



University of California
San Francisco



ZUCKERBERG
SAN FRANCISCO GENERAL
Hospital and Trauma Center

Promoting physical activity and healthy beverage intake in pediatric safety-net settings: *From evidence to action*

Amy L. Beck MD MPH

Associate Professor of Pediatrics, University of California San Francisco
Co-Director Healthy Lifestyles Clinic, San Francisco General Hospital

September 08, 2022

Objectives

- Recognize the impacts of the COVID-19 pandemic on children's health behaviors and weight trajectories
- Present a continuum of approaches to physical activity promotion in pediatric safety-net settings including lessons learned along the way
- Demonstrate strategies to promote healthy beverage consumption among children based on parents' beliefs, preferences, and values

Case study: The power of physical activity access

- 8-year-old girl with hx of overweight but not of obesity
- Lives in a studio in the Tenderloin neighborhood of SF without a full kitchen
- Mostly processed food
- Both parents have obesity and diabetes
- **Pre-pandemic routine:**
 - Attended afterschool program with outside play time
 - Father picked her up from afterschool program and went to playground for an additional 1-2 hours
 - Swam 3x per week in a public pool
- **During first 6 months of COVID-19 pandemic**
 - Never left her apartment

Case study outcomes

- Patient gained 27 pounds in the first 6 months of the pandemic
- BMI increased from 90th percentile to >99th percentile
- Developed hypertension
- Parents reported no significant change in diet

Study

Impact of shelter-in-place policies on children's health behaviors and weight gain

- **Prospective study**
- **Enrolled children with BMI \geq 85th percentile**
 - Measured at a primary care visit at San Francisco General or UCSF Health from 1/1/20 – 3/15/20
- **Parents completed a telephone survey about the impact of shelter-in-place on child health behaviors**
 - Physical activity
 - Screen time
 - Sleep
 - Intake of fruits, vegetables, sugary beverages and food with added sugar

Demographics (n=145)

Child Demographics		%
Sex		
Male		45
Female		55
<i>Grade level at start of shelter-in-place</i>		
Not yet in school		3
Pre-school or TK		22
K-1 st		20
2-3		24
4-5		23
6-7		6
<i>Insurance Type</i>		
Public		90
Private		10
<i>Race-ethnicity</i>		
Latino		77
African-American		8
Asian		2
White		2
Pacific Islander		0.7
Mixed race-ethnicity		10
<i>Main language spoken in home</i>		
Spanish		70
English		27
Other		3
<i>Parent educational level</i>		
Less than high school degree		36
High school degree		48
College degree or beyond		16
<i>Employed outside the home prior to March 16, 2020</i>		70

Results

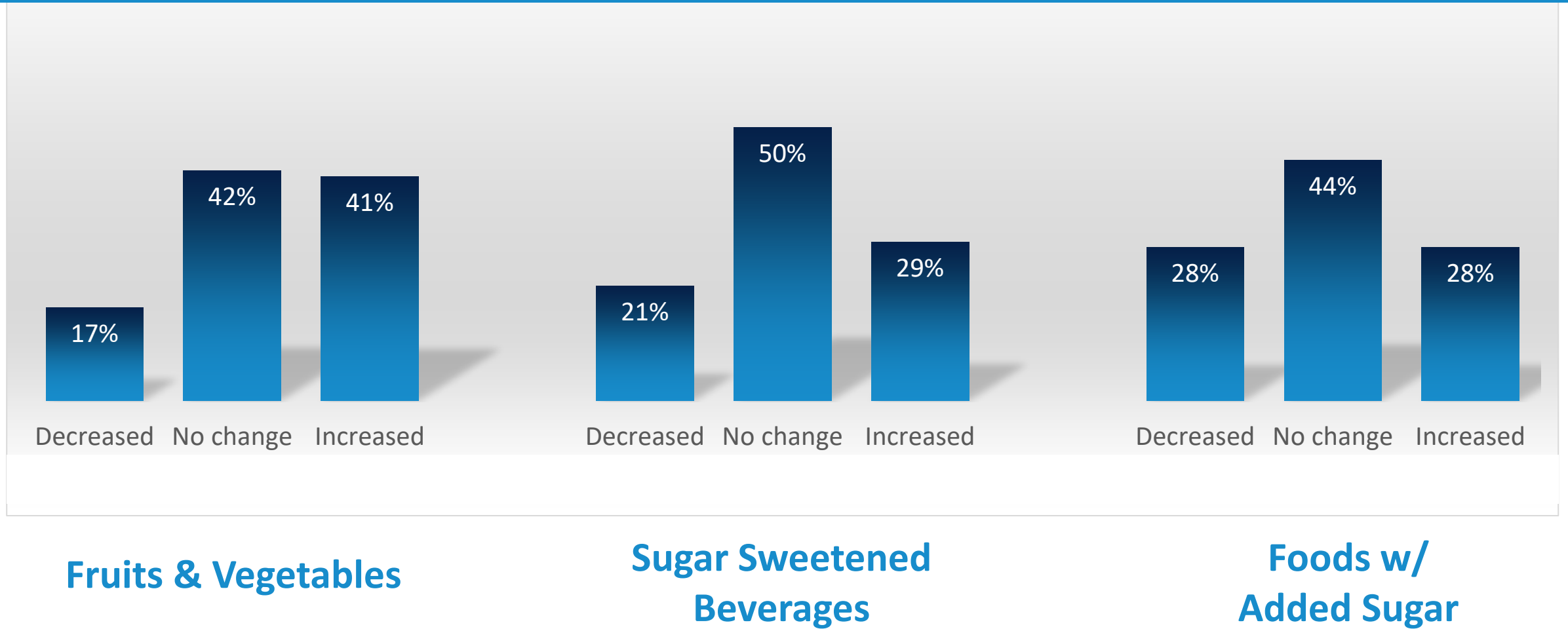
Variable	Pre-pandemic	During pandemic	p-value
Screen Time			
Mean daily non-academic screen time	1.6 hours (SD 1.3)	3.8 hours (SD 2.2)	<0.001
Mean daily non-academic screen time ≥ 4 hours per day	6%	52%	<0.001
Physical Activity			
Mean daily physical activity	1.8 hours (SD 1.2)	1 hour (SD 1)	<0.001
Bedtime			
Bedtime after 10 pm	3%	65%	<0.001



Physical activity access

- 28% of participants reported NO outside physical activity
- 45% had no outdoor space to play at home
- Minutes of physical activity per day lower among those with no outdoor space at home (52 minutes versus 76 minutes $p=0.02$)

Dietary Intake

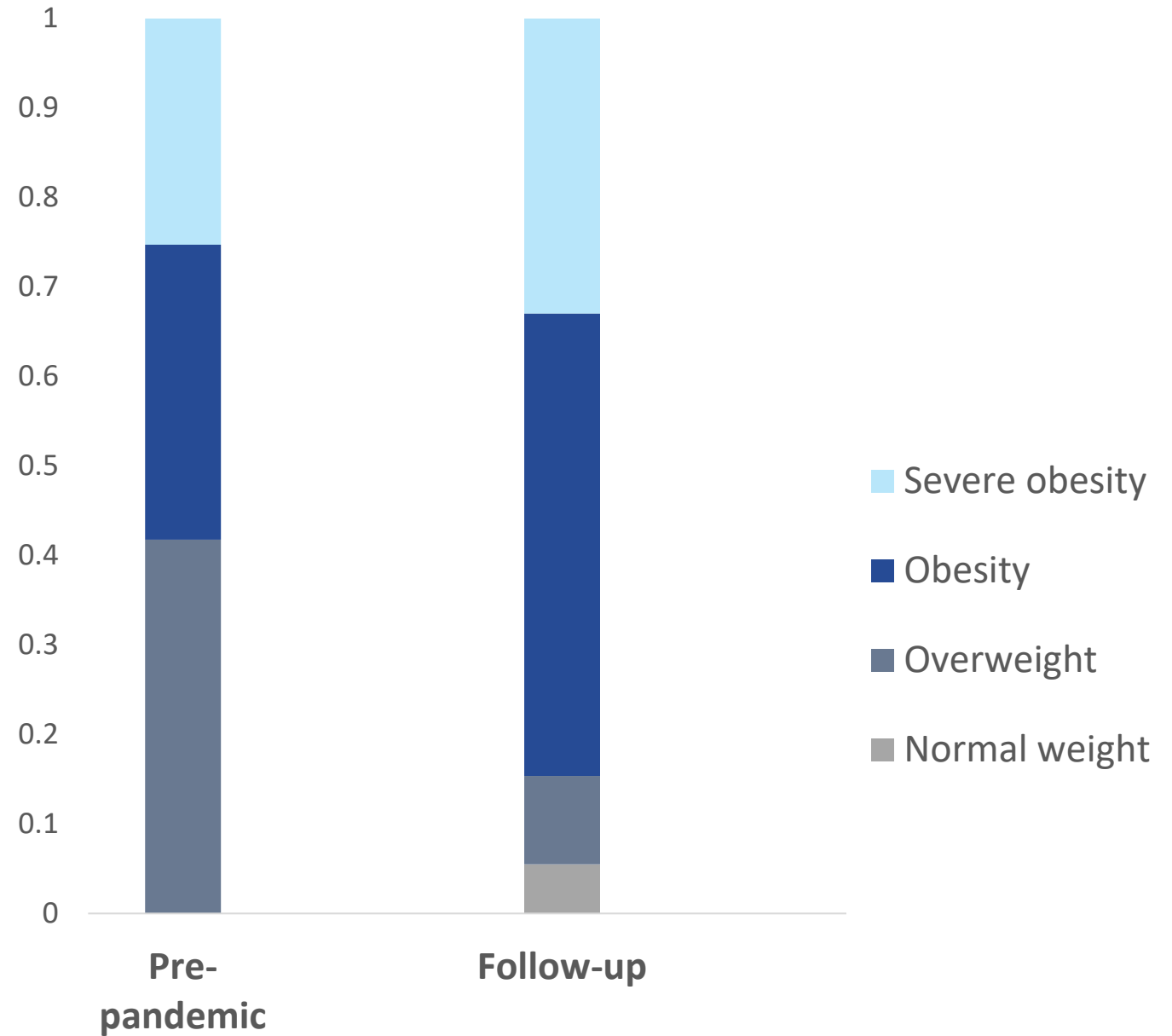


Weight gain results (n=91)

-
- Mean time to follow-up: 10.1 months (SD 1.4)
 - Mean monthly weight gain: 0.73 kg (SD 0.47)
 - Equivalent to **yearly weight gain of 19.3 pounds**
 - Healthy weight gain in this age range is 4-7 pounds per year

Beck AL, Huang JC, Lendzion L, Fernandez A, Martinez S. Weight Gain during the COVID-19 Pandemic in a High-Risk Cohort of Children in San Francisco, CA. Child Obes. 2022;18(2):143-146.

Change in Weight Category (n=91)





Physical activity access is essential!

Continuum of approaches to physical activity promotion in clinical settings

Individual counseling and goal setting (motivational interviewing)

Passive referrals to local resources (handouts, QR codes)

Active case management to connect families to programs


Partnership creation with local CBOs to offer tailored programming (co-design model)

Direct partnership with local physical activity instructors to offer programming for patients as part of lifestyle interventions

Individual counseling and goal setting

- Works well for families who have the ability to access resources and programming
- Can be helpful for families who have low awareness of how much physical activity kids are getting at school
- Most successful when families can be active together
- Important to emphasize the multiple benefits
 - Mental health
 - Stress reduction
 - Time to connect with child

Passive referrals to local resources



May be effective for families who are English speaking, tech savvy, and able to afford fees

Scholarship applications often available but can be very challenging to complete

Registration for many programs only available through on-line portals that are hard to navigate and require time sensitive registration

San Francisco Youth Soccer Financial Aid Application

Total Annual Household Income
Ingreso Anual Total del Hogar *

Please upload your document below in the designated area. Non aid related documents will only delay the award process. |Cargue su documento a co el área designada. Los documentos no relacionados con la ayuda solo retrasarán el proceso de adjudicación.

(Check all that apply.) The following applies to our family:
(Marque todo lo que corresponda a su familia.) Favor de mostrar documentación disponible de los que marque abajo. Nuestra familia : *

	Yes Si	No
We are in a Medi-Cal Program Tenemos Medi-Cal	<input type="checkbox"/>	<input type="checkbox"/>
We are in a California Works program) Estamos en un programa de beneficios CalWorks	<input type="checkbox"/>	<input type="checkbox"/>
CalFresh (formerly food stamps) CalFresh (anteriormente cupones de alimentos	<input type="checkbox"/>	<input type="checkbox"/>
We live in public housing Vivimos en vivienda pública	<input type="checkbox"/>	<input type="checkbox"/>
We are in Healthy Families Program Tenemos Healthy Families	<input type="checkbox"/>	<input type="checkbox"/>
Our children have been approved by SFUSD for free/reduced lunch . Mi jugador/a recibe almuerzo gratis o reducido del distrito escolar SFUSD	<input type="checkbox"/>	<input type="checkbox"/>
Disability Uno o más miembros de la familia tienen discapacidad	<input type="checkbox"/>	<input type="checkbox"/>
Unemployment Desempleo	<input type="checkbox"/>	<input type="checkbox"/>
Other Otro (favor describa):	<input type="checkbox"/>	<input type="checkbox"/>

Please provide document in PDF, JPEG, PNG or TIFF format, we are unable to open HEIC.

If you have Cal Works or Cal Fresh, upload it here:
Mas de Cal Works o Cal Fresh, cárguelo aquí:

Choose File

No file chosen

If you have State benefit, Medi-Cal or Healthy Families programs, upload it here:
Mas de Medi-Cal o Healthy Families, cárguelo aquí:

Choose File

No file chosen

If you live in public housing or receive free or reduced lunch, upload that documentation here:
Si vives en una vivienda pública o recibes almuerzo gratis oa precio reducido, sube esa docu

Choose File

No file chosen

If you have a disability or unemployment document, upload it here:
Si tiene un documento de discapacidad o desempleo, cárguelo aquí:

Choose File

No file chosen

Upload other relevant document letter here:
Cargue otra carta relevante del documento aquí:

Choose File

No file chosen



IMPORTANT | IMPORTANTE:

You must check the box below to receive email communication
re: Financial Aid Status. (All Financial Aid Communication is via email.)
Debe marcar la casilla a continuación para recibir comunicaciones
por correo electrónico en relación con el estado de la ayuda financiera.

☐ Please email me about Financial Assistance status and next steps. | Por favor envíeme un correo electrónico sobre el estado de Asistencia fi



SF Parks & Rec Scholarship Application Process

ELIGIBILITY

1. **Residency:** Applicants can prove eligibility by providing a picture identification matching the name on a utility bill.
2. **Applicants can prove income eligibility by providing:**
 - Prior year income tax return
 - Current SSI (Supplemental Security Income) statement

For each member of a qualifying household, programs will be subsidized accordingly, based on request and determination by the Scholarship Coordinator of the appropriate scholarship level. Scholarship recipients may be withdrawn from the program and become ineligible for future scholarship due to “no show,” excessive absences, and/or excessive late withdrawals as determined by the Scholarship Coordinator.

Level 3 – 100%

Applicant must provide two Public Assistance Program verifications

Extends 100% of program cost to individuals who meet the eligibility criteria; the household participants are in two or more government subsidized programs; and the scholarship recipient is either a child under the age of 18 years old or a senior citizen over the age of 65.

- Attendance is mandatory in order to maintain scholarship eligibility
- Maximum of 2 programs per person per season
- Summer day camps are available for the entire summer

VERIFICATION

Required documentation confirming participation in any of the San Francisco Human Services Agency (H.S.A.) administered programs is as follows:

- MediCal— provide current Notice of Action letter
- CalWORKS— provide current Notice of Action letter
- Food Stamp— provide current Notice of Action letter
- Public Housing Authority— provide rent receipt
- Foster Care— provide court order letter
- Homeless— Homeless Coalition/Homeless Advocate/Homeless Prenatal Care or other agency's letterhead verification letter

Structural barriers:

- Scholarship application challenging to complete (requires a printer)
- Requires e-mail address and understanding of how to photograph and attach documents
- Challenging for families who are informally employed and informally housed to produce required documentation
- On-line program catalog hard to read
- On-line registration challenging to navigate, particularly on a phone
- Many very low-income families only given 50% scholarship (not enrolled in 2 public assistance programs)

Active case management: SF Parks & Rec

- Grant funded role based in childhood obesity clinic
- Meets with families in-person to fill out application and review supporting documentation (some home visits)
- Submits application and supporting documentation
- Assists families in setting up e-mail addresses
- Reviews program options with families
- In many cases, completes registration for families for programs

Outcomes

134

hours of work in June, July, August

30

children have received **scholarships** and were **successfully enrolled** in SF Parks & Rec programming for Fall 2022 (mostly in swimming classes) – majority ages 5-12

4.5

hours of case management required per enrolled patient, on average!

Continuum of approaches to physical activity promotion in clinical settings

Individual counseling and goal setting (motivational interviewing)

Passive referrals to local resources (handouts, QR codes)

Active case management to connect families to programs

Partnership creation with local CBOs to offer tailored programming (co-design model)

Direct partnership with local physical activity instructors to offer programming for patients as part of lifestyle interventions

Adolescent barriers and facilitators to physical activity

Qualitative Study

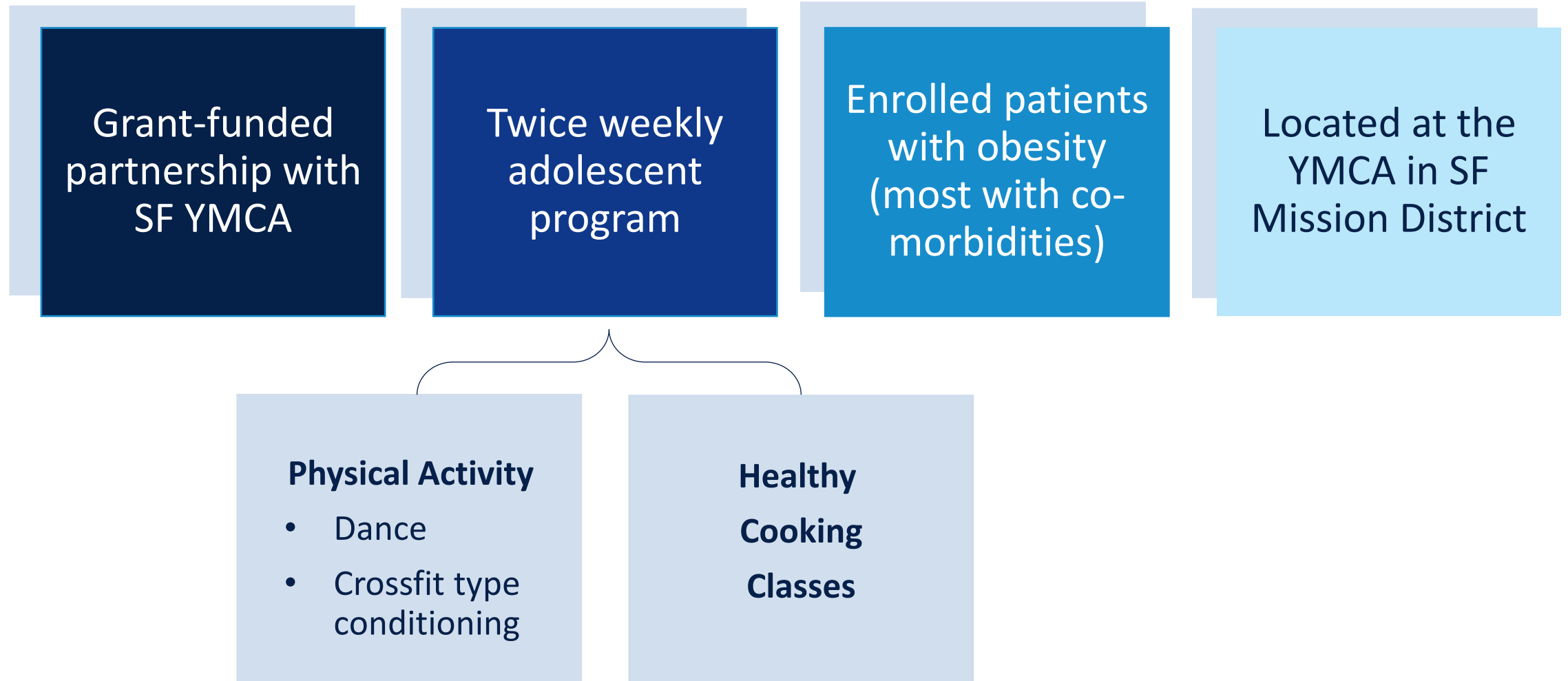
- n=30 low-income Latino adolescents interviewed
- Transcripts analyzed using the **COM-B** framework
- *Capability:*
 - Often lacked requisite skills for the activities they were interested in
- *Opportunity:*
 - Age restrictions, cost and transportation were barriers
- *Motivation:*
 - Highly motivated to be more active

Participant Quotes

“I really want to get into yoga . . . but it’s also pretty expensive and there isn’t really a place where they offer it around the area I live in... I feel like in the places where white people have a higher economic status, there are a lot of programs, but in the lower economic status areas in San Francisco it’s kind of hard to find those resources.” (17-year-old)

“Once you get older, there’s programs and dancing programs, but it’s more for if...you’ve been doing it your whole life. I feel like that’s how I see it...I’m a beginner, so where do I go?” (17-year-old)

Healthy and Fit Teen Program



Healthy and Fit Teen Program

Advantages



- Easy to recruit
- Well attended
- Teens liked the location
- Teens appreciated the fact that no experience was required

Challenges



- Difficult to maintain staffing
- Competing site priorities
- Space limitations
- Financial sustainability

Continuum of approaches to physical activity promotion in clinical settings

Individual counseling and goal setting (motivational interviewing)

Passive referrals to local resources (handouts, QR codes)

Active case management to connect families to programs

Partnership creation with local CBOs to offer tailored programming (co-design model)

Direct partnership with local physical activity instructors to offer programming for patients as part of lifestyle interventions

Physical Activity & Childhood Obesity

Most evidence-based lifestyle interventions for childhood obesity include a physical activity component

USPSTF recommends referral of children with obesity to a multi-disciplinary program that offers 26 contact hours in 6-12 months

Pre-pandemic we offered a medium intensity program that included physical activity, nutrition and parenting education

Program put on hold during the early phase of the pandemic

Healthy Saturdays

- Weekly physical activity program for obesity clinic patients ages 4-12
- Offered outdoors at a local park
- Paid physical activity instructor and student volunteers
- 60 minutes of fun, intensive physical activity
- Drop in (no registration or attendance requirement)
- Sibs welcome
- Community building among parents and kids
- Healthy snack demos

Next Steps

Expand Healthy Saturdays

- Additional sites
- Wider age range
- Greater variety of activities

Local advocacy to reduce barriers to structured physical activity

- Simplify requirements
- Low or no-tech enrollment options
- Reduce or eliminate costs for lowest income families
- Adolescent specific offerings

Leverage existing partnerships with CBOs to support more physical activity within their programs

- Assist with evaluation
- Use of Fitbits for objective data?

SSBs & Child Health Equity

- Sugar-sweetened beverage (SSB) consumption is strongly linked to childhood obesity and other health conditions
- Beverage companies disproportionately target Black and Latino youth with their marketing
- Black and Latino youth consume significantly more SSBs and are more likely to suffer from associated health problems

SSB Intake linked to:

Obesity

Type 2
Diabetes

Fatty liver
disease

Hypertension

Cardiovascular
disease

Cancer

Dental Caries

Malik VS, Hu FB. Sugar-Sweetened Beverages and Cardiometabolic Health: An Update of the Evidence. *Nutrients*. 2019;11(8). doi:10.3390/nu11081840

Chazelas E, Srouf B, Desmetz E, et al. Sugary drink consumption and risk of cancer: results from NutriNet-Santé prospective cohort. *BMJ*. 2019;366:l2408.

Jensen T, AbdelBleich SN, Vercammen KA. The negative impact of sugar-sweetened beverages on children's health: an update of the literature. *BMC Obes*. 2018;5:6.

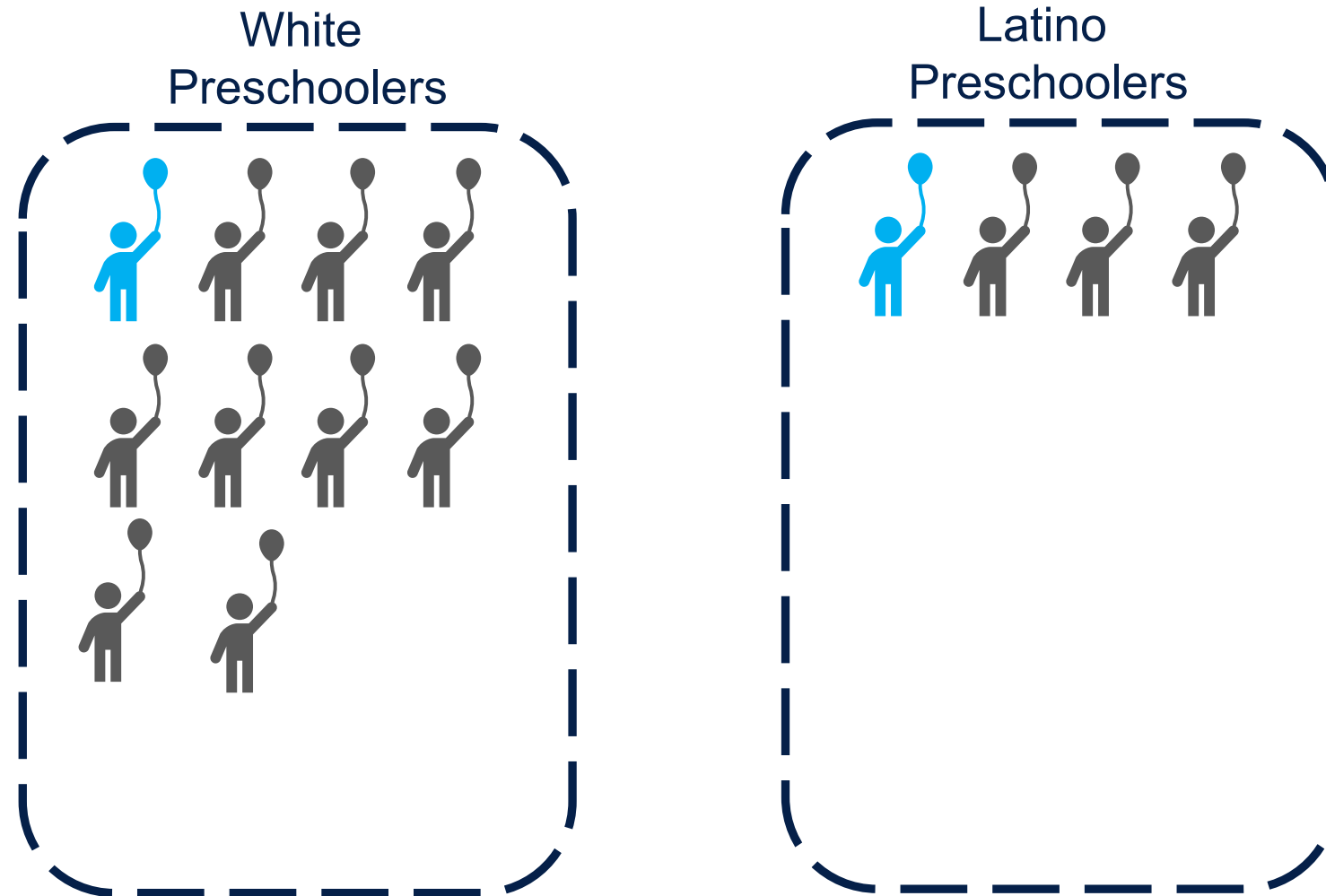
Malek MF, Sullivan S, et al. Fructose and sugar: A major mediator of non-alcoholic fatty liver disease. *J Hepatol*. 2018;68(5):1063-1075.

SSB Marketing: 1 billion dollars per year



Harris J, Fleming-Milici F, Kibwana-Jaff A, Phaneuf L. *Sugary Drink Advertising to Youth: Continued Barrier to Public Health Progress*. UCONN Rudd Center for Food Policy and Obesity

Latino children & parental report of SSB consumption on the day prior (CHIS 2013-2016)





Potential drivers of disparities: Insights from qualitative research

- Predatory SSB marketing practices
 - Parents see soda as unhealthy but fruit drinks as healthy
- Cultural beliefs regarding homemade SSBs may contribute
- Generational differences

“Natural” is better

- Beverages with fruit on the label or the words “all natural” are viewed as healthy

“This is better because it’s natural. It says that it’s all juice”

“I think that it’s healthy because it has fruit and vitamins. One bases oneself in that it looks like it’s all natural. Supposedly it has natural fruit or something natural.”



Adolescent beliefs about healthy eating

Organic/expensive foods are healthy

“[What’s healthy in the vending machine] is these crackers and Pop-Tarts. Not Pop-Tarts, but they’re like popcorn – they’re organic. . . It’s all organics. Everything in the vending machines is organic. Even the sodas are organic.”



Beck AL, Iturralde EM, Haya-Fisher J, Kim S, Keeton V, Fernandez A. Barriers and facilitators to healthy eating among low-income Latino adolescents. *Appetite*. 2019 Apr 04; 138:215-222.



Nutrition Facts

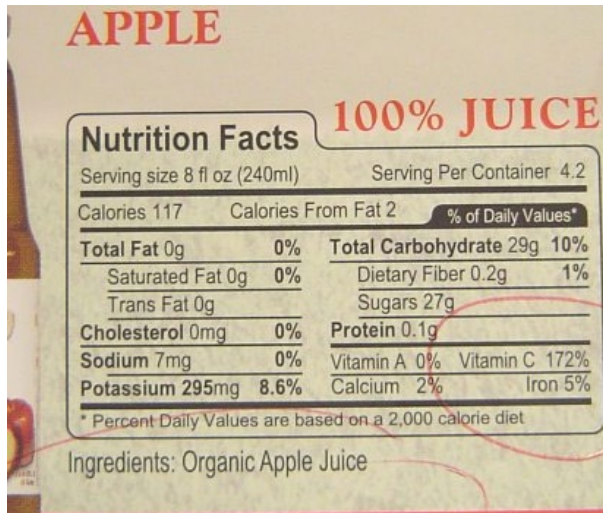
	Standard Serving	This Package
Serving Size	8 fl oz (240 mL)	20 fl oz (591 mL)
Servings Per Container	2.5	1
Amount Per Serving	% DV*	% DV*
Calories	100	240
Total Fat	0g 0%	0g 0%
Sodium	35mg 1%	75mg 3%
Total Carbohydrate	27g 9%	65g 22%
Sugars	27g	65g
Protein	0g	0g

*Percent Daily Values (DV) are based on a 2,000 calorie diet.

WIC messaging impact

- Some parents believe juice from WIC, in particular, must be healthy

“Yes, because I have a daughter with an obesity problem. . . My older daughter is obese. So we have gotten rid of the juices in our house, except for the one they give us in WIC, the 100% fruit juice”



APPLE 100% JUICE

Serving size 8 fl oz (240ml) Serving Per Container 4.2

Calories 117		Calories From Fat 2		% of Daily Values*	
Total Fat 0g	0%	Total Carbohydrate 29g	10%		
Saturated Fat 0g	0%	Dietary Fiber 0.2g	1%		
Trans Fat 0g		Sugars 27g			
Cholesterol 0mg	0%	Protein 0.1g			
Sodium 7mg	0%	Vitamin A 0%	Vitamin C 172%		
Potassium 295mg	8.6%	Calcium 2%	Iron 5%		

* Percent Daily Values are based on a 2,000 calorie diet.

Ingredients: Organic Apple Juice

“And the WIC juices have some vitamins. . . There is some reason that the WIC department is giving them out, to take care of children, it’s for their health. . . Soda has a lot more sugar than the WIC juice. The WIC juice only has a teaspoon or half a teaspoon”

Beck AL, Takayama JI, Halpern-Felsher B, Badiner N, Barker JC. Understanding how Latino parents choose beverages to serve to infants and toddlers. *Matern Child Health J.* 2014 Aug; 18(6):1308-15.

Parents' preferences for messaging on SSBs

- Information on health effects is important
- Visualization of sugar content is important
- Expert messengers are preferred (nutritionists and doctors)



Beck AL, Takayama JI, Halpern-Felsher B, Badiner N, Barker JC. Understanding how Latino parents choose beverages to serve to infants and toddlers. *Matern Child Health J.* 2014 Aug; 18(6):1308-15.

Morel K, Nichols K, Nong Y, et al. Parental and Provider Perceptions of Sugar-Sweetened Beverage Interventions in the First 1000 Days: A Qualitative Study. *Acad Pediatr.* 2019;19(7):748-755.

Sugary Drink Messaging for Policy Change: A Resource for Advocacy Campaigns. American Heart Association; 2021.

Lay health educator led intervention on healthy beverage consumption for parents of young children

Discussion of health effects

Demo of sugar content in soda and a fruit drink

Comparison of sugar content in SSB, 100% fruit juice, and whole fruit

Individualized goal setting around reduction in sugary beverages for child and family

Role play to practice conveying intervention content to others in the family

Randomized controlled trial of intervention led to reduction in reported consumption of SSBs' and 100% fruit juice

7-day SSB and 100% fruit juice consumption

	Baseline	2-week follow-up
Intervention	31 oz	12 oz
Control	40 oz	39 oz
p	0.41	0.02

Beck AL, Fernandez A, Rojina J, Cabana M. Randomized Controlled Trial of a Clinic-Based Intervention to Promote Healthy Beverage Consumption Among Latino Children. Clin Pediatr (Phila). 2017 Aug; 56(9):838-844. PMID: 28553726.

Thinking to scale

Reach?

Sustainability?

Dissemination?

Video + text messaging

High quality videos in
English and Spanish
capturing the content
from our in-person
intervention

24 reinforcing text
messages (delivered
two per week)

How Sugary Drinks Affect Your Child's Health:

[How Sugary Drinks Affect Your Child's Health – YouTube](#)

[Como las bebidas azucaradas afectan la salud de sus hijos/as - YouTube](#)



Video strategies

- Visualization of sugar content
- Health effects of SSBs
- Expert messengers (doctor/nutritionist)
- Address deceptive marketing
- Include older generation
- Impact of homemade drinks

Next Steps

- **Dissemination and evaluation**
 - Clinical settings
 - Medical offices
 - Dental offices
 - Preschool/day cares
 - Community Based Organizations that serve youth

Lessons learned

- Patient and family perspectives and input are critical!
- Getting started is hard, sustainability is harder
- Important to build relationships with community organizations over time and leverage them as opportunities arise
- Critical to advocate for systemic changes that can reduce barriers for our most vulnerable patients

What can
you do?

Educate

Advocate

Partner

Acknowledgments

- Mentors par extraordinaire:
 - Dr. Alicia Fernandez
 - Dr. Michael Cabana
 - Dr. Chuck McCulloch
 - Dr. Eliana Perrin
- Funders:
 - NICHD
 - HRSA/MCHB
 - UCSF REAC program
 - Hellman Foundation
 - SFGH Foundation
- SFGH 6M Children's Health Center
Providers, Staff and Patients

Contact me: amy.beck@ucsf.edu

