

# Perceived barriers/facilitators to a healthy lifestyle among diverse adolescents with overweight/obesity: A qualitative study

Michelle I. Cardel<sup>1</sup>  | Sarah M. Szurek<sup>1</sup> | Jackson R. Dillard<sup>1</sup>  | Abhya Dilip<sup>1</sup> | Darci R. Miller<sup>1</sup> | Ryan Theis<sup>1</sup> | Angelina Bernier<sup>2</sup> | Lindsay A. Thompson<sup>2</sup> | A. Dulin<sup>3</sup> | David M. Janicke<sup>4</sup> | Alex M. Lee<sup>1</sup>

<sup>1</sup>Department of Health Outcomes and Biomedical Informatics, College of Medicine, University of Florida, Gainesville, Florida, USA

<sup>2</sup>Department of Pediatrics, College of Medicine, University of Florida, Gainesville, Florida, USA

<sup>3</sup>Department of Behavioral and Social Sciences, Center for Health Equity Research, Brown University School of Public Health, Providence, Rhode Island, USA

<sup>4</sup>Department of Clinical and Health Psychology, College of Public Health and Health Professions, University of Florida, Gainesville, Florida, USA

## Correspondence

Michelle I. Cardel, PhD, MS, RD, Department of Health Outcomes and Biomedical Informatics, College of Medicine, University of Florida, 2004 Mowry Road, Suite 2247, PO Box 100177, Gainesville, FL 32610, USA. Email: mcardel@ufl.edu

## Funding information

National Center for Advancing Translational Sciences, Grant/Award Number: UL1TR001427; National Institutes of Health National Heart, Lung, and Blood Institute, Grant/Award Numbers: K01HL141535, R25HL126146

## Summary

**Objective:** Effectiveness of behavioural obesity treatments in adolescents is modest. Thus, incorporating participant feedback may lead to improvement of intervention acceptability. This qualitative study's objective was to assess perceived barriers/facilitators to weight loss and healthy lifestyles among diverse adolescents with overweight/obesity (OW/OB).

**Methods:** Adolescents ages 14–19 with BMI  $\geq$  85th percentile participated in focus groups and identified perceived barriers/facilitators to weight loss and healthy lifestyles.

**Results:** Ten sex-stratified focus groups ( $n = 41$ ;  $n = 13$  males,  $n = 28$  females) were conducted in 2018 and 2019. Females reported experiencing weight struggles, whereas males often stated no struggles with weight, despite all participants meeting criterion for OW/OB. Barriers included eating behaviours, family members and internal motivation, with additional barriers of physical activity, friends, time and support cited in females. Facilitators included parental, familial and peer support of healthy eating and exercise, modelling behaviours, internal motivation and organized sports. Two additional findings regarding adolescents' perceived barriers/facilitators include substantial overlap and sex differences of perceived barriers/facilitators.

**Conclusions:** Adolescent males and females with OW/OB experience weight status differently, affecting their perceived barriers/facilitators to weight loss and healthy lifestyles. Tailoring weight management interventions to the unique needs of adolescent females versus adolescent males has the potential to improve intervention quality and effectiveness.

## KEYWORDS

adolescence, paediatric obesity intervention, paediatric obesity, weight management

## 1 | INTRODUCTION

Adolescent obesity has reached epidemic levels in the United States,<sup>1–3</sup> with severe obesity increasing fourfold since 1985.<sup>4</sup> Excess adiposity in youth commonly extends into adulthood,<sup>5</sup> affecting long-term emotional and physical health including risk for cardiovascular disease, type 2 diabetes and depression.<sup>6–8</sup>

Adolescence, defined as ages 11–21 years,<sup>9</sup> is fraught with ever-changing mental, emotional and hormonal peaks and valleys.<sup>10</sup> Major psychological transitions take place, such as increased autonomy, but self-regulatory skills are limited and presence of enhanced receptivity to peer, rather than adult, input exists.<sup>9–11</sup> Adolescent care may require approaches tailored to these unique phases in terms of barriers, facilitators and preferences. Though qualitative studies have identified factors influencing health-related behaviours among adolescents,<sup>12–15</sup> few interventions in weight management have sought to first identify adolescent needs and preferences in intervention development.<sup>16</sup>

Effectiveness of current behavioural obesity treatments among adolescents is modest,<sup>3,17</sup> and research is needed to identify modifiable factors that may improve treatment efficacy. While health-related benefits are demonstrated,<sup>18,19</sup> behavioural interventions experience adherence challenges, often resulting in high attrition rates.<sup>20,21</sup> Incorporating participant feedback into intervention development can improve intervention acceptability.<sup>22</sup> Research on the perspectives of adolescents with overweight/obesity (OW/OB) to identify factors that may affect their achievement of weight loss and a healthy lifestyle could inform intervention development, thereby increasing acceptability and effectiveness. The objective of this qualitative study was to assess perceived barriers and facilitators to weight loss and a healthy lifestyle among adolescents with OW/OB.

## 2 | METHODS

### 2.1 | Design

Focus groups were conducted to assess perceived barriers and facilitators to weight loss and a healthy lifestyle among adolescents with OW/OB. Given that this was part of a larger project aimed at developing and implementing a healthy lifestyle group-based intervention for adolescents, focus groups were conducted rather than individual interviews. Institutional Review Board approval (IRB201701609) was acquired.

### 2.2 | Participants and recruitment

Racially/ethnically diverse adolescents ages 14–19 were recruited for ten sex-stratified focus groups ( $n = 41$ ;  $n = 13$  males,  $n = 28$  females; focus group size ranging from two to seven participants in each group) in 2018 and 2019 via clinic and community fliers, mailed postcards and Facebook advertisements. Participants were eligible for study

inclusion with a BMI  $\geq$  85th percentile-for-sex-and-age as determined by CDC growth charts, using self-reported height and weight collected via telephone screening.<sup>23</sup> School (or community, depending upon participant age) subjective social status was reported using validated youth and adult MacArthur scales.<sup>24,25</sup>

Exclusion criteria included greater than or equal to 5% of weight loss in past 6 months, diagnosed diabetes, any condition prohibiting physical activity, diagnosed clinical depression, known substance abuse or eating disorder, pregnancy and any major health condition or medication known to affect body composition or appetite as established through self-report in the telephone screening.

### 2.3 | Data collection

All participants provided consent/assent to participate (with parental consent as appropriate). Moderators and comoderators were trained in focus group methods and to avoid weight-related bias. The moderator led each discussion using a semistructured moderator guide, and the comoderator took notes while observing interactions and group dynamics. The moderator guide was based on expertise of the research team and previously conducted behavioural weight loss intervention focus groups,<sup>26</sup> and written at a reading level of  $\leq$ 6th grade as determined by Flesch–Kincaid. An open question format was used, and participants were encouraged to speak freely about their thoughts and experiences.<sup>27</sup> Given the sensitive nature of the discussion, all focus groups were sex-stratified, and focus group moderators were primarily sex-concordant with the participants to encourage open and honest dialogue and facilitate feelings of safety and comfort. However, in one case (out of 10), a female moderator facilitated the discussion for a male focus group. Each focus group was audio-recorded, subsequently transcribed and reviewed for accuracy. Table 1 provides an overview of the topics discussed during each focus group. The full moderator guide is included in Data S1.

Focus groups lasted between 60 and 90 min in duration, and all participants were given a basic demographics survey at their conclusion. Focus groups were conducted until no new themes emerged, and thematic saturation was met.

**TABLE 1** Topic guide for focus groups to assess perceived barriers and facilitators to weight loss and a healthy lifestyle among adolescents with overweight/obesity

- Tell us about any family or friends you know who struggle with their weight.
- Has anyone here ever struggled with their weight?
- Does anyone currently struggle with their weight?
- What are some things that make it hard to lose weight?
- Who are the people in your life who support you in making healthy choices?
- Who in your life makes it hard for you to make healthy choices?
- What are some things that make it easier to lose weight?

## 2.4 | Data analysis

One author (S.M.S.) with mixed methods experience led trainings about theme identification,<sup>28</sup> codebook development,<sup>29</sup> coding and intercoder agreement.<sup>30</sup> Four of the team members (A.M.L., D.R.M., J.R.D., A.D.) read all focus group transcripts independently and cocreated a structured codebook based on emergent themes and concepts with oversight from authors M.I.C. and S.M.S. Each code contained a detailed description, inclusion and exclusion criteria, typical and atypical exemplars and a 'close, but no' example to assist with valid and reliable code application.

Using MAXQDA2018 software (VERBI Software, Berlin, Germany), each transcript was coded independently at the response level by a pair of qualitative coders. A third team member assisted with

identifying coding disagreements that were then the subject of systematic discussions for meaning and codebook refinement. All double-coded text was evaluated using Kappa ( $\kappa$ ) values from the intercoder agreement function. Transcripts were recoded with the updated codebook until  $\kappa \geq 0.61$ , indicating substantial or outstanding agreement. S.M.S. ultimately decided which codes to retain.

We analysed word frequencies, examined and generated visualizations for code intersections (co-occurrence) and retrieved coded segments. Quote selections were made using interactive quote matrices that explored thematic domains related to the barrier and facilitator codes by sex. Code co-occurrence with barriers and facilitators is expressed as a percentage of all barrier coded segments by sex, with the same strategy applied to facilitators. Codes were included in the analysis if they intersected with either of these two

**TABLE 2** Demographics of focus group participants by sex (mean  $\pm$  SD)

Variable	All (n = 41)	Sex	
		Female (n = 28)	Male (n = 13)
Age (years)	16.0 $\pm$ 1.8	15.9 $\pm$ 1.8	16.3 $\pm$ 1.8
Sex (% female)	68.3%	68.3%	31.7%
Race			
White	56.1%	60.7%	46.2%
Black or African American	36.6%	28.6%	53.8%
Asian	4.9%	7.1%	0%
Multiple races	2.4%	3.6%	0%
Ethnicity			
Hispanic/Latino	14.6%	14.3%	15.4%
Not Hispanic/Latino	80.5%	85.7%	69.2%
Did not answer	4.9%	0%	15.4%
Parental education (mother)			
Some high school	7.3%	7.1%	7.7%
High school diploma/GED	7.3%	10.7%	0%
Some college	14.6%	14.3%	15.4%
Associate degree	12.2%	7.1%	23.1%
College graduate	29.3%	25.0%	38.5%
Graduate/professional degree	19.5%	21.4%	15.4%
Do not know	9.8%	14.3%	0%
Parental education (father)			
Some high school	7.3%	7.1%	7.7%
High school diploma/GED	17.1%	7.1%	38.5%
Tech or vocational school	4.9%	0%	15.4%
Some college	12.2%	17.9%	0%
Associate degree	0%	0%	0%
College graduate	19.5%	25.0%	7.7%
Some graduate/professional school	2.4%	3.6%	0%
Graduate/professional degree	9.8%	10.7%	7.7%
Do not know	26.8%	28.6%	23.1%
Reported school (or community) subjective social status (SSS)	6.4 $\pm$ 1.9	6.4 $\pm$ 1.9	6.4 $\pm$ 2.0

main codes with a frequency of greater than or equal to 10% to focus our results on the most frequently discussed codes by sex. The consolidated criteria for reporting qualitative research (COREQ) were utilized to report study results.<sup>31</sup>

### 3 | RESULTS

#### 3.1 | Participant demographics

Six female and four male focus groups ( $n = 41$ ;  $n = 13$  males and  $n = 28$  females) were conducted. Participant demographics are in Table 2. Focus group participants were of diverse racial/ethnic backgrounds (56.1% White, 36.6% Black, 14.6% Hispanic) with a mean age of  $16.0 \pm 1.8$  years.

#### 3.2 | Coding

Transcripts were coded by two different coders and Cohen's  $\kappa$  values ranged between 0.61 and 0.81. The analysis included 20 distinct themes that intersected with barriers and facilitators with varying frequency of at least 10% of all barrier or facilitator coded segments by sex (Table 3). Focusing on these most frequent code co-occurrences, females discussed relatively equal numbers of barriers and facilitators, and males said less about barriers compared with facilitators. For females, eight codes were identified as both barriers and facilitators in conversation, and five codes displayed the same conversational overlap during the male focus groups. With these comparisons in mind, the results are presented as (a) barriers to weight loss and healthy lifestyles, (b) facilitators to weight loss and healthy lifestyles and (c) intersections between barriers and facilitators, with each

section reporting commonalities and differences between male and female participants. Table 4 presents example quotes for each of the main points discussed.

#### 3.3 | Perceptions of weight status

Males often reported they did not currently experience weight loss struggles; instead, they described past weight struggles or discussed gaining weight as a future 'looming fear' (male, FG1). Male descriptions of modifying one's body size or weight referred to participation in activities designed to build muscle or in organized sports, such as football. These statements were in contrast to females' acknowledgement of meeting clinical criteria for OW/OB and that their health care providers, families and/or peers had discussed the topic of weight loss with them. Female adolescents perceived that, at present, weight loss was necessary in order to meet societal and/or medical standards.

#### 3.4 | Barriers to weight loss and healthy lifestyles

##### 3.4.1 | Commonalities across sexes

Barriers were defined as 'any factor (a person, place, thing, context or emotional state) that makes weight loss or maintaining a healthy lifestyle harder for that participant directly or for someone else they know'. Food and eating behaviours were the two most salient barriers to participants.

I eat way more than a lot of people. I do not know what it is, but I just like food. (Male)

**TABLE 3** Frequency of codes discussed as barriers and facilitators by sex

Females				Males			
Barriers $n = 123$	%	Facilitators $n = 102$	%	Barriers $n = 46$	%	Facilitators $n = 45$	%
Food	37.4	Support	46.1	Food	47.8	Support	57.8
Eating	35.0	Parent	38.2	Eating	34.8	Physical activities	26.7
Physical activities	19.5	Physical activities	35.3	Other Kin	19.6	Parent	24.4
Parent	18.7	Food	32.4	Parent	15.2	Modelling	24.4
Friends	15.5	Eating	31.4	People	15.2	Food	22.2
Time	13.8	Modelling	24.5	Access	15.2	Motivation	20.0
Motivation	13.0	Friends	14.7	Motivation	13.0	Eating	15.6
Support	12.2	Organized sports	12.8	School	13.0	Other kin	15.6
Weight gain	12.2	Motivation	11.8	Craving	10.9	Friends	15.6
School	12.2	People	11.8			Organized sports	15.6
People	11.4	Gym	10.8			Family	13.3
Disease	10.6					Gym	11.1
						Socializing	11.1

Note: Denominator for the percentages was the total number of segments assigned the barrier (or facilitator) code across all focus groups respective to sex, which is shown across the top row as, ' $n = \_\_\_$ '.

**TABLE 4** Example quotes of perceived barriers and facilitators and their intersections for weight loss and healthy living among adolescents with overweight and obesity**Section 1: Barriers to weight loss and healthy living****A. Commonalities across sexes****Food and eating behaviour**

'food ... like what other people buy because since I do not buy the groceries I have no control over what we have in the house'. (Female, Focus Group 4)

'I always—I eat way more than a lot of people. I do not know what it is, but I just like food, and I always think I weigh more than everybody else, which I do, but I do not know. It's a lot. It's complicated'. (Male, Focus Group 2)

**Parents and Family**

'I guess kind of my mom because even though I know she means well, what she says about food and how she phrases what she says, it makes me feel bad and then, I just do not even want to try. I guess she's made my relationship to food really bad. So, I do not know'. (Female, Focus Group 1)

'Like they know that you would need snacks, and then they just stack the whole cabinet full of snacks, and it's like, "Well, it's there. I mean, I have nothing else to do, so, I mean, I'll just eat a couple here and there"'. (Male, Focus Group 3)

**Motivation**

'... (A) lot of the time, I do not have a lot of motivation to exercise. I go to get up and I'm like, "Well, what if I did not?" I just sit back down and ... I do not because I just do not want to. A lot of people have motivation to exercise because they are like, "Oh, I want to lose weight or (gain) endurance, strength ..." I just do not. I do not want to. I just do not really care that much about it, which is a problem but we are working on it'. (Female, Focus Group 6)

'Motivation. It's like you know you have to do it, but you have to find the time to do it, find the right ways to do it, and just like the motivation and the effort towards losing the weight'. (Male, Focus Group 3)

**School**

'Like if you had any bullies at school, like anyone that picks on you or something'. (Female, Focus Group 1)

'I can go to the gym for a week or two and then school gets too much and then I stop, and then I just never get back in'. (Male, Focus Group 1)

**B. Differences specific to females****Physical activity**

'I think it's also that knowledge of what to do, too, like where do I even start? Running is great, but am I gonna run five days a week? Right now, probably not. But like having the knowledge of like, what to do at a gym. I have no idea how to use some of those equipment, so I'm not gonna go to the gym and like, make a fool of myself. So having the knowledge of what to do would also make it easier, I think, to lose weight'. (Female, Focus Group 3)

**Friends**

'... I do not want to say that my friends are stopping me from making healthy choices because I'm my own person. I can make those decisions by myself, but of course, it's gonna be more fun to like, hang out with your friends and do whatever than stay home and cook healthier meals and spend more time exercising and stuff like that'. (Female, Focus Group 3)

**Time**

'I think also being busy. It's really hard being busy, like school and clubs afterwards and homework, it's really hard to try to figure out where to squeeze in that 30 minutes a day'. (Female, Focus Group 3)

**Support**

'... she also does not help me because she never gives me like one unhealthy thing or you know—I do not know, we never get like that one thing, so it makes me go and crave other things that I cannot get, so'. (Female, Focus Group 2)

**Weight gain**

'It started when I was in, like, second grade. I just moved from a different county, so I guess the stress of me making new friends and adjusting to a new home; I just did not do much. So, then, I just started gaining and gaining. Then, I had a lot of medical problems. I was on a lot of medications and things, like steroids, and I gained a lot of weight from them. Then, I just never got off, so it just kept growing and growing until now'. (Female, Focus Group 1)

**Hormonal**

'Partially myself. If I'm just ... it's that time of month or something, if I'm on my period. I'm just like, "Oh, an entire pint of ice cream could not hurt"'. (Female, Focus Group 6)

**Section 2: Facilitators to weight loss and healthy living****A. Commonalities across sexes****Support**

'Having somebody to do with you, like my neighbour, she used to walk with me and stuff, so that kind of motivated me because I kind of felt like she depended on me and I depended on her'. (Female, Focus Group 4)

'Like what he said, the people you surround yourself around, because I feel like you can have more people that support you and help you lose weight, because you feel like you have someone to count on to push you to do it ...'. (Male, Focus Group 2)

**TABLE 4** (Continued)**Parents and family**

'Yeah, my mom cuz she cooks the dinner. She cooks dinner for us. So like, she knows I'm trying to lose weight, so she's like, okay, when I cook this, and start cooking this like—if she wants to make chicken, she's not gonna fry, she's gonna bake it for me instead. Like she likes that small stuff to help me eat right'. (Female, Focus Group 2)

'I know definitely my mom is one that supports me. It's kind of like that maternal instinct to have the best in mind for your kid and have them have a good enough diet and standard of living ...' (Male, Focus Group 2)

**Physical activity**

'... Like I def—like before I was—like I was a super chubby kid and like a baby and stuff. But like, you know, I'm like working towards that. I've been going to the gym a bunch and like eating healthier and all that, so' (Female, Focus Group 3)

'I think it's also—what I think else makes it easier is like you know how (the local fitness center) has the free summer workout thing? I feel like that helps for the people that cannot pay for it, a gym membership, and then it helps kids want to get motivated to do it, because their friends are in the thing, and then you are like, "Oh, they are doing it. I want to do it too, because it seems fun"....' (Male, Focus Group 2)

**Food and eating behaviour**

'... if you eat less portions or you minimize what you eat, then it will ... help you'. (Female, Focus Group 3)

'Again, always buying good food, keeping yourself focused on healthy foods ...' (Male, Focus Group 1)

**Modelling**

'My mom and my grandma like we'll go to like Texas Roadhouse and I usually want like fried chicken then my grandma said maybe we should get baked chicken instead, seems healthier'. (Female, Focus Group 2)

'Yeah, my parents, pretty much the same thing. They've always encouraged me to go out and to do sports. And my dad is – he goes to the gym all the time. So ever since I was younger he's always had that kind of influence on me to do that. And also to not go out to eat as much'. (Male, Focus Group 4)

**Friends**

'Yeah, I'm at my best friends a lot cuz we study together, and she's like the poster child for a Whole Foods, yeah. And so her whole house is like vegan and she's gluten free and she's also dairy free and so like everything is gross somehow, in my opinion. But like she's very healthy, and so she kinda like motivates me to be very healthy. I'm there all the time and like eating what she eats so like I'm trying to make that switch ...' (Female, Focus Group 2)

'Probably my friends, because they want what's best for me, so they always want to invite me to go do things that are athletic so I'm not always inside ...' (Male, Focus Group 2)

**Motivation**

'So, obviously, during summer, I'm going to want to go to the beach, not that I'm fat or anything but I'm like, "Well, I want to look slim and nice and everything." Then, it's just internal motivation more than external. I feel like if you are internally motivated, you are more likely to do it and then, you are more likely to strive towards things that will make you lose weight ...' (Female, Focus Group 6)

'Motivation. If you get motivated, I feel like you have more motivation in your life to lose weight, and you have self-confidence, and you feel like you can do it, then I feel like it would be easier for me to lose weight. As long as you—if there's a way to make it fun to lose weight, where you do not feel like you are just doing it to please everybody else, and you want to help yourself, and you feel better losing weight than gaining weight, I feel like that would make it easier'. (Male, Focus Group 2)

**Organized sports**

'I think too—well, for me, I joined a lot of sports. I did, I tried—well, when I was in high school, I joined a lot of sports and I did volleyball and lacrosse. And the whole year round, so that really helped, "cause being a team and also having a coach condition you and helping you out, encouraging you"'. (Female, Focus Group 3)

'You always get a view. It's just so boring for me (running). So like with other stuff, like I played soccer. I do not know why, but whenever I had to get a ball into the net, I could run more'. (Male, Focus Group 3)

**Section 3: Intersections between barriers and facilitators****A. Commonalities across sexes****Parents and family**

'Some people in my family, they motivate me to eat well. Then, a couple days later, they'll start eating the wrong things and they'll try to feed me it and try to make me eat it, and I'm trying to stay healthy in all things. They just keep switching back and forth'. (Female, Focus Group 1)

'I like my mom around cuz she is trying to lose weight, too, so she'll help me, motivate me do it and stuff. My dad is just like, "Just do it. Just lose weight". He's never had a weight problem, so he's just like, "Why do not you just do it?"' (Female, Focus Group 2)

**Food and eating behaviour**

'... at first I gain weight like for the first week because my body was retaining like, no longer food in that eight hours and I would like crave, so I would eat as much as I wanted which it did not help, but then once it became a habit (*intermittent fasting*) I would eat like healthy meals, and I knew how to like control myself into it and I got really healthy, but then, I do not know I stopped it, so yeah'. (Female, Focus Group 2)

'But like it's mostly me. I have to go to them and say, "Hey, I want to eat healthier. I want to—you know, I cannot eat so much food and everything"'. (Male, Focus Group 3)

**Motivation**

(Continues)

**TABLE 4** (Continued)

'Well like I could easily do something to fix like something if I'm wrong, but I just do not have motivation'. (Female, Focus Group 4)  
 'Motivation. It's like you know you have to do it, but you have to find the time to do it, find the right ways to do it, and just like the motivation and the effort towards losing the weight'. (Male, Focus Group 3)

Food was reported as a barrier to weight loss in terms of wanting and liking 'unhealthy food', 'temptations', 'cravings' and 'addictions to sweet food'. Situational access to these foods comes from parents and family members who are typically responsible for the foods brought into the home.

Like they know that you would need snacks, and then they just stack the whole cabinet full of snacks. (Male)

Adolescents expressed frustration with parents that provided access to unhealthy foods. Some adolescents described eating due to stress or emotions as a barrier to weight loss. While acknowledging exercise as an important health behaviour, adolescents cited a lack of motivation and school demands as barriers to engaging in regular physical activity.

### 3.4.2 | Differences specific to females

Females mentioned barriers to physical activity and exercise, including a lack of knowledge about exercise equipment. Some females reported choosing not to engage in exercise to avoid feelings of embarrassment stemming from incorrect exercise form or equipment use.

I have no idea how to use some of those equipment, so I'm not gonna go to the gym and like, make a fool of myself. (Female)

Social engagements with friends often centred around food, which presented situational barriers to maintaining healthy eating patterns. Female adolescents discussed their friends wanting to eat calorie-dense foods or go to restaurants and wanting to join or lacking the skills to choose a better alternative.

You're not gonna be like, oh, let me just eat a salad while all my friends are eating pizza or whatever, you know? (Female)

Females also described comments or actions considered supportive by parents and family regarding weight loss and eating as invalidating due to hurtful language and authoritarian behaviour, which often caused guilt and shame.

Even though I know she (mom) means well, what she says about food and how she phrases what she says, it makes me feel bad and then, I just do not even want to try. (Female)

Although both males and females spoke about how school demands limited their ability to engage in regular physical activity, females more often elaborated on how 'being busy' and a having less time made it especially difficult to engage in healthy behaviours.

It's really hard being busy, like school and clubs afterwards and homework, it's really hard to try to figure out where to squeeze in that 30 minutes a day (of exercise). (Female)

Females also identified hormones and periods as reasons for not engaging in a healthy diet or exercise behaviours. Many female adolescents discussed substantial weight gain during one past period of their life and described their difficulty losing it. This struggle was attributed to medical diagnoses (e.g., polycystic ovary syndrome), medications (e.g., antipsychotic medications or steroids) and life transitions (e.g., quitting sports). The majority of females described a struggle and desire to lose weight, although their reasons varied from wanting to conform to societal norms, to 'feeling good and healthy', to receiving medical recommendations (e.g., controlling blood glucose or qualifying for breast reduction surgery). They reported having discussions about weight or weight loss with healthcare providers, families and/or peers.

## 3.5 | Facilitators to weight loss

### 3.5.1 | Commonalities across sexes

Facilitators were defined as 'any factor (a person, place, thing, context or emotional state) that makes weight loss or maintaining a healthy lifestyle possible or easier for that participant directly or for someone else they know'. Overall, the facilitators to weight loss and a healthy lifestyle were very similar across sexes. Adolescents reported physical activity and healthy eating as significant health behaviours that facilitate weight loss. With regard to eating patterns, participants discussed eating less and food substitution as two behaviours that promote weight loss.

... if you eat less portions or you minimize what you eat, then it will ... help you. (Female)

These behaviours were intertwined with discussions of external support—the most frequently mentioned facilitator across both sexes. This support came from encouragement to exercise and eat healthy, internal motivation and a stable household environment. Parents, particularly mothers, were described as the most supportive people in adolescents' lives.

... she (mom) knows I'm trying to lose weight, so she's like, okay ...—if she wants to make chicken, she's not gonna fry, she's gonna bake it for me instead. Like she likes that small stuff to help me eat right. (Female)

Support was also designated as beneficial due to camaraderie and accountability associated with beginning and maintaining healthy habits promoting weight loss.

Adolescents also identified other individuals (e.g., parents and peers) modelling healthy behaviours as a facilitator. Adolescents considered parents, family and friends choosing to exercise and eating healthy as helpful and motivational for their engagement in healthy lifestyles.

And my dad is—he goes to the gym all the time. So ever since I was younger he's always had that kind of influence on me to do that. (Male)

But like she's (friend) very healthy, and so she kinda like motivates me to be very healthy. I'm there all the time and like eating what she eats so like I'm trying to make that switch ... (Female)

Adolescents also cited that internal motivation was needed to practice healthy behaviours that lead to weight loss.

If you get motivated, I feel like you have more motivation in your life to lose weight, and you have self-confidence, and you feel like you can do it, then I feel like it would be easier for me to lose weight. (Male)

Finally, both males and females acknowledged that organized sports were beneficial for engagement in exercise due to the inherent structure and enjoyment associated with participation.

### 3.5.2 | Differences specific to females

No facilitators were identified that were specific to females only.

## 3.6 | Intersection of barriers and facilitators

### 3.6.1 | Commonalities across sexes

The complex biopsychosocial context of weight status was recognized by adolescents through the overlapping nature of perceived barriers and facilitators. Several codes co-occurred with both the barrier code and the facilitator code, recognizing their duality and nuances in the weight loss. Participants used their language to describe multiple domains of experience—internal psychosocial states (e.g., motivation) and external behaviours—and with regard to specific people. Internal motivation was a facilitator, whereas lacking motivation was

considered a barrier. Food and eating behaviour appear as both barriers and facilitators, which could be partially attributed to the fact that this was a main health behaviour contributing to weight loss and gain throughout the discussion; although, it is noteworthy that their connection to multiple barriers identifies food and eating as the most frequently discussed barriers but not as the most frequently discussed facilitators to weight loss and a healthy lifestyle. In fact, physical activity supersedes food or eating behaviour as a facilitator among both male and female adolescents. The clearest descriptions of factors with a dual nature were ascribed to people in the adolescent's lives. Family behaviours posed a challenge for adolescents with respect to weight loss and healthy living in addition to offering support.

Some people in my family, they motivate me to eat well. Then, a couple days later, they'll start eating the wrong things and they'll try to feed me it and try to make eat it, and I'm trying to stay healthy in all things. (Female)

Though parents were reported as generally well-intentioned, adolescents perceived parents as playing a role in both helping and hindering weight loss and a healthy lifestyle.

My mom, she's the one who helps and does not help me, cuz she will cook healthy, but she has like a sweet tooth, she likes to eat sweets. (Female)

Regardless, adolescents more often perceived their parents as facilitators than barriers, particularly with respect to modelling behaviours.

### 3.6.2 | Differences specific to females

Females described physical activity, friends and support as both barriers and facilitators to weight loss and living a healthy lifestyle. Though verbal support from friends regarding body size was positive, social engagements with friends were often not perceived as helpful for maintaining healthy lifestyle goals. Though both males and females acknowledged the duality of parents and their supportive and unsupportive actions, females were the only ones to report that comments of good intentions by the parent were counter-effective to the adolescent and were often hurtful.

## 4 | DISCUSSION

This qualitative study highlights a variety of perceived barriers and facilitators to healthy lifestyles and weight loss among adolescents with OW/OB from diverse racial/ethnic backgrounds. Additionally, two other themes regarding adolescents' perceived barriers and facilitators to weight loss and healthy lifestyles were also identified: (a) substantial overlap between perceived barriers and facilitators and (b) differences between female and male adolescents in both

the lived experience of having OW/OB and perceived barriers and facilitators to weight loss and healthy living. These data highlight the potential need for sex- or gender-specific interventions among adolescents with OW/OB while also addressing adolescents' perceived barriers and facilitators during the design of weight management interventions.

Sex differences were prevalent during discussions of weight status perception. Males generally stated no current struggles with weight and described that weight management struggles were a past issue or a problem that could manifest in the future. Weight loss was not discussed as a primary focus for males; rather, they discussed interest in 'getting bigger' and 'building muscle', particularly in reference to organized sports, such as football, in which a larger body size is acceptable or even preferred.<sup>32</sup> These findings are consistent with weight perception literature indicating adolescent females are better able to predict their body mass index classification (i.e., underweight, normal weight, OW and OB) relative to males.<sup>33</sup> Moreover, previous work demonstrates females who perceive themselves as overweight are more likely to want to lose weight, as compared with males who tend to desire weight gain rather than weight loss when dissatisfied with their bodies.<sup>34</sup> These differences may reflect social norms in which females have increased societal pressure to be thin<sup>35</sup> and experience more weight-based discrimination than males.<sup>36</sup> However, with the currently available data, it is difficult to identify if males had differing experiences based on sex or on perceived gender roles, and further research is needed to identify how to best incorporate differing perceptions by sex of ideal weight status within recruitment and retention strategies in weight management interventions.

Food and eating behaviours posed the most significant barriers, which included desire, cravings, emotional eating and access to unhealthy food items. This is consistent with previous qualitative research among college students with OB, who described eating behaviour as a key component of why they had gained significant weight.<sup>37</sup> In that study, however, frequent fast-food, overeating and skipping breakfast were the primary eating behaviour factors surrounding weight gain.<sup>37</sup> Conversely, participants cited healthy eating as more challenging when parents and family members brought 'unhealthy' foods into the home, including snacks and 'junk food'. The adolescents expressed frustration with parents for how their actions could be simultaneously supportive and unsupportive. These findings differ slightly from focus groups conducted among adolescents from low-income families finding parents and schools making healthy foods that look and taste good would facilitate healthy eating.<sup>15</sup> Adolescents also identified lack of motivation as a barrier for engaging in healthy behaviours. Lack of motivation has been previously described as a barrier for weight management among young adults.<sup>38</sup> School and school-related activities (e.g., homework) were cited as comprising a significant portion of the day, and adolescents felt stress and a lack of time arising from school were additional barriers. Consistency with other research<sup>37,38</sup> strategies to overcome barriers related to food and eating behaviour, promotion and discussion of health-related goals with parents and family members (i.e., awareness of food items brought into the home that are unsupportive to a healthy diet), lack of

motivation to engage in health-related behaviours and time management could improve intervention effectiveness.

Females reported several additional barriers not mentioned by male participants. Females discussed lack of knowledge regarding how to properly engage in physical activity, particularly in a gym setting, as a barrier to physical activity due to fear of embarrassment by exercising incorrectly. Another focus group study among adult women cited feelings of self-consciousness as a barrier to engaging in physical activity<sup>39</sup>; however, this barrier was specifically related to body size rather than lack of knowledge regarding equipment use. Female-specific barriers also identified friends not engaging in healthy behaviours, lack of time and lack of or misguided support, which mirrored a previous report cited in young adults.<sup>38</sup> Craving and consumption of calorie-dense foods were attributed to menstrual cycles. Additionally, several females cited experiencing a period of marked weight gain as a side effect of pharmacotherapy (antipsychotics, steroids) and an inability to subsequently lose the weight gained. Education around the metabolic effects of medications known to cause hyperphagia and/or increased body weight are warranted to mitigate side effects of these therapies. Additionally, interventions among adolescent females may benefit from addressing issues related to proper gym equipment use and behavioural change strategies to address lack of time, support, motivation and cravings during menstruation.

Facilitators of weight loss and a healthy lifestyle were the same for both sexes and focused on factors that would assist with healthy eating and being active. Support from parents and family, as well as friends, was the most frequently discussed facilitator. A systematic review of facilitators of healthy eating in young adults reports this finding as well and demonstrates that family and friends who have a healthy diet facilitate the same practice in young adults.<sup>40</sup> This corresponds to findings herein that modelling of healthy eating is a perceived facilitator to weight loss and making healthy choices. Previous work indicates family and friend support on physical activity through adolescence leads to increased total moderate-to-vigorous physical activity,<sup>41</sup> aligning with findings herein that family and friend support facilitates physical activity. Organized sports are also beneficial for both physical and psychological health.<sup>42,43</sup>

While physical activity, friends and support were solely perceived as facilitators for males, females perceived these subjects to be both facilitators and barriers. Longitudinal studies show males report greater levels of support for physical activity engagement from family and friends, whereas female adolescents report lower levels of support for these same engagements from friends.<sup>41</sup> Females in this study reported that hanging out with friends sometimes came at the expense of having time to exercise, but friends or family who engaged in physical activity with them were seen as a facilitator for being active. Females perceiving less support for engagement in physical activity could affect their desire to engage in physical activity, especially from an internal perspective. Though verbal support from friends regarding body size was positive, social engagements with friends, such as going out to eat, was perceived as a barrier. Both males and females discussed the duality of parents, describing actions of their parents as both supportive and unsupportive depending on

the context. Females reported that they recognized good intentions by their parent(s), but felt that even well-intentioned actions, were sometimes counter-effective and hurtful.

The strength of this study lies in the transferability of the findings to similar contexts.<sup>44</sup> Valuable and practical information was obtained on barriers and facilitators from a diverse group of adolescents that will aid in the development of an adolescent intervention. Although each moderator underwent the same training, there is always potential for interviewer bias influencing breadth and depth of participant discussion. The relatively small sample size with significantly less males ( $n = 13$ ) than females ( $n = 28$ ) is a study limitation. However, several sex differences were found in this analysis, but it is difficult to ascertain if differences between male and female adolescents were derived from sex differences or by perceived gender differences. Thus, recommendations related to sex-specific weight management interventions may potentially need to be gender-specific interventions. Future work should also consider conducting sex- and race/ethnic-specific focus groups to ascertain potential differences by race/ethnicity given previously observed differences between perceptions of weight status and social norms by racial/ethnic identity.

## 5 | CONCLUSIONS

Female and male adolescents indicated different lived experiences regarding their weight. A variety of perceived barriers and facilitators to weight loss and a healthy lifestyle were identified, though differences were observed by sex. The data from this study can inform the design of sex- or gender-specific weight management interventions in which curriculum content is tailored to address adolescent barriers and facilitators to improve the quality, acceptability, feasibility and effectiveness.

### FUNDING

This work is supported by the National Institutes of Health National Heart, Lung, and Blood Institute (R25HL126146 and K01HL141535) and the National Center for Advancing Translational Sciences (UL1TR001427).

### CONFLICT OF INTEREST

The authors declared no conflict of interest.

### ORCID

Michelle I. Cardel  <https://orcid.org/0000-0002-9395-8618>

Jackson R. Dillard  <https://orcid.org/0000-0003-4368-0096>

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

**How to cite this article:** Cardel MI, Szurek SM, Dillard JR, et al. Perceived barriers/facilitators to a healthy lifestyle among diverse adolescents with overweight/obesity: A qualitative study. *Obes Sci Pract*. 2020;6:638–648. <https://doi.org/10.1002/osp4.448>