

RESEARCH TO PRACTICE

Measuring Height and Weight in Head Start Preschoolers: Suggestions for Best Practices

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Measuring height and weight in preschool children is an important way to track their growth patterns and identify potential nutrition and health risks. Converting these measurements to a BMI-for-age percentile and tracking this over time, allows Head Start (HS) programs to help with preventing obesity in the early childhood years. These measurements also allow HS to evaluate obesity prevention programs implemented in HS programs. However, looking at height and weight measurements and the process used to measure children is important to assure accurate measurements. The purpose of this study was to examine the height and weight data at two time points in one program and explore the perceptions of health staff around the data collection process. Best practices for measuring height and weight of HS preschoolers are discussed.

Keywords: early childhood education, obesity, measurement, Body Mass Index, screening

INTRODUCTION

In 2018, 16.6% of Head Start preschoolers had obesity, with a range across states from 12.5 to 27.1 percent (Imoisili et al., 2020). Lowering obesity rates among children is among the nation's public health goals outlined in *Healthy People 2030* (Office of Disease Prevention and Health Promotion, 2020). This is important because preschoolers who are overweight or obese are five times as likely to be overweight or obese by the age of 12, and are more likely to become overweight or obese as adults (Centers for Disease Control and Prevention [CDC], 2013). Additionally, childhood obesity has both immediate and long-term negative outcomes related to physical, social, and emotional health (Freedman et al, 2007; Griffiths et al, 2010; May et al., 2012 & Must et al, 2006).

Height and weight measurements in children are converted into a Body Mass Index (BMI) for age percentile that is used to classify their weight status (underweight, overweight, obese), track their growth patterns, and identify potential health risks (Bell et al., 2018; CDC, 2020). Early Care and

Education programs, such as Head Start (HS) have been identified as ideal locations for obesity prevention initiatives and evaluation (Institute of Medicine, 2013). More specifically, since HS programs are required to report child weight classifications (i.e., underweight, normal weight, overweight, obese) to the US Department of Health and Human Services [USDHHS] on the Program Information Reports (Office of Head Start, 2020), this data could also be used to monitor obesity in low-income preschoolers across the US, where overweight and obesity remains high (Imoisili et al., 2020).

In the 2016 Head Start Health Manager Descriptive Study (Karoly et al., 2016) almost 86 percent of programs identified obesity as a major concern and 80% of programs obtained height and weight measurements on-site. Therefore, examination of the measurement data and discussion with HS programs related to needs around the data collection process could provide valuable insight into potential needs and best practices around this process in HS. The purpose of this study was to 1) examine and compare the height and weight data of preschoolers in one program at two time points during the school year and 2) explore the perceptions of health staff around the data collection process.

METHODS USED TO CONDUCT THE STUDY

Study Design & Procedures

At the beginning of the school year, a 60-minute mandatory nutrition training was conducted by the HS nutrition manager. The training included nutrition information, menu/meal guidelines, and instructions on how to use the stadiometer and scale for child measurements, although, most of the training addressed nutrition guidelines with approximately ten minutes addressing the height and weight measurements. Verbal instructions regarding strategies for conducting school-based anthropometric measurements as recommended by the CDC (2018), including removing shoes, hair accessories, and coats/jackets during measurements, were provided. Teachers recorded the height and weight measurements (in both August and February) on a spreadsheet that was returned to the nutrition manager who entered the information into the ChildPlus data management system.

To better understand the practices around the height and weight measurement collection, the ten members of the HS health team participated in a 60-minute focus group (FG). The attendees included the program-level nutrition staff and nursing/health staff who provided services to all HS sites and training for the height and weight measurements. Three overarching questions guided the FG: 1) What is the process your program uses to collect the height and weight of preschoolers in your program? 2) Who is responsible for conducting the measurements? 3) What are some of the challenges around data collection?

De-identified height, weight, BMI-for-age, weight classification and each child's gender and age was received by the research team for each time point and compared from the August to the February measurement to examine growth patterns over this time period. The focus group was audio recorded, transcribed, and coded. Codes were organized into themes.

FINDINGS FROM THE STUDY

Forty-six teachers across 13 HS sites collected height and weight measurements of 455 enrolled preschoolers in August and February. During the 6-month period, children significantly increased in height and weight, growing on average 1.36 inches and gaining 2 pounds. The average BMI-for-age percentile decreased by 3.99 points from the 65th percentile to the 61st percentile. However, 39 children lost height (or did not exhibit height growth), 104 children lost weight (or did not exhibit weight growth), and 60 children gained more than 5 pounds during the 6 months. Two-hundred sixty (260) measurements indicated normal growth across the two time points.

Three themes were identified from the focus group with the ten health staff: Pressures on HS teachers; HS teacher lack of understanding of BMI; and lack of precision of the data collection. The health team described the pressures on teachers that may influence their ability to see the height and weight measurements as a priority. They described teacher time as a major challenge. The health managers also described that they perceived the teachers lack understanding of the measurements and how these measures are connected to their roles as teachers. The health team also described how these previous factors (e.g., other time pressures and not seeing the connection of the measurements to their teaching role or academic outcomes) may influence the lack of precision of the data collection.

DISCUSSION

Summary

Research has shown that monitoring height, weight and BMI and implementing programs in early childhood can steady the rise of childhood obesity through elementary school (Moreno-Black, et al, 2016). The purpose of this study was to examine height and weight data of HS preschoolers and to explore HS health team perceptions of this measurement process.

When first looking at the average BMI-for-age change from August to February, it appears that obesity rates in these children declined over the 6-month period, which would be important. However, when looking at the individual measurements where height and weight losses were seen, there were questions whether challenges in the measurement process could have contributed to these declines. Almost 25 percent of the children had a decrease in weight or had no weight gain over the 6-month time frame, which would be unlikely given children's growth patterns. Previous research has shown that challenges in the measurement process can be related to the person obtaining the measurements and variations in the child such as hydration, fidgeting, fatigue, time of day, and positioning (Himes, 2009).

In this program, teachers and classroom staff were responsible for collecting height and weight measurements, which may be similar in other HS programs with program sites across large geographic locations or those with limited staffing. However, barriers such as teachers' daily responsibilities, time pressures, and lack of understanding around the importance or relevance of the measurements may have contributed to reduced reliability and precision. Therefore, despite

receiving standardized equipment and a brief training, a more in-depth training in conducting height and weight measurements, including interpreting BMI results and understanding the impact of errors on the child's BMI status, may be needed (Nihiser et al., 2007). The training could include demonstration and practice sessions to exhibit understanding and proper technique, as well as examples illustrating how small errors in height and weight in preschool children can impact BMI percentile and associated weight status category. Providing additional information regarding the association between obesity and academic performance may assist in increasing teacher understanding of the measurements, as well as their role in the process. Additional continuing education or professional development opportunities for HS staff may also be created to teach best practices and enhance the foundational knowledge around height/weight/BMI measurement in children.

Limitations

A strength of this study included the large number of child paired height and weight measurements to examine. However, the results are limited to one HS program and may not reflect the way in which all Head Start programs collect height and weight of preschoolers. Additionally, the individual(s) responsible for measurements may vary across programs, counties, and states. Individuals may even change from measurement to measurement due to staffing changes. More research is needed to explore how BMI measurements are collected at various programs across states, who is responsible for overseeing and collecting the measurements, and the training provided in order to determine best practice recommendations.

Suggestions for Height and weight Measurements in Practice

This research provides insight into potential challenges of measuring the height and weight of preschoolers enrolled in HS. However, more research is needed to explore whether other HS programs have similar experiences. HS Performance Standards (USDHHS, nd) provide general guidance on health assessments, but allow programs to tailor health policies/practices to meet the needs of each program's size, staffing and capability. This may result in differences in how height and weight measurements are conducted and who is responsible for collecting this data. The impact on the accuracy of the height and weight measurements that may occur as a result of these differences could be minimized by the use of best practices.

While a college degree is not required to take high-quality height and weight measurements, adequate and on-going training is necessary to ensure measurements are accurate and trusted. Suggestions for best practice include assigning dedicated staff to conduct the measurements (or partnering with external organizations who have the expertise to conduct measurements); limiting the number of data collectors; conducting regular hands-on training for those who will be conducting height and weight measurements. Other suggestions include choosing appropriate/consistent measurement equipment (to include regular calibration); measuring at the same time of day; and creating a standardized, written measurement protocol with images of correct child positions and storing the document with the equipment, as to be available for each use. Guidance from national HS with templates for policies and protocols around measuring height

and weight may be beneficial, as HS is in a position to monitor obesity of low-income children enrolled in the program through these measurements.

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