



# webinar wednesday

PRESENTED BY PALMETTO CARE CONNECTIONS



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## *Managing Pediatric Obesity Via Telehealth*

**Christine San Giovanni, MD, MSCR  
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**May 17, 2023 at 12:15pm-1:15pm EST**

*webinar is being recorded.  
Full recording and presentation  
available after the webinar.*





# MANAGING PEDIATRIC OBESITY VIA TELEHEALTH

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# Objectives

## Report

Report prevalence and contributing factors to pediatric obesity

## Identify

Identify co-morbidities of obesity and ways to assess for them

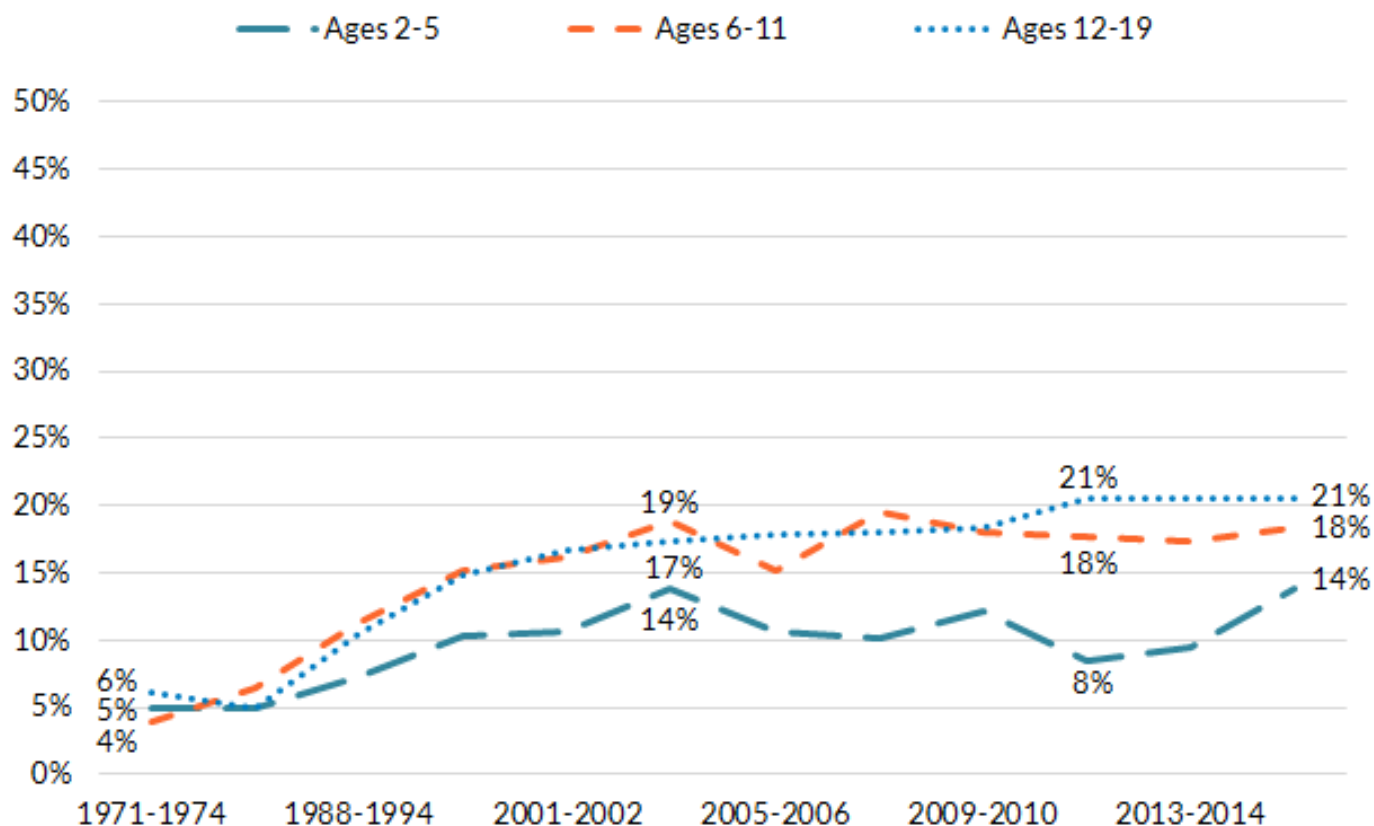
## Describe

Describe successes and challenges of a weight management program via telehealth

# A Huge Public Health Concern

- One-third of children and adolescents have overweight or obesity
- NHANES data from 2017-2018 reported prevalence of 19.3% in youth and severe obesity as high as 6%
- 12-19 years old 21.2%
- Obesity disproportionately affects minority populations
  - 25.6% in Hispanic youth; 26.9% Mexican American youth; 24.2% non-Hispanic Black youth
- Obesity is also more prevalent in **low-income, less educated or rural populations**

## Percentage of Children Ages 2 to 19 Who Are Obese, by Age: Select Years, 1971-2016



Source: Data for 1971-2014: Fryar, C. D., Carroll, M. D., & Ogden, C. L. (2016). *Prevalence of overweight and obesity among children and adolescents aged 2-19 years: United States, 1963-1965 through 2013-2014*. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Retrieved from [https://www.cdc.gov/nchs/data/hestat/obesity\\_child\\_13\\_14/obesity\\_child\\_13\\_14.pdf](https://www.cdc.gov/nchs/data/hestat/obesity_child_13_14/obesity_child_13_14.pdf). Data for 2015-2016: Hales, C. M., Carroll, M. D., Fryar, C. D., & Ogden, C. L. (2017). *Prevalence of obesity among adults and youth: United States, 2015-2016 (NSCH Data Brief No. 288)*. Hyattsville, MD: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Health Statistics. Retrieved from <https://www.cdc.gov/nchs/products/databriefs/db288.htm>.

# Why Do We Care?

Obesity is a chronic and progressive disease

Children with obesity are 5 times more likely to have obesity as adults than children without obesity

Adolescent obesity leads to adult obesity and adverse cardiovascular outcomes



# Obesity: A Complicated Disease

- Not just imbalance of calorie consumption and expenditure
  - Abnormalities in hypothalamic homeostasis
  - Neuronal circuits involved in reward-based decision making, learning, and memory
  - Mental Health
  - Socioeconomic Status
  - Genetics
  - Hormones
  - Sleep
  - Early-life risk factors



# Obesity & COVID

COVID disrupted children and adolescents' structured routines.

Families who were disproportionately affected by obesity pre-pandemic were more likely to experience an impact on income, food, and other social determinants of health

The estimated proportion of persons aged 2-19 years old with obesity was 19.3% in August 2019 and 22.4% in August 2020

The monthly rate of increase in BMI nearly doubled during the COVID-19 pandemic compared with a prepandemic period

6-11 year old children experienced largest increase in rate of Body Mass Index (BMI) change; pandemic rate was 2.5 times as high as pre-pandemic rate

CLINICAL PRACTICE GUIDELINE Guidance for the Clinician in Rendering Pediatric Care

American Academy  
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

# Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity

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# Weight Status for Medical Documentation

## Overweight

≥ 85<sup>th</sup> to 95<sup>th</sup> %ile

## Class I Obesity (BMI 30-34.9 kg/m<sup>2</sup>)

≥95<sup>th</sup> to 120% of 95<sup>th</sup> %ile

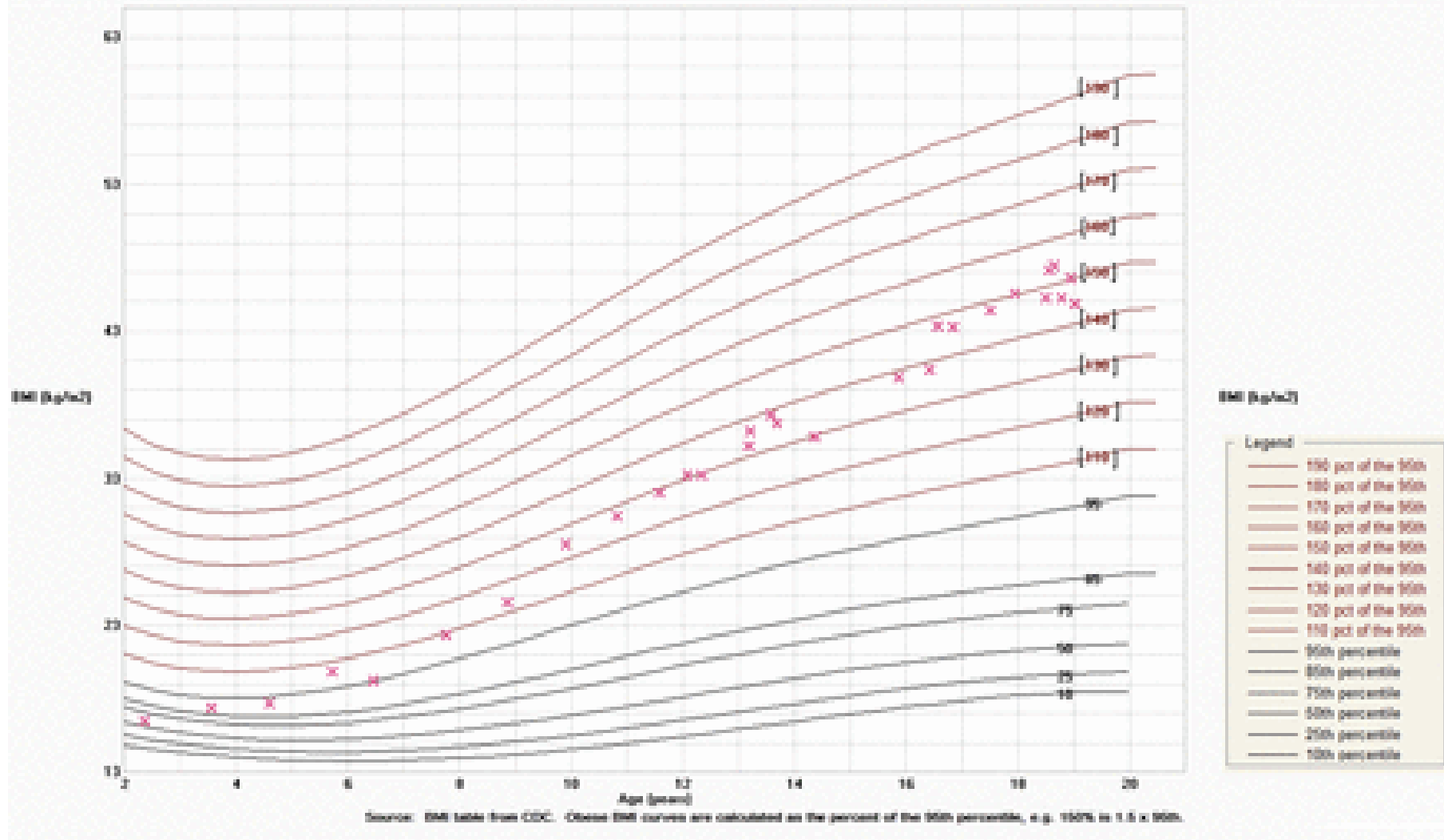
## Class II Obesity (BMI 35-39.9 kg/m<sup>2</sup>)

≥ 120% of 95<sup>th</sup> %ile to 140% of 95<sup>th</sup> %ile

## Class III Obesity (BMI >40 kg/m<sup>2</sup>)

≥ 140% of 95<sup>th</sup> %ile

Girls BMI - Percent of the 95th Percentile ( Girls, 2-20 years)



Pediatricians and other PHCPs should measure height and wt, calculate BMI, and assess BMI percentile using age- and sex-specific CDC growth charts or growth charts for children with severe obesity at least annually for all children 2 to 18 y of age to screen for overweight (BMI  $\geq$  85th percentile to <95th percentile), obesity (BMI  $\geq$  95th percentile), and severe obesity (BMI  $\geq$  120% of the 95th percentile for age and sex).

# Treatment of Pediatric Obesity



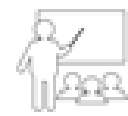









Early reduction and improvement in BMI predicts better outcomes

First line treatment: Intensive Health Behavior & Lifestyle Treatment (IHBLT)

USPSTF >26 contact hours of behavioral interventions over 6-12 months

Refer early to dietitian and/or MUSC's Wellness Works Program

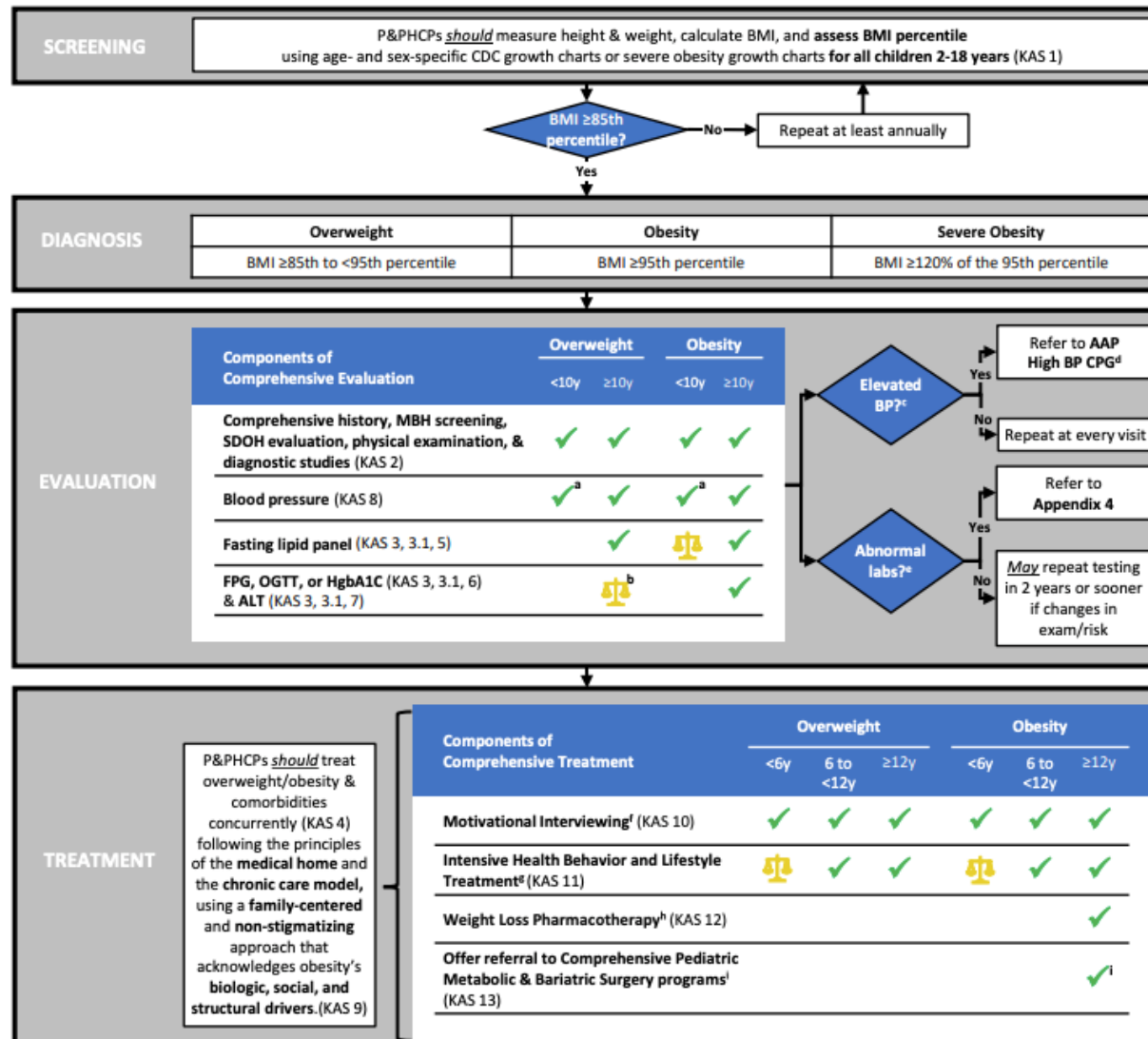
## Intensive Health Behavior and Lifestyle Treatment (IHBLT)

WHO:	WHEN:	WHAT:	WHERE:	DOSAGE:	FORMAT:	CHANNEL:
 Patient and family in partnership with a multidisciplinary treatment team*	 Promptly for child or adolescent with overweight or obesity	 Health education and skill building on multiple topics   Behavior modification and counseling	 Healthcare setting   Community-based setting with linkage to medical home	 Longitudinal treatment across 3-12 months with ideally $\geq 26$ contact hours	 Group,   Individual, or   Both	 Face-to-face (strongest evidence)   Virtual (growing evidence)

\* PCPs and/or PHCPs with training in obesity as well as other professionals trained in behavior and lifestyle fields such as dietitians, exercise specialists and behavioral health practitioners

- Pediatricians and other PHCPs should treat overweight (BMI  $\geq$  85th percentile to  $<$ 95th percentile) and obesity (BMI  $\geq$  95th percentile) in children and adolescents, following the principles of the medical home and the chronic care model, using a family-centered and non-stigmatizing approach that acknowledges obesity's biologic, social, and structural drivers.

# APPENDIX 1 Algorithm for Screening, Diagnosis, Evaluation, and Treatment of Children and Adolescents with Obesity



- Pediatricians and other PHCPs should treat children and adolescents for overweight (BMI ≥ 85th percentile to <95th percentile) or obesity (BMI ≥ 95th percentile) and comorbidities concurrently.
- Pediatricians and other PHCPs should use motivational interviewing (MI) to engage patients and families in treating overweight (BMI ≥ 85th percentile to <95th percentile) and obesity (BMI ≥ 95th percentile).

# Obesity Comorbidities

- Children & Adolescents with higher BMIs and more comorbidities are more likely to experience a decreased health-related quality of life
- Common comorbidities:
  - High blood pressure
  - High cholesterol
  - Type 2 Diabetes
  - Fatty liver disease
  - Osteoarthritis and joint pain
  - Sleep apnea and breathing problems
- Children & Adolescents with obesity may also experience psychological effects:
  - Low self-esteem
  - Depression
  - Anxiety
  - Eating disorders
  - Suicidal ideation



- 2-21 years old
- Offer visits in Mount Pleasant, North Charleston, Summerville, and virtual visits throughout South Carolina, also available with School-based Health Program
- Dietician visits every month and physician visit every 3-6 months, Physical Therapist and Psychologist as needed
- Exercise sessions everyday
- Curriculum includes individual sessions on healthy eating, safe exercising, reading food labels, limiting tempting foods and screen time, goal setting, self-monitoring, rewards, and problem solving

## MUSC's Wellness Works Program

<https://musckids.org/our-services/heart-center/clinics-and-programs/heart-health-program>

Pediatricians and other PHCPs should offer adolescents 12 y and older with obesity (BMI  $\geq$  95th percentile) weight loss pharmacotherapy, according to medication indications, risks, and benefits, as an adjunct to health behavior and lifestyle treatment.

Pediatricians and other PHCPs should offer referral for adolescents 13 y and older with severe obesity (BMI  $\geq$  120% of the 95th percentile for age and sex) for evaluation for metabolic and bariatric surgery to local or regional comprehensive multidisciplinary pediatric metabolic and bariatric surgery centers.

# Telehealth for Pediatric Obesity

- Telehealth: patient-clinician communication via video conferencing or other methods of remote access to provide health assessment or counseling
- Mobile Health (mHealth): Use of mobile technology such as smartphone or tablet apps or text messages to engage end-users in improving their own health
- Great to supplement in-office visits to fulfill USPSTF recommended 26 hours of contact time for IHBLT
- Helps with cost (transportation), time (school/work schedules), and lack of sufficient resources especially in rural areas
- Increases accessibility to care
- Systematic review (Moorman, et al, 2021)
  - BMI z-score improved 0.10 or less
  - High retention rates (80-100%)
  - Attendance (64-93% while in-person visits typically fall to 50% or lower)
  - Mean Satisfaction (77-100%)

# Telehealth visits for Pediatric Obesity: Advantages

Collecting family history, medications, social history, home environment, and sleep history can be done easily

Can visualize acanthosis nigricans and striae on camera

Increased productivity, less clinic overhead

Discuss food items/food labels in the home

Share items in fridge or pantry

See exercise equipment or space

Apps & Wearable devices can provide rich data at follow-up visits

# Telehealth for Pediatric Obesity: Challenges

BMI

Blood pressure

Internet connectivity

# Telehealth Considerations

- If patients live far away, it's perfect to alternate visits between telehealth and in-person
- Consider patient privacy during home visits
- External labs ordered so patients can go to preferred, convenient lab
- Blood pressures can be taken by nurse at school or BP cuff at home
- Consider mobile health apps or texting to stay connected to supplement visits
- Look into privacy protection if recommending apps
- Try wearable activity trackers or apps that you can collect data at a visit
- Novelty wears off! May need to keep changing what your patients are using!



# Study comparing weight management program outcomes in- person vs. telehealth

**Table 3.** Outcomes of in-person and telehealth treated patients in a paediatric weight management program.

Characteristic	In-person <i>n</i> = 1019	Telehealth <i>n</i> = 58	
Continuous variables	Mean ± SD		<i>P</i> -value <sup>a</sup>
Body mass index (BMI)			
BMI difference	0.912 ± 2.79	0.683 ± 1.92	0.3942
BMI percentile difference	−0.304 ± 3.00	−0.162 ± 0.59	0.4990
BMI z-score difference	−0.044 ± 0.22	−0.032 ± 0.15	0.6453
Non-inferiority ( $\Delta = 0.15$ )			0.001
Laboratory values			
Haemoglobin A <sub>1c</sub> difference <sup>b</sup> (mmol/mol)	0.009 ± 0.71 ( <i>N</i> = 228)	0.067 ± 0.44 ( <i>N</i> = 6)	0.5918
Low-density lipoprotein difference <sup>b</sup> (mg/dL)	−2.333 ± 22.84 ( <i>N</i> = 201)	−2.000 ± 14.99 ( <i>N</i> = 4)	0.9288
Alanine transaminase difference <sup>b</sup> (IU/L)	0.274 ± 27.06 ( <i>N</i> = 226)	48.625 ± 76.11 ( <i>N</i> = 8)	0.0888
Time-related outcomes			
Days on study	339.3 ± 339.3	267.2 ± 255.4	0.3872
Categorical variables	<i>N</i> (%)		
Total visits categories			0.0909
<6 visits	645 (63.3)	33 (56.9)	
6–12 visits	266 (26.1)	22 (37.9)	
>12 visits	108 (10.6)	3 (5.2)	

SD: standard deviation.

<sup>a</sup>Significance testing: chi-square test for categorical variables and Fisher's exact test where expected cells were less than 5. Wilcoxon–Mann–Whitney test for non-parametric continuous variables and two-sample independent t-test for parametric variables.

<sup>b</sup>*N* is specified in cells with excessive missing values.

Lukenbill, et al. 2021.

# Mobile Health

Mhealth: use of mobile technology such as smartphone, tablet apps or text messages, to engage end-users in improving their own health

95% of adolescents currently have smartphones!

Text messaging and mobile devices have been shown to be feasible in aiding self monitoring and promoting behavior change

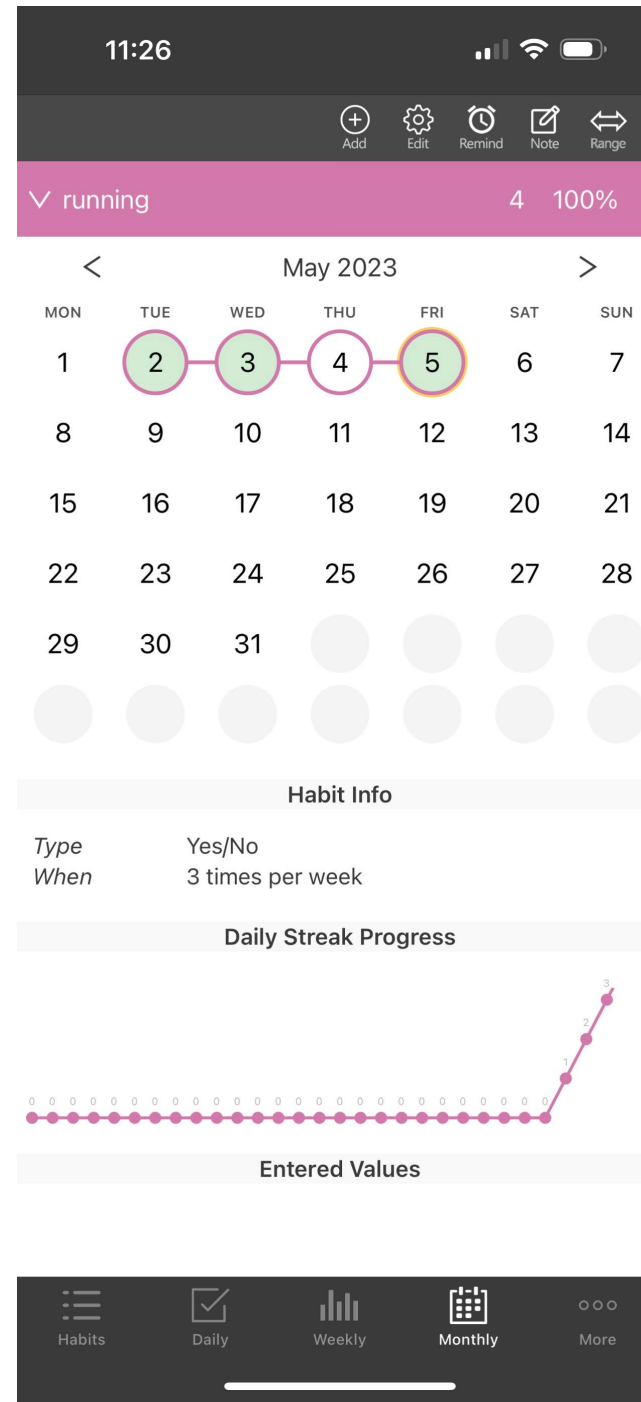
Provides a new venue for clinical care of pediatric obesity

# Mobile Health Monitoring

- Adult side: CPT code 99091 for reviewing physiological data from FDA-approved app
- Get familiar with several apps
- Target behaviors they want to change and feel confident (increase veggies is a great way to build self-efficacy)
- Incorporate evidence-based behavior change principles: goal setting, self-monitoring, feedback, social support, accountability, incentives

# Habit-Bull: Daily Goal Planner


- Goal setting
- Self-monitoring
- Accountability
- Self-efficacy



# Monday Motivators


- Text messages to motivate patients
- Started with our patients in Wellness Works
- Every Monday, they received some educational information on becoming healthier and could click on a link to find out more!

Did you know that too little sleep is associated with obesity? You can help by ensuring that your school age child receives 9-12 hours of sleep per day and your teenager 8-10 hours!



Having trouble sleeping???


The light from electronic devices can trick your brain into thinking that you should stay awake, even if you don't want to! Set a phone and tablet "curfew" and remove TVs from the bedroom to make sure that your brain knows what it is time for sleep.



Do you have aches and pains?

People with an unhealthy weight can have joint and muscle problems.

Skipping, jumping rope, or running at least 3 times a week promotes strong bones and joints!



Does Diabetes run in your family? One way to prevent it is to cut back on sugar-sweetened beverages. Soda, juice, kool-aid, lemonade, and gatorade are high in sugar that can lead to diabetes, and low in nutrition. Drinking water helps cut down on calories from sugary drinks and can cut costs at the grocery store.

# Health Chat: Underserved Adolescent Patients Communicating with their Providers via Mobile Health for Weight Management

Objective: Use a mixed-methods approach to investigate the feasibility and acceptability of an integrated model where Primary Care Providers (PCPs) monitor and support adolescents' progress in reaching healthy goals between office visits via MyFitnessPal™ app.



What's on your mind?

**cauliflower0101pc** 1 minute ago

I reached my exercise goal today!

 Like •  Comment



**healthchatteam** Great job! Keep up the good work!

0 seconds ago • [Like](#) • [Delete](#)



Write something...

Figure 1: Frequency of Posting Goals

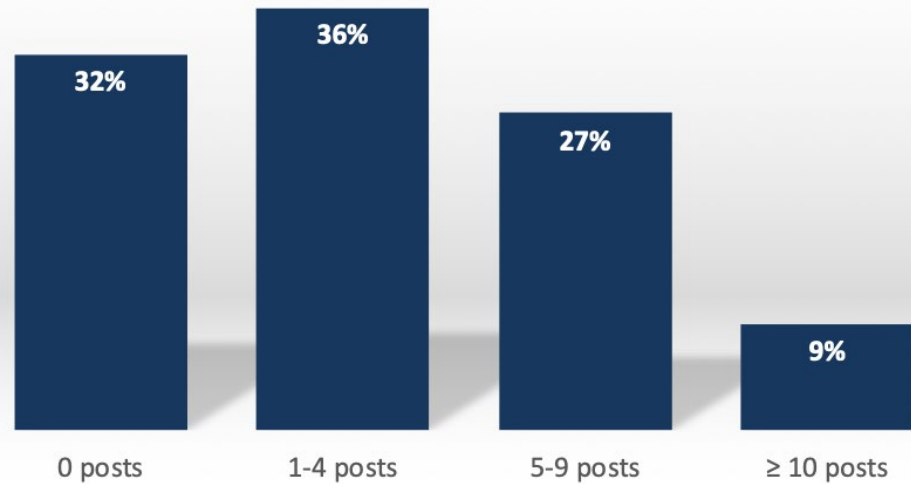


Table 2: Pre and Post Analyses of Health Chat Study

Variable	Pre	Post	P-Value
n	24	15	
BMI z- score	2.3 ± 0.5 (n=22)	2.4 ± 0.5 (n=12)	0.9987
BMI	35.2 ± 6.9 (n=24)	35.1 ± 7.4 (n=13)	0.2538
Patient ready to make a change in eating?	5.8 ± 2.6 (n=19)	4.3 ± 2.3 (n=11)	0.8402
Patient ready to make a change in Physical Activity?	5.2 ± 2.6 (n=20)	4.2 ± 2.0 (n=11)	0.2585

# Comments from Participants

“You’re just having like a mentor, someone to guide you and give you that push that you need to do what you want to be able to accomplish, stuff like that. That helps a lot.”

“It just gave me like a little boost of confidence. Made me feel like I was doing something right to go towards my goals”

“It gives you like a push because you know it’s kind of like homework. You know you have to turn it in so you know you have to do it. It’s like that.”

## Conclusions

- Use of a smartphone app as part of a lifestyle intervention has advantages, but engagement by adolescents was limited.
- Further investigation is needed for appropriate components of provider/adolescent-patient communication via mobile health.

## Future Steps:

- Integrate similar interventions with ease and convenience of using phone and keeping adolescents connected with primary care provider but not requiring logging in to an app.
- Evaluate whether monitoring goals over texting may be preferred.

# Preliminary Data with Texting Patients

- 10 patients participated, set 2 goals with provider, and were texted every evening for 30 days
  - 4 replied 30 times/30 days
  - 2 replied 20-30 times/30 days
  - 4 replied 10-20 times/30 days

# Take home points

Obesity is a chronic, progressive disease that needs continuous management from primary care home and supplement with community programs/resources.

No watchful waiting recommended! Manage obesity and its comorbidities together promptly.

Obesity can be managed via telehealth. Alternate visits in-person/telehealth and be creative with obtaining data in between visits.

USPSTF recommends 26+ hours of contact time with patients to help improve their BMI. Telehealth & mobile health are great ways to supplement office visits.



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