Reaching women with obesity to support weight loss before pregnancy: feasibility and qualitative assessment

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Abstract

Background: We sought to assess attitudes toward weight and barriers to recruitment of women with obesity for a potential preconception weight-loss/lifestyle modification intervention.

Methods: We performed a qualitative study involving women of reproductive age (18–45) with obesity (body mass index ⩾30 kg/m^2) who were considering a pregnancy in the next 2 years. We evaluated four methods of recruitment. We used previously validated survey questions to evaluate risk perceptions. In a subset, we used semistructured interviews for topics that required more in-depth information: domains included attitudes toward weight-related issues, intentions, and barriers to engagement in a structured weight-loss program. We performed qualitative analyses of interview transcripts using immersion crystallization.

Results: We recruited the majority (80/82, 98%) of women using e-recruitment strategies. Eighty-one women filled out the survey and 39 completed an interview. Three-quarters of the women surveyed (60 of 81) reported attempts to lose weight in the past year and 77% (68/81) of survey respondents cited jobs and work schedules as a barrier to adopting healthy habits. More than 87% (34 of 39) of women interviewed reported willingness to participate in a structured weight-loss program prior to getting pregnant. Of these, 74% (25 of 34) stated they would consider delaying their attempts at a future pregnancy in order to participate in such a program.

Conclusions: E-recruitment is a promising strategy for recruitment for preconception weight-loss and lifestyle modification program. Most women state a willingness to delay pregnancy attempts to participate in a weight-loss program.

Keywords: preconception care, obesity, weight loss, recruitment, feasibility

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Introduction

Obesity affects almost a third of women of reproductive age in the United States.[1] Prepregnancy obesity increases risk for adverse health outcomes in mothers and offspring.[2–13] Experts recommend that women with obesity should lose weight before pregnancy, but there is limited high-quality evidence on the risks and benefits of doing so.[14–17] A recent review and meta-analysis of interventions to reduce or prevent obesity in this population sighted a severe lack of well-designed high-quality studies on weight management during preconception.[18] Furthermore, the few published studies that have attempted to offer lifestyle or weight-loss interventions to women in a preconception framework have faced major challenges in recruiting women.[19,20] For example, Gokee-LaRose and colleagues[20] reported that in three National Institutes of Health (NIH)-supported weight-loss studies, young adults aged 18–35 years represented only 7% of the recruited population. Another two studies targeting young women reported difficulties with recruitment and were unable to reach conclusions on the impact

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of the lifestyle/weight-loss interventions they were investigating because of their small sample size.[21,22]

Given these prior reports, we first aimed to assess the feasibility of recruitment of women with obesity who may be planning a pregnancy in the next 2 years. Secondarily, we invited women to complete a survey and a phone interview to evaluate their attitudes and perceptions toward weight-related issues, intentions, and barriers to taking part in a potential preconception weight-loss intervention to better inform the development of such interventions in the future.

Methods

Population

We included women between the ages of 18 and 45 years, with a body mass index (BMI) $\geqslant 30\,k/m^2$, who reported a plan to become pregnant within the next 2 years and who were English speakers. We excluded women with prior bariatric surgery. This study was approved by the Harvard Pilgrim Health Care Institutional Review Board (IRB reference no: 1105007). We provided participants with a written statement about the research, but due to the nature of data collection, the IRB determined that the study met the regulatory requirements necessary to waive documentation of informed consent.

Recruitment

We explored four methods of recruitment between January and July of 2018. We set a recruitment goal to enroll 25 women over the course of 12 months. We evaluated classic recruitment methods of posting flyers in the waiting room, hallways, and restrooms of the Massachusetts General Hospital (MGH) Women's Health Associates (WHA) and Obstetrics and Gynecology clinics. A member of the study staff was present in the waiting rooms at both clinics to answer any questions and to process enrollment during 10 half-day periods over the course of 2 months. All women attending an appointment for physical exams or annual visits when our staff was on site were handed an informational flyer by the front-desk staff on arrival. Second, we placed an ad in the Metro, a free daily newspaper distributed to users of public transportation in Boston. The ad was included weekly in both the Tuesday Science and Thursday Weekend Edition of the paper for the month of March 2018.

We also used two online or "e-recruitment" strategies. One was an existing service called Research Ally (Rally) that helps researchers at Partners HealthCare (health system that includes MGH) create postings about their studies and facilitate recruitment of participants. Our ad included eligibility criteria and a short study description. Participants indicated their interest by entering contact information and we responded to each participant's inquiry. Participants were sent a maximum of three reminders to complete study tasks (a survey and a semistructured interview). Finally, we worked with Ovia Health, a Boston-based health solution company that offers a downloadable mobile device App available across the United States, targeted at women trying to conceive. We posted an advertisement to Ovia users whose profile stated "not trying yet" under a question about time trying to conceive. Participants could enter their contact information and calculate their BMI to determine eligibility and follow a link to complete the survey. Again, we responded to each participant's enrollment inquiry to coordinate a time to speak by phone to complete the semistructured interview.

Patient and public involvement

Patients or members of the public were not involved in the design or conduct of the study; however, one of the aims of this study was to collect information about perceived risk, barriers, and facilitators toward weight loss in this specific population to design a patient-centered intervention in the future.

Measures

We used a combination of survey and semistructured interviews to examine participants' attitudes and experiences regarding weight loss and to discover essential components necessary to success of a future weight-loss program. We selected 33 questions from previously validated survey instruments to capture demographic information, domains concerning relationship status, prior obstetrical history, pregnancy intentions, health knowledge, risk perception, and behavior regarding weight loss.[4,23] We asked participants to estimate their personal risk of chronic diseases and pregnancy outcomes adapting these

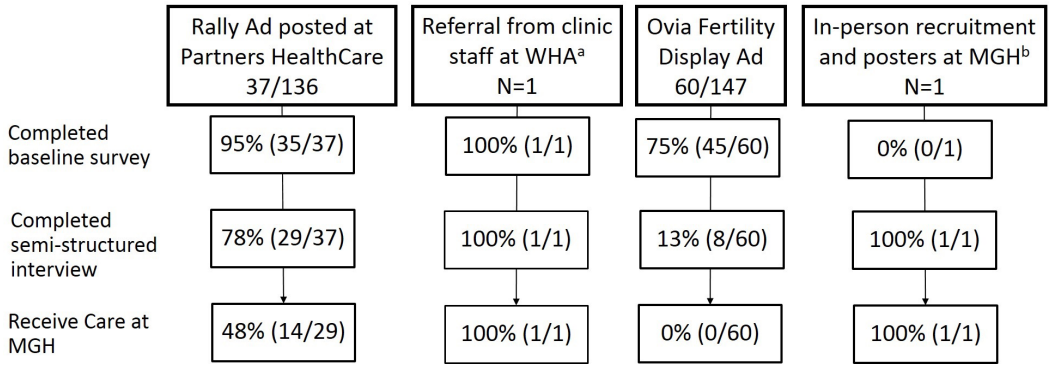

Figure 1. Enrollment by recruitment pathway.
[a]WHA—Women's Health Associates Clinic.
[b]MGH—Massachusetts General Hospital.

questions from a survey to assess concerns and perceived health risk found using the PhenX Toolkit.[23]

A research assistant (RA) trained in qualitative research methods led semistructured phone interviews with participants who provided contact information. Our domains included past experiences with weight loss, structured weight-loss program formats, and preferred methods of engagement. Interviews were recorded and transcribed before the recording was destroyed. We provided an electronic $10 Amazon gift card for completion of the online survey and a $20 Amazon gift card for participating in the semistructured interview.

Data analysis

We performed all descriptive analyses using SAS software, version 9.4 (SAS Institute Inc, Cary, NC). We used median and interquartile range (IQR) for continuous data and frequency and percentages for categorical data. Research staff trained in qualitative methods entered interview transcripts into QDA Miner, a qualitative analysis software, and coded using a combination of value and in vivo coding. Codes were revised three times by a single investigator to best align with the study goals to appropriately describe the experiences of participants. We used the immersion-crystallization method to determine the emergent trends and recurrent themes used by most participants.[24] Throughout the process, the research team met at each step to establish consensus on the consistency and accuracy of coding and analysis.

Results

Recruitment

Our classic recruitment approaches of posting flyers in relevant clinics and in the science edition of the Metro newspaper did not result in many enrollment inquiries. Our study staff made repeated visits to the clinic but were only approached by one participant interested in enrolling. We did not receive any contacts from women based on the ad we posted in the Metro newspaper.

Most participants in this study were recruited using e-recruitment methods (Figure 1). The Ovia advertisement was active for 70 h in the spring of 2018; there were 257 clicks to a hyperlink where participants could complete a screening survey to determine their eligibility: we received 147 completed screening surveys, of whom 60 women were found eligible to participate (others excluded based on self-reported height and weight leading to calculated BMI < 30). Out of the 60 eligible women, we received completed surveys from 45 (75%) women, and we were able to complete semistructured interviews with 8 (13%) of the survey respondents. It took many calls and/or emails to set up appropriate times to talk with participants recruited through the app.

The Partners HealthCare web-based ad featured the study for a period of 3 weeks in the spring of 2018. During this time, 136 potential participants entered their contact information to allow screening surveys to be administered. We identified 37 eligible participants, two were not interested in

participating and we received completed surveys from 35 (95%) women. Of these, we reached 29 (78%) participants to complete the semistructured interview. Respondents to the web-based ad were more likely list two valid methods of contact and to respond to our first attempt to reach them.

A total of 81 women filled out the baseline survey and 39 completed the semistructured interview. E-recruitment strategies accounted for 99% of the completed surveys (80/81) and 95% (37 of 39) of the completed semistructured interviews. One subject (recruited at clinical site) participated in the interview portion alone but failed to finish the survey.

Participant characteristics

Among the 81 survey respondents, median age was 29 years (IQR: 27–34), median BMI 35 kg/m^2 (IQR: 32–42) and they reported a wide range of income (Table 1). Women reported a median age at menarche of 12 (IQR: 11–13) years old, and a substantial number (44%, 36 of 81) reported irregular menstruation. Most participants were in a stable relationship and 40% (33 of 81) reported that they were not actively trying to conceive at the time of their enrollment (Table 1).

Surveys

All participants described themselves as at least slightly overweight and nearly 50% (40 of 81) described themselves as very overweight. Women identified their weight as contributing to added risk of developing cardiovascular disease and diabetes later in life, and to a somewhat lesser degree to developing pre-eclampsia or gestational diabetes during pregnancy (Figure 2). In contrast, few women perceived their weight as being a risk for a need to undergo a c-section or of giving birth to a large baby (Figure 2).

Almost three-quarters of women (60 of 81) reported having attempted to lose weight in the past 12 months, but very few respondents paid for formal programs or consulted with a dietician during that time. About 90% (73 of 81) of participants reported that they were currently trying to lose weight on the survey, but we did not assess whether these weight-loss attempts

Table 1. Characteristics of participants at enrollment.

	N (%) or median (IQR)	
	N = 81	
Age, years	29	(27–34)
Body mass index (BMI), kg/m^2	35	(32–42)
Race		
White or Caucasian	54	(66.7%)
Black or African American	10	(12.3%)
Asian	5	(6.2%)
Other	3	(3.7%)
Mixed	9	(11.1%)
Ethnicity: Hispanic	8	(9.9%)
Household income		
20,000 or less	5	(6.1%)
20,001–40,000	21	(25.9%)
40,001–70,000	24	(29.6%)
70,001–100,000	13	(16.0%)
More than 100,000	15	(18.5%)
Don't know	3	(3.7%)
Education		
Some high school	2	(2.5%)
High school graduate	8	(9.9%)
Some college	23	(28.4%)
College graduate	29	(35.8%)
Graduate school	19	(23.5%)
Any health insurance[a]	75	(93.8%)
Age of menarche, years	12	(11–13)
Irregular menstrual cycle	36	(44.4%)
Number of prior pregnancies[a]		
No prior pregnancies	44	(55.6%)
1 pregnancy	13	(16.0%)

(Continued)

Table 1. (Continued)

	N (%) or median (IQR)	
	N = 81	
2+ pregnancies	23	(28.4%)
In a stable relationship	76	(93.0%)
Uses contraception. . .[a]		
Regularly	24	(30.0%)
Sometimes or infrequently	10	(12.5%)
Not at all	46	(57.5%)
Currently, trying to conceive		
Trying	22	(27.2%)
Not trying	33	(40.7%)
Did not answer	26	(32.1%)
Median months spent trying to conceive[b]	6.0	(2.0–12.0)
Currently pregnant[c]		
No	70	(88.6%)
Do not know	9	(11.4%)

[a]N = 80.
[b]N = 22.
[c]N = 79.

were motivated by a desire to conceive or fertility concerns (Table 2). In addition, 77% (68/81) of survey respondents cited jobs and work schedules as a barrier to losing weight and adopt healthy habits (Figure 3).

Qualitative interviews

Nearly all participants interviewed (38 of 39) discussed the need for accountability in successful weight loss (Table 3). Participants described accountability as multifaceted process including the use of: one on one meetings, mobile apps, texting, online tools, and support groups. Participants also discussed their lack of motivation in concert with other challenges to maintaining a weight-loss regimen. They also emphasized a desire to easily incorporate new behaviors into their daily routine, and frequently indicated that prior experiences during structured weight-loss programs were too restrictive. Interviewees identified several helpful features of mobile apps: including facilitating accountability, logging food and exercise, and providing reminders to ensure regular engagement with a weight-loss program.

More than 87% (34 of 39) of women interviewed reported willingness to participate in a structured weight-loss program prior to getting pregnant. Of these, 74% (25 of 34) stated they would consider delaying their attempts at a future pregnancy to allow time to complete a weight-loss program before conception. They reported being willing to delay pregnancy attempts for a range of 3 months to 5 years (median: 12 months) with four out of every five women indicating that they would be willing to delay pregnancy attempts at least 6 months.

Discussion

We found that we can recruit young women with a BMI $> 30\,kg/m^2$ who are considering a pregnancy and that using e-recruitment had a substantially higher success rate and was more efficient than traditional methods. Based on our experience, the prompt responses on the clinical web-based ad and within the fertility app may point to increasing accessibility or preference of mobile phone platforms.[21,25,26] We faced similar challenges in recruitment as have been reported by other studies using "classic" recruitment strategies.[19,20,27] Griffin and colleagues[19] discussed their difficulties recruiting overweight and obese young women to a yearlong weight-loss trial, receiving about two recruitments per month over the 24-month recruitment window (they enrolled 50 women, and had aimed for 70). Gokee-LaRose and colleagues[20] reported that in three NIH-supported weight-loss studies, young adults aged 18–35 years represented only 7% of the recruited population. Hutchesson and colleagues[27] identified eight studies of lifestyle interventions targeting young women: only one study aimed at weight loss in women with obesity (others aimed at weight gain prevention) and most studies were of small sample sizes (range: 23–129). Like Griffin and colleagues,[19] we also observed a low response rate to our ad when posted as a flyer in a public space and even with staff were present at clinic locations. Our more novel recruitment strategies utilizing an established web-based ad to reach research participants and placing a targeted ad within an Ovia fertility app seemed to work

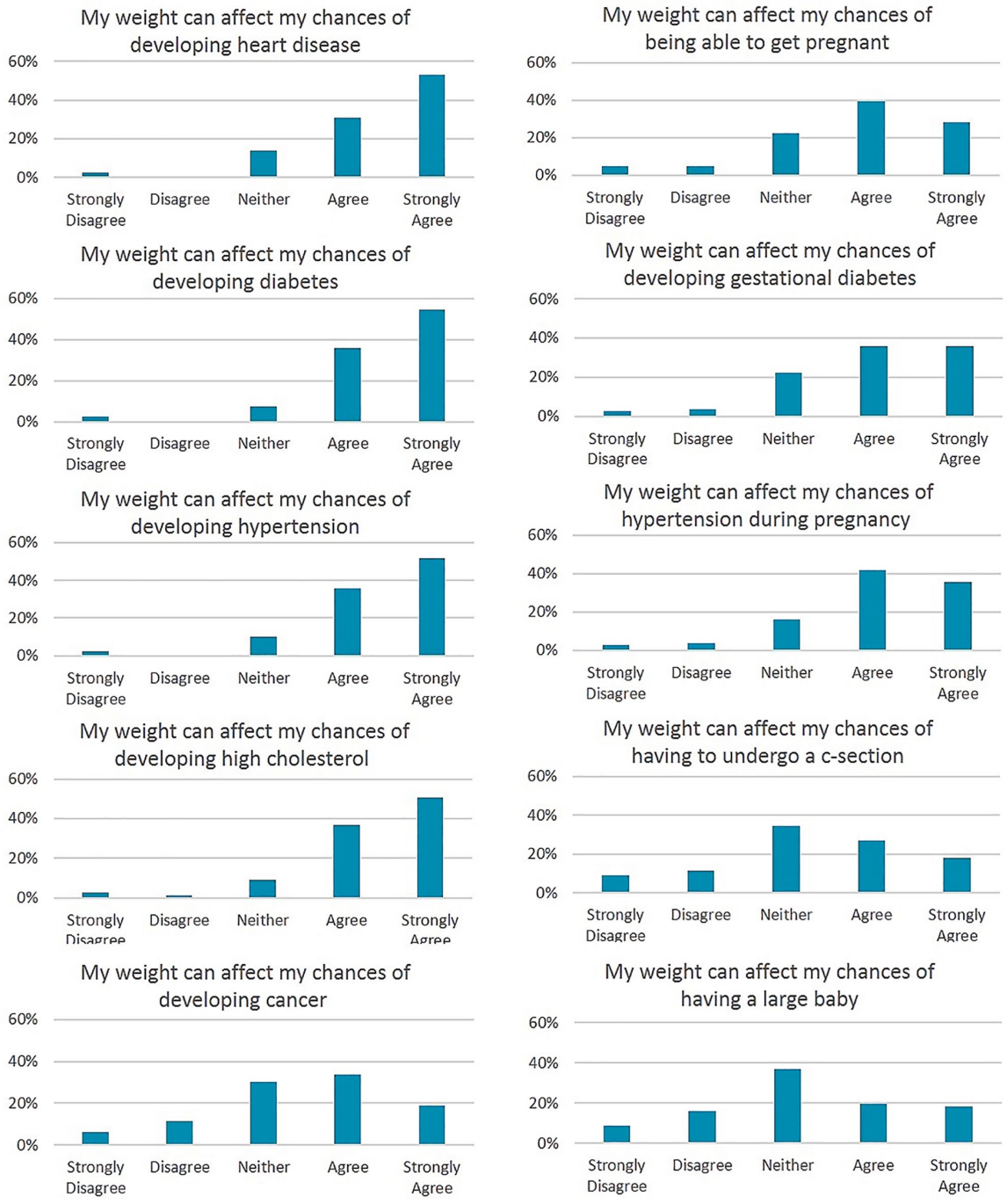

Figure 2. Participant self-assessed risk of weight-related complications.

better. We observed a high response rate over a short display time for the Ovia ad yet spend many more hours coordinating times to complete semi-structured interviews.

Other studies have noted challenges recruiting for weight-loss studies among young adults due to weight loss being motivated by body-image and self-esteem rather than prevention of health-related outcomes.[19,28] Risk perception may be lacking in this younger population as a key step toward intrinsic motivation.[29,30] Without knowledge of risk factors, belief in personal control and in a benefit of lifestyle modification, it is difficult to achieve the

Table 2. Behaviors toward weight loss.

	N = 81	%
Tried to lose weight in the past year	60	74.1
Paid for a formal weight-loss program in the past year	10	12.3
Saw a dietician or nutritionist in the past year	12	14.8
Followed a diet on your own in the past year	46	56.8
Currently, trying to . . .		
Lose weight	73	90.1
Not do anything about weight	7	8.7
Stay the same weight	1	1.2
Prior methods of weight loss[a] (nonexclusive)		
Exercising	47	78.3
Eating fewer calories	43	71.7
Eating less carbs	33	55.0
Maintaining a consistent eating pattern	24	40.0
Eating less fat	22	36.7
Weighing yourself frequently	22	36.7
Eating breakfast daily	21	35.0
Working to reduce stress	20	33.3
Using meal replacements	15	25.0
Using diet pills, laxatives, diuretics, and water pills	10	16.7
Other	4	6.7

[a]N = 60.

momentum necessary to illicit change.[31] Despite an apparent understanding of the association between excess weight and the development of chronic diseases, many women did not perceive themselves at elevated risk for pregnancy complications (Figure 2). Better education to health professionals and raising awareness to general population is needed to help young women gain the knowledge to understand these risks.

Lack of time and motivation are consistently noted as barriers to participation in weight-loss program trials and this was in line with our findings.[21,32,33] Regardless, women we spoke with expressed an interest in dedicating time to weight-loss programs as they plan for a pregnancy. This is a key moment to intervene in a women's life-course to help them enter pregnancy at a healthier weight status, perhaps influencing the health of future generations.

Strengths and limitations

Among our strengths, we were able to evaluate multiple recruitment strategies during 6 months of active enrollment, and we recruited a diverse population of women. Most of our survey questions were adapted from previously validated questionnaires. We were also able to gain a clearer understanding of individual survey responses using open-ended questions during the semi-structured interviews.

There are also important limitations to our study. This was a self-selected group of women. Our participants likely have an interest in research or participating in an intervention when compared to those who did not respond to the survey or semistructured interview. Furthermore, the survey and interviews were only conducted in English, and these women may not be representative of the general population of women of reproductive age with obesity. Our study population was largely non-Hispanic and White, but the prevalence of obesity in women of reproductive age (20–39 years) is higher among non-Hispanic black and Hispanic women in the United States.[1] It will be important for future preconception weight-loss trials to target a more racial/ethnically diverse population. We were more successful with e-recruitment, but we cannot infer that women who were willing to respond to a survey and participate in interview would engage in a lifestyle intervention.

Implications for practice and/or policy

We found that women had a clear understanding of the risk of excess weight on the development of chronic diseases but were less aware of the obesity-related risk for pregnancy complications. Clinical providers should assess preconception risk related to weight and provide counseling to women of reproductive age to better understand these risks.

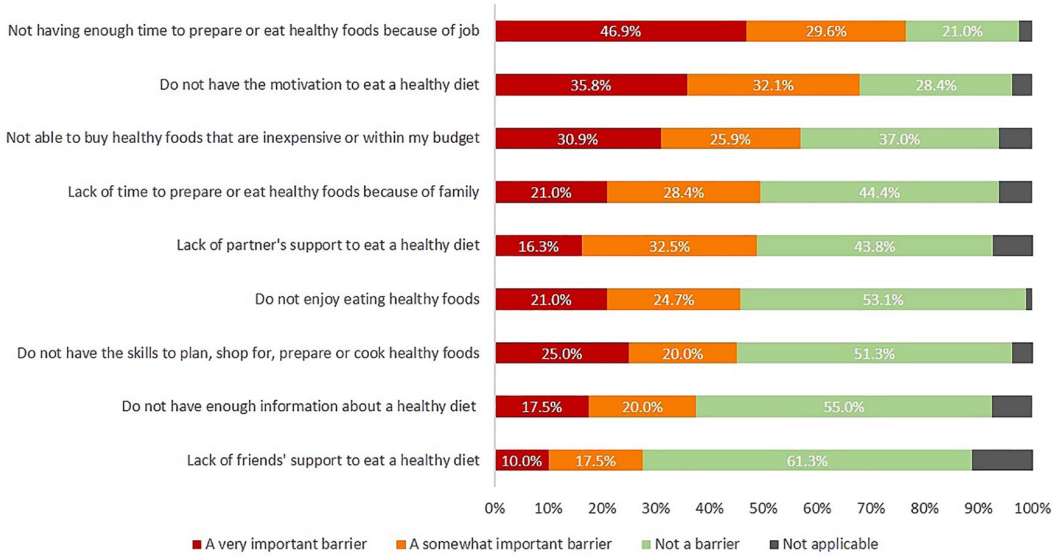

Figure 3. Barriers to healthy eating.

Table 3. Recurrent themes and representative quotes from semistructured interview.

Theme	N (%)	#Codes	Representative Quote
Accountability[a]	38 (97)	114	"Personal training was really successful for me. It gave me accountability in terms of making sure that I go to the gym." "Having someone there to make sure that I stick to it"
Motivation[b]	19 (49)	31	"I'm not as motivated to eat healthy and now it seems like a diet chore. I feel so low energy about going to the gym". "So now I am struggling on the daily trying not to get discouraged and not stopping going to the gym."
Lack of time[c]	19 (49)	38	"I had to stop taking the group classes because with my work schedule I couldn't guarantee that I would be there in time. "I work two jobs . . . so I work sixty-four hours a week. I don't think there is ever a consistent time off I usually never have any days off. So, it is just difficult to motivate myself so that in time where I could be sleeping to roast a bunch of vegetables or grill a bunch of chicken and do all that stuff."
Sustainability[d]	20 (51)	31	"It's just short-term tricks that will drop your weight but won't actually support you for like an ongoing lifestyle change." "I looked at a 9 week training plan and said, 'nope I can't do this'. So, I think it's important to break a big challenge up into smaller parts."
Apps[e]	30 (77)	58	"An app-based program that would allow daily tracking of nutritional intake including educational materials that could be customized based on a weekly assessment of where you are in relation to goals" "I would probably say a combination of in person and online. It would be great to check-in with somebody every once and while but then have most of the communication to be one text or an app."

[a]"Accountability" defined as discussion of holding the participant accountable for their actions regarding weight loss.
[b]"Motivation" defined as discussion of sources or lack of motivation.
[c]"Lack of time" defined as expressing a limitation in successful weight loss due to time constraints.
[d]"Sustainability" defined as a mention of sustainable weight loss.
[e]"Apps" defined as mentioning mobile applications or technology to facilitate accountability.

We find that young women prefer weight-loss programs that support accountability, incorporate the use of apps, are sustainable, and integrate well into their daily life. Researchers should consider women's desire for these features when designing weight-loss interventions trials for future implementation into real-life programs in their communities.

Conclusion

Prior studies have found that it is challenging to engage young women of reproductive age into weight-loss programs before they enter pregnancy. E-recruitment may be more successful, particularly among a young adult population. Young women with obesity have a relatively low perception of their weight-related risk regarding obstetric outcomes, which might be one of the key missing steps toward engaging in formal weight-loss programs. It is also notable that most women were willing to delay their pregnancy attempts for the right program. A couple of trials are currently recruiting in this area.[34,35] Hopefully these on-going trials will be able to provide some answers on what type of programs can help women of reproductive age to lose weight, and whether these programs can lead to better obstetric outcomes, and healthier metabolic status for women and their offspring.

Author contributions

M.F.H. designed the study and research approach. D.S., A.K., E.O., and M.F.H. all contributed to the design of data collection instruments. D.S. collected data, contributed to data analyses, and wrote the first draft of the manuscript. M.F.H.,. A.K., and E.O. contributed to discussions, interpreted findings, and edited the manuscript. All authors read and approved the final version of the manuscript for submission.

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Conflict of interest statement

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Trial registration

This study is registered with www.ClinicalTrials.gov under trial registration number NCT03663621.

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