (the total number infants, toddlers, preschool, and children enrolled). Analyses were done with SAS version 9.4 (*SAS Institute Inc., Cary, NC*).

Table 1
Reported policies and best practices regarding physical activity of childcare centers participants of the Texas Early Childhood Physical Activity Survey collected February 2016.

	% (n)	
Physical Activity Policies		
Aggregate Policy Score[a] (*M, SD*)	3.92	3.00
Shoes & clothes that allow children and teachers/caregivers to actively participate in PA	66.45	(303)
Amount of time provided each day for indoor & outdoor PA	62.50	(285)
Unstructured (active free play) PA play	48.25	(220)
Not withholding PA as punishment	40.57	(185)
Supporting PA (e.g. staff involved during active play time, visible display in classrooms & common areas)	39.91	(182)
Structured (adult-led active play) PA play	35.53	(162)
Education for teachers/caregivers on children's PA	33.33	(152)
Limiting long periods of seated time for children	28.07	(128)
Education for children on PA	25.22	(115)
Education for families on children's PA	12.28	(56)
Physical Activity Best Practices		
Aggregate Practice Score[b] (*M, SD*)	4.55	1.99
Outdoor active free play is provided for all children 2 or more times per day	78.53	(373)
PA education (motor-skill development) provided through standardized curriculum ≥1 times per week	75.96	(357)
Staff members never restrict active play time for children who misbehave	70.55	(333)
Toddlers & preschoolers are not seated > 15 min at any one time outside of nap & meal times	52.81	(244)
Teachers/ staff receive professional development on children's PA ≥2 times per year	33.84	(155)
Teachers/ caregivers often join in active play & make positive statements	30.13	(144)
Toddlers provided ≥90 min/day of indoor & outdoor PA	26.57	(98)
The facility shows visible PA support (poster, pictures, or books) in all rooms	22.70	(106)
Preschoolers provided ≥120 min/day of indoor & outdoor PA	20.72	(98)
Preschoolers provided ≥60 min/day of structured (adult-led) PA	14.77	(70)
Infants never spend time in seats/ swings/ ExcerSaucers outside of nap & meal times	13.46	(44)

[a]Aggregate Policy Score is the total number of policies reported by the center, range 0–10.
[b]Aggregate Practice Score is the total number of best practices reported by the center, range 0–11.
Abbreviations: PA, Physical activity; min, minute.

3. Results

A total of 481 surveys were included in analysis. Participant and center characteristics are reported elsewhere (Byrd-Williams et al., 2019). The majority of respondents were Non-Hispanic, white, female, spoke mostly English, and had some college, technical degree, or higher.

On average, centers reported having less than 40% of policies and meeting less than 40% of best practices (Table 1). While caregiver-initiated activities should be included within Texas childcare written plans, only 35.5% of ECEs reported this policy which may have consequently led to poor reported best practices for minutes of structured, adult-led activity (15%) and total minutes indoor and outdoor activity provided (21% of centers). Only two practices mandated in the Minimum Standards were met by > 50% of centers – outdoor free play provided at least two times per day and not allowing staff to restrict active play as punishment.

Each written policy was associated with significantly higher odds of meeting at least one studied best practice (Table 2). Policies for providing education for children (best practices = 8), for caregivers (7), and for families (7) were associated with the largest number of best practices met (OR = 1.74–3.27). Policies for providing structured, adult-led active play was also associated with a high number of best practices (8) (OR = 1.65–3.24). Despite mandated standards and having a high response rate (> 60%), policies for amount of time

Table 2
Association between physical activity policies and best practices in childcare centers participants of the Texas Early Childhood Physical Activity Survey collected February 2016.

Best Practices											
	Teachers/ staff receive professional development on children's PA ≥2 times per year	The facility shows visible PA support (poster, pictures, or books) in all rooms	Outdoor active free play is provided for all children ≥2 times per day	Teachers/ caregivers often join in active play & make positive statements	Infants never spend time in seats/ swings/ ExcerSaucers outside of nap & meal times	PA education (motor-skill development) provided through standardized curriculum ≥1 times per week	Staff members never restrict active play time for children who misbehave	Preschoolers provided ≥60 min/day of structured (adult-led) PA	Toddlers provided ≥90 min/day of indoor & outdoor PA	Toddlers & preschoolers are not seated > 15 min at any one time outside of nap & meal times	Preschoolers provided ≥120 min/day of indoor & outdoor PA
Policies	OR (95% CI) n = 452	OR (95% CI) n = 448	OR (95% CI) n = 450	OR (95% CI) n = 454	OR (95% CI) n = 285	OR (95% CI) n = 451	OR (95% CI) n = 450	OR (95% CI) n = 450	OR (95% CI) n = 379	OR (95% CI) n = 438	OR (95% CI) n = 450
Limiting long periods of seated time	**1.67 (1.09–2.57)**	**2.59 (1.62–4.15)**	**1.89 (1.24–2.87)**	1.49 (0.96–2.33)	0.92 (0.41–2.09)	1.17 (0.71–1.93)	1.36 (0.85–2.17)	1.09 (0.61–1.96)	1.14 (0.69–1.88)	0.81 (0.53–1.23)	1.19 (0.72–1.96)
Unstructured (active free play) play	**1.95 (1.31–2.90)**	1.09 (0.70–1.71)	**1.58 (1.08–2.30)**	1.29 (0.86–1.93)	**2.35 (1.11–4.98)**	1.12 (0.72–1.73)	1.27 (0.84–1.91)	0.88 (0.52–1.48)	1.25 (0.79–1.97)	0.90 (0.62–1.31)	1.00 (0.63–1.57)
Amount of time provided daily for indoor & outdoor PA	**1.98 (1.30–3.03)**	**2.17 (1.31–3.62)**	**1.65 (1.11–2.46)**	**1.74 (1.13–2.69)**	1.90 (0.84–4.29)	1.41 (0.90–2.19)	1.25 (0.83–1.91)	1.52 (0.86–2.69)	0.92 (0.58–1.47)	1.25 (0.85–1.85)	1.13 (0.70–1.81)
Shoes & clothes that allow children & teachers/ caregivers to actively participate in PA	**2.03 (1.31–3.15)**	**1.94 (1.16–3.26)**	1.47 (0.98–2.21)	**1.58 (1.01–2.47)**	**3.34 (1.31–8.51)**	1.25 (0.79–1.97)	1.17 (0.76–1.80)	0.94 (0.54–1.64)	1.09 (0.67–1.77)	1.11 (0.74–1.65)	0.98 (0.61–1.59)
Supporting PA (staff involved in active play, visible displays, etc.)	**3.63 (2.41–5.46)**	**3.18 (2.00–5.05)**	**2.62 (1.77–3.88)**	**3.26 (2.14–4.96)**	**3.56 (1.64–7.74)**	**1.87 (1.17–2.99)**	1.26 (0.83–1.92)	1.64 (0.97–2.78)	1.15 (0.73–1.83)	0.96 (0.67–1.42)	1.26 (0.79–1.99)
Not withholding PA as punishment	**1.95 (1.31–2.90)**	**2.13 (1.35–3.35)**	**1.89 (1.29–2.78)**	1.43 (1.61–3.67)	**2.18 (1.04–4.55)**	**1.82 (1.14–2.89)**	**4.44 (2.71–7.27)**	1.63 (0.96–2.77)	1.13 (0.71–1.79)	1.36 (0.92–2.00)	1.00 (0.63–1.59)
Education for families	**1.99 (1.12–3.53)**	**2.27 (1.24–4.15)**	**3.15 (1.74–5.70)**	**2.30 (1.29–4.08)**	1.46 (0.56–3.83)	**2.73 (1.13–6.57)**	**2.08 (1.01–4.26)**	**2.01 (1.01–4.00)**	1.44 (0.75–2.76)	0.98 (0.55–1.72)	1.33 (0.69–2.57)
Education for teachers/ caregivers	**2.59 (1.72–3.91)**	**3.01 (1.90–4.78)**	**2.43 (1.62–3.63)**	**2.41 (1.58–3.67)**	**2.29 (1.09–4.82)**	**1.74 (1.06–2.85)**	1.31 (0.84–2.04)	1.60 (0.94–2.74)	**1.61 (1.01–2.57)**	0.84 (0.56–1.24)	1.15 (0.72–1.85)
Structured PA (adult-led active play)	**3.24 (2.15, 4.88)**	**2.84 (1.79–4.49)**	**2.05 (1.38–3.04)**	**2.31 (1.52–3.51)**	**2.11 (1.01–4.41)**	**2.07 (1.26–3.41)**	**1.65 (1.06–2.57)**	**2.07 (1.22–3.51)**	1.03 (0.64–1.66)	0.88 (0.59–1.30)	1.02 (0.63–1.64)
Education for children	**2.75 (1.77–4.28)**	**3.27 (2.03–5.27)**	**2.35 (1.52–3.63)**	**2.36 (1.51–3.70)**	**2.62 (1.22–5.60)**	**2.06 (1.16–3.64)**	**1.81 (1.09–3.01)**	**2.27 (1.31–3.93)**	0.98 (0.58–1.67)	0.87 (0.57–1.34)	0.95 (0.56–1.60)
Aggregate Policy Score	**1.24 (1.15–1.33)**	**1.24 (1.15–1.34)**	0.99 (0.92–1.07)	**1.19 (1.11–1.28)**	**1.20 (1.06–1.36)**	**1.12 (1.04–1.21)**	**1.11 (1.04–1.20)**	**1.10 (1.01–1.20)**	1.03 (0.96–1.11)	1.00 (0.94–1.06)	1.02 (0.95–1.10)

Abbreviations: PA, Physical activity; min, minute. Note: Boldface indicates statistical significance.

provided for indoor and outdoor PA was associated with a low number of best practices (4) (OR = 1.65–2.17).

Only one best practice – teachers/staff receive professional development on children's PA at least two times per year – was significantly associated with all ten of the studied policies and the aggregated policy score (OR = 1.24–3.63). The best practice of providing toddlers ≥90 min/day of indoor & outdoor PA was associated with only education for teachers/caregivers (OR = 1.61, 95% CI, 1.01–2.57). Despite licensing standards, no studied policy was significantly associated with providing preschoolers at least 120 min a day of indoor and outdoor PA and having toddlers and preschoolers seated no > 15 min at any one time outside of nap and meal times.

4. Discussion

This study examined the association between written policies for PA and meeting NAPSACC best practices in Texas ECEs. Although Texas Licensing Minimum Standards require specific standards for licensing (Texas Department of Family and Protective Services Licensing Division, 2017), few written policies were reported. This study examines which policies are associated with meeting good PA practices, which is paramount for promoting healthy behaviors in young children. The findings suggest policies alone may not be sufficient in supporting best practice implementation and Texas ECEs have many opportunities for enhancement.

When centers have policies for providing structured, adult-led PA and for providing education to children, teachers, and families, they meet a larger number of best practices than centers without these policies. Centers with written policies for structured, adult-led PA have two times the odds of meeting best practices for 60 min of structured play for preschoolers. As less than 15% of centers reported this best practice, writing formal policies may be a first step in achieving better PA practices in centers. This supports a previous study which found that these policies were associated with increased center-provided minutes of activity (Tandon et al., 2017). Despite this, only two states, Tennessee and Texas, have state regulations for PA type provided (structured and unstructured) (Duffey et al., 2014). State licensing standards should therefore consider mandating these policies in childcare centers and provide caregiver education to increase promotion of the translation of these policies to best practices.

No policies were associated with higher odds of meeting the best practice for toddler and preschool seated time nor providing 120 min or more of indoor and outdoor PA for preschoolers in this sample. Although the policy for the amount of time provided for indoor and outdoor PA was one of the most reported policies (62.5%), only 20% of preschools provided the best practice of at least 120 min of daily indoor and outdoor PA. While outdoor time is one of the most common state regulations for childcare centers in the U.S (85% of states/territories require regulation (Duffey et al., 2014), these associations suggest that policies may simply not be enough to engage caregivers to provide adequate amounts (120 min) of daily PA. It may be that state licensing requirements are not sufficiently reflecting best practices, therefore center policies are not reflective of best practices, thus leading to centers providing insufficient minutes of activity. Because there are no formal licensing requirements in Texas for duration or frequency of PA (only recommendations for two or more short structured activities daily and providing 60–90 total minutes of outdoor time), centers may have written policies but are not providing enough PA for health benefits. These data could therefore suggest that the licensing minimum standards should be revised to clearly reflect best practices in promotion of PA. In May 2019, the Texas State Legislature passed Texas Senate Bill 952 which amends the Licensing Minimum Standards for ECEs to be consistent with American Academy of Pediatrics Caring for Our Children standards (American Academy of Pediatrics and American Public Health Association, 2019). Once implemented, future research should examine the differences in quality of policies after legislature mandates and explore if these updated mandates lead to increased practice implementation.

4.1. Study Limitations and Strengths

The limitations of this study should be noted. This is a convenience sample of publically available email addresses and thus are not representative of all childcare centers in Texas limiting generalizability, however examination of responses shows that all regions of Texas were surveyed. Future explorations with this population could consider the use of incentives to increase participation rate and overall generalizability as well as explore other modes of survey delivery such as telephone and mail-based. Previous state-wide surveys utilizing these methods have higher response rates than the current study (Tandon et al., 2017; Nanney et al., 2017; Sisson et al., 2012). In addition, there is the possibility of social-desirability bias due to the self-report nature of the survey. Caregivers may have overestimated the percentage of desirable practices or policies. Additionally, respondents may not be fully aware of their center's exact policies, increasing recall bias. However, these biases can be assumed across previous caregiver studies and should not disproportionally affect this sample of Texas caregivers. Examination of written policies by researchers and observation of practice implementation may be one way to reduce these biases, however this was out of the scope for this study. Strengths include a large sample with all regions of Texas present. The use of a previously validated, widely-used scale, NAPSACC, to assess PA practices enables comparison to future studies. Additionally, the study examined a variety of PA polices and best practices.

5. Conclusion

This study examined the associations between center policies and achieving best practices related to children's PA behaviors. The results show that educational policies and policies for structured, adult-led active play are associated with meeting a larger number of best practices than centers without these policies. While state-level licensing standards are required, inconsistences between written policies and implementation should continue to be addressed as policies alone may not be enough for caregivers to provide optimal minutes of PA for health benefits. Furthermore, because the individual centers are responsible for writing and implementing their own policies, future research should examine the quality of policies for adherence to state standards and barriers for implementation when exploring the relation between policy and practice. Finally, state licensing standards should be mindful of PA best practices and revise standards to include specific language regarding policy mandates to help childcare centers promote PA to young children.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Data statement

The data that support the findings of this study are available from the Texas Department of State Health Services but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Texas Department of State Health Services.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pmedr.2019.101019.

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