

Assessment of Pediatric Resident Knowledge and Comfort in Addressing Childhood Obesity in Clinical Practice

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Abstract

Background: Recent data estimate the prevalence of pediatric obesity at 19.3%. Emphasis on primary prevention and early identification is needed to avoid development of serious medical and psychosocial sequelae. The objective of this initiative is to assess baseline knowledge and comfort among trainees at an inner-city pediatric residency program in identifying children with overweight/obesity, evaluating associated risk factors and comorbidities, and providing effective counseling.

Methods: Key topics from 2 major guidelines on pediatric obesity assessment, prevention, and treatment were incorporated into the development of a resident questionnaire, which consisted of 12 knowledge-based questions and a Likert scale evaluating self-perceived knowledge and comfort on 7 skills.

Results: Forty-six percent of eligible residents completed the questionnaire ($n = 28$). The mean score on the objective knowledge-based section was $44\% \pm 13\%$, with no differences by training year. The percentage of residents with correct responses by topic ranged from 14% to 79%. The mean self-perceived knowledge rating was 3.56 ± 0.86 . The mean self-perceived comfort rating was 3.53 ± 0.89 . Neither the self-perceived knowledge nor comfort rating was a significant predictor of performance on the objective knowledge-based section when controlling for postgraduate year status.

Conclusions: Significant gaps in knowledge were discovered among pediatric residents with regard to appropriate screening, assessment, and counseling practices related to pediatric overweight/obesity. These deficits were not consistently reflected in residents' self-perceived knowledge and comfort ratings. The results of this initiative highlight the need for incorporation of standardized curricula on childhood overweight/obesity into pediatric resident education.

Keywords: obesity; overweight; pediatrics; preventive interventions; primary care; resident education

Introduction

Since 1971, overall rates of childhood obesity in the United States have more than tripled, with the largest increase in the school-aged children. The latest data from the National Health and Nutrition Examination Survey (NHANES) from 2017 to 2018 estimate that currently 35.4% of children and adolescents have either overweight or obesity and 19.3% have obesity. Hispanic, non-Hispanic black, and Mexican American youth are disproportionately affected.¹

Studies have shown that obesity established at an early age confers a high risk of obesity in adolescence,^{2,3} and up to 80%–90% of children with established severe obesity at ages 2–5 continue to have obesity as adults.⁴ In addition, the risk of cardiometabolic complications, including dysglycemia, dyslipidemia, and hypertension, increases with

greater severity of obesity, even when controlling for age, race/ethnicity, and sex.⁵

Although multiple factors are responsible for these alarming trends, suboptimal training of physicians leading to a lack of knowledge about the implications of obesity is an important contributor that should be considered. As frontline providers, pediatricians are in a unique position for close monitoring of their patients' anthropometric measures, allowing for early identification of overweight/obesity and provision of timely interventions to avoid long-term sequelae. However, previous studies looking at resident education on childhood obesity identified deficits in instructional quality and lack of formal curricula among programs with a pediatric training component.^{6–9}

The objective of our current initiative was to assess baseline knowledge and comfort among trainees at an

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inner-city pediatric residency program in identifying children with overweight or obesity, evaluating associated risk factors and comorbidities, and providing appropriate counseling. We hypothesized that major gaps in knowledge will be identified due to paucity of a formal educational curriculum on childhood obesity and that trainees will not always be cognizant of their own limitations.

Materials and Methods

Setting

Pediatric trainees at the Icahn School of Medicine at Mount Sinai in New York City, NY, were invited to complete an anonymous questionnaire either in person during their continuity clinic or online over a period of 4 weeks between March and April of 2018. This medium-sized residency program offers pediatric training through the traditional categorical pathway and research track, as well as through preliminary positions for trainees enrolled in advanced subspecialty programs and through a number of combined programs, including medical genetics and pediatrics/psychiatry/child and adolescent psychiatry. Despite the broad clinical, research, and educational experiences and opportunities available to trainees, there is currently no formal curriculum on childhood obesity.

To solidify their educational experience in the general pediatric outpatient setting, all trainees participate in resident continuity clinics throughout the duration of their training. The majority of trainees complete this experience at the Mount Sinai Pediatric Associates Practice. This practice sees an estimated 15,000 preventative visits per year, and a large percentage of patients come from East and Central Harlem, which is comprised predominantly of Hispanic and non-Hispanic black populations and where up to 42% of preschoolers, 46% of public elementary school children, 32% of adolescents, and 60% of adults had either overweight or obesity as of 2007.¹⁰

Data Source and Questionnaire Content

Key themes from two major guidelines on childhood obesity assessment, prevention, and treatment published in recent years were incorporated into the development of a resident questionnaire.^{11,12} The questionnaire consisted of 12 knowledge-based multiple-choice questions on the following topics: diagnostic criteria for pediatric overweight and pediatric obesity; prevalence of childhood obesity in the United States (based on 2013–2014 NHANES data available at the time of the questionnaire development); endocrine/genetic causes of obesity; associated comorbidities; diagnostic criteria for diabetes; diagnostic criteria for pediatric hypertension; recommendations on fruit, vegetable, and fruit juice intake, physical activity, and screen time; and indications for bariatric surgery.

In addition, trainees were asked to rate their self-perceived knowledge and comfort on seven skills using a Likert scale from 1 to 5 (1 = not knowledgeable/not com-

fortable to 5 = very knowledgeable/very comfortable). These skills included screening for and identifying children with overweight or obesity, discussing the diagnosis of pediatric overweight/obesity with patients and their families, screening for factors contributing to the development of pediatric overweight/obesity, assessing for potential familial or psychosocial factors that contribute to pediatric overweight/obesity, screening for comorbidities associated with pediatric overweight/obesity, counseling families on preventative measures and lifestyle modifications related to pediatric overweight/obesity, and discussing potential pharmacological or surgical options for management of pediatric obesity.

Trainees were asked to indicate their postgraduate year (PGY) status (PGY1, PGY2, or PGY3+) and whether they would be interested in participating in a multidisciplinary, family-focused, group-based obesity clinic that would be built into the continuity practice. A sample questionnaire is provided under Supplementary Data.

Statistical Analyses

Continuous data were assessed for normality using the Shapiro–Wilk test. For normally distributed data and non-normally distributed data with a sample size ≥ 30 per group, means and standard deviations are reported and an independent two-sample test or one-way analysis of variance with the Tukey *post hoc* test was used for evaluation of differences in means across groups. For non-normally distributed data with a sample size of < 30 in at least one group, the Mann–Whitney *U* test and Kruskal–Wallis test with pairwise comparisons of mean ranks were utilized; significance values were adjusted by Bonferroni correction to account for multiple comparisons for the latter. For categorical variables, the Pearson chi-square test and adjusted residual *post hoc* analysis with Bonferroni correction for multiple tests were performed.

Multiple linear regression analyses were conducted between knowledge (independent variable) and comfort (dependent variable) ratings, both as aggregates across all seven skills and then separately for each individual skill, as well as between mean self-perceived knowledge/comfort ratings calculated for each participant (as two separate analyses where each factor acted as an independent variable) and the percentage scores on the objective knowledge-based section (dependent variable); all analyses were controlled for PGY status. A subgroup analysis to assess the latter relationship by PGY status was also performed.

A two-sided *p*-value of < 0.05 was used to define statistical significance for all tests. The Statistical Package for the Social Sciences International Business Machines Corporation (IBM) software package (Version 25.0; IBM, Armonk, NY) was used for all statistical analyses.

The project was determined to be a quality initiative by the Department of Pediatrics Performance Improvement Committee at the Icahn School of Medicine at Mount Sinai and was thus exempt from Institutional Review Board approval.

Results

Twenty-eight trainees (46% of all eligible residents) completed the questionnaire (25 in person and 3 online) (Table 1). Although the percentage of PGY3+ residents who participated was lower (29%) compared with the percentages of PGY1 (55%) and PGY2 (59%) residents, this difference was not statistically significant. The mean score on the objective knowledge-based section was

Characteristic	Result	Test statistic	<i>p</i>
Sample size	28 (46% of all eligible residents)		
PGY1	11 (55%)		
PGY2	10 (59%)		
PGY3+	7 (29%)		
		0.929 ^a	0.63
Percentage score on objective knowledge-based section	44% (13%)		
PGY1	42% (9%)		
PGY2	44% (15%)		
PGY3+	46% (17%)		
		0.187 ^b	0.83
Self-perceived knowledge rating, mean (SD)	3.56 (0.86)		
PGY1	3.21 (0.92)		
PGY2	3.83 (0.72)		
PGY3+	3.71 (0.76)		
		11.828 ^b	< 0.001 ^c
Self-perceived comfort rating, mean (SD)	3.53 (0.89)		
PGY1	3.27 (0.91)		
PGY2	3.71 (0.84)		
PGY3+	3.65 (0.83)		
		5.478 ^b	0.005 ^d

^aPearson chi-square statistic.

^bF statistic.

^cOn Tukey *post hoc* analysis, statistically significant differences were found between PGY1 and PGY2 residents ($p < 0.001$) and PGY1 and PGY3 residents ($p = 0.002$).

^dOn Tukey *post hoc* analysis, statistically significant differences were found between PGY1 and PGY2 residents ($p = 0.007$) and PGY1 and PGY3 residents ($p = 0.05$).

PGY, postgraduate year; SD, standard deviation.

44% ± 13%, with no significant differences among the PGY groups. The mean self-perceived knowledge rating was 3.56 ± 0.86, and the mean self-perceived comfort rating was 3.53 ± 0.89. The PGY1 group had significantly lower mean ratings for both variables compared with the PGY2 and PGY3+ groups.

The percentage of residents with correct responses by topic ranged from 14% to 79% (Fig. 1). The topics with the lowest percentage of correct responses (<50%) included prevalence of childhood obesity, diagnostic criteria for diabetes, diagnostic criteria for pediatric hypertension, recommendations on fruit juice, recommendations on screen time, and indications for bariatric surgery. There were no differences among the PGY groups on any topic except the diagnostic criteria for pediatric overweight. The PGY3+ group had the lowest percentage of correct responses (14%) on this topic compared with the PGY1 (73%) and PGY2 (70%) groups.

The mean ranks of self-perceived resident knowledge and comfort ratings were similar across skills, with the exception of discussing potential pharmacological or surgical options for management of pediatric obesity, which had the lowest mean ranks for both variables (data not shown). When evaluating responses by PGY status, the PGY1 group had significantly lower mean rank knowledge ratings in discussing the diagnosis of overweight/obesity and counseling on preventative measures/lifestyle modifications compared with the PGY2 group, but not the PGY3+ group (Table 2). There were no significant differences in the mean rank comfort ratings across the PGY groups on any skill (Table 3).

The self-perceived knowledge rating was a significant predictor of the comfort rating in general and on all of the seven topics individually, when controlling for PGY status (Table 4). However, neither the mean self-perceived knowledge nor comfort rating was a significant predictor of performance on the objective knowledge-based section, both when controlling for training year (Table 4) and on subgroup analyses by PGY status (data not shown).

Twenty-four respondents (86%) indicated that they would be interested in participating in a multidisciplinary, family-focused, group-based obesity clinic. The characteristics of trainees who indicated “yes” versus “no” are summarized in Table 5. The group that answered “no” had a higher mean rank score on the objective knowledge-based section.

Discussion

The prevalence of pediatric overweight and obesity in the United States has continued to rise at an alarming rate over the past five decades. Environmental factors, characterized by intake of high amounts of processed carbohydrates prevailing in the Western diet, low levels of physical activity, and increased sedentary behaviors, have undoubtedly contributed to these trends, underscoring the importance of primary prevention. As frontline medical

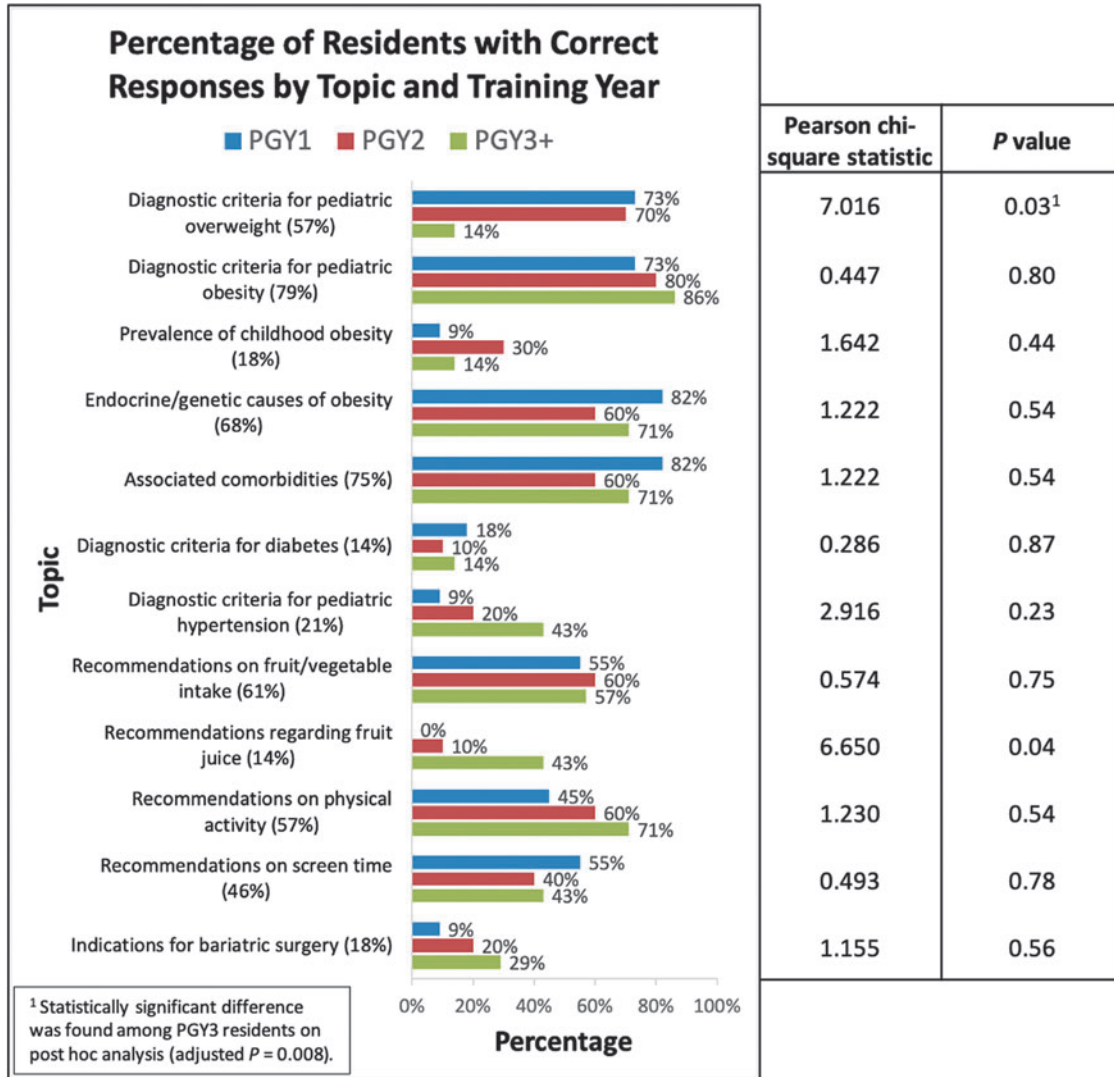


Figure 1. Proportion of trainees with correct responses to objective questions by topic and PGY status. In addition, the description of each topic is followed by the total percentage of residents who answered that corresponding question correctly. Results of the Pearson chi-square test are presented in the columns to the right. PGY, postgraduate year.

providers for children, pediatricians are ideally positioned to deliver preventative counseling, identify concerning anthropometric trends, and offer appropriate screening and intervention when overweight or obesity is identified.

However, pediatricians must be properly trained to be able to provide the best care possible, and studies have indicated that physician training on the topics of obesity and nutrition, both in adult and pediatric specialties, is often suboptimal.⁶⁻⁹ Multiple barriers have been identified based on interviews and surveys conducted with program directors, including lack of structured training and faculty development within a program, other competing curricular demands and lack of time, unclear evidence base for pediatric obesity treatment and prevention interventions, lack of training sites for seeing pediatric patients with obesity, inadequate financial resources for program development, and lack of insurance reimbursement for obesity interventions.^{6,7}

In response to some of the identified barriers surrounding lack of best practice recommendations, two major guidelines have been published over recent years to help guide pediatric providers on childhood obesity assessment, prevention, and treatment, most recently in 2017.^{11,12} Several programs and institutions with a pediatric training component have adopted these guidelines and/or other educational materials to design and implement curricula on pediatric obesity in the past 15 years.¹³⁻¹⁵ These curricula varied in size, length, and format, but all identified positive outcomes, including increases in physician confidence, optimization of physician clinical behavior, positive change in patient behavior, and/or improvements in electronic medical record documentation of topics related to overweight/obesity.^{14,15}

In addition to the efforts described above, both the American Academy of Pediatrics and the United States Preventive Services Task Force have strived to increase

Table 2. Comparison of Self-Perceived Knowledge Ratings by Skill and Training Year

Skill	PGY	Mean rank knowledge rating	H statistic (df 2)	p
Screening for overweight/obesity				
	1	13.05	3.197	0.20
	2	16.75		
	3+	13.57		
Discussing the diagnosis of overweight/obesity				
	1	9.18	10.685	0.005 ^a
	2	18.50		
	3+	17.14		
Screening for contributing factors				
	1	10.50	5.974	0.05
	2	17.55		
	3+	16.43		
Assessment of familial/psychosocial factors				
	1	11.50	5.101	0.08
	2	18.35		
	3+	13.71		
Screening for comorbidities				
	1	12.64	1.759	0.42
	2	15.00		
	3+	16.71		
Counseling on preventative measures/lifestyle modifications				
	1	10.55	7.839	0.02 ^b
	2	18.00		
	3+	15.71		
Discussing pharmacological/surgical treatment options				
	1	11.14	4.095	0.129
	2	15.40		
	3+	18.50		

^aOn pairwise comparisons with Bonferroni correction, a statistically significant difference in mean ranks was found between PGY1 and PGY2 residents (adjusted $p=0.007$).

^bOn pairwise comparisons with Bonferroni correction, a statistically significant difference in mean ranks was found between PGY1 and PGY2 residents (adjusted $p=0.02$).

df, degrees of freedom; PGY, postgraduate year.

Table 3. Comparison of Self-Perceived Comfort Ratings by Skill and Training Year

Skill	PGY	Mean rank comfort rating	H statistic (df 2)	p
Screening for overweight/obesity				
	1	12.27	4.747	0.09
	2	18.10		
	3+	12.86		
Discussing the diagnosis of overweight/obesity				
	1	10.86	4.894	0.09
	2	17.15		
	3+	16.43		
Screening for contributing factors				
	1	11.18	4.920	0.09
	2	17.30		
	3+	15.71		
Assessment of familial/psychosocial factors				
	1	12.86	1.010	0.60
	2	15.95		
	3+	15.00		
Screening for comorbidities				
	1	12.91	1.193	0.55
	2	15.40		
	3+	15.71		
Counseling on preventative measures/lifestyle modifications				
	1	12.36	2.830	0.24
	2	14.20		
	3+	18.29		
Discussing pharmacological/surgical treatment options				
	1	13.09	0.583	0.75
	2	15.45		
	3+	15.36		

df, degrees of freedom; PGY, postgraduate year.

Table 4. Multiple Linear Regression Analyses of Objective and Subjective Data

Independent variable ^a	Dependent variable	B [95% CI]	SE B	β	t Statistic	p						
Self-perceived knowledge rating	Self-perceived comfort rating	0.776 [0.676 to 0.876]	0.051	0.754	15.345	<0.001						
Combined												
Individual skill												
Screening for overweight/obesity												
Discussing the diagnosis of overweight/obesity												
Screening for contributing factors												
Assessment of familial/psychosocial factors												
Screening for comorbidities												
Counseling on preventative measures/lifestyle modifications	Percentage score on objective knowledge-based section	-1.870 [-12.887 to 9.147]	5.349	-0.076	-0.350	0.73						
Discussing pharmacological/surgical treatment options												
Mean self-perceived knowledge rating												
Mean self-perceived comfort rating							Percentage score on objective knowledge-based section	-2.363 [-11.995 to 7.269]	4.677	-0.104	-0.505	0.62
Screening for overweight/obesity												
Discussing the diagnosis of overweight/obesity												
Screening for contributing factors												
Assessment of familial/psychosocial factors												
Screening for comorbidities												
Counseling on preventative measures/lifestyle modifications												
Discussing pharmacological/surgical treatment options												

^aAll analyses were performed with PGY status added as a covariate.

B, unstandardized beta; CI, confidence interval; SE, standard error; β , standardized beta; PGY, postgraduate year.

Table 5. Characteristics of Trainees by Expressed Interest in Obesity Clinic Participation

Characteristic	Trainee response to whether they would be interested in participating in a multidisciplinary, family-focused, group-based obesity clinic		Test statistic	p
	“Yes”	“No”		
Sample size	24 (86%)	4 (14%)	1.559 ^a	0.46
PGY1	10	1		
PGY2	9	1		
PGY3+	5	2		
Percentage score on objective knowledge-based section ^b	42% (13%)	56% (8%)	17.500 ^c	0.04
Mean rank score	13.23	22.13		
Self-perceived knowledge rating, mean (SD) ^b	3.57 (0.86)	3.46 (0.88)	2200.000 ^c	0.52
Mean rank knowledge rating	99.40	99.07		
Self-perceived comfort rating, mean (SD) ^b	3.55 (0.89)	3.39 (0.88)	2124.500 ^c	0.35
Mean rank comfort rating	99.85	90.38		

^aPearson chi-square statistic.

^bAlthough means and SDs are reported, nonparametric testing was performed for comparison of mean ranks as the data were not normally distributed and the sample size in at least one of the groups was <30.

^cU statistic.

PGY, postgraduate year; SD, standard deviation.

awareness of the pediatric obesity epidemic by providing recommendations for prevention, screening, and intervention practices.^{16,17} Furthermore, the American Board of Pediatrics recognizes nutrition and obesity as important content topics that are tested by the certifying examinations under the domain of “Preventative Pediatrics/Well-Child Care.”¹⁸

However, despite these endeavors, to date, there are no standardized recommendations or guidelines provided by the Accreditation Council of Graduate Medical Education (ACGME) to incorporate formal obesity education into the pediatric residency training curriculum. Although the “Frequently Asked Questions” document from the ACGME Review Committee for Pediatrics mentions nutritionists as practitioners who are part of interprofessional teams and may supervise pediatric residents, a review of the most recent ACGME Program Requirements for GME in Pediatrics, effective as of July 1, 2020, did not identify any specific references to weight, obesity, or nutrition under “Educational Program” requirements.^{19,20} As such, most pediatric residency programs continue to lack in a structured designed curriculum on these topics.

To determine whether the aforementioned educational gaps have tangible consequences on residents’ experiences, we surveyed trainees at an inner-city pediatric residency program to assess their objective knowledge on the major themes included in the recently published guidelines cited above and gauge their self-perceived knowledge and comfort ratings on seven skills that pertain to pediatric overweight and obesity. We found suboptimal overall performance on the objective knowledge-based section, notably with no significant differences by training year. Even more disheartening was that only 57% and 79% of residents were able to correctly identify the diagnostic criteria for pediatric overweight and obesity, respectively, with the PGY3+ residents having the worst performance on the former question.

Although the PGY3+ group was the smallest and the trainees’ postresidency plans were not assessed, presenting some limitations to the interpretation of results, the poor performance of the PGY3+ group and the overall lack of expected improvement in objective knowledge are nonetheless concerning. As $\geq 50\%$ of the trainees in this residency program pursue subspecialty training, it is possible that by their third year, these residents’ educational focus shifts toward the topics directly pertinent to their chosen career path, resulting in knowledge lapses of topics related to general pediatrics. Furthermore, some PGY3+ residents, whether consciously or subconsciously, may feel that topics such as overweight/obesity may not be as relevant to their future training and practice, resulting in reduced awareness and attention to them.

However, given the importance of childhood overweight/obesity and how it permeates all corners of medical practice, including pediatric subspecialties, it is imperative that all pediatricians, regardless of training and career path, are at least able to correctly identify these children and

provide appropriate referrals if necessary. Correctly diagnosing children with overweight/obesity forms the foundational basis for appropriate screening practices and preventative and therapeutic interventions, and the inability to do so likely narrows the window period for effective counseling, putting these patients at risk for further weight gain and metabolic deterioration.

Of even greater interest and significance was the lack of correlation found between self-perceived knowledge and comfort ratings and objective knowledge, both when controlling for training year and on subgroup analysis by PGY status. These findings suggest that while trainees may in fact feel well equipped to address the above topics, with mean self-perceived knowledge and comfort ratings in the upper half of the designated scale, this is not supported by objective data, indicating that residents regardless of their level of training often lack awareness of their gaps. Even residents with the lowest overall scores on the objective knowledge-based section perceived their knowledge and comfort on topics related to pediatric overweight/obesity to be adequate.

This discrepancy could be at least partially explained by the fact that trainees may feel that their exposure to a large population of children with overweight/obesity alone is sufficient to provide them with the tools necessary to care for these patients; however, the lack of a formal curriculum incorporating evidence-based guidelines and thus limited appreciation of the recommended best practices preclude their ability to properly address the relevant issues.

This disconnect between objective knowledge and self-perception of knowledge/comfort may have significant implications directly impacting the care of children with overweight/obesity. The inability to acknowledge one’s limitations may contribute to overconfidence and lead to either missed opportunities for appropriate identification and counseling or the delivery of misinformation.

In addition, although residents are always precepted in the continuity clinic by more experienced attending pediatricians, misjudged self-perceived knowledge/comfort may lead to missed opportunities for education if residents feel like they are well equipped to address and manage the issues related to overweight/obesity on their own. This is especially relevant for PGY3+ residents who are typically granted more independence in patient care and decision-making, with less direct oversight by preceptors.

While assessments of baseline knowledge of topics related to pediatric overweight/obesity and trainee perception of their knowledge and comfort are necessary initial steps in highlighting the detrimental effects that lack of a formal curriculum has on the training of future pediatricians, it is equally as important, if not more so, to brainstorm and implement potential solutions. As one solution, we had assembled a working group of residents, faculty, clinic leadership, nutritionists, and social workers to develop a multidisciplinary, group-based family-focused program focused specifically on topics related to

overweight/obesity, with the goal of incorporating it into the resident-run clinic. The majority of trainees expressed interest in this program on our questionnaire.

Appreciating the large medical, psychosocial, and financial impacts associated with the unmitigated obesity epidemic, in addition to program-level interventions, it is necessary to optimize physician education on a more large-scale level. One way to ensure this is to mandate formal obesity training in pediatric training programs and highlight proficiency in obesity care as one of the core competencies residents should master before program completion. Basic knowledge of obesity topics is not just relevant to general pediatricians but also to all pediatric subspecialists as they will undoubtedly encounter patients with overweight/obesity throughout their careers and could help reinforce healthy lifestyle practices.

This quality initiative has several limitations. First, this assessment was performed on a limited number of trainees at one residency program and may thus not necessarily be generalizable to the larger population of pediatric residents. However, we believe that by virtue of being part of a medium-sized program that attracts a diverse cohort of trainees of varying backgrounds, educational experiences, and interests, we had a rather representative sample of pediatric residents and can still use the pivotal data acquired through the survey to make broader assumptions about the state of obesity education at large.

Another limitation is that we did not specifically assess whether trainees themselves felt like their obesity training was sufficient or whether they were able to identify any gaps and/or had suggestions for a preferred modality of teaching, although the majority expressed interest in a multidisciplinary, group-based family-focused program.

Nonetheless, our initiative is one of the first of its kind to design a questionnaire that assessed not only subjective knowledge and comfort but also objective resident knowledge on 12 topics borrowed directly from the evidence-based guidelines on pediatric obesity prevention, assessment, and treatment, which are fundamental for providing optimal patient care. In doing so, the questionnaire sheds light on specific deficits in resident obesity education and the concerning lack of concordance between self-perceived knowledge/comfort and objective performance. Our hope is that these findings will motivate individual programs to adopt more rigorous obesity training and provide an impetus for a more global incorporation of formal obesity education into residency curricula.

Conclusions

Pediatric obesity continues to be a major public health issue, with persistently rising prevalence and strong tracking into adulthood, often leading to debilitating health-related complications and considerable medical costs. Pediatricians, as frontline providers, have a critical opportunity to recognize and address this issue early on by providing appropriate screening, assessment, and counseling to those at risk, with the

ultimate goal of curbing further weight gain and development of chronic comorbidities. Thus, appropriate education on pediatric overweight/obesity is critical in equipping physicians-in-training with the tools necessary to tackle this issue head on.

However, despite the presence of evidence-based guidelines and program-specific educational endeavors developed over recent years, there is a lack of formal educational curricula on pediatric obesity across residency programs. Our quality initiative showed that as a consequence, residents of all training levels have limited knowledge on the pertinent topics related to pediatric obesity, which are highlighted in the published guidelines, and often lack awareness of their gaps.

Future studies surveying trainees across different programs would help clarify whether these knowledge deficits are in fact present nationally and if there are any discrepancies identified in terms of both program-specific and geographical factors. Furthermore, we invite the assembly of a multidisciplinary working group to develop specific guidelines for a formal education curriculum on pediatric obesity to be incorporated into the pediatric ACGME program requirements, with an associated set of core competencies that residents should be expected to meet by the completion of training.

Authors' Contributions

Dr. Azova conceptualized and designed the quality initiative, developed data collection instruments and coordinated data collection, carried out the analyses, drafted the initial manuscript, and reviewed and revised the manuscript. Dr. Mogilner assisted with the design of the quality initiative, provided relevant expert input, administered the questionnaires, and critically reviewed and revised the manuscript. All authors approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

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Author Disclosure Statement

No competing financial interests exist.

Supplementary Material

Supplementary Data

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