

# Patient and Cardiologist Perspectives on the Treatment of Patients With Concomitant ASCVD and Obesity

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## Abstract

Atherosclerotic cardiovascular disease (ASCVD) and obesity pose challenges to patients, healthcare professionals (HCPs), and health systems. The aim of this study was to understand the journey of patients with ASCVD and obesity, their caregivers, and managing HCPs to optimize treatment outcomes. Patients with ASCVD and body mass index  $\geq 27$  kg/m<sup>2</sup> (N = 61), their caregivers (N = 12), and HCPs (N = 24) were given an online survey and participated in 1:1 interviews. Cardiology HCPs (N = 120) were given a quantitative online survey. Despite the presence of risk factors, patients described little communication or urgency from their HCPs regarding the link between obesity and cardiovascular health prior to an ASCVD event. Cardiology HCPs ranked obesity as only the fourth most important parameter to monitor pre- and post-ASCVD event but were hesitant to prescribe antiobesity medications pre- and post-ASCVD despite new treatment options. In fact, only 12% recommended medication for weight management. Comprehensive HCP training on weight management and medication options as well as training on strategies to communicate these options to patients and involve them in their own treatment decisions may improve patient experiences and lead to improved health outcomes in patients with obesity and ASCVD.

## Keywords

cardiology, obesity, ASCVD, atherosclerotic cardiovascular disease, cardiovascular diseases, antiobesity medications, obesity management, physician–patient relations, bias, ethnic and racial minorities

## Introduction

In the United States, cardiovascular disease (CVD) remains the leading cause of death, with more than 700,000 CVD deaths reported in 2022.<sup>1</sup> Deaths due to CVD are predominantly attributed to atherosclerotic CVD (ASCVD), with a prevalence of 7.5% of US adults representing an estimated 19.9 million people with ASCVD.<sup>1,2</sup> Atherosclerotic CVD prevalence from 1999 to 2018 was notably higher in those with lower education levels, higher body mass index (BMI), and lower family income.<sup>3</sup>

Atherosclerotic CVD when present with obesity (BMI  $\geq 30$  kg/m<sup>2</sup>) poses a serious challenge to patients, healthcare professionals (HCPs), and health systems. There is a large body of literature documenting consistent treatment gaps, disparities, and high disease burden in patients with ASCVD and obesity in the United States.<sup>4–9</sup> However,

there are few studies documenting both patient-lived ASCVD and obesity experiences and physician perspectives in the treatment of ASCVD in the setting of obesity,<sup>10–12</sup> particularly in patients in racial and ethnic minority groups.

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The literature on lived experiences in obesity and ASCVD is sparse and is generally focused on ASCVD or obesity, not both. A comprehensive understanding of what patients with ASCVD and obesity and their HCPs experience as they navigate the healthcare system is necessary for optimal delivery of treatment and effective mitigation of barriers to successful treatment. As positive patient experiences and high satisfaction with care are associated with better health outcomes,<sup>13,14</sup> encouraging patients to be involved in their own healthcare improves the quality of the healthcare provided, promotes equity, and improves the ability of HCPs to meet diverse patient needs. However, including patients in their own healthcare journey requires open lines of communication and dispelling existing biases between HCPs and patients. This may be particularly complicated in the setting of ASCVD and obesity, in which multiple HCP types are involved (eg, primary care providers [PCPs], endocrinologists, cardiologists, dietitians, and more) and given that societal and HCP biases around weight are common. For example, a systematic review and meta-analysis of 17 studies looking at weight bias among HCPs (including physicians, nurses, dietitians, psychologists, physiotherapists, speech pathologists, podiatrists, and exercise physiologists) showed that HCPs hold weight bias toward patients with obesity that may ultimately affect patients' willingness to participate in healthcare decision-making.<sup>15</sup>

This 2-part research study aimed to document the prevailing perspectives and lived experiences of Black/African American, Asian, White, LatinX, and multiethnic patients, caregivers, and HCPs during treatment for ASCVD and obesity, providing further rigor in the evaluation of HCP perspectives and treatment options.

## Methods

### Study Design

This was a 2-part, mixed-methods study of patients with  $\geq 1$  ASCVD event (defined as myocardial infarction, stroke, or symptomatic peripheral arterial disease [PAD]) and BMI  $\geq 27$  kg/m<sup>2</sup>, their caregivers, and the HCPs who treat these patients. The study was performed in 2 parts: a qualitative part utilizing an online survey to gain insight into the experiences of patients with ASCVD and BMI  $\geq 27$  kg/m<sup>2</sup>, their caregivers, and HCPs who treat these patients and a quantitative part to evaluate clinical process and outcome measures within the ASCVD and obesity treatment space based on responses from cardiologists who frequently treat patients with BMI  $\geq 27$  kg/m<sup>2</sup>. Particular attention was paid to racial/ethnic differences across patient demographic groups in both study parts.

The study was conducted from February 6, 2023, to August 2, 2023, in the United States and conformed to the principles of the Declaration of Helsinki and Good Clinical Practice. Investigational Review Board (IRB) approval was obtained prior to study start and written electronic informed

consent was obtained from all participants prior to study material being administered. The informed consent described the purpose and process of the study, information on compensation, and contact information to address any concerns participants may have had.

### Participants

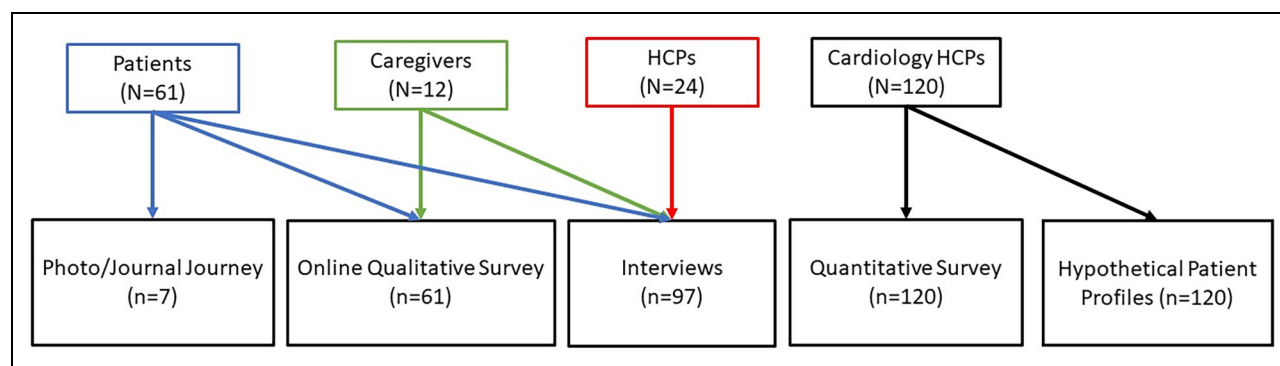
Participant recruitment utilized social media and referrals from HCPs, social workers, HCP professional organizations, and community advocates. All participants received honoraria for their involvement.

In the qualitative part of the study, eligible participants agreed to informed consent and spoke English fluently. Patients were required to be at least 45 years old, diagnosed as having had a heart attack, stroke, or symptomatic PAD, and have a BMI of 27 kg/m<sup>2</sup> or higher. A BMI of 27 kg/m<sup>2</sup> was chosen as the lower bound for inclusion as patients can have excess adiposity that impairs their health at a BMI  $<30$  kg/m<sup>2</sup> if there is evidence of an obesity-related complication such as ASCVD. Caregivers were aged  $\geq 21$  years and cared for patients who met the above criteria. Healthcare professionals were required to be board-certified cardiologists, nurses, or PCPs aged  $\geq 21$  years who had been practicing for at least 3 but not more than 30 years and who treated mostly adult patients who met the above criteria. The HCPs in the qualitative part of the study were not the treating clinicians for any of the patients. All participants had to have access to a laptop, tablet, or mobile phone compatible with required services for completion of the interview. Those opting to participate in the photo and journal study had to have a mobile phone for taking photographs and the ability to send photos and text commentary to the research vendor.

In the quantitative part of the study, eligible HCPs were board-certified cardiologists, cardiology nurses, or cardiology nurse practitioners  $\geq 21$  years old who had been practicing for at least 3 but not more than 30 years and who treated mostly adult patients with ASCVD and BMI  $\geq 27$  kg/m<sup>2</sup>. These HCPs must have agreed to informed consent, spoken English fluently, and had access to a laptop, tablet, or mobile phone compatible with required services for completion of the survey. The cardiology HCPs in the quantitative part of the study were independent from the HCPs in the qualitative part of the study.

### Qualitative Methods and Data Analysis

The planned sample size for the qualitative part of the study was 114 participants, including 77 patients with ASCVD and BMI  $\geq 27$  kg/m<sup>2</sup>, 12 caregivers of patients who met these criteria, and 25 HCPs who treated patients with ASCVD and BMI  $\geq 27$  kg/m<sup>2</sup>. In total, 61 patients with ASCVD and BMI  $\geq 27$  kg/m<sup>2</sup>, 12 caregivers, and 24 HCPs who treat these patients were eligible and consented to participate in the study.



**Figure 1.** Overall study design.

An initial online survey containing a series of multiple-choice questions was administered to patients and caregivers to gather baseline information related to ASCVD and/or obesity (Figure 1 and Supplemental File 1). Survey data were tabulated using descriptive statistics; no formal statistical analysis was conducted, and there was no attempt to power this survey for statistical analysis by ensuring minimum sample sizes.

Semistructured interviews were conducted with patients, caregivers, and HCPs in-person, via videoconferencing, or via telephone to gain insight into cardiovascular (CV) background/history, perception of treatment pre- and post-ASCVD event, healthcare experiences, the impact of ASCVD on family/finances, current care practice, and barriers to treatment. Interviews were conducted by investigators using an IRB-approved discussion guide (Supplemental File 2). Patients responded to survey and interview questions to the best of their recollection and understanding.

Patients could also participate in an optional photo/journal exercise to uncover unconscious motivations and emotions related to obesity and/or ASCVD by providing “selfies” or photos of scenes during their day along with journal commentary describing their emotions (Figure 1).

Data from interviews were transcribed by a third party, and transcripts were analyzed to identify common themes. No formal coding was performed as part of the analysis. Results from the qualitative part of the study are reported using the Standards for Reporting Qualitative Research guidelines.<sup>16</sup>

### Quantitative Methods and Data Analysis

The planned sample size for the quantitative part of the study was 120 cardiology HCPs who treated patients with ASCVD and BMI  $\geq 27$  kg/m<sup>2</sup>. The determination of sample size for this part of the study was driven by recruitment feasibility. A total of 120 cardiology HCPs were eligible and consented to participate in the study.

Quantitative online surveys (Supplemental File 3) were administered to cardiology HCPs to establish robust estimates of key performance indicators in ASCVD with a focus on obesity and the racial/ethnic profile of the patient (Figure 1). Cardiology HCPs were also given sets of 4 hypothetical patient profiles and free-form text fields for treatment

recommendations to gain insight into how the HCP approaches treatment pre- and post-ASCVD event. There were 2 male and 2 female profiles; each profile of the same sex was identical to the other with the exception of race (one profile was a Black/African American patient and the other was a White patient).

The collection of quantitative data was managed by GRG Global. This part of the study was powered to detect a one-sample margin of error of  $\pm 12\%$  with  $\alpha = 0.05$  and power = 0.80 ( $\alpha$  = traditional Type I error). Data were summarized using descriptive statistics. Regression and/or analysis of variance methodologies were utilized when analyzing treatment choice exercises involving hypothetical patient profiles.

## Results

### Qualitative (Patients, Caregivers, and HCPs)

**Participant Demographics and Disease Characteristics.** Patients self-identified as Black/African American (38%), White (29%), LatinX (20%), Asian (10%), or multiethnic (3%) (Table 1). Most (66%) had been diagnosed with obesity prior to their ASCVD event. Healthcare professionals were cardiologists (71%), cardiology nurses (21%), and PCPs (8%); most practiced in private practice (50%) or at a teaching hospital (42%).

**Identification of Themes.** Five main themes related to ASCVD and obesity were identified based on interviews: patient and clinician inertia, obesity and weight bias, care experience, treatment interventions, and social determinants of health/health inequities. The results within these themes are described below as they relate to the timing of ASCVD events in patients.

**Patient/clinician Inertia Prior to an ASCVD Event.** Prior to their ASCVD event, most (82%) patients reported that their PCP was managing their health care, and many reported only visiting their HCP when needed, sometimes due to lack of insurance and the high cost of care, but other times due to not prioritizing their health or simply waiting until something was wrong. Despite 72% of patients reporting a family history of CV events and 59% believing they had risk

**Table 1.** Participant Information.<sup>a</sup>

Characteristic	Percentage
Patients (Part 1), N = 61	
Age category	
45-59 years	51%
≥60 years	49%
Ethnicity	
Black/African American	38%
White	29%
LatinX	20%
Asian	10%
Multiethnic	3%
Previous obesity diagnosis	
Yes	66%
No	34%
Number of ASCVD events	
1	61%
2	31%
3	5%
4	1%
5	1%
Type of prior ASCVD events (n)	
Myocardial infarction	41
Stroke	19
Peripheral arterial disease	16
Income range in USD	
\$0-\$24,000	8%
\$25,000-\$49,000	16%
\$50,000-\$74,000	34%
\$75,000-\$99,000	16%
\$100,000-\$149,000	16%
\$150,000-\$199,000	8%
Caregivers (Part 1), N = 12	
HCPs (Part 1), N = 24	
HCP type	
Cardiologist	71%
Cardiology nurse	21%
Primary care professional	8%
Practice setting	
Nonteaching hospital	8%
Teaching hospital	42%
Private practice	50%
Minority patient population compared to other HCPs	
More diverse	46%
Similarly diverse	46%
Less diverse	8%
Cardiology HCPs (Part 2), N = 120	
HCP type	
Cardiologist	83%
Cardiology nurse	15%
Nurse practitioner	2%
Practice setting	
Integrated delivery network	47%
Community hospital	21%
Academic/university hospital	16%
Private group practice	6%
Community teaching hospital	6%
Private practice	5%
HCP location	
Urban	42%

(continued)

**Table 1.** (continued)

Characteristic	Percentage
Suburban	50%
Rural	8%
Patient background	
Had ASCVD event	63%
Have not had ASCVD event but are at high risk	36%

Abbreviations: ASCVD, atherosclerotic cardiovascular disease; HCP, healthcare professional; USD, United States dollars.

<sup>a</sup>Due to rounding, percentages may not add up to 100%.

factors for an ASCVD event, most did not have major concerns about their health prior to their ASCVD event, highlighting the lack of value placed on preventative care. Patients/caregivers also reported not receiving enough education from HCPs on the link between obesity and CVD and a lack of urgency from HCPs to identify and treat risk factors prior to their ASCVD event.

Prior to an ASCVD event, one White patient explained the lack of urgency they felt from their PCP regarding weight management:

“[PCP] was not as serious as it should have been. A little bit loose, friendly. We used to talk about sports and other things. The advice was not as strong as it should have been.”

“[The PCP] said ‘Look, you’re overweight. You gotta reduce [your weight].’ And I thought I was bulletproof. I just didn’t listen.”

A White patient with PAD, who described themselves as always on the go and who participated in sports, was self-employed and did not have insurance prior to their ASCVD event. The patient was not overly concerned about their health, as they considered themselves relatively healthy and active. It wasn’t until after an ASCVD event that they secured health insurance and were diagnosed with diabetes and other heart problems. The patient had been experiencing symptoms of an ASCVD event for months that were undetected due to the lack of preventative care.

“[PCP] discovered diabetes. He discovered all of these problems. It’s like waking up one morning, and you’re sick, you know. You had all these things, and he says ‘I can’t keep seeing you for an hour and a half every month. I got other patients. You need to get yourself specialists.’”

“I got my disability. So that was from social security, state disability, which is also Medicaid. So, you know I was surviving on that. As a result, I lost my house.”

One Black/African American caregiver described their experience with their spouse’s care prior to the ASCVD event as “passive”:

“I thought it (referring to their husband’s care) was very passive to me personally. [There were] a lot of changes that he should have made prior to the heart attack, and I personally feel that his PCP should have had those things implemented with him. They should have had a regimen, you know. They should have already set up that ‘if you keep going down this role, this is going to happen.’ He didn’t get that so I wasn’t comfortable with it.”

“I have to make myself heard. Yeah, because in other words, they’re going to pick up that chart, and they’re going to go over the previous history, because that’s how this starts off. They pick up the chart, and they go back to the previous history. Not currently. What’s going on right now.”

The caregiver also reported feeling bias from the HCPs, stating:

“The doctor wants to dwell on the factors of our race and what you know genetically is inclined. And this is just what it’s going to be. I just don’t believe that. They’re almost saying like, there’s no way around this because you’re Black. Yeah, it’s like condemning us. No, that’s not so.”

After the ASCVD event, the caregiver described their new lifestyle changes, but also highlighted the important role that the caregiver plays in postevent compliance with discharge plans:

“We work out, we hike, we go to the gym. Now we do stuff like that. We have dietician classes that we attend. We have a regimen of supplements and protein items that we consume now on a regular basis. That has changed drastically. Yeah, we didn’t used to do any of that. [We] have to do this together instead of me holding him accountable. I have to be accountable too.”

Finally, most (77%) patients reported  $\geq 1$  symptom prior to their ASCVD event but often did not realize that these were symptoms of a CV event.

A LatinX patient described not recognizing the signs of an ASCVD event and attributing them to other sources, highlighting the importance of educating patients on the signs and symptoms of an ASCVD event prior to the event itself:

“I began what I thought was chest problems because of the food I was eating and I went for almost 5, 6 days thinking I had heartburn or some problem with my chest as a direct result of my diet...They have some great ethnic cuisine and I like spicy. So, I just assumed it was that, right?”

**Obesity and Weight Bias Prior to an ASCVD Event.** Many patients, but especially patients in racial/ethnic minority groups, reported biased treatment due to their weight and were reluctant to question their HCP.

One Asian patient described the bias in treatment they received from their HCP:

“He kind of shamed me a little bit. He was checking me and then I took my shirt off and he said something like ‘Well see, look at you.’”

A Black/African American patient also described their experience with HCP weight bias and societal weight bias:

“All my problems, it is weight. When I was in the service, I ran like a deer. I felt like I was 20 years old. I feel really great. It’s just every time I would put on weight, it kills my spirit, you know, like depressed me. I think I can do it. I need to do better...so I needed to just get the weight together.”

“They scolded me. I didn’t like to be scolded, but I knew it was like a tough love type thing. I took it very well at times, but at times I didn’t...”

“It’s always the first thing somebody says about you. If you’re fat they attack you...that is always the number one judgmental insult that everyone throws your way.”

Healthcare professionals themselves admitted that conversations around weight can be uncomfortable and recognized that these conversations should focus on weight management as a medical issue rather than a social one.

One cardiologist approaches obesity as a medical issue with their patients:

“It’s not a judgment call; it’s a medical diagnosis. Much like your smoking is a medical problem, much like diabetes is a medical problem...We’re trying to get beyond the stigma of saying this to you. You are a weak and bad person versus you have a medical problem. We need to deal with it, but it’s a hard conversation to tell somebody...”

Another cardiologist aims to establish a solid relationship with their patients when discussing weight:

“I think a lot of people feel like they’ve been judged their whole life. And so you know, you kind of just want to say, hey, you know, is it okay if we talk about, you know your weight? It is impacting your health? And that’s the reason we bring it up. So just trying to be nice and establish that relationship...If they take offense to it, then you’re not gonna build that therapeutic relationship.”

**Care Experience after an ASCVD Event.** Post-ASCVD event, most (67%) patients reported that care was led by cardiologists rather than PCPs. Their discharge plans usually included general lifestyle recommendations but rarely included a specific plan. Healthcare professionals admitted to not providing specific lifestyle change recommendations due to a lack of time, potential lack of compliance, and other social issues.

For many patients, but especially those whose eating patterns are ingrained in their cultural identity, the

recommendation of a “healthy diet” was not understood and was hard to accomplish, with little to no support from HCPs.

A LatinX caregiver described the difficulties in getting their loved one to eat healthier. Regarding care prior to the ASCVD event, the caregiver stated:

“They should have spoken to her more seriously...like that you need to lose weight. You’re at high risk of having a heart attack. You’re an ex-smoker. You’re overweight. You have [high] blood pressure. You have diabetes. But he was more like ‘You know, you need to take care of what you’re eating and get away from the bread, and you know, the fried food, and things like that.’ He wasn’t that aggressive.”

After their loved one’s ASCVD event, the caregiver stated:

“You know, she wasn’t there [hospital] that long, only 3 days before coming home. She wanted to come home because they had her on a cardiac diet...‘Nothing had flavor’ she would say. ‘This food is disgusting. I want to go home.’ She wanted to go home. She didn’t like it there. She was a mess.”

“Well, I’m her caregiver completely now 24/7. I make sure she takes her medications. That she bathes and she’s clean, and you know, take her to doctor’s appointments. Do all her finances, make sure that she is taken care of correctly.”

The caregiver further elaborated that her loved one has strong emotional connections to the food of her culture, such as her Cuban coffee and bread.

“She likes very rich foods and a lot of Cuban food, rice and beans and pork, and she was doing that...and when she came to live with me, we lived a little differently than she’s accustomed to. She would insist on having her rice and beans almost every day and just to please her, I would do it.”

She compared the dynamic of enforcing rules to that of a parent dealing with a toddler, shedding light on the emotional struggles that often accompany being a caregiver.

“She’s a person that likes bread, and it was hard to deal with taking it away because she was used to it. She got angry, she still does, because now I got her on a strict diet...She wants what she wants when she wants it, and I say no like she’s a child. I have to say no, you can’t have this, and sometimes I give in. Like maybe on a Sunday we’ll go to the bakery...and I’ll give her you know, a small piece of bread with 2 or 3 pestalitos...and she is extremely happy, because she can’t live like that constantly every day.”

**Treatment Interventions after an ASCVD Event.** Healthcare professionals confirmed that they had to make difficult choices when choosing therapies for their patients with ASCVD and obesity.

One cardiologist describes the choices that they have to make weighing the cost of drugs versus providing the best treatment option:

“...a lot of the newer medications are not generic. And so, your kind of stuck in some cases where you’re either not providing the best therapy or you’re providing somebody with a therapy that is very expensive for them which they may or may not continue to take.”

Many patients, especially those in ethnic/racial minority groups and lower socioeconomic groups, felt that their care and treatment were inherently biased, leading to a lack of trust in their HCP.

After an ASCVD event, a Black/African American participant described feelings of racial bias during their treatment:

“Some of it was about insurance. It’s kind of the feeling ‘I’m not going to tell you about this, because you can’t afford it anyway.’”

“I think that some people have preconceived ideas about how much they can or can’t trust doctors.”

Another Black/African American participant described being initially profiled as a drug-seeker in the emergency department, leading to a delay in care for his actual ASCVD event, a stroke:

“So the first round of questions I got were things like ‘Oh, are you on any drugs?’ And I’m wearing a button up shirt and a tie and some nice slacks and nice shoes, and they’re asking me if I’m a drug user...I was having difficulty speaking. I’m also not able to move half of my body, and that just was not making it any better.”

“I believe there is a strong possibility that the physician who immediately looked at me and made the determination that I had used drugs and was not having a stroke, may have considered my race when determining whether or not I had a stroke.”

The participant believes that this treatment was due to his race, as none of the attending HCPs were Black/African American and wonders that, if he had received treatment earlier, would he be struggling as much with recovery. The patient is now on disability, unable to work, and suffers from memory, speech, and motor function issues.

**Social Determinants of Health/health Inequities after an ASCVD Event.** A healthy diet and lifestyle were reported to be economically unattainable in certain racial/ethnic minority groups or those lower on the socioeconomic scale. For example, 76% of Black/African American patients stated that having an ASCVD event had a moderate or substantial impact on their finances compared to 39% of patients who

were not Black/African American. Eating healthier was the most frequently reported (62%) contributor to these financial impacts.

A Black/African American patient described some of the barriers they faced when tasked with eating healthier after an ASCVD event:

“I don’t think that doctors take into account when they tell you need to eat healthy, how financially restrictive that can be. You know they kind of say it with a minimal concern and expect you to do it. But that comes from buying fresh fruits and vegetables and fish, and all of that stuff is incredibly expensive, and time consuming because that stuff doesn’t last forever.”

A Black/African American patient who was considered morbidly obese and had struggled with weight for the majority of their life also described the challenges they faced when trying to lead a healthier lifestyle. After an ASCVD event, the patient’s doctor recommended a dietitian who prescribed expensive protein drinks and meal plans not covered by insurance. While effective, paying for them was not sustainable and the dietitian did not offer any alternatives.

“The protein drinks [recommended by nutritionist] are really expensive, I really want to keep the protein up... That protein was like anywhere from \$60 to \$80 for a barrel of protein... I totally would love to do it. But \$250 a month. That’s a lot.”

The patient did not know how to cook, which made it virtually impossible to prepare affordable, healthy food, and the patient was provided no support from their physician or dietitian on how to overcome this challenge.

In addition to barriers to a healthier lifestyle, many participants noted a lack of support around navigating other aspects of their new life after an ASCVD event.

One Black/African American participant described feelings of helplessness after their event:

“I wish when I was at my lowest point, I had another human being who could have helped me through it and help me navigate it just for several months. I was just in a fog, and it would have been really extremely helpful just to have somebody who could help me navigate it again. I have friends, you know, come by bringing me food and getting me out of the house and whatever, but they’re not going through and saying like ‘Hey, did you fill out this disability form? Hey, did you contact this person? Hey, have you checked with the State to see what they can do?’.”

Another Black/African American participant expressed the lack of support in terms of finding resources to aid in their post-ASCVD lifestyle:

“I think that a platform for patients to be able to share their experiences and information is important. And I’m pretty sure they got self-help groups or whatever. But that shouldn’t be something you should go looking for.”

### *Quantitative (Cardiology HCPs Only)*

**Participants.** Most cardiology HCPs (83%) were cardiology physicians (Table 1) (75% noninterventional, 25% interventional). Half (50%) practiced in suburban settings, 42% in urban settings, and 8% in rural settings.

Cardiology HCPs estimated that 51% of their patients had excess weight and 43% had BMI >30 kg/m<sup>2</sup>; 63% of their patients had ≥1 ASCVD event. Approximately 36% of their patients who had not had an ASCVD event were at high risk of having one. Half (50%) reported that their patients were more likely to be racial/ethnic minorities than other HCPs.

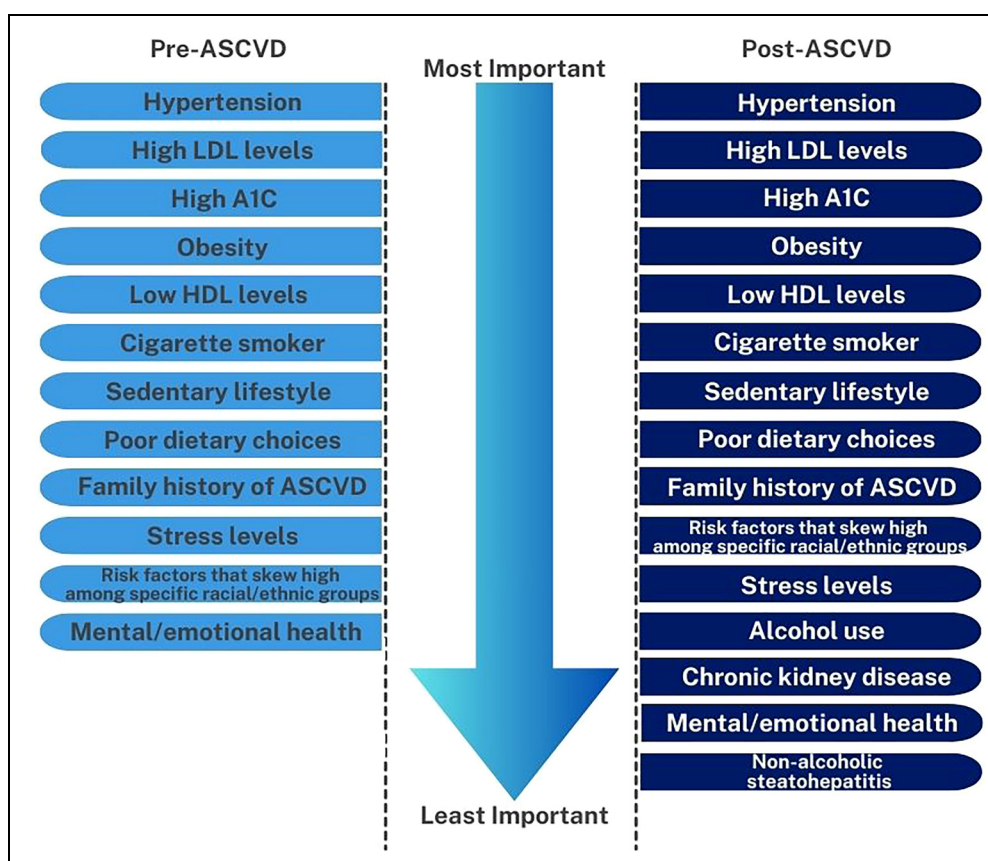
**Pre-ASCVD Event.** Cardiology HCPs reported hyperlipidemia (77%), hypertension (75%), and BMI >30 kg/m<sup>2</sup> (51%) as the most frequently observed risk factors pre-ASCVD. They ranked hypertension, elevated low-density lipoprotein (LDL) levels, and high A1C as the most important parameters to monitor before an event, while obesity was ranked as fourth most important (Figure 2).

Cardiology HCPs rarely diagnose obesity and most patients, even those with diagnosed risk factors, were not referred to a cardiologist until after an ASCVD event. Most (55%) cardiology HCPs believe that other HCPs should be handling the topic of weight and cited a lack of time as a reason for not discussing it in detail with their patients. Overall, 96% of cardiology HCPs believe patients’ obesity developed due to lifestyle choices; 92% recommended diet and exercise, and 90% recommended diet changes only for ASCVD prevention, but recommendations were often vague and without specific goals.

Only 12% of cardiologists recommended medication for chronic weight management in patients with obesity and ASCVD. They reported being more likely to refer patients for bariatric surgery than to prescribe weight management medication due to insurance coverage. Medications to aid in chronic weight management are assumed to be generally expensive and may have high copays and some HCPs in this study acknowledged that newer weight management treatments were not prescribed to patients in racial minority groups or lower socioeconomic groups due to unconscious bias. Moreover, 61% of cardiology HCPs states a history of medication noncompliance as a primary treatment constraint in patients with obesity. Healthcare professionals admitted to bias when considering noncompliance to both medications and lifestyle changes and felt that patients in racial/ethnic minority groups exhibited greater noncompliance.

**Post-ASCVD Event.** Most (86%) cardiology HCPs were responsible for secondary event prevention in patients with





**Figure 2.** Risk factors cardiology healthcare professionals consider most important to monitor pre- and post-atherosclerotic cardiovascular disease (ASCVD) event in patients with obesity/cardiology healthcare professionals (HCPs) were asked to rank how important it is to monitor specific risk factors using a scale of 1 (most important) to 12 (least important) in their patients who have not yet had an ASCVD event but who are at high risk for an event and a scale of 1 (most important) to 15 (least important) in their patients who have had an ASCVD event.

obesity and ASCVD. Cardiology HCPs still considered hypertension, high LDL, and high A1C to be the most important parameters to monitor postevent, with obesity ranking as fourth most important (Figure 2). Despite secondary prevention being mostly led by cardiology HCPs, 53% of cardiologists believed that PCPs should lead the management of lifestyle modifications, and 55% stated that other HCPs should lead the management of obesity, even though it is a risk factor for future events.

The most frequently prescribed medications postevent were statins and daily aspirin, most often in combination with a standard Mediterranean diet and exercise. However, HCPs reported that patients most frequently cited stress eating (91%), lack of time (85%), and culturally related diet practices (78%) as reasons for not adhering to diet and exercise plans post-event.

**Hypothetical Patient Profiles.** When presented with hypothetical profiles for patients with BMI  $\geq 27$  mg/kg<sup>2</sup> that differed only in the race of the patient, treatment approaches were similar both pre- and post-ASCVD event in both racial groups, despite the fact that Black/African American patients with obesity are

known to have a higher risk of ASCVD than White patients.<sup>7,17</sup> In both racial groups, pre- and post-ASCVD recommendations focused on generalized diet modifications and exercise. Only 18% to 26% of cardiology HCPs reported that they would treat/manage obesity in these patients.

Some cardiologists became noticeably uncomfortable when conversations turned to the topics of race and patient outcomes. After the hypothetical patient profile exercise, most cardiology HCPs reiterated the stance that treatment should not differ based on the race or ethnicity of the patient.

“The treatment wouldn’t differ for patients who are from different race or ethnicity. The drugs that we prescribe for the patients differ based on their condition and not on their ethnicity.”

“They are all the same. The treatment approach will be the same for each patient. There can be differences between the type of treatment and medications based on particular patients’ risk factors and overall health condition.”

“No, I do not have different approaches based on the race and the ethnicity. My approach depends only upon the risk factors



of the individual. But sometimes there can be a difference based on the insurances that they have. What I do is I take into account what their third-party payer mix is, which does relate to racial profile. I take into account what their lifestyle might be, which is, again, possibly racially profiling them and what their third-party payer arrangements are. But other than that, the only tools that I have are to treat blood pressure aggressively, to treat cholesterol aggressively, to tell people to stop smoking, and it transcends whatever their race is, it doesn't matter what their race is, so the distribution may be different, but the treatment plan remains the same."

## Discussion

This study examined the lived experiences of patients with ASCVD and obesity, their caregivers, and the different HCPs that treat these patients, with a focus on the racial/ethnic backgrounds of patients, to understand the role of social determinants of health in the treatment of patients with ASCVD and obesity.

The study identified a sense of inertia in which HCPs did not proactively provide guidance or a sense of urgency around weight management, even though obesity is a confirmed risk factor for having an ASCVD event. Cardiology HCPs were aware of obesity as a risk factor for ASCVD, ranking obesity as the fourth most important monitoring parameter in patients pre- and post-ASCVD events. However, they often treat obesity as a risk factor for other risk factors or diseases. Thus, it is important that HCPs aid patients in making the connection between ASCVD and obesity so that they can make informed decisions regarding their care, particularly with patients who may not prioritize their own health due to a lack of insurance, cost of care, and/or a lack of understanding of their current risk factors.

Most patients reported that their PCP was managing their care prior to an ASCVD event, highlighting the important role that PCPs can play in the prevention of both obesity and ASCVD. Despite current recommendations for PCPs to counsel patients on weight management options,<sup>18</sup> patients in the current study reported not receiving adequate information on the role of obesity in the development of ASCVD. Current guidelines recommend that weight-related complications should be assessed to establish treatment goals and strategies, with lifestyle changes at the foundation of treatment.<sup>19,20</sup> However, most patients in the current study reported receiving only general guidance for lifestyle changes without any specific goal-setting or support.

To prevent the progression of obesity or to lower the burden of weight-related complications, the American College of Cardiology (ACC)/American Heart Association (AHA)/The Obesity Society (TOS) guidelines, and the American Association of Clinical Endocrinologists (AACE)/American College of Endocrinology (ACE) guidelines both recommend weight loss of at least 5% of body weight and the AACE/ACE guidelines recommend weight

loss of at least 10% body weight for many complication-specific targets.<sup>19,20</sup> American Association of Clinical Endocrinologists/ACE recommendations target at least 2.5% weight loss within 1 month of treatment initiation and ACC/AHA/TOS guidelines recommend 5% to 10% weight loss within 6 months of initiating treatment.

Although these guidelines provide direction around the goals for weight management, PCPs still face several challenges in providing weight management treatment options to their patients, including a lack of time, knowledge, and training around specific weight management plans and medications for individual patients, as well as high costs for certain antiobesity medications (AOMs).<sup>21–23</sup> This often leads to general lifestyle recommendations without the benefit of specific goal setting. In a study of 107 PCPs, few reported using evidence-based guidelines when determining a treatment plan despite most agreeing that obesity treatment should be a priority.<sup>24</sup> Recommendations from PCPs to improve obesity treatment included education on local obesity treatment resources, evidence-based dietary counseling strategies, and self-help resources for patients as well as enhanced team-based care with support from peers trained in obesity medicine and dietitians.

Given the high rates of obesity in the United States, arming patients and PCPs with the appropriate tools and information around weight management prior to an ASCVD event can have implications both at the individual patient level and at the population level. Currently, the Obesity Medicine Association recommends AOMs as one of the 4 nonsurgical pillars of obesity management, in addition to appropriate nutrition, physical activity, and healthy behaviors.<sup>25</sup> Antiobesity medications can be utilized in patients with ASCVD and obesity in conjunction with lifestyle changes when appropriate. However, in current practice, AOMs are generally underprescribed,<sup>26</sup> with <2% of patients with obesity in the United States being treated with AOMs.<sup>27</sup> The underutilization of AOMs may stem, in part, from the side effects of these drugs, the most common of which can include gastrointestinal symptoms (constipation, nausea, vomiting, diarrhea, bloating, abdominal pain), headache, and dizziness.<sup>28</sup> Additional barriers to AOM prescription may include lack of knowledge around prescribing these drugs, lack of insurance coverage, and perceptions of the prescriber around whether a patient is able to afford an AOM. While recently approved AOMs, such as semaglutide and tirzepatide, can lead to weight reductions of approximately 11% to 12%,<sup>28</sup> at the time of this survey the long-term safety of these drugs on CV morbidity and mortality had not been established,<sup>29</sup> leading to uncertainty for cardiologists on how and when to prescribe these medications. Since the completion of the survey, the labeled indication for semaglutide 2.4 mg now includes a reduction of the risk of major adverse CV events in adults with CVD and obesity or overweight.<sup>30</sup> While tirzepatide does not currently have a CV indication, it's CV benefit is being evaluated in clinical trials.

The use of AOMs is not only associated with weight loss but also may reduce blood sugar, blood pressure, LDL, severity of sleep apnea, and improve CV outcomes, leading to improved overall health.<sup>31</sup> A recent simulation study suggests that if all patients who were eligible for AOMs began using them, there would be an approximate 750 billion USD savings over the next 75 years.<sup>32</sup> Taking a broad, public-health approach to address weight management early, including recommending both lifestyle changes and AOMs when appropriate, may result in not only a healthier population but also financial gains and a shift in public thinking and reduction in bias around how obesity is diagnosed and treated.

While PCPs tend to shoulder the burden of lifestyle and obesity management in patients pre-ASCVD event, cardiologists should have sufficient training to support their patients post-ASCVD event. A societal bias around weight, with the prevailing view that obesity is a choice and is reversible with improved diet and exercise, extends into the healthcare setting,<sup>11,33</sup> including this study in which most cardiologists believed that obesity was the result of poor lifestyle choices. Thus, many cardiology HCPs find it difficult to broach the subject of weight with sensitivity, particularly in patients in racial/ethnic minority groups.

Although cardiologists frequently treated traditional risk factors with medication, they infrequently prescribed AOMs, aligning with global findings on chronic weight management in patients with obesity and heart failure or hypertension.<sup>11</sup> Instead, most provided general lifestyle recommendations to promote weight loss. Patients with obesity have often had a long-term struggle with their weight prior to discussing weight with their HCP, and many have tried and failed to manage their weight using diet and exercise alone,<sup>19,34–36</sup> suggesting that additional measures are needed. However, both HCPs and patients are reluctant to talk about weight for many reasons, including a lack of time, the stigma surrounding overweight and obesity, HCP bias, and a general lack of familiarity with AOMs.<sup>27</sup>

Moreover, patients described certain behaviors as “culturally ingrained” and very difficult to change if they do not have specific support. Patients in rural and urban settings may be in a “food desert,” and the cost of healthier food is a barrier to many patients, but tends to disproportionately affect racial/ethnic minority groups. One of the most important aspects of the successful treatment of patients with ASCVD and obesity, especially those who face cultural, racial, or socioeconomic barriers to weight management, is a sustained partnership between the patient and a multidisciplinary clinical care team to ensure successful treatment and to prevent future comorbid events.<sup>19,20</sup> Shared decision-making involving the exchange of information between HCPs, patients, and caregivers should be embraced, including enhanced HCP–patient communication training and utilization of available tools (such as patient decision aids) that are written at an appropriate health literacy level and in a

language that the patient can understand. This type of shared decision-making has shown to improve CV outcomes and drive health equity.<sup>37</sup>

There are several new treatments for chronic weight management in obesity, but many cardiology HCPs reported not prescribing these medications due to lack of a labeled CV indication even though they are aware of the data linking obesity to specific risk factors for ASCVD. Cardiology HCPs also admitted to implicit bias in judging which of their patients may be able to afford medication and which may have lower treatment compliance (often patients in ethnic/racial minority groups).<sup>38,39</sup> Thus, cardiologists will often refer patients for bariatric surgery procedures or prescribe older, less expensive medications before prescribing newer AOMs.

A one-size-fits-all approach from cardiology HCPs was highlighted by the similarity in treatment recommendations across racial groups in the hypothetical patient profile exercise, even though HCPs are aware that Black/African American patients have a higher risk and frequency of ASCVD and may also have more aggressive disease when compared to other racial groups.<sup>17</sup> The lack of consideration of race and other social determinants of health in the results of this exercise may actually diminish positive health outcomes in certain groups of patients. However, most cardiology HCPs also indicated that they would welcome additional continuing medical education training around cultural sensitivity in their patients with obesity and ASCVD.

Overall, this study provides valuable insights into the patient, caregiver, and HCP perspectives on the treatment of patients with ASDVD and obesity and highlights treatment gaps in the field. These gaps may be addressed in the future in several ways. First, patients should understand where to find resources and information on treatment options for weight management and should be encouraged to educate themselves on currently available AOMs, including their benefits and risks.<sup>27</sup> Similarly, HCPs should be provided with additional and continuing training on the use of AOMs and general approaches to talking about weight management with their patients. This applies to both PCPs, who can provide guidance on weight management prior to an ASCVD event, and cardiology HCPs who treat these patients after an ASCVD event. Healthcare professionals should take the time to discuss detailed medical history, comorbidities, and previous strategies used for weight management, whether or not they were successful, with their patients without bias regarding their weight, racial background, or socioeconomic status. Treatment goals based on current guidelines and evidence-based recommendations should be set by HCPs in addition to utilizing all available resources at their institution, including nutritionists, endocrinologists, other specialists, and behavioral therapists, when appropriate.<sup>40</sup> Healthcare professionals should also ensure that AOMs are prescribed consistently for their patients, regardless of inherent biases around which patients may or may

not be able to afford these medications, and should voice opinions on the current health policies to ensure equitable accessibility of these medications.

**Limitations.** Limitations of this study included the lack of Native American patients and patients in other racial minority groups that were either not enrolled or were not specified as a choice for race. The gender, age, race/ethnicity of HCPs, and gender of patients were also not collected in this study, making it difficult to draw conclusions on patient/HCP interactions based on these characteristics. This study did not examine differences in treatment experiences and outcomes in patients from urban versus rural settings, where there may be stark differences in the availability of healthy foods, transportation options, and other factors that may affect their care. The role of mental and emotional health in patients with ASCVD and obesity was also not explored in depth in this study. Finally, this study did not utilize formal coding, limiting the extent to which the qualitative data could be interpreted.

## Conclusions

The results of this study highlight the gap in care that patients with ASCVD and obesity experience, particularly those in ethnic/racial minority groups and low socioeconomic groups. These findings serve as a call to action for PCPs and cardiology HCPs to provide additional and specific support and guidance on the management of obesity in their patients that include both lifestyle changes and the use of AOMs, where appropriate and based on current clinical practice guidelines for the treatment of obesity, both before and after an ASCVD event. Moreover, there is a need for additional training for HCPs focused on discussing weight openly and without bias with their patients to enable patients to be more involved in healthcare decision-making. Together, these changes can lead to improved health outcomes in patients with ASCVD and obesity and higher satisfaction with their care.

## Key Points

- There is little communication between patients and HCPs regarding the link between obesity and atherosclerotic cardiovascular disease (ASCVD).
- Cardiology HCPs acknowledge obesity as a risk factor for ASCVD, but few prescribe antiobesity medications for weight management.
- There is gap in care that patients with ASCVD and obesity experience, especially those in ethnic/racial minority groups and low socioeconomic groups.
- Cardiology HCPs should take on a larger role in the management of obesity in their patients, before and after an ASCVD event.

## Authors' Note

**Ethical Considerations:** Ethical approval was obtained from an Institutional Review Board (WCG Clinical Services, Puyallup, WA) prior to administration of any study material. **Consent to Participate:** Written electronic informed consent was obtained from patients, caregivers, and HCPs for their anonymized information to be published in this article. **Human and Animal Rights:** All procedures in this study were conducted in accordance with WCG Clinical Services (Puyallup, WA)-approved protocols. **Data Availability Statement:** The data that support the findings of this study are available from I<sup>3</sup> Strategy Partners, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are, however, available from the authors upon reasonable request and with permission from I<sup>3</sup> Strategy Partners.

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## Author Contributions

Conceptualization, Methodology, and Investigation: PT, MGK, DM, CR, AT, and LB; Writing—original draft: PT, MGK, DM, CR, AT, LB; Writing—critical review and editing: PT, MGK, DM, CR, AT, and LB; Resources: PT, MGK, and LB; Visualization: PT, MGK, DM, CR, AT, and LB.

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## Supplemental Material

Supplemental material for this article is available online.

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