Clinical Communications

Quality of life for parents of children with food allergy in peanut-restricted versus peanut-free schools in the United States and Canada

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Clinical Implications

- Peanut-allergic children's caregiver quality of life in peanut-free versus peanut-restricted schools has not been evaluated. Quality of life was not improved in caregivers of peanut-allergic children in peanut-free schools in the United States/Canada surveyed through national allergy advocacy society newsletters.

TO THE EDITOR:

Peanut allergy policies and management have focused primarily on allergen avoidance and treatment because there is no cure for food allergies.[1] Although there is no evidence of efficacy, schools have implemented peanut exclusion policies in an attempt to increase the safety of children with peanut allergy. Use of a validated Food Allergy Quality of Life Parental Burden (FAQL-PB) questionnaire[2] revealed that social limitations consistently affect the quality of life (QOL) of caregivers of food-allergic children and increased social burden in the school setting.[3]

Because of the QOL concerns and increased risk of peanut exposure in peanut-containing schools,[4] various avoidance strategies have been pursued, including separate lunch spaces for food-allergic students (peanut-restricted) and completely peanut-free campuses. The influence of school peanut restriction status on caregiver QOL is unknown. This study sought to explore the QOL of caregivers of peanut-allergic children in peanut-restricted versus peanut-free schools in the United States and Canada.

This was a cross-sectional, anonymous online survey (SurveyMonkey) of parent-reported school peanut restriction status with the primary outcome as the FAQL-PB (17 questions) total score. Additional questions identified caregiver and child demographic characteristics as well as school environment (see Figure E1 in this article's Online Repository at www.jaci-inpractice.org). A survey link was distributed to Food Allergy Research & Education and Food Allergy Canada members via emailed newsletters for 6 weeks (August-September 2016). Each question was scored from 0 (not troubled) to 6 (extremely troubled), with lower cumulative score representing a higher QOL. Survey respondents were parent/guardians of a child younger than 18 years with peanut allergy who attended daycare/school. Subjects with multiple food allergies were excluded. If there were multiple children with peanut allergy in a household, the caregiver chose 1 representative child.

Demographic characteristics and FAQL-PB scores were summarized and compared with *t* test or Fisher exact test. Linear regression assessed the association between FAQL-PB scores and country/peanut restriction status. A multiple linear regression model controlled for potential confounders with and without an interaction term by country and peanut restriction status. Individual questions were analyzed to determine mean scores for country/peanut restriction status. The minimal clinically important difference was defined as 0.5.[5]

One thousand two hundred surveys were initiated with 148 excluded because the child was not in school, did not have a peanut allergy, or did not live in the United States/Canada. Nine-hundred sixty-six surveys were completed. Most respondents were from the United States and mothers (Table I). Seventy-seven percent of children attended peanut-restricted schools. Most respondents were white with incomes of $50,000 or more. Approximately 40% of children in peanut-free schools were in prekindergarten or kindergarten. Canadian students ate lunch in the classroom (68%) and US students in the cafeteria (43%) ($P < .001$). Supervision in the lunchroom/cafeteria was more often performed by school staff in the United States (78%) versus Canada (52%), where volunteers and other nonstaff personnel supervised ($P < .001$). Most children in both countries ate snacks in the classroom (64%) and were supervised by teachers (54%), but US children had snacks in the classroom/lunchroom more often than Canadian children ($P < .001$). QOL was lower among US and Canadian caregivers with children in peanut-free compared with peanut-restricted schools ($P = .037$) with a 3.6 point higher total FAQL-PB score, corresponding to lower QOL. There was significant effect modification between country and peanut status ($P = .029$). The total survey score was 4.4 points higher among Canadian compared with US caregivers ($P = .015$) (Table I). Among those with children in peanut-free schools, the score was 8.14 points lower in the United States compared with Canada ($P = .01$), corresponding to better QOL. The score was 8.5 points higher among Canadian caregivers with children in peanut-free compared with peanut-restricted schools ($P = .026$), but no difference was seen in the United States (Figure 1, *A*). After adjusting for education ($P < .0001$), grade ($P < .001$), and race/ethnicity ($P = .192$), the interaction between country and peanut restriction maintained statistical significance ($P = .016$). Among those in peanut-free schools, the score was 7.03 points lower among US caregivers compared with Canadian caregivers ($P = .035$). Among Americans, the score was 5.6 points lower ($P = .057$) for caregivers in peanut-free schools compared with peanut-restricted schools (Figure 1, *B*). In Canada, scores for questions related to anxiety/sadness ($P = .017$ and .015, respectively) and burden regarding extra time spent in preparation of meals and precautions before leaving the home ($P = .012$), and troubled feelings when leaving the child in the care of others were higher among caregivers with children in peanut-free compared with peanut-restricted schools ($P = .004$).

Peanut-free schools trended toward improved caregiver QOL in the United States ($P = .057$) and reduced QOL in Canada ($P = .026$). In both the adjusted and unadjusted results, the direction of the effect was opposite in Canada and the United

TABLE I. FAQ-PB scores and characteristics

Total score and all demographic characteristics	All patients N = 1,052	Canada N = 209 (20%)	United States N = 843 (80%)	*P* Value	Peanut-free N = 218 (23%)	Peanut-restricted N = 716 (77%)	*P* Value
Total score, mean ± SD (N = 966)	53.1 ± 22.6	56.6 ± 20.6	52.2 ± 23.0	**.0155**	56.1 ± 22.7	52.5 ± 22.5	**.0365**
Sex, n (%) (N = 952)				.744			.352
Female	376 (40)	78 (41)	298 (39)		77 (35)	292 (41)	
Male	575 (60)	113 (59)	462 (61)		140 (65)	419 (59)	
Other	1 (0.1)	0	1 (0.1)		0	1 (0.1)	
Relationship, n (%) (N = 952)				.057			**.041**
Father	34 (4)	4 (2)	30 (4)		5 (2)	28 (4)	
Mother	902 (95)	187 (98)	715 (94)		212 (98)	668 (94)	
Other	16 (2)	0	16 (2)		0	16 (2)	
Grade, n (%) (N = 952)				**<.001**			**<.001**
Daycare/prekindergarten	135 (14)	38 (20)	97 (13)		85 (39)	48 (7)	
Kindergarten-5th	425 (45)	105 (55)	320 (42)		102 (47)	316 (44)	
6-8th	185 (19)	26 (14)	159 (21)		24 (11)	156 (22)	
9-12th	207 (22)	22 (12)	185 (24)		6 (3)	192 (27)	
Race, n (%) (N = 912)				**<.001**			**<.001**
White	787 (86)	140 (78)	647 (88)		158 (77)	608 (89)	
Black/African American	12 (1)	0	12 (2)		3 (1)	9 (1)	
Mixed	90 (10)	32 (18)	58 (8)		36 (18)	54 (8)	
Asian	21 (2)	7 (4)	14 (2)		8 (4)	13 (2)	
American Indian/Alaska/Pacific Islander	2 (0.2)	0	2 (0.3)		0	2 (0.3)	
Ethnicity, n (%) (N = 892)				**<.001**			**.019**
Non-Hispanic	846 (95)	173 (100)	673 (94)		195 (98)	631 (94)	
Hispanic	46 (5)	0	46 (6)		4 (2)	42 (6)	
Income, n (%) (N = 698)				.062			.357
<$25,000	8 (1)	3 (2)	5 (1)		2 (1)	6 (1)	
25,000-49,999	31 (4)	5 (4)	26 (5)		3 (2)	28 (5)	
50,000-99,999	159 (23)	41 (29)	118 (21)		42 (24)	113 (22)	
100,000-149,999	212 (30)	46 (33)	166 (30)		55 (31)	154 (30)	
>150,000	288 (41)	45 (32)	243 (44)		73 (42)	211 (41)	
Parental education, n (%) (N = 920)				**<.001**			.154
High school or less	18 (2)	4 (2)	14 (2)		5 (2)	12 (2)	
Some college or associate's degree	122 (13)	43 (24)	79 (11)		33 (16)	85 (12)	
Bachelor's degree	373 (41)	80 (44)	293 (40)		82 (39)	282 (41)	
Master's degree	270 (29)	30 (17)	240 (32)		50 (24)	213 (31)	

Demographics and FAQL-PB scores were summarized and compared with t-test or Fisher's exact test.
Bold indicates statistical significance ($P \leq .05$).

States. These findings may be related to the predominance of peanut-free schools, lunch location in the classroom, and lower rate of staff supervision in Canada. In the United States, peanut-free schools are in the minority, lunch location is rarely outside the cafeteria, and there is a higher rate of staff supervision. The results of this study must be interpreted with caution given the differences in school policies in Canada and the United States, and the availability of allergen-free products between countries.[6]

Strengths of this study include a validated instrument, anonymous, high rate of completed surveys, and analysis controlled for multiple confounders. Selection bias may be present because the true survey response is unknown and parents actively involved in advocacy organizations may place more emphasis on their child's food allergy as a part of his or her daily life. In addition, skewing did occur toward higher education and income level, causing lack of generalizability.

This study indicates that peanut-free policies in schools were not associated with improved QOL for caregivers of peanut-allergic children in this population. Emphasis on avoidance of peanut in the environment may inadvertently cause increased caregiver anxiety. Other contributing factors include lower staff supervision and lunch/snack location in the classroom rather than cafeteria. Peanut restriction policy may also further single out food-allergic children, who have already been shown to have increased incidence of bullying due to food allergy. In addition, parents of non–food-allergic children have argued that the nutrition of their children may be compromised in peanut-free schools. These parents point to peanuts as an affordable and good source of protein. School peanut restrictive policy recommendations should include adequate staff supervision and eating locations away from the classroom, and future policy statements should implement interventions scientifically proven to make a positive impact.