Adolescent obesity management: Understanding the communication and support preferences of underserved youth

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Abstract

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PURPOSE: Adolescence is a time when health decisions can have a major impact in creating habits that affect youth for rest of their lives. Poor nutrition, insufficient physical activity, and sleep deficits are associated with increased risk for weight gain. Less than half of adolescents in this country meet the daily recommended amount of physical activity and a significant number of adolescents do not have healthy eating or sleep habits. Consequently, approximately 20.5% of US adolescents are overweight or obese. Ethnic/racial minorities and families of lower socioeconomic status are disproportionately affected by the obesity epidemic and have limited access to obesity prevention and treatment interventions; living outside of an urban center may also reduce access to interventions. Understanding communication preferences of diverse populations can improve impact of clinical interventions. Few studies exist focusing on what youth from disenfranchised backgrounds view as useful modalities to receive guidance regarding making healthy lifestyle changes. In this study, we sought to learn about communication and support preferences related to nutrition, physical activity, and sleep, to inform development of equitable strategies that fit the needs of youth who are currently from globally diverse and underserved backgrounds. METHODS: We qualitatively interviewed 20 adolescents attending an obesity management program at a tertiary referral center in Seattle using a semi-structured script. We deliberately sought to include a high proportion of youth who lived outside of Seattle. Sessions were audio recorded and

transcribed. Responses were coded using thematic analysis techniques to identify similarities and differences amongst the groups. Subjects received $10 for participation, and all materials/procedures were approved by an institutional review board. RESULTS: Participants' ages ranged between 15 to 21 years; 70% were 18 years or younger. Participants were from diverse backgrounds; half were from disenfranchised racial/ethnic communities (30% Latino/Hispanic, 5% African American/Black, 5% Asian, 10% multiracial), 1 participant was transgender female, 1 participant was gender non-binary, 20% of participants spoke Spanish at home, 40% lived in an apartment and the vast majority, 80%, lived in a city other than Seattle. Some common co-morbidities amongst participants include hypertension, anxiety, depression, pre-diabetes and elevated lipids.

Main themes regarding communication and support preferences included that patients desired:

1. Written health recommendations and healthy lifestyle tips in electronic form such as social media, website or email rather than paper form.
2. Desire for representative images that are reflective of a diverse group of youth from different racial/ethnic backgrounds, genders, and body types.
3. Tips or examples for nutrition and physical activity that reflect body, gender and cultural diversity.
4. An interactive platform that allowed participants to choose healthy lifestyle goals, interact with team members and peers.

CONCLUSION: Our diverse sample of participants identified several preferences and creative ideas for communication around diet and lifestyle changes. This information can be used to optimize clinic-based interventions to increase impact in disenfranchised populations.

1. Introduction

Obesity affects 1 in 5 youth between ages 6 and 19 years (CDC, 2018). Addressing obesity during adolescence is especially important, as it is during this time that lifelong habits around eating and activity are established (Wang LY, 2008). Families from minority, lower socioeconomic status (SES), and rural backgrounds continue to be disproportionately affected by the obesity epidemic (CDC, 2018). These disparities are due to a complex set of factors, including limited access to obesity prevention and treatment interventions (Johnson JA 3rd, 2015).

Current online technologies present a multitude of ways to engage youth in obesity management strategies; these strategies may allow for broader reach compared with traditional in person approaches (Direito A, 2015). Indeed, multiple studies have demonstrated that adolescents are interested in or respond positively to technology-based interventions such as email communications with a health coach and receiving advice/assistance on lifestyle changes via social media (Holmberg C, 2018) (Patrick K, 2014). Indeed, several small studies using social media and online platforms have shown promising results for behavior change and weight loss (Wang Y, 2017). However, not all studies have demonstrated positive effects of technology-based approaches. For example, studies evaluating the most widely available commercially available apps have not demonstrated significant change to fitness (Direito A, 2015). Online approaches that include content and design that are: 1) based on existing evidence-based principles, and 2) tailored to the preferences of a wide variety of adolescents including those from diverse are likely to be most effective. The purpose of this study was to explore youth perspectives on communication and support preferences around obesity management in a sample of youth that includes a high proportion of racial/ethnic minority, low SES, and rural youth, to inform future intervention efforts.

2. Methods

2.1 Sampling strategy and participants

We used purposive sampling to recruit participants who were either currently participating or were prior participants in an adolescent obesity management program at an Adolescent Subspecialty Clinic in Seattle. We included participants involved in two types of obesity management programs. The first program included a visit with a medical provider, certified dietician, fitness specialist and social worker or some combination thereof over several months. The second program included a more intensive obesity management program consisting of the above components plus a group seminar where participants and their families met once a week for 16 weeks. The seminars consisted of an educational session with guest medical, social work and dietitian speakers and dietitian facilitated cooking classes for patients and their families.

Inclusion criteria for the study consisted of: BMI $\geq$ 85th percentile, age between 15 to 26 years, current or past participant in one of the above programs and patients who were from a medically underserved area or population. We used the Health Resources and Services Administration (HRSA) definition to assist with identification of groups from medically underserved areas, such as rural communities or communities of lower socioeconomic status and populations that were of a medically underserved race, ethnicity or gender (HRSA, 2018). We were granted a HIPAA waiver to assist with participant recruitment. Potential participants were first identified via medical records and their primary provider in the clinic confirmed eligibility prior to reaching out to the family to invite the youth to participate. We ran a data search of current and prior, within the past two years, participants of an obesity management then asked their primary subspecialty providers to confirm potential participants met criteria for the study. We excluded patients who were unable to complete an interview in English, and/or whom had additional diagnoses that the primary clinician determined might make the interview process challenging or triggering (e.g., eating disorder).

2.2 Recruitment and interview procedures

Participants were approached via telephone prior to a clinic visit or face-to face during a clinic visit. A total of 20 youth and at least one parent/guardian consented and participated for inclusion in the study. Both parent/guardian and participant were approached and consented at the same time. All participants were offered the choice of where they wanted the interview to take place, in clinic room, clinic office space or space in the hospital. Prior to the interview, participants completed a survey asking about basic demographic and medical information, this information was subsequently verified by chart review. Qualitative interviews were then conducted using a standardized, semi-structured script. The script was developed a priori and included prompts around prior weight loss attempts/experiences with the clinical team in addition to prompts that were focused on participant communication preferences and recommendations after a review of written, online, and app-based materials. We also included prompts related to social media as a tool for diet and lifestyle messages; however, for these prompts participants did not review materials but instead were asked to reflect on their own experiences (Table 1). We received approval for all procedures and materials by the Seattle Children's Institutional Review Board.

2.3 Materials Reviewed During Interviews

All written materials provided to participants were hospital approved standard materials with information about physical activity, nutrition and sleep, which are accessible to employees through the tertiary hospital website.

Online websites were chosen based on the target audiences of the websites and from recommendations of clinical dieticians and medical providers in the tertiary obesity management clinic. The content of the websites included recommendations for lifestyle changes to sleep, nutrition and/or physical activity. Refer to Table 2 for the list of websites. During the interview, participants were asked to review the website and talk through their experiences while navigating. They were also asked to provide their input on design preferences for the website they were reviewing.

Lastly, participants reviewed an interactive app that was previously developed by faculty in the clinical program to screen for many behavioral risk factors that affect adolescents (including fitness, nutrition and sleep). Refer to figure 1 for a screen shot of the app. Participants were asked to critique their interaction with the app and provide recommendations on potential changes to it or for input on how they would design an app for use in the clinical setting.

Interviews ranged between approximately 30 minutes up to 1-1.5 hour(s). All interviews were audio recorded, transcribed, and reviewed for accuracy. Initial interviews took place with both interviewers present to ensure we could provide feedback on interview styles. Subjects received $10 for participation. The Seattle Children's Institutional Review Board approved all materials.

2.3 Analysis

We used Braun and Clark's Thematic Analysis technique, which consists of six steps: 1) familiarization with data, 2) generating initial codes, 3) searching for themes among codes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the final report (2006 citation). For step one, two people reviewed de-identified transcripts. In step two, we extracted quotes from the transcripts and entered them into a spreadsheet. Two coders met regularly to review manually entered codes after every few participant transcripts were reviewed. We compared codes and resolved disagreements by discussion. We then met with a larger team of four members to further review and refine codes. Once we had completed extraction of data and coding of all 20 transcripts, we proceeded to step three. The two main coders then met to create a summary of the main themes. We then presented the data to a larger group of four team members; we subsequently refined themes and identified subthemes. In step four, the two main coders developed a list of main themes. For step five, the main coders shared their themes with the larger group, and re-organized/refined our themes in this meeting. We then prepared this manuscript collaboratively, step six.

3. Results

3.1 Description of Participants

Participants' ages ranged between 15 to 21 years; 70% were 18 years or younger. Participants were from diverse backgrounds; half were from disenfranchised racial/ethnic communities (30% Latino/Hispanic, 5% African American/Black, 5% Asian, 10% multiracial), 1 participant was transgender female, 20% of participants spoke Spanish at home, 40% lived in an apartment and the vast majority, 80%, lived in a city other than Seattle. Some common co-morbidities amongst participants include hypertension, anxiety, depression, pre-diabetes and elevated lipids. Please refer to Table 3 for further detail on participant demographics.

3.2 Main themes

The majority of participants appreciated communications around diet, exercise and lifestyle changes that were positive, motivational, and consistent among team members. Participants had many ideas about how communication could be improved. We divided these into two main thematic categories that are presented below: role of technology in weight-management efforts and specific website design preferences.

3.21 The role of technology in weight-management efforts

Participants described unique roles for each type of technology-based communication platform (email, social media, and other online resources). Several participants suggested that email could be used to augment in person clinical visits to communicate information about fitness, nutrition and sleep in addition to or instead of paper because it allowed participants to access the information more easily at a later point ("…*email, because then I get a notification and it is there forever.*").

Participants also discussed the role of social media in the delivery of weight-management messages/interventions, (*"…these days I would say social media and technology plays a big role. So asking people and getting to know them on a virtual level."*). Some participants acknowledged potential harms of social media use such as promoting pro anorexia behaviors, as one participant noted, "*[social*

media is a] double edged sword because you have models and stuff that can make you anorexic." Several participants also described cyberbullying and weight-related jokes as a problem on social media, two participants described this problem as:

> *"There are lots of mean people online. Especially on Instagram. I don't think people understand that the body positive movement is all about just not hating yourself, it is not promoting anything. But then people say "well if we bully you then you won't want to be that way anymore" which is a really toxic way of thinking"*

A few participants also recognized targeted advertisements online and in their social media. One participant described how they viewed advertisement to be harmful:

> "*..the false advertising like 'lose 10 lbs' and it is not realistic and harmful to uneducated people. Things that are fake are prominent, and it is a big issue.*"

Many participants, however, also felt social media played a positive role in their weight journey particularly in combatting feelings of stigma and isolation, as illustrated by this quote:

> "*I follow a lot of people on like Instagram who are making lifestyle changes like I am and trying to be healthier and I think it's nice to find people trials and tribulations and other people's struggles. It's just nice to know that you are not alone and that you're not the only one. I think that that's important for everyone to watch*."

Many participants described increasing their social support through social media and in online support communities. For some, the fact that it was a less personal source of support allowed them to communicate more honestly in online communities, compared with how they communicated about weight to family and friends.

> "*Your family can only, you know they're so supportive they're just very supportive but sometimes you need more than just your parents telling you like hey it's gonna be okay. Like you need other people to tell you like you're doing good even if you haven't lost all the weight you wanna lose you*

have still have so long just keep chugging along. Have a community of people you know you don't know personally but you get to watch them succeed and it makes me at least want to work harder, umm so that's nice."

Other participants described online support communities as an adjunct to in person ("*In person you get to see actually the people being like supportive and all of that but if online it's very more accessible*."). Finally, many participants looked to online video sites such as YouTube as a source of information, direct guidance, and examples of potential nutrition and physical activity goals ("*I like YouTube videos- like if people I watch talk about stuff I might look it up or if it comes up as a recommended video. I will also look at workout videos*").

3.21 *Specific website and app design preferences*

In this category, participants described three major subthemes: content, appearance and social support preferences. In terms of content preferences for an online program or app, the most consistent recommendation was that the website/app should contain a menu of strategies related to nutrition, exercise, sleep, and media that they could personally choose from ("…*a variation of the different Instagram accounts I follow, with different tips on how to set your phone aside and not be distracted so you can sleep better, and how to get into healthy eating habits, and different work outs you could do*.")

In terms of appearance, many participants described the importance of graphic/pictorial content to capture users' attention ("*I would use pictures and videos and colors*"). Several participants emphasized the importance of diversity in the characters/individuals portrayed on the website/app ("…*people with different body types and different races*"). One participant specifically described the importance of gender and body diversity, to make the content more relatable to a wider group of youth ("*I would make it look more gender neutral. I would show larger people doing the workouts*.") One participant also described the importance of having diverse nutrition, weight management, and other tips and strategies that might appeal to youth from a wide variety of cultural and ethnic backgrounds:

"*Different foods, and different plans for different people. I would want it to be personalized. Like, different foods that can give you different vitamins or health benefits. And different exercises for different people*."

Participants had many ideas for social support preferences, with many emphasizing a desire for an interactive program that offered provider communication and peer support networks outside of clinical encounters. The majority of participants felt the program should be interactive allowing participants to communicate with providers questions and their progress towards their personalized goals between face to face visits ("…*more interactive, for people add in their data, and how their sleep went that day, and read what they should and should not do*.") Additionally, several participants were interested in some form of a support network and ability to communicate with peers ("*if in the app it had people in my area or around the world that are going through the same thing it would be nice to communicate*.")

4. Discussion and Conclusion

We interviewed participants from diverse backgrounds and identified specific recommendations for technology-based obesity management strategies. Participants described several benefits to incorporating technology into in person obesity management programs, and/ or to standalone technology-based diet and lifestyle programs. Participants described several benefits of multiple different types of technology to assist with weight-management efforts, including. This is consistent with the limited amount of extant literature on this subject. For example, one study using social media to connect with 13 participants found a positive correlation between interaction on social media, comments/likes, and weight changes. (Prout Parks E, 2018) Other studies are currently underway to determine if social media and online use can be used to assist young adults with reaching a wider audience to assist with weight management (Napolitano MA, 2017).

Participants also provided several specific design and content preferences. Participants desired representative images that are reflective of a diverse group of youth from different racial/ethnic backgrounds, genders, and body types as well as tips or examples for nutrition and physical activity that reflect body, gender and cultural diversity. Based on our results, diverse visual representation with respect to race/ethnicity, body types and genders in technology-based interventions, and/or tailor intervention content specifically to represent each different target audience based on specific user feedback from members of this target audience.

Our participants also endorsed the importance of an interactive platform that allowed them to choose their own goals from a menu of choices for nutrition and physical activity option. This theme suggests that technology-based intervention approaches that employ a motivational interviewing approach, in which participants choose their own goals and are given encouragement and support to reach these goals, may be a particularly effective strategy when developing online/technology-based interventions.

5. Limitations

Our sample size of 20 participants, while small is typical for qualitative studies. Additionally, study location at subspecialty care at a single tertiary hospital limits generalizability; however, we did make deliberate attempts to include youth who were diverse in terms of race, ethnicity, and urbanicity and achieved youth participation who represented this diversity.

Conclusions

Our diverse sample of participants identified several preferences and creative ideas for communication around diet and lifestyle changes. The most salient themes included the importance of using images and content that are reflective of participants' backgrounds and body types, and the importance of an interactive platform that allowed communication with providers and peers and the ability to choose personalized goals from a menu of options. Providers and researchers can use data

from this study to incorporate technology into existing obesity management interventions, and/or to create standalone technology-based programs to reflect the needs of their participants and increase impact in disenfranchised populations.

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References

Antwi, F. (2012). The effectiveness of web-based programs on the reduction of childhood obesity in school-aged children: A systematic review. *JBLI Library of Systematic Reviews*, 1-14.

CDC. (2018, 05 23). *Overweight and Obesity: Childhood Obesity Facts*. Retrieved from Center for Disease Control and Prevention: https://www.cdc.gov/obesity/data/childhood.html

Charles C, G. A. (2006, 11). Cultural influences on the physician-patient encounter: The case of shared treatment decision-making. *Patient Education and Counseling, 63*(3), 262-7. doi:10.1016/j.pec.2006.06.018

Chen, J. (2017, August 02). Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management for Overweight and Obese Adolescents: Pilot Study. *Interactive Journal of Medical Research, 6*(2), 12. doi:10.2196/ijmr.7860

Direito A, J. Y. (2015, 08). Apps for IMproving FITness and Increasing Physical Activity Among Young People: The AIMFIT Pragmatic Randomized Controlled Trial. *Journal of Medical Internet Research, 17*(8). doi:10.2196/jmir.4568

Holmberg C, B. C. (2018, 03). Health literacy in a complex digital media landscape: Pediatric obesity patients' experiences with online weight, food, and health information. *Health Informatics Journal*. doi:10.1177/1460458218759699.

HRSA. (2018, 23 05). *Shortage Designation: Medically Underserved Areas and Populations (MUA/Ps)*. Retrieved from Health Resources & Services Administration (HRSA Health Workforce): https://bhw.hrsa.gov/shortage-designation/muap

Johnson JA 3rd, J. A. (2015, 06). Urban-rural differences in childhood and adolescent obesity in the United States: a systematic review and meta-analysis. *Childhood Obesity, 11*(3), 233-41. doi:10.1089/chi.2014.0085

Napolitano MA, W. J. (2017, 09). Using social media to deliver weight loss programming to young adults: Design and rationale for the Healthy Body Healthy U (HBHU) trial. *Contemporary Clinical Trials, 60*, 1-13. doi:10.1016/j.cct.2017.06.007.

Patrick K, M. S. (2014, 01). Design and implementation of a randomized controlled social and mobile weight loss trial for young adults (project SMART). *Contemporary Clinical Trial, 37*(1), 10-8. doi:10.1016/j.cct.2013.11.001

Prout Parks E, M. R.-G. (2018, 03). Assessing the Feasibility of a Social Media to Promote Weight Management Engagement in Adolescents with Severe Obesity: Pilot Study. *JMIR Research Protocols, 7*(3). doi:10.2196/resprot.8229

Reece, L. (2016, August 19). 'I just don't want to get bullied anymore, then I can lead a normal life'; Insights into life as an obese adolescent and their views on obesity treatment. *19*(4), 897-907. doi:10.1111/hex.12385

Wang LY, C. D. (2008, 05 01). The association between body mass index in adolescence and obesity in adulthood. *Journal of Adolescent Health , 42*(5), 512-518. doi: doi: 10.1016/j.jadohealth.2007.10.010

Wang Y, X. H. (2017, 05). A Systematic Review of Application and Effectiveness of mHealth Interventions for Obesity and Diabetes Treatment and Self-Management. *Advances in Nutrition, 8*(3), 449-462. doi:10.3945/an.116.014100

Figure 1: Adolescent Behavioral Health Screen App

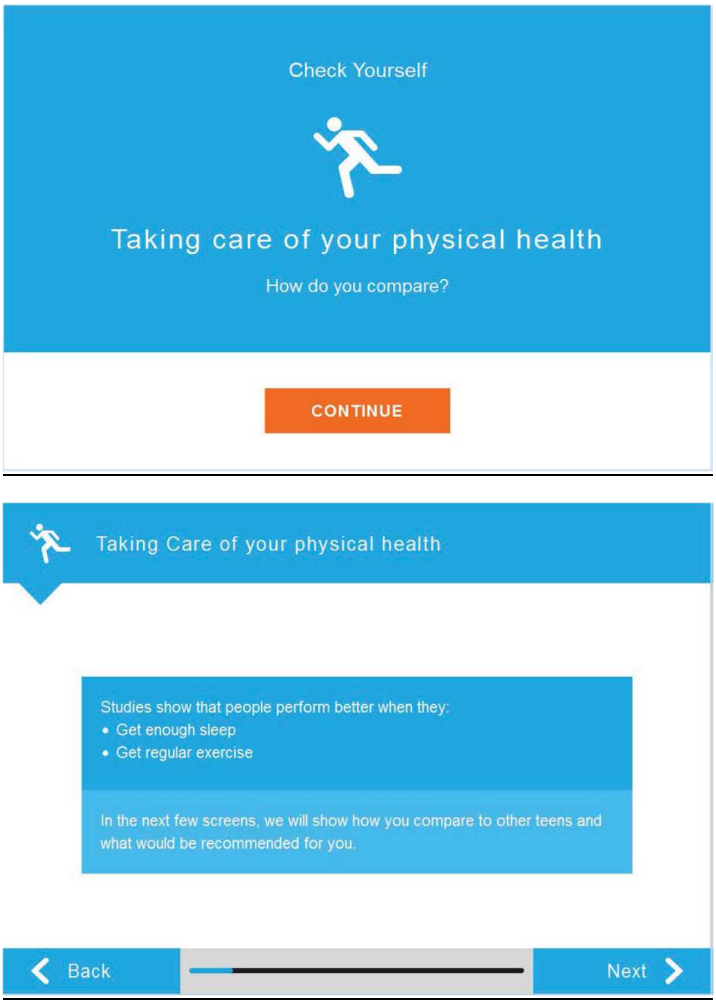

Table 1: Interview Prompt

Topic	**Interview Prompt**
Prior weight loss attempts and experiences	When talking with your medical team what do you find most helpful? What have you done to try to lose weight? What have been some barriers to changing your health?
Communication preferences	How do you like to receive information?

Recommendations for written, online, and app-based materials	[Evaluating written material, websites and Apps] What do you find motivating or helpful? What do you find harmful or not motivating? If you were to create the material (written, website or app) what would you design?
Use of social media or other online materials	Are there ways that you use the internet (social media or websites) to motivate or inspire you to make change to physical activity, nutrition or sleep? Anything make you feel unmotivated?

Table 2: List of Websites

- http://kidshealth.org/teen/recipes
- http://www.cdph.ca.gov/HealthInfo/healthyliving/childfamily/Documents/MO-NUPA-TeenCookbook.pdf
- https://www.whatscooking.fns.usda.gov/
- http://cachampionsforchange.cdph.ca.gov/Pages/default.aspx
- http://www.fitness.gov/eat-healthy
- http://www/healthyeating.org/Healthy-Eating/Meals-Recipes/Family-Meal-Planning.aspx
- https://www.myfitnesspal.com/
- http://www.blogilates.com/
- http://www.sleepcycle.com/

Table 3: Demographic Data

Variable	Description of Participants
Gender	
- Gender non-binary	1/20 (5%)
- Transgender Female	1/20 (5%)
- Cisgender Female	14/20 (70%)
- Cisgender Male	4/20 (20%)
Self-reported Race/Ethnicity	
- Latina/o	6/20 (30%)
- Black	1/20 (5%)
- White	10/20 (50%)
- Asian	1/20 (5%)
Multi-racial	
- Mexican/Black	1/20 (5%)
- Native American/White	1/20 (5%)
Primary Language	
- English	16/20 (60%)
- Spanish	3/20 (15%)
- English & Spanish	1/20 (5%)
Age	
- 15 to 17	14/20 (70%)
- 18 to 19	4/20 (20%)
- 20 to 21	2/20 (10%)
Disease Co-Morbidities (identified from chart review) [a]	
- PCOS	4/20 (20%)

- HTN	4/20 (20%)
- Elevated Lipids (cholesterol, triglycerides or other lipids)	4/20 (20%)
- Elevated ALT	4/20 (20%)
- Pre-Diabetes or Insulin Resistance	4/20 (20%)
- Mental Health (ADHD, Anxiety, Depression, PTSD)	5/20 (25%)
- Vitamin D Deficiency	3/20 (15%)
- OSA	2/20 (10%)
Residence Type	
- House	12/20 (60%)
- Apartment	8/20 (40%)
Number of people (children and adults) living at home	
- $\leq$4	16/20 (80%)
- 5 to 6	2/20 (10%)
- $\geq$ 6	2/20 (10%)
Place of Residence	
- Seattle	4/20 (20%)
- Other than Seattle	16/20 (80%)

[a]Participants have overlapping disease co-morbidities, thus numbers add above 100%.