

# Adolescents and Their Parents: Perceptions of Addressing Obesity in the Inpatient Setting

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## ABSTRACT

**OBJECTIVES:** Extending obesity screening to the inpatient setting may increase adolescent and parent awareness of weight status. Whether this should be a priority given limited resources depends on how interventions would be received by adolescents and their parents. In this study, we aimed to further understand the perception of adolescents and their parents to addressing obesity in the inpatient setting to inform how to better address this issue.

**METHODS:** Pairs of hospitalized adolescents 13 to 18 years old on a general service and their parents were surveyed. The adolescent and parent surveys included 20 and 21 multiple choice and ordered response questions, respectively. Questions assessed perception of adolescent weight status, readiness to discuss weight status in the hospital, and preferences regarding how that should be done. Demographics were self-reported. Adolescent BMI was calculated from medical records and categorized on the basis of Centers for Disease Control and Prevention charts.

**RESULTS:** Analysis was done on 121 of 122 adolescent-parent pair responses. Of the adolescents, 34% were obese and 21% were overweight. Over two-thirds of adolescents and parents wanted to be informed during the hospitalization if the adolescent was overweight or obese, but there was concordance of both wanting to be informed in only 55% of pairs. A majority of adolescents and parents indicated that they preferred receiving information from physicians and through face-to-face discussion.

**CONCLUSIONS:** Although most adolescents and parents want to be informed of weight status in the inpatient setting, providers should be aware of potential differences in adolescent and parent receptiveness.

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Obesity is a common adolescent medical problem. The percentage of adolescents with obesity from 12 to 19 years increased from 5% to nearly 21% from 1980 to 2014, with a higher prevalence among Hispanic (22%) and non-Hispanic African American (20%) youths.<sup>1-5</sup> The disease burden of obesity disproportionately affects urban minority children, likely because of socioeconomic and environmental factors that coexist with genetic propensity.<sup>1,6,7</sup> In the last decade, there has been an almost twofold increase in pediatric hospitalizations for obesity-related conditions.<sup>8-10</sup>

Parents would like their child's primary care physician (PCP) to address weight-related issues and to do so at regular intervals.<sup>11</sup> However, PCPs may not address adolescent weight status because of a lack of comfort with weight status screening, diagnosis, and management, as well as infrequent PCP visits due to lack of insurance, reliance on the emergency department for primary care, or less-frequent well-child visits with increasing age.<sup>12-16</sup> Therefore, extending obesity screening to other care locations may be important in the earlier recognition of adolescents who are overweight or obese.

The National Association of Children's Hospitals and Related Institutions focus group recommends that obesity be identified in both inpatient and outpatient settings, but a survey in 2009 revealed that only 37% of hospital respondents had a policy to identify and treat patients with obesity.<sup>17</sup> Additionally, a previous study revealed that nearly 90% of parents of children aged 2 to 18 years indicated that they wanted their inpatient physician to inform them if their child is overweight or obese.<sup>18</sup> However, previous studies in which researchers investigated parental receptiveness to discussing obesity in the inpatient setting did not contain assessments of the specific attitudes of adolescents.<sup>18,19</sup>

The authors of a qualitative study that revealed adolescents' perceptions of obesity treatment concluded that personal engagement of adolescents and focus on their individual expectations and goals was

important.<sup>20</sup> During adolescence, many individuals struggle with identity, self-image, and feeling awkward about their bodies.<sup>21</sup> Additionally, adolescents seek independence, have decreased engagement with their parents, and are growing in their ability to think abstractly and set goals.<sup>21</sup> Adolescence therefore represents a different developmental stage in which increasing independence might mitigate parental influence.

It is important to understand what issues adolescents and parents are receptive to discussing in the inpatient setting to prioritize the limited time and resources available. Our primary aim with this study was to investigate adolescent and parent receptiveness to identifying and being informed of adolescent weight status in the inpatient setting in a primarily African American and Hispanic population with high rates of obesity. Our secondary aim was to assess whether there was concordance within adolescent-parent pairs regarding this preference given that persistent discord between a parent and child may have a negative impact on patient adherence and self-management.<sup>22</sup>

## METHODS

### Setting

We conducted a survey of hospitalized adolescents and their parents at an academic, tertiary care children's hospital associated with a large urban health care system. Adolescents aged 13 through 18 years who were admitted to a general pediatric hospital medicine or adolescent service and their parent or legal guardian were recruited from August 2014 to August 2015. Participants were excluded if they were unable to be consented or complete the survey in English or Spanish or if both the adolescent and parent were not present at the time of approach. Participants could not participate in the survey more than once. Potential participants were identified by reviewing a computer-based inpatient general pediatric hospital medicine census during weekdays when study personnel were available. The consent and survey were available in English and Spanish. The study was approved by the Albert Einstein College of Medicine Institutional Review Board.

## Procedure and Survey Design

The questionnaire was piloted with 5 adolescent-parent pairs. Pilot pairs were asked to independently read and complete the survey. Study personnel then discussed the questions and responses with the pairs to assess readability, feasibility, and understandability. Questions were modified on the basis of feedback. Study personnel noted the time it took pilot pairs to complete the survey. The surveys were translated into Spanish by an institutionally accredited interpreter.

Eligible adolescents and their parent or legal guardian were approached by the recruitment team. Once consent from the parent or guardian and assent from the adolescent was obtained, the adolescent was asked to complete a 20-question and the parent and/or guardian a 21-question written survey in either English or Spanish without the recruiter present. Respondents were able to skip questions.

The adolescent survey consisted of multiple choice and ordered response questions (4 options) that were developed to assess adolescent perception, level of concern, and readiness to discuss and receive information about their own weight status while admitted to the hospital. Adolescent demographics, perceived personal weight status, level of concern about weight, and the effect of hospital physician expressing concern on adolescent level of concern were obtained via self-report. Adolescents were also asked if they would like to be notified of obesity or overweight status while in the hospital, by whom, and in what format.

The parent survey consisted of multiple choice and ordered response questions (4 options) that were developed to assess parental perception, level of concern, and readiness to discuss and receive information about their adolescent's weight status while admitted to the hospital. Parent demographics, personal weight status, perception of adolescent's weight status, level of concern about the adolescent's weight, and the effect of the hospital physician expressing concern on the parent level of concern were obtained via self-report. Parents were asked if they would

like to be notified of obesity or overweight status in their hospitalized adolescent and by whom. Additionally, they were asked if they thought that their adolescent would want to be informed of their weight status while hospitalized.

The study personnel subsequently calculated each adolescent's BMI from his or her weight and height obtained from electronic medical record to determine the accuracy of perception of the adolescent's weight status both by the parent and adolescent. If these data were unavailable, surveys were eliminated from analysis. BMI was calculated and classified as obese ( $\geq 95$ th percentile for age and sex), overweight ( $\geq 85$ th percentile and  $< 95$ th percentile), normal weight (greater than or equal to fifth percentile and  $< 85$ th percentile), or underweight (less than fifth percentile) by using the Centers for Disease Control and Prevention BMI Calculator for Child and Teen Metric Version.<sup>23</sup> The actual categorization of the adolescent's BMI was compared with the weight status perceived by the parent and adolescent. All identifying information was discarded after these data were collected.

### Statistical Analysis

Descriptive statistics (percentages, means, and SDs) were used to describe the overall sample. A bivariate analysis was done to compare adolescents who were normal weight to those who were overweight and obese. Given the small sample size, adolescents who were overweight and obese were combined. The *t* test was used for continuous variables and  $\chi^2$  test or Fisher's exact test was used for categorical variables. Statistical analysis was done by using Stata version 13 (Stata Corp, College Station, TX).

### RESULTS

During the study period, there were 588 adolescents admitted to the general pediatric hospital medicine and adolescent services. On the basis of the availability of study personnel and the presence of both the adolescent and parent, 134 adolescent-parent pairs (23% of those eligible) were approached and 122 completed surveys (completion rate 91%). One pair was

excluded because the adolescent's height was not available in the electronic health record ( $N = 121$ ). Six adolescents (5%) and 12 parents (10%) answered the survey in Spanish. Based on hospital registration data during the collection period, the preferred language for 12% of adolescent admissions was Spanish, and the preferred language was not English or Spanish for  $< 1\%$ . Thirty-four percent ( $n = 41$ ) of adolescents were obese, 21% ( $n = 26$ ) were overweight, and 43% ( $n = 52$ ) were normal weight. The demographics of the adolescent and parent groups are listed in Table 1.

Seventy-four percent ( $n = 89$ ) of adolescents and 70% ( $n = 85$ ) of their parents wanted to be informed during a

hospitalization if the adolescent was overweight or obese (Table 2). However, only 67% ( $n = 81$ ) of parent-adolescent pairs were in agreement on wanting or not wanting to know, with 55% ( $n = 67$ ) both wanting to know (Fig 1). In 62% ( $n = 75$ ) of pairs, parents were correct about whether their adolescent would want (57%,  $n = 69$ ) or not want (5%,  $n = 6$ ) to know. Seventeen percent ( $n = 20$ ) of parents were unsure if their adolescent would want to know or did not answer the question. Eighty percent ( $n = 97$ ) of adolescents and 68% ( $n = 82$ ) of parents indicated they would be more worried about the adolescent's weight if a doctor in the hospital expressed concern about it.

**TABLE 1** Adolescent and Parent Demographics ( $N = 121$ )

Adolescent	<i>n</i> (%)	Mean	SD	Parent	<i>n</i> (%)
Sex				Relationship to patient	
Male	51 (42)	—	—	Mother	104 (86)
Female	70 (58)	—	—	Father	12 (10)
				Other	5 (4)
Age, y	—	15.7	1.6	Age	
				<30	4 (3)
				30–39	42 (35)
				40 or greater	71 (59)
				No answer	4 (3)
Wt status, BMI based				Wt status, self-report	
Obese	41 (34)	—	—	Obese	5 (4)
Overweight	26 (21)	—	—	Overweight	53 (44)
Normal wt	52 (43)	—	—	Normal wt	55 (45)
Underweight	2 (2)	—	—	Underweight	4 (3)
				No answer	4 (3)
BMI percentile	—	74.8	28.0		
Race and/or ethnicity				Race and/or ethnicity	
White	13 (11)	—	—	White	13 (11)
African American	29 (24)	—	—	African American	33 (27)
Hispanic	64 (53)	—	—	Hispanic	63 (52)
Other	14 (12)	—	—	Other	7 (6)
No answer	1 (1)	—	—	No answer	5 (4)
				Education	
				<HS/GED	21 (17)
				HS/GED	42 (35)
				College	42 (35)
				Graduate school	9 (7)
				Other	3 (2)
				No answer	4 (3)

GED, general education diploma; HS, high school; —, not applicable.

**TABLE 2** Adolescent and Parent Wanting To Know About Overweight or Obese Status

Actual wt	Want To Know		Both Parent and Adolescent Want To Know <i>n</i> (%)
	Adolescent	Parent	
	Yes, <i>n</i> (%)	Yes, <i>n</i> (%)	
Obese ( <i>n</i> = 41)	25 (61)	32 (78)	21 (51)
Overweight ( <i>n</i> = 26)	21 (81)	14 (54)	12 (46)
Normal wt ( <i>n</i> = 52)	41 (79)	37 (71)	32 (62)
Underweight ( <i>n</i> = 2)	2 (100)	2 (100)	2 (100)
Total ( <i>N</i> = 121)	89 (74)	85 (70)	67 (55)

Of the adolescents who were overweight or obese and did not want to be told (*n* = 21) about their weight status, 8 (38%) provided reasons, including the following: (1) it would make them feel bad (*n* = 4, 50%), (2) they were already aware of their overweight or obese weight status (*n* = 3, 38%), and (3) their PCP should be the one to tell them (*n* = 1, 12%). Of adolescents who were normal weight or underweight and did not want to be told (*n* = 11), 6 (55%) provided reasons, including the following: (1) they were confident that they were not overweight or obese (*n* = 4, 67%) and (2) it would make them feel bad (*n* = 2, 33%). Bivariate analysis was done to assess for differences between adolescents who were normal weight and overweight or obese and

their parents (Table 3). There was no difference between the characteristics of these groups, except that parents of adolescents who were overweight or obese were more likely to self-report as being overweight or obese themselves ( $P = .02$ ). Normal weight adolescents and their parents were more likely to have an accurate perception of the adolescent's weight status compared with obese or overweight adolescents ( $P = .001$ ) and their parents ( $P = .003$ ). Parents of adolescents who were overweight and obese were more likely to be concerned about the adolescent's weight ( $P = .002$ ). There was no significant difference in wanting to be informed of weight status between the groups. Although parents of adolescents

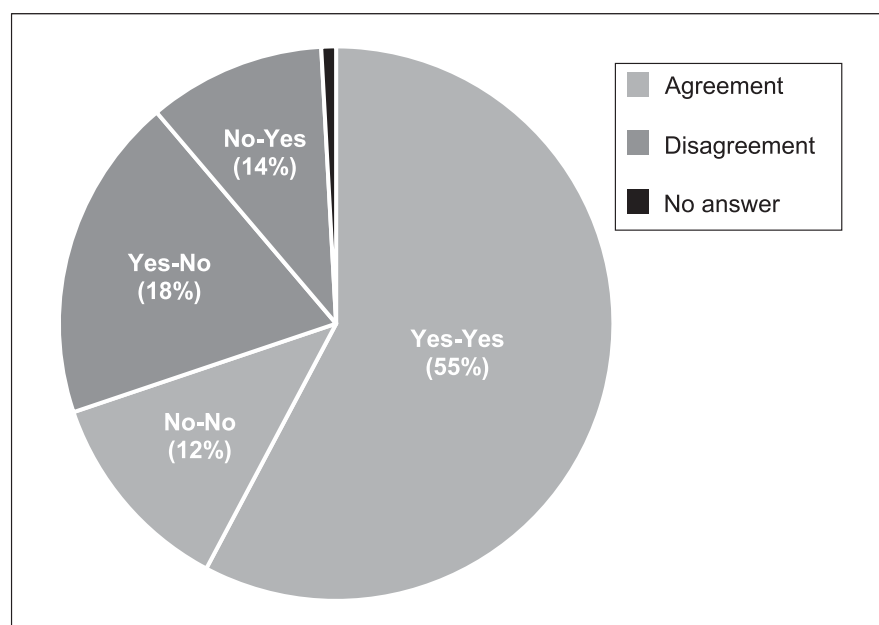
with normal weight were more likely to have increased concern about the adolescent's weight if a hospital doctor expressed concern ( $P = .03$ ), this was true for the majority of parents in both groups.

Respondents were also asked questions about how they would like to receive information about weight status. Sixty-one percent of adolescents and 64% of their parents indicated a doctor as one of the individuals who should tell them about obesity or overweight status (Fig 2). Seventeen percent (*n* = 21) of adolescents chose their parent as the sole individual who should tell them. Of the 91 adolescents who answered in what format they would like to receive information about weight status, 58% (*n* = 53) preferred face-to-face discussion, 34% (*n* = 31) written handouts, 15% (*n* = 14) videos, and 14% (*n* = 13) computer or Internet resources (multiple answers were possible). More than half of parents who answered (*n* = 82) also indicated that they prefer face-to-face discussion (*n* = 47, 57%) and written handouts (*n* = 43, 52%) more than videos (*n* = 10, 12%) or computer or Internet resources (*n* = 17, 21%).

## DISCUSSION

Obesity affects an adolescent's current and future physical, mental, emotional, and social well-being and is therefore an important health issue.<sup>1-4,24</sup> With this study, we increase our knowledge of adolescent and parent preferences in addressing obesity in the inpatient setting, especially in a predominantly Hispanic and African American population, which is at higher risk for weight misperception.<sup>25,26</sup> It demonstrates that most hospitalized adolescents and their parents want to be informed of the adolescent's weight status. It also gives important considerations for developing interventions to address weight status in the inpatient setting, including the potential discord among adolescent-parent pairs and their preference for being informed of weight status by physicians.

With our findings, we confirmed that adolescents who are obese or overweight and their parents were likely to misperceive the adolescent's weight status.<sup>27-29</sup> Accurate



**FIGURE 1** Adolescent-parent pair agreement in wanting to be informed about weight status. Adolescent response listed first.

**TABLE 3** Comparison of Adolescents Who Are Normal Weight Versus Overweight or Obese

	Normal Wt ( <i>n</i> = 52)	Overweight or Obese ( <i>n</i> = 67)	<i>P</i>
Adolescent characteristics, <i>n</i> (%)			
Age, mean ± SD	15.7 ± 1.6	15.7 ± 1.6	.81
Male	24 (46)	27 (40)	.52
Hispanic	26 (50)	37 (55)	.57
African American	12 (23)	16 (24)	.92
Parent characteristics			
Age <40	19 (37)	26 (39)	.80
Hispanic	26 (50)	36 (54)	.69
African American	10 (19)	22 (33)	.10
Education less than college	23 (44)	36 (54)	.30
Overweight or obese	21 (40)	41 (62)	.02
Accurate perception of wt? <sup>a</sup>			
Adolescent: yes	44 (85)	37 (55)	.001
Parent: yes	43 (83)	38 (57)	.003
Both: yes	42 (81)	32 (48)	<.001
Concerned about wt?			
Adolescent: yes	19 (37)	34 (51)	.12
Parent: yes	15 (29)	38 (57)	.002
Both: yes	9 (17)	28 (42)	.004
Want to be informed?			
Adolescent: yes	41 (80) <sup>b</sup>	46 (69)	.15
Parent: yes	37 (71)	46 (69)	.77
Both: yes	32 (62)	33 (49)	.18
More concerned if hospital doctor concerned?			
Adolescent: yes	45 (88) <sup>c</sup>	50 (75)	.07
Parent: yes	41 (82) <sup>d</sup>	39 (63) <sup>e</sup>	.03

<sup>a</sup> Perception of wt for adolescents who were overweight or obese was considered accurate if a wt status of either overweight or obese was indicated.

<sup>b</sup> *n* = 51 because of missing data.

<sup>c</sup> *n* = 51 because of missing data.

<sup>d</sup> *n* = 50 because of missing data.

<sup>e</sup> *n* = 62 because of missing data.

obesity in the inpatient setting. Bradford et al<sup>18</sup> found that 90% of parents were receptive compared with the 70% of parents and 74% of adolescents in our study. This discrepancy may exist because Bradford et al<sup>18</sup> surveyed only parents of children 2 to 18 years of age, whereas we focused on adolescents and their parents. Although obesity is an important issue in adolescence, there are many other prominent adolescent health issues, including mental health issues, prevention of pregnancy, violence, and drug and alcohol avoidance.<sup>35</sup> One may hypothesize that the receptiveness of adolescents and parents to hearing about obesity may be lowered by the relative immediacy of these other issues.

We also highlight the potential presence of adolescent and parent discord in receptiveness to addressing obesity in the inpatient setting. This should be taken into consideration by a provider when discussing weight status. Given that there was agreement in wanting to be informed in only approximately half of the adolescent-parent pairs, identifying the receptive party may be difficult. More than a third of parents either did not know or incorrectly assessed their adolescent's preference for being told about weight status, which suggests a general lack of communication between adolescents and parents on this issue. Although there is increasing autonomy in adolescence, parents can still influence adolescent behaviors. For example, purchasing fast food at least 3 times per week by parents was associated with the presence of unhealthy food in the home and adolescent intake of fast food and salty snacks.<sup>34</sup> Therefore, the unique developmental stage of adolescence and the potential for discord between adolescents and parents should influence the development and implementation of interventions used to address obesity in the inpatient setting.

Lastly, we also add to current literature that more than half of adolescents and their parents prefer to receive information on this issue through face-to-face discussion. Although there is evidence that a large percentage of teenagers use the Internet to

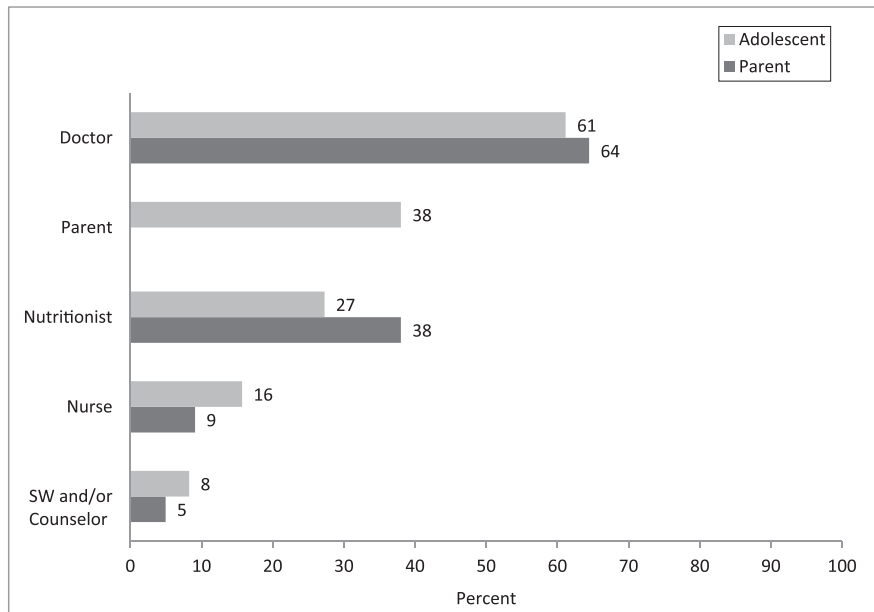
perceptions about weight status are associated with motivation to engage in healthy behaviors.<sup>30,31</sup> We highlight that even in this population with higher disease burden and likelihood of weight misperception, inpatient admissions can be an opportunity for hospitals to increase accurate awareness of weight status and intervene to initiate a treatment plan.

Bradford et al<sup>18</sup> investigated parent attitudes toward inpatient obesity screening in a previous study. Although ~60% of parents in both studies thought a physician should inform them if their child is overweight or obese in the inpatient setting,

inpatient pediatric providers often do not address obesity because they feel that parents will not be receptive.<sup>32</sup> This underlines the importance of changing inpatient pediatric provider perception about parent receptiveness. Furthermore, we highlight that hospital physician expressing concern about weight can increase the level of concern for the majority of adolescents and parents.

Although a similar percentage of parents in both studies wanted the physician to be the one to inform them if their child was overweight or obese, the studies differed in the rate of receptiveness to addressing





**FIGURE 2** Who should tell adolescents and parents about overweight or obese status ( $N = 121$ ). SW, social worker.

seek health information, adolescents are more satisfied with information obtained from parents and physicians.<sup>35</sup> This is another important consideration when developing inpatient policies or interventions to address obesity.

There are several limitations to this study. First, it was conducted at a single institution. Second, the weight and height obtained during acute hospitalizations may lead to inaccurate weight classification because of acute changes in weight associated with the reason for hospitalization, which may over- or underestimate the prevalence of adolescents who were overweight or obese. The reason for hospitalization could also have affected weight perception (eg, if the reason for admission was associated with obesity), but this was not accounted for. Third, surveys were obtained only on weekdays. It is possible that unmeasured confounders could have impacted the type of patients seen on weekdays, and we cannot comment on how this would have affected our data. Finally, the surveys were not validated, and this could reduce the accuracy and precision of these results. Despite these limitations, we importantly introduce the adolescent perspective and

raise considerations for possible future interventions to address obesity in the inpatient setting.

## CONCLUSIONS

Most adolescents and their parents want inpatient physicians to discuss obesity and overweight status and would be more concerned if the provider expressed concern. Further investigation into the implementation of effective inpatient discussions to address adolescent obesity is needed. This could include focus groups with adolescent-parent pairs that are designed to explore strategies to navigate adolescent and parent discord and pilot family or dyadic approaches to discussing obesity. Inpatient discussions of adolescent obesity are an opportunity that should be seized and optimized.

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Diana S. Lee and Elissa Gross

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