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Perceived Barriers to Teaching Movement and Physical Activity to Kindergarteners in Ghana

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Abstract
Regular participation in physical activity can improve students' health and academic achievement. It is important to develop a positive attitude toward participation in regular physical activity early in life. Thus, an understanding of factors that affect the activity levels of young children is essential. Therefore, the purpose of the study was to examine what kindergarten teachers perceived as barriers to teaching movement and physical activity. Participants included a purposive sample of 79 teachers from one district in the Upper West Region of Ghana. An 11-item served as the main data source. The questionnaire utilized a 5-point Likert scale. Data were analyzed using descriptive and inferential statistics. Results showed class sizes ranging from 12-161 pupils per teacher. The teachers identified lack of resources (62.0%), lack of support from other teachers (36.80%), lack of time (25.30%), and inadequate training (25.30%) as the major barriers to teaching movement and physical activity. Independent t-Test and One-Way ANOVA analyses found gender, class taught, and professional qualification did not significantly influence teachers' perception of barriers to teaching movement/physical activity. There is the need for teacher education institutions in Ghana to prepare early childhood physical education specialists.
Keywords: Physical activity, kindergarten, physical education, perceived barriers, Ghana.

1. Introduction

Physical activity has health effects in both children and adults (Archer & Blair, 2011) –research suggests that physical activity improves children's health as early as age four [Timmons et al., 2012]. Despite that little is known about the levels and patterns of physical activity in children, those under the age of three and preschoolers are generally assumed to be physically active (Hinkley, 2011). The World Health Organization ([WHO], 2015) recommends at least moderate to vigorous intensity of 60 minutes of daily physical activity for young children.

Generally, the school is considered an ideal setting for making an impact on the physical activity levels of children and young adolescents due to the large number of children in school. Physical education or movement programs have the potential to influence most of children's structured as well as unstructured physical activity levels (National Association for Sport and Physical Education [NASPE], 2004).

There is evidence suggesting that healthier students are better learners and that physical activity can improve students' academic achievement, as well as other factors that influence academic success in school (Basch, 2010; Trudeau & Shephard, 2008; Active Living Research, 2007). Integrating movement into curriculum activities can increase activity levels of young children without sacrificing academic learning time (Trost, Fees, & Dzewaltowski, 2008).

Poor physical activity and fitness levels are associated with chronic diseases such as obesity, heart disease, and diabetes (Martyniuk & Tucker, 2014). The diseases associated with lack of physical activity are preventable; and ways to increase physical fitness in children should be a priority in schools. Participation in regular physical activity can lead to increased metabolic health, muscular strength, bone health, and cardio respiratory fitness for young children (Strong *et al.*, 2005). There are also several psychological benefits to regular physical activity such as increased self-esteem, self-efficacy, better sleep, and reductions in anxiety and stress levels (Chalkley, Milton, & Foster, 2015). Encouraging regular participation in moderate to vigorous physical activity in schools can reduce health risk among children. Furthermore, physical activity habits established during one's younger years also tend to track into young adulthood and later life (Telama et al., 2005).
A major aim of the Ghanaian kindergarten curriculum is for young children to learn to live active healthy lives (Ministry of Education, Science & Sports ([MOESS], 2006). The physical development domain in the curriculum is intended to help children live healthy lives through movement and physical activity. The curriculum covers gross and fine motor skills, perceptual skills, and sports and games (MOESS, 2006). It encourages children to participate in physical activities through physical play. As Paley (2004) noted, play is central to early childhood education. This can only be achieved if early childhood educators are well-trained to

teach movement. However, this is not the case as many early childhood educators are unaware of movement-related teaching strategies (Burgeson, Wechsler, Brener, Young, & Spain, 2001).

The early childhood curriculum should be comprehensive, encompassing the overall development of young children (MOE, 2012). However, physical development is often the most neglected domain of development in early childhood settings (Stork & Sanders, 2008). Studies have reported positive relationships between fundamental motor skills and physical activity among young children (Barnett, Hinkley, Okaley & Salmon, 2013; Robinson, Wadsworth, & Peoples, 2012). Given the importance of establishing a pattern of regular physical activity early in life (Tucker, 2008), understanding environmental factors that affect the activity levels of young children is essential. Physical activity during childhood seems to be protective against obesity later in life. In addition, adults who are obese as children carry a risk of poorer health and increased mortality compared with adults who are not obese as children. By maintaining childhood aerobic fitness, physical activity during childhood reduces the adult risk of cardiovascular disease [Boreham et al., 2002).

Extant literature identifies common barriers that constrain the teaching of physical education, movement, and physical activity in early childhood settings. Marginalization of the subject, inadequate financial resources, and socio-economic status are barriers to participation in physical education and movement for younger children (Barroso et al., 2005; Hamlin & Ross, 2005). In addition, lack of enthusiasm, self-efficacy, lack of support from other staff and administration (Martyniuk & Tucker, 2014), and the use of inappropriate teaching practices (Burgeson et al., 2001) serve as barriers to opportunities for movement and physical activity in early childhood environments.

1.1 Purpose of the Study

The purpose of the study was to examine the barriers to teaching movement and physical activity in Ghanaian kindergarten classrooms. It is important to develop a positive attitude toward participation in regular physical activity early in life. In light of this, an understanding of environmental factors that affect the activity levels of young children is essential (Tucker, 2005).

1.2 Research Questions

Four research questions guided the study:

1. What do kindergarten teachers perceive as barriers to teaching movement and physical activity?
2. Does gender influence kindergarten teachers' perceived barriers to teaching movement and physical activity?
3. To what extent does the class (grade level) kindergarten teachers teach influence what they perceive as barriers to teaching movement and physical activity?
4. Does professional qualification influence what kindergarten teachers perceive as barriers to teaching movement and physical activity?

2. Method

2.1 Participants

Participants included a purposive sample of 79 teachers, (32 KG1 and 47 KG2) from one district in the Upper West Region of Ghana. Of the 79 teachers, 78 indicated their gender (30 males and 48 females). The sample consisted of untrained teachers (16.46%) and trained teachers with post-secondary certificates (5.06%), diplomas (65.82%), and bachelor's degrees (12.66%).

2.1 Instrument

A questionnaire served as the main data source. The authors developed the questionnaire based on extant literature on the perceived barriers to teaching physical education, movement, and physical activity in school settings. The questionnaire was a 5-point Likert scale. The questionnaire consisted of 11 items (perceived barriers) in addition to biographical information such as gender, teaching experience, class taught, and professional qualification. Participants indicated the extent to which they agreed or disagreed to each of the 11 statements by checking the appropriate box for strongly agree (5), agree (4), neutral (3), disagree (2) or strongly disagree (1). Thus, a high rating (5 or 4) means that respondents view the questionnaire item to be a major barrier, while a low rating (2 or 1) for an item meant the item was not perceived as a barrier to teaching movement and physical activity. The questionnaire had a Cronbach's Alpha of .738

2.2 Data Collection and Analysis

The questionnaires were administered to the teachers at their respective schools. The first author passed out the questionnaires to the teachers before class and collected the completed questionnaires at close of the school day. The first author's institution provided formal approval for the study. Permission to conduct the study was also obtained from the District Directorate of Education. In addition, participants provided informed consent prior to completing the questionnaires.

Data were analyzed using descriptive and inferential statistics. First, the authors calculated frequency counts and percentages for each of the 11 items on the questionnaire for strongly agree/agree, neutral, and disagree/strongly disagree. Second, the authors determined each participant's overall mean score for the 11 items. Third, they calculated overall mean scores for sub-groups (e.g. gender) using the individual overall mean scores. The overall mean scores represented the teachers' perceptions of barriers to teaching physical education, movement, and physical activity.

3. Results

3.1 Biographical Information

Table 1 presents descriptive data on class size and teaching experience. The maximum class size for KG 1 and KG2 were 161 and 85 per teacher respectively. The corresponding mean class sizes were 49.25 and 43.27 respectively. The combined mean class size for both KG1 and KG2 was 45.70.

In addition, Table 1 shows data on teachers' teaching experience in years. The mean number of years of teaching experience was 4.07. The mean number of years teaching kindergarten was 2.34, with 28 being the maximum and one the minimum.

Table 1 Means for class size and teaching experience

Class	N	Minimum	Maximum	Mean	Standard Deviation
Class Size					
KG1	28	14.00	161.00	49.25	32.53
KG2	41	12.00	85.00	43.27	19.63
KG1 & KG2	69	12.00	161.00	45.70	25.61
Teaching Experience					
Overall Experience	76	1.00	30.00	4.07	5.57
KG Experience	74	1.00	28.00	2.34	3.42

3.2 Perceived Barriers

The first research question examined what kindergarten teachers perceived as barriers to teaching movement and physical activity. The teachers in the current study identified lack of resources, lack of support from other teachers, lack of time, and inadequate training as the major barriers to teaching movement and physical activity in their kindergarten classes. First, Table 2 indicates that 62.00% of the teachers strongly agreed or agreed that lack of resources such as teacher's guide/manual constituted a barrier to teaching movement and physical activity. Second, 36.80% of the teachers perceived lack of support from other teachers as another barrier, followed by lack of time (25.30%) and inadequate training (25.30%).

Conversely, the teachers did not perceive the importance of movement/physical activity, their own physical fitness levels, student interest in movement, and the using time for movement to teach other subjects as barriers. Most of the teachers (95.00%) perceived movement/physical exercise as an important content for young children (see Table 2). The data also showed that 89.80% perceived themselves as having the required physical fitness levels to teach movement/physical exercise. In addition, 81.00% strongly disagreed or disagreed that their students were not interested in physical education or movement/physical exercise. Finally, 73.40% of them did not perceive using time for movement/physical exercise to teach other content areas as barrier.

Table 2 Frequency counts and percentages for perceived barriers.

Perceived Barrier	Strongly Agree /Agree		Neutral		Disagree/Strongly Disagree	
	f	%	f	%	f	%
1. There is not enough class time to teach PE/movement/physical exercise.	20	25.30	3	3.80	56	70.90
2. I lack adequate training to teach PE/movement/physical exercise.	20	25.30	1	1.30	58	73.40
3. My students are not interested in PE/movement/physical exercise.	6	7.60	3	3.80	70	81.00
4. PE/movement/physical exercise is not an important content/topic.	4	5.10	0	.00	75	95.00
5. I lack the required physical fitness level (energy) to teach PE/movement.	6	7.60	2	2.50	71	89.80
I do not have enough resources (e.g. teacher's guide/manual) to teach movement/physical exercise.	49	62.00	1	1.30	29	36.80
7. PE/ movement/physical exercise is the PE specialist's responsibility.	15	19.00	6	7.60	58	73.40
8. I receive no support from other teachers.	29	36.80	6	7.60	44	55.60
9. I receive no support from my headteacher.	23	29.20	8	10.10	48	60.80
10. Teaching PE/ movement/physical exercise will make me sweaty and smelly.	16	20.30	5	6.30	58	73.40
Time for PE/ movement/physical exercise is used for teaching other topics (e.g. Math, English etc).	17	21.50	4	5.10	58	73.40

3.3 Gender, class, professional qualification and perceived barriers

The second, third, and fourth research questions investigated the impact of gender, class (grade level) taught, and professional qualification on what the kindergarten teachers' perceived to be barriers to teaching movement and physical activity. Table 3 presents data on gender, class and overall means (indicating perceived barriers). The data indicates that females (2.27) had a higher overall mean score than males (2.18). However, the Independent t-Test analysis shows that there was no significant difference for the overall mean scores for females and males ($p = .581$). Table 3 further shows that the overall mean score for KG1 (2.32) was higher than the overall mean score for those who taught KG2 (2.10). Similarly, the mean difference was not statistically significant ($p = .316$).

Table 3: Independent t-Test analyses for gender, class, and perceived barriers

Category	Males(n= 30)		Females (n=48)		t-value	
	M	SD	M	SD	t	p
Overall Mean Score	2.18	.55	2.27	.75	-.549	.581
	KG1 (n = 33)		KG 2 (n = 46)			
Overall Mean Score	2.32	.75	2.10	.63	1.01	.316

Table 4 presents data on professional qualification and overall mean scores (indicating perceived barriers). Teachers with Bachelor's degrees (2.46) had the highest overall mean, followed by those with Post-Secondary certificates (2.36). The teachers with Diplomas (2.17) had the lowest overall mean score, followed by Untrained teachers (2.23). However, the One-Way Analysis of Variance (ANOVA) data shows that the differences among the four groups were not significant (p =.631).

Table 4: One-Way ANOVA for mean score and professional qualification and perceived barriers

Category	Untrained (n=13)		Post-Sec Cert (n=4)		Diploma (n=52)		Bachelor's degree (n=10)		F-value	
										p
Overall Mean Score	2.23	.65	2.36	.67	2.17	.591	2.46	1.11	.58	.631

4. Discussion and Conclusions

The present study examined what kindergarten teachers in Ghana perceived as barriers to teaching movement and physical activity in their classes. The first finding was that many schools had large class sizes— class sizes ranged from 12-161 pupils per teacher. This is consistent with the finding that the ratio of kindergarten pupils to trained teachers was 155:1 (UNESCO, 2008). This ratio, the report explained was a reflection of the country's inability to cope with the surge in kindergarten education. There is the need for a well-coordinated effort by all stakeholders to achieving the long-term target pupil-teacher ratio for kindergarten at 25:1.

Another major finding of the study was that the kindergarten teachers identified the lack of resources such as teacher guides/manuals as a major barrier to teaching young children movement and physical activity. The inadequate preparation among early childhood educators in the teaching of movement and physical activity has been well documented. Burgeson et al. (2001) for example, reported the lack of awareness of movement-related teaching strategies among early childhood educators, and their frequent use of inappropriate practices in teaching movement. In one study, physical education coordinators at the district and regional directorates of education in Ghana lamented the lack of training of physical education specialists at the then Teacher Training Colleges (Sofo, Belcher, Ocansey, & Kanton, 2010). With the upgrade to Colleges of Education, Ghana has the opportunity to train specialist physical education teachers for the basic schools, especially at the early childhood level. This would require a concerted effort by the two teacher education universities in the country— University of Cape Coast and the University of Education, Winneba. The preparation of early childhood/elementary physical education specialists at these institutions is warranted. Only then would the Colleges of Education have the faculty with the expertise to prepare teachers with the requisite knowledge and skills to teach movement and physical activity at the kindergarten level.

A third major finding of the present study was that professional qualification had no influence on what the teachers perceived as barriers to teaching movement and physical activity in their kindergarten classes. That is, the factors perceived by untrained teachers as barriers to teaching movement did not differ from those perceived by trained teachers. In other words, it did not matter if a teacher was trained or untrained in terms of teaching movement/physical activity. this finding is not surprising, since the trained teachers at the basic school level are generalists, and are not adequately prepared to teach movement and physical activity.

The current study utilized a forced-choice Likert format for data collection. Thus, the results only identified the perceived barriers to teaching physical activity. Future research using qualitative approaches such as open-ended questionnaires and/or interviews would provide more insight on why and how the perceived barriers impact the teaching of movement and physical activity at the kindergarten level. In addition, a replication of this study at multiple districts would provide data from a large sample that would be more insightful than the small sample size utilized in the current study. Furthermore, future research could measure kindergarten children's physical activity levels and their respective teacher' perceived barriers to teaching physical activity. That would provide more insight into how the perceived barriers impact children's physical activity levels.

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