

Student and Parental Perceptions of School-based Body Mass Index Screening and Notification

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Abstract

To address the childhood obesity epidemic, school-based body mass index (BMI) screening and surveillance is proposed or mandated in 30 states. We examined parent and student perceptions of school-based measuring and reporting in an ethnically diverse school district in Madras, Oregon, USA. Four broad themes emerged from focus groups held separately with parents and students. Students generally expressed a neutral opinion of BMI measurement. Parents felt that they held primary responsibility for their child's weight. Parents and students perceived BMI notification as important; however, BMI reporting did not widely serve as an impetus for physician involvement or self-reported behavior change. Perceived barriers to behavior change included the lack of a supportive environment, poor access to healthcare, cultural issues, lack of concern over childhood overweight or a minimizing of health risks associated with overweight and poor understanding of the BMI graph and accompanied reporting of health information. Notification letters had limited effectiveness in this community.

Keywords: Adolescents/Youth; Behavior change; Children; Community and public health; Ethnicity; Families; Focus groups; Health care screening; Health policy/policy analysis; Obesity/Overweight

Introduction

Over one third of children and adolescents aged 2-19 years are overweight or obese [1,2]. Although children from all racial, ethnic and socioeconomic circumstances are affected, children from low-socioeconomic and minority groups are disproportionately affected [3-5]. Childhood and adolescent obesity represents a major public health concern because of the associated physical and psychosocial health risks, and increased probability of persistence of overweight into adulthood [6-8]. Therefore, childhood obesity treatment and prevention efforts have been targeted as a public health priority [9,10].

In response to the obesity epidemic, the Institute of Medicine (IOM) proposed yearly body mass index (BMI) screening and reporting of results to parents as one strategy to combat this growing problem [10]. This approach has been adopted by several states and school districts [2]. The programs are intended to increase awareness of childhood obesity among parents and may serve as a vehicle for engaging families in the initial stages towards behavior change [2,11]. However, there is limited evidence to demonstrate the efficacy of these programs and controversy exists surrounding their use. There is some concern that parents may initiate restrictive diets in children and that children may be stigmatized as a result [2,12].

Jefferson County School District 509J (JCSJ) in Madras, Oregon has conducted BMI surveillance for over a decade with children from kindergarten to 5th grade. JCSJ used Centers for Disease Control and Prevention (CDC) protocol for weighing and measuring youth [11]. Height was measured by stadiometer and weight was measured by calibrated Tanita scale with only light weight clothing. Items such as shoes and over clothes, i.e. sweatshirts, were removed for weighing. Measured data were entered into Nurse's Aide School Health Software version 3.2, a comprehensive school health program that calculates age and gender specific BMI. This same program was used to generate BMI reports which depicted each child on a BMI chart standardized for gender and age.

These surveillance efforts were expanded in 2007 to include adolescents from 6th, 8th and 11th grade. During this same period,

the district began reporting BMI results to parents of children in kindergarten to 5th grade. The BMI report included the child's weight and height history plotted on BMI-for-age/sex and weight/height-for-age CDC growth charts along with a letter of explanation that was drafted with input from local community healthcare providers and signed by the district school nurse [13]. CDC color-coded graphs were used to facilitate understanding of which BMI category (underweight, normal, overweight or obese) children belonged to. The notification letter included diet and lifestyle suggestions, as well as websites for further advice, a suggestion to discuss results with the family physician, a warning not to place the child on a weight-loss diet without seeking assistance from a doctor, and a contact number for the school nurse should further assistance be required. Students from 6th, 8th and 11th grade were measured but parents did not receive notice of results.

JCSJ represents a racially diverse community with approximately equal thirds non-Hispanic White, Hispanic, and Native American students. Jefferson County, in comparison to the state of Oregon population, has a greater percentage of people below the poverty level (14.6% vs. 11.6%), a greater percentage of students eligible for free or reduced school lunches operated by the United States Department of Agriculture (75.6% vs. 45.7%), and a lower percentage of students that graduate from high school (57% vs. 73%) [14-16]. This research focused on perceptions of BMI measuring and reporting and self-reported behavior change in response among parents and students. The objective of this study was to determine how students from JCSJ perceived being measured and to determine from both student and parental viewpoints if the notification had any impact on their behavior. The ultimate goal

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was to determine if the BMI notification letter served as impetus for behavior change and to assist in preparing recommendations for the local school board regarding district health policies.

Methods

Design

Sixteen focus groups, two in Spanish with Hispanic parents, were conducted in the five schools (8 with parents and 8 with students) in November and December of 2009 to examine student and parent perceptions of BMI measurement and reporting in a diverse, rural community in Madras, Oregon (USA). Focus groups were chosen as the mode of data collection to obtain insights so that participants could take the lead in the conversation and be able to respond to one another.

The Oregon Health & Science University Institutional Review Board and the Northwest Indian Health Board Institutional Review Board approved the study protocols.

Recruitment and participants

The research team recruited participants from five schools within JCSD. Invitations to participants were made by drawing a random selection from the population of students measured. Students represented three elementary schools, one middle-school and one high-school. The student participants were in grades 4, 5, 6, 8 and 11. Children from younger grades were not included in focus groups based upon recommendations from the research partnership teacher advisory group who had concerns that these students would not contribute effectively. Parents of children from Kindergarten to 5th grades and from 6th, 8th and 11th grade were invited to participate. Invitation was not dependent on body mass index. Focus groups took place in the school the child was enrolled with. Members of the research team made reminder calls the night before or the day of each focus group. Researchers conducted focus groups with parents and children until we felt a full-range of observations had been obtained.

Focus groups had a mean of five participants per focus group (range 2-13) including 20 parents of students in kindergarten to 5th grade (25% male, 75% female), 15 parents of children in 6th, 8th and 11th grade (7% male, 93% female), 26 students from 4th and 5th grade (50% male, 50% female) and 23 students from 6th, 8th and 11th grade (39% male, 61% female) for a total of 84 participants.

Data collection

The focus groups were held in private rooms at each respective school. Two of the eight focus groups with parents were held in Spanish and all eight focus groups with students were held in English. Each 60-minute focus group had a moderator accompanied by an observer. All sessions were audio-taped. Researchers provided each parent participant with a copy of the informed consent form and concurrently explained the purpose, procedures, and confidentiality of the study. All parents were sent consent forms to their home via United States mail at the time of invitation acceptance. Student participants arrived with a signed parental consent form if the research team had not received a signed parental consent previously via United States mail. Children then assented themselves by participating in the focus group. After obtaining consent/assent from participants, each member was presented with a copy of the BMI notification letter and an accompanying CDC graph for a fictitious child. The focus group discussion began with an icebreaker.

The lead moderators in this study had 15-20 years of experience in conducting focus groups. A semi-structured focus group discussion protocol was devised in order to explore both reactions to and the

effectiveness of the current practice of BMI screening and notification. Questions began as broader questions and became progressively more focused, inquiring about beliefs, attitudes and opinions related to the BMI notification process including message content, the weight status of children in the community, views on responsibility for childhood weight and student perceptions of the measuring process as recommended by Kruger [17]. The moderators guided the discussion but remained value neutral. To achieve this, the moderators kept the discussion of their own perceptions out of the conversation, asked nonjudgmental, value neutral questions, and probed for clarifying statements from participants.

In return for their participation, in each focus group, participants received a \$10.00 USD gift card of their choice to one of three outlets (Subway sandwich shop, a local grocery store, or a local bowling alley).

Data analysis

Complete recordings of focus group sessions were transcribed verbatim by a study assistant in English or Spanish. Spanish focus groups were then translated to English by a native Spanish speaker who specializes in health document translation. Transcripts were imported into NVivo8 to facilitate coding of key words, phrases and quotes that emerged (NVivo qualitative data analysis software; QSR International Pty Ltd., Windows Version 8). Codes were used to develop broad categories and to identify emerging themes and representative quotations. Credible themes were considered as recurring issues that were raised by more than one participant in a group and ideally by participants in more than one group. This analysis was conducted independently by three researchers and discussed in order to reach consensus. To increase credibility of the study, multiple researchers were involved in data collection and coding. Interpretation bias was reduced by including an analyst that was not involved in the data collection. After coding the data, the research analysts worked independently to capture participants' responses to BMI measuring and reporting. Student and parental questions focused on the same basic themes and therefore the data is presented together.

Results

Research findings were grounded in the participant perspective. The four broad themes emerged from the data.

Routine

In general, the students participating in focus groups perceived the weighing process as a routine, trivial task, having little lasting effect. Representative statements of this sentiment across the grade levels include a fourth grade student who stated,

“Just got weighed and measured and then I left”.

A fifth grade student who said,

“I just thought it was useful. It didn't really matter to me”.

An eighth grade student simply stated,

“It was easy”.

And a less enthusiastic statement came from an eleventh grade student who said,

“I thought it was just something the school made me do, so I just went up there and did it”.

However, some students did not feel comfortable with being weighed and measured for height. A fourth grade student stated,

"I felt fat".

A sixth grade student said,

"Felt puny...Cause the thing's so big. When they measure how high you are. It's like, you pull the thing all the way down from where the last person was, that's like, taller than me".

While an eleventh grade student said,

"They [student's friends] said I know if I'm fat, so I don't need to go up there cause I know I'm fat".

Most students considered the measurement process to be adequately private; however a student in the 11th grade felt that the use of an additional curtain to increase privacy and hence the comfort level should be considered. Students across the grades repeatedly said that they would have liked to have been informed of their weight at the point of measurement. A 6th grader captured this by saying,

"I'd feel better if I knew my weight. That way I can set goals for myself. But, if somebody was asking me, then I wouldn't tell them, because I don't want nobody else to know my weight".

While an eleventh grade student said,

"I didn't like how they wouldn't tell me how much I weighed even though I told them I didn't care because I'm not ashamed of how much I weigh".

Perceived responsibility for maintenance of childhood weight

Parents felt that they held the main responsibility for their child's weight control and believed they should provide healthy food and education for their children. Some parents expressed difficulty with getting their children to adopt healthy eating habits. This was repeatedly stated by the Hispanic parents who described their children's preference for American foods such as hot dogs rather than traditional foods such as tortillas. This perception of the parent as having primary responsibility was not shared by the older adolescents who felt their weight should be their personal responsibility as they approach adulthood. One third grade parent stated,

"The school can only do so much. It's your child. You need to take responsibility".

While an eleventh grade student said,

"We're almost adults. It's our responsibility".

Parents and students believed the school district held partial responsibility for helping students maintain a healthy weight, and provisions should include health education, nutritious meals and physical activity. While some parents and students felt this was already being offered, others believed that the school could provide better services. Some parents and students described a rushed atmosphere in the cafeteria, a long line at lunch that led to time constraints, and the availability of unhealthy meal options.

BMI notification perceived as important, though of limited impact

The outlook on BMI reporting was largely positive among parents and students. Almost all parents perceived it as important to continue receiving BMI reports for their children in kindergarten to 5th grade and felt that BMI notification should commence for children in the higher grades. Parents felt that the letter provided a tangible resource that could be referenced. Parents and children felt the process would increase awareness of weight status with parents acknowledging that

children were not routinely weighed following infancy. Other parents viewed the letter as important reassurance for both themselves and their children when the report indicated normal weight. Two statements from parents reflect the desire for reassurance. First a parent of a fourth grader stated,

"Not only for my information, but to share with her...cause she's nine and she's already got that media type of...oh, I'm getting too fat mom...I say you're growing... All the other girls look like this, you know, and I think this is a good influence"

While a parent of an eleventh grade student said,

"My child is small like me...there's all these other kids a full foot taller than my child. Seeing her on that graph and saying ahh, she is ok. That helped me enormously because we kept telling her you gotta eat more".

A small number of parents did describe making healthful changes following receipt of the letter, including a reduction in screen time and greater encouragement of physical activity; however BMI notification did not widely serve as an impetus for positive diet and lifestyle change among participants. Some parents did not recall receiving the letter and a small number disclosed not reading the letter. In addition, BMI notification was poorly understood by many parents and students alike. Despite the recommendation to share the BMI information with a doctor, parental responses indicated that most parents did not pursue this route.

Identified Barriers to Effectiveness of BMI Screening

A number of barriers were cited. In general, both parents and children possessed awareness of the need for healthy food choices and physical activity. However, they perceived that barriers exist with regard to putting this awareness into practice, such as poverty, lack of education, expense of healthy foods, having a large number of fast-food outlets in the proximity, and lack of knowledge regarding community resources. In addition, Hispanic parents in particular noted that their children did not routinely visit the doctor. The following quotes represent perceived barriers in the community. A sixth grade student stated,

"There's a lot more fast food restaurant here".

An eleventh grade student said,

"Health food is really, really expensive".

An eleventh grade parent stated,

"Our community is, umm, is one of the highest in poverty. A lot people may not be educated or might not be able to afford healthier foods".

A fourth grade student said,

"I've never been to the doctor since I was a baby".

A parent of a sixth grade student reflected this as well, stating,

"I have never taken him [child] to the doctor. He never gets sick".

Mixed opinions existed among the groups with regard to the presence of overweight in the community. Some viewed youth weights as problematic while others viewed the weight status of youth in the community as normal. A small number of parents did not perceive that their own child was overweight, but could appreciate that the community had an issue with overweight. A parent of a third grade child said,

"I've seen some [children] that are overweight. You know, there's no doubt that there is a problem. But I don't believe my child is one of them".

Most participants had difficulty understanding the BMI graphs and this detracted attention from the enclosed letter. Despite the color-coding of BMI graphs, parents were eager to have the focus group moderator explain their meaning. In general, knowledge of BMI was poor among focus group participants. Some parents and children expressed that the letter did not sufficiently explain the meaning of BMI despite community-based research partnership efforts to craft the letter at an appropriate reading level. A number of statements reflect the difficulty in interpreting the letter and results. One parent of a kindergartener said,

"Because it was confusing, I got defensive. So I called up on the number that was on the paper. Why are you measuring my daughter?"

An eleventh grade student stated,

"I don't think it [letter] really explains it [BMI]. It just brings it up and then says what BMI stands for".

And a parent of a fourth grade student stated,

"I'm not exactly sure what it [BMI] was, but I heard it several times".

There appeared to be a lack of communication between the school and parents surrounding BMI reporting. Some parents suggested that a meeting prior to BMI notification would be helpful. One parent of a second grade student suggested,

"I think if they do [send the letter] it needs a better explanation and possibly a parent meeting before hand to understand it and to explain the way that you got to the decision that it was sent to the parent".

Another parent of an eighth grade student expressed the desire to connect with the school by stating,

"I really like this meeting. And it would be helpful if you have more meetings going on and more participants".

In the same sense of desire to connect, parents in one Hispanic focus group repeatedly suggested that having a Caucasian nurse's name on the letter would result in poor attention being paid to the letter by Hispanic parents. Despite the letter being sent in both English and Spanish, parents suggested that a Caucasian nurse would be less likely to understand them and more importantly they would not be able to relate to their concerns. Parents indicated that the nurse's surname was enough for them to know the health care provider was not Hispanic. A Hispanic parent of an 8th grade student stated,

"If you don't see a Hispanic name, you don't get the attention to read the letter. Especially for the ones that don't know English. Even though you get it in Spanish they're not going to want to know anything else".

Discussion

To our knowledge, the current study is the first to examine parent and student perceptions of school-based measurement and reporting of BMI among a relatively low-income, ethnically-diverse population. In general, BMI measurement did not seem to leave a lasting impression on students. However, children from 4th to 6th grade used words such as "fat", "small" and "puny" to describe how they felt regarding their own weight and height. This is in line with results from Kalich et al. [18] who measured an ethnically-diverse group of students from 5th to 8th grade and found that while the majority of students did not find discomfort with BMI measurement, a greater proportion of overweight students

(38%) felt uncomfortable with the weighing process in comparison to normal weight students (8.1%).

The majority of students would have liked to have been informed of their weight at the time of measurement. An eleventh grade student indicated that if students are not informed, they may become defensive about their weight. Gibbs et al. [19] has suggested that because sufficient studies have not been conducted in this area, there is a possibility that withholding a child's weight may unintentionally generate anxiety. One study on BMI measurement at school provided students with their weight and height, but not with their BMI or weight status and found that 59% of students found it beneficial to become aware of their weight [18]. Children that participated in the current study identified a lack of routine doctor visits and lack of parental discussion over the notification letter. Therefore, it may be important that students are informed of their weight status in a private setting. It has been suggested that BMI may be shared with children that are beyond grade four if the process does not label the child and is adequately private [11].

Parents perceived that they hold the main responsibility for maintaining their child's weight, until a stage that they are no longer living at home. The children and younger adolescents in the current study felt that the responsibility should be shared between the parent and child, as the parents must purchase the food in the home. However, the 11th grade students (aged 16-17) believed that they held the main responsibility for their weight, which was reflected in their opinion that parents should not receive their BMI results.

The school was viewed as having an important secondary responsibility in the management of children's weight. Both parents and children perceived providing health education, healthy school meals, and adequate physical activity as necessary. Studies have indicated similar views among parents [20-23]. Parents were open to receiving assistance from the schools in managing their child's weight, which suggests that parents may be open to school-based interventions, but that the parent as key influencer must be respected.

Parents and students in our study expressed how lunchtime was a rushed occasion. An earlier study with students indicated that a rushed lunch atmosphere may increase vending machine usage [24]. Some parents were concerned that the meals were unhealthy. Guidelines suggest that schools should provide an environment which facilitates healthy eating and physical activity if the school introduces a BMI-measurement program [25]. This also highlights the need to effectively communicate school nutrition and physical activity standards to parents in order to demonstrate the district commitment to health.

The majority of parents had a positive outlook on BMI screening and wanted the school to conduct measurements on an annual or biannual basis. This is consistent with the majority of previous studies which show that parents generally tend to support these programs [21,26-29]. Kubik et al. [26] found that 78% of parents wished to receive annual BMI notification from the school. Johnson et al. [29] found parents from ethnic-minority groups were the most interested (84.9%) in receiving BMI information, which is in line with our results for an ethnically-diverse community.

While some parents enacted changes after receiving the letter most did not heed the advice to speak with the family doctor. Parents described a preference for trying to control their child's weight in the home first, with the intention of seeking assistance from the doctor if the situation became uncontrollable. One study examined this issue specifically and found that only 1/3 of parents (33.6%) spoke with their doctor about the results [29]. Reasons for this might include financial

issues, poor access, or lack of support from a physician on a previous visit [30]. Responses from some Hispanic parents indicated that their child had never been taken to the doctor; not surprising given that 38% of uninsured US children are of Hispanic origin, and 12% of uninsured children had no contact with a health care professional in over two years [31].

The majority of parents indicated they had discussed the BMI notification with their partner, but most did not discuss the letter with their child. Previous studies have indicated that less than half of parents tend to discuss the BMI results with their child [26,29]. Kubik et al. found that most parents felt sharing the information from the BMI notification letter with the child made the child feel not at all (68%) or slightly (15%) uncomfortable, with reports of discomfort being greater among parents of overweight children [26].

An interesting finding was the apparent disconnect between some parents and the schools. It appeared that parents did not feel involved in the BMI screening process which led to misunderstanding among some regarding the purpose of BMI notification. This indicates the importance of adequate communication between parents and schools if a BMI screening program is to be successful. Hispanic parents in particular enjoyed the focus group discussions and were eager for the school to conduct further meetings with more participants. This may suggest that Spanish-assisted group discussion may be an acceptable aid to accompany BMI notification or other forms of communication.

Some parents in the current study were not concerned with the result if the child appeared active. These findings are consistent with previous research on preschool children (one on Hispanic toddlers) which found that parents did not perceive overweight to be an issue for their child if the child was physically active and appeared to be healthy [32,33]. Likewise, parents reported a lack of concern with the BMI results because children were growing in a similar fashion to siblings and to themselves as a child. This suggests that parental perception may be skewed by comparison to others. There was varying opinion between and among groups with regard to the weight status of children in the community; with many feeling that they were normal, indicating a shift in perception of “normal body weight” which could compromise the effectiveness of BMI screening [34]. In addition, a number of parents did not view overweight in a serious light. One parent perceived normal weight in children as perfection and therefore not as a realistic goal. Two Native American parents described speaking with family members regarding the letter and laughing at the content, indicating further that they did not associate excess weight with risk for disease which has also been reported in a previous investigation [35].

Most parents that participated in focus groups had heard of BMI, but they were unable to define BMI and did not understand its meaning. This mirrors findings from Oettinger et al. [36] where only 30% of parents could roughly define BMI. Some have suggested that the use of the term “percentiles” when discussing childhood BMI may be confusing to parents as the reporting differs from adult BMI reporting [37]. The BMI notification letter was dependent on a number of assumptions, for example that parents would understand concepts such as reading of labels, balancing calories, and reducing sedentary time.

Over 14% of adult Americans have below basic literacy skills and a further 29% have basic literacy skills [38]. Factors increasing likelihood for having below basic literacy skills include Hispanic ethnicity and incompletion of high school education [38]. Poor literacy skills can also impact health literacy, which limits understanding of health information [39]. In addition, direct translation to Spanish may not be suitable for those with basic literacy in their native language [40]. This

might indicate that the letter was pitched at too complex a level for this group. Issues with literacy may have contributed to the poor recall of the letter by some participants.

The CDC graphs that accompanied the letter proved more difficult for parents to comprehend than the letter itself, thereby limiting parental understanding of their child's weight. A recent study found that parents had difficulty using BMI charts and that 77% could not correctly interpret charts containing both weight- and height-for-age plotted values [41]. This may indicate the potential need for face-to-face contact with the parents if full benefit of the process is to be derived.

Limitations

Although the findings in the current study represent the opinions of focus group participants and cannot be generalized, we were able to obtain a large sample of 84 participants representing the diverse schools and a spectrum of ages. Participants may have had different views on BMI screening and notification than nonparticipants. In spite of this, it was felt that saturation was reached among the participants who attended. Students from the 4th and 5th grade did not contribute as effectively as the older students. Responses often tended to be vague and it seemed that “group think” may have been in operation on occasion, which is where students do not express different opinions [42]. It has been suggested that in focus-group sessions with younger participants, having greater than 4 to 6 participants may increase reluctance to talk [43]. However, in the current study two of the groups with 4th and 5th grade students had 8 and 13 participants which may have contributed to the “group think” effect. In addition, the BMI categories of the participating children and children of the participating parents were unknown. It may have been useful to examine the perceptions as per weight category. More females participated in the parent focus-groups, which limits the input from male parents regarding BMI screening.

Recommendations

Considering the poor access to and usage of the healthcare system among some members of this community, school-based surveillance can be useful in providing representative data for the purpose of population surveillance. Given that parents felt the information was important, efforts are required to make the process more understandable, accessible and culturally appropriate if BMI screening efforts are to continue. Alternative approaches may be more suited to low-income, racially-diverse communities. This might involve providing BMI information to parents via other means, such as school-wide meetings with representative local individuals and health professionals using more simplified messages. School-based surveillance is important and BMI notification has some utility but it must be done with caution. In addition, the long-term impact of such measures remains to be seen. Until then, schools can and should play an important role in collecting accurate height and weight data for surveillance purposes.

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