

Listen and learn: Using focus groups in program planning for a low-income population at cardiovascular risk

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Abstract

Background: Poverty increases the risk of cardiac disease, while diminishing the resources available to mitigate that risk. Available prevention programs often require resources that low-income residents of urban areas do not possess, e.g. membership fees, resources to purchase healthy foods, and safe places for physical activity. The aim of this study is to obtain participant input in order to understand the health-related goals, barriers, and strengths as part of planning a program to reduce cardiovascular risk.

Methods: In a mixed methods study, we used surveys and focus groups as part of planning an intervention specifically designed to meet the needs of lower income individuals. Based on prior research, we used Self-Determination Theory (SDT) and its core constructs of autonomy, competence, and relatedness as the theoretical framework for analysis. The study collected information on the perspectives of low-income urban residents on their risks of cardiovascular disease, their barriers to addressing health needs, and how they addressed those barriers. Focus group transcripts were analyzed using standard qualitative methods including paired coding and development of themes from identified codes.

Results: Participants had health goals that aligned with accepted approaches to reducing their cardiovascular risks, however they lacked the resources to reach those goals. We found the need for support in the three SDT core constructs. The barriers that participants reported suggested that these basic psychological needs were often thwarted by their environments.

Conclusions: Substantial disparities in both access to health-promoting resources and in support for autonomy, competence, and relatedness must be addressed in order to design an effective intervention for a low-income population at cardiac risk.

Background

Significant disparities exist in cardiovascular disease (CVD) mortality rates by race, ethnicity, socioeconomic status, and geographic location persist (1). For instance, even in this decade, individuals who are African American have a 27% higher age-adjusted death rate from CVD than the general population (2), and persons aged 35 to 64 in the lowest quartile of socioeconomic status are twice as likely to die from myocardial infarction and coronary heart disease. These disparities mirror the significant disparities in the prevalence of seven key risk factors: smoking, physical inactivity, obesity, poor diet, hypertension, high cholesterol, and abnormal fasting glucose (3). In addition, disparities in stressors including Adverse Childhood Experiences (ACEs) contribute to cardiovascular risk by multiple pathways (4).

Access to healthy foods and exercise, two powerful preventative factors for CVD, can be an insurmountable barrier for the most vulnerable populations. Low-income neighborhoods may lack supermarkets, a situation described as a food desert (5–7). Gentrification of neighborhoods has resulted in food mirages: local markets that provide wide selections of fresh produce and other healthful foods,

but at prices inaccessible to low-income consumers (8). Similar to food deserts, there is a lack of access to exercise in areas of poverty, which has been termed exercise deserts (9). In addition to poor access to healthy foods and exercise, individuals living in poverty are exposed to disproportionate environmental toxicities. Multiple studies connect the stress of living in low-income, under-resourced neighborhoods to chronic diseases (10, 11). Elevated exposure to stressors begins in childhood, and ACEs are more common in low-income neighborhoods (12). Increased frequency of ACEs correlates with incidence of cardiovascular disease (4).

Widely available and sustainably funded cardiac prevention programs, such as traditional cardiac rehabilitation and the Ornish Reversal Program, are very effective at reducing recurrent cardiac events (13). However, they may only serve to increase the disparities discussed above. The lifestyle changes they promote require those same diet and exercise resources that are inaccessible to a low-income urban population. Furthermore, the providers of these programs may not be knowledgeable about the goals and lived experiences of these populations. This knowledge is essential in planning a program that will reduce disparities in this population.

Our study used focus groups to explore the cardiovascular health-related goals, barriers, and strengths of a low-income population of urban residents. We sought this information as part of planning a peer-support program to address cardiovascular risk. Focus group research is based on valuing participant input; therefore it is not surprising that focus group studies have used Self-Determination Theory (SDT) as a theoretical framework both in designing the studies and analyzing the results.

SDT holds that individuals demonstrate motivation (likelihood of engaging in behaviors) when they are able to meet the three basic psychological needs of competence, autonomy, and relatedness. In the context of health care, competence means possessing resources and knowledge, and feeling capable of taking the steps required to maintain one's health. Autonomy refers to the choice to pursue specific health goals rather than feeling pressured to follow a doctor's orders or by an already distrusted medical establishment (14). Relatedness in the healthcare environment means feeling supported by health care professionals and by peers. When these three basic needs of competence, autonomy, and relatedness are met, people feel intrinsic motivation, become engaged in their own health care, and as a result, have positive health outcomes (15).

SDT posits that motivation is powerfully influenced by environmental factors that support or undermine SDT needs, rather than being inherent in individuals. For example, a person's home life, neighborhood resources, and access to health care, all have the potential to support or block a person from feeling motivated to take the actions which will lead to positive health outcomes. Therefore, SDT may be especially relevant to populations with scarce resources. When resources are scarce, people are less able to get their needs of competence, autonomy, and relatedness met (16).

Using SDT as a framework, focus groups have been used to study health behaviors in low-income populations including low-income pregnant women who are overweight or obese (17), older adults of differing economic status with barriers to increasing physical activity (18), and low-income Latinx adults

with Type II Diabetes (19). These studies consistently find that SDT is a useful framework for evaluating data on underserved populations and health-related risks and behaviors.

Though focus groups have studied health behaviors in low-income populations, to our knowledge there are no recent studies involving focus groups made up of low-income urban residents, with content that includes all three major determinants of cardiovascular outcomes (nutrition, physical activity, and stress). Further, while Self-Determination Theory has been used as a conceptual framework for some focus group studies, it has not been used for focus groups involving our specific population and types of cardiovascular risk. Our study contributes to the existing body of knowledge by using focus groups to explore perceptions of a range of cardiovascular risk-related barriers, strengths, and preferences among a low-income urban population, with SDT as an organizing framework for the findings.

Methods

Recruitment and data collection

This is a mixed methods study using primarily qualitative data, with some quantitative data included. The study was approved by our Institutional Review Boards. We used a convenience sample recruited at a community-based safety net health facility in a small northeastern city with a high poverty rate. Flyers and posters were left in common areas and individual clinics, and medical staff at the facility were encouraged to refer patients. Recruitment criteria required participants to be aged 18–85, current patients at the study site, and have one or more self-reported cardiac risk factors (diabetes mellitus, hypertension, coronary artery disease, obesity/overweight).

Three focus groups were conducted in Spring 2018 at the community-based health center. Focus group sizes were eight, 12, and 13, for a total of 33 participants. This number of participants in each group is within the typical range for focus groups (20). The number of focus groups was based on available staffing and funds; however the use of two to four groups is fairly common in health research (21–25). Each group lasted 60–90 minutes, depending on the length of participant comments. Quantitative data was collected by survey on-site prior to each focus group, followed by semi-structured focus group questions. Participants received a \$25 supermarket gift card as an incentive for taking part in the study.

Written surveys collected data on demographics and personal characteristics such as self-ratings of health. Because the focus groups were part of the planning process for an ongoing program, participants were asked about their preferences for potential programming. They were also asked questions about resources that could impact programming, such as access to smartphones and cooking facilities.

The focus groups were conducted by professional facilitators employed by the health care system. Members of the research team were present at each focus group. We used semi-structured interview guides including questions on health care goals, supports, barriers, and suggestions for our future program. Table 1 presents the items in the focus group guide. Focus groups were digitally recorded and then professionally transcribed.

Table 1
Focus group guide

| Focus Area | Questions |
|-----------------------------|---|
| Health Goals | 1. What are your goals for your health? Why? |
| Social Support/Stress | 2. Besides your doctor or nurse practitioner, is there anyone in your life who you can go to for support with your health goals? 3. Is there anyone in your life that you feel you can talk to when you feel stressed? |
| Nutrition | 4. Is changing your diet important to you? Why or why not? Probe: What are some of the things that make changing your diet hard? |
| Exercise | 5. Do you think exercise is important for you? Why or why not? Probe: What makes it hard to exercise? |
| Program Planning General | 6. As we said earlier, we are planning a group to help people meet their health goals. If we were to offer such a program, do you think it would be helpful to you? Why? Probes: How could a group help you meet your goals about eating better? About exercise? About stress? 7. Are there any specific things about groups/group meetings that you think we should avoid? 8. Is there anything else in general that we haven't asked, that you think we should know? |

Analysis

Quantitative survey data was analyzed using SAS software, focusing on descriptive statistics. Qualitative data was analyzed using NVivo qualitative analysis software. We used open coding for the first group and then discussed and developed a code book to be used for the second and third focus groups. Additional codes were added to the codebook if new topics or themes were identified in the later groups. Paired coding was used for each focus group transcript to ensure rigor. Codes were then discussed and adjusted until agreement of over 95% was reached for each code. After coding comparison, nodes were discussed and combined into overall metathemes and subthemes.

Results

Demographics

Sample demographics and characteristics are presented in Table 2. The study sample size was 33 across the three focus groups. Participants were 63.64% female with the remainder male. An “other” category was offered but no participants selected it. Mean age was 50.80, with a range of 24 to 71. During the focus groups it became clear that a small number of participants came in pairs as either couples, friends, or relatives, however we did not ask about this in the surveys so cannot state the frequency. The largest racial group was African American, with 48.48% of participants identifying in this category. The next largest group was white (27.27%), followed by Latinx (12.12%), other (9.09%), and then Asian (3.03%). Participants were asked to identify as many categories as applied to them, but none chose more than one race/ethnicity. The majority of participants (60.61%) reported incomes of less than \$1000 per month. Almost 20% of participants did not select an income level, so it is difficult to ascertain the true percentages for this question.

Table 2
Participant characteristics

| | Number | Percentage | Mean (SD) |
|---------------------|--------|------------|---------------|
| Age | 30 | | 50.80 (14.10) |
| Gender | | | |
| Male | 12 | 36.36 | |
| Female | 21 | 63.64 | |
| Race/ethnicity* | | | |
| Black | 16 | 48.48 | |
| White | 9 | 27.27 | |
| Latinx | 4 | 12.12 | |
| Asian | 1 | 3.03 | |
| Other | 3 | 9.09 | |
| Income source* | | | |
| Employment/job | 4 | 12.12 | |
| SSI/SSD | 23 | 69.70 | |
| TANF | 0 | 0.00 | |
| GA | 3 | 9.09 | |
| Family | 4 | 12.12 | |
| SNAP | | | |
| Yes | 24 | 75.00 | |
| No | 8 | 25.00 | |
| Health insurance | | | |
| Yes | 32 | 96.97 | |
| No | 1 | 3.03 | |
| Monthly income | | | |
| 0 - \$200.00 | 6 | 18.18 | |
| \$201.00 - \$400.00 | 2 | 6.06 | |

*Participants could select more than one option

| | Number | Percentage | Mean (SD) |
|---|--------|------------|-----------|
| \$401.00 - \$600.00 | 3 | 9.09 | |
| \$601.00 - \$800.00 | 9 | 27.27 | |
| \$801-\$1000 | 0 | 0.00 | |
| More than \$1,000.00 | 7 | 21.21 | |
| Not sure/declined/missing | 6 | 18.18 | |
| Overall health | | | |
| Poor | 8 | 24.24 | |
| Fair | 14 | 42.42 | |
| Good | 8 | 24.24 | |
| Very Good | 2 | 6.06 | |
| Excellent | 1 | 3.03 | |
| Health problems | | | |
| Diabetes | 9 | 27.27 | |
| Hypertension | 26 | 78.79 | |
| Heart disease | 4 | 12.12 | |
| Obesity | 15 | 45.45 | |
| High cholesterol | 12 | 36.36 | |
| Other | 5 | 15.15 | |
| Number of health problems | | | |
| 1 | 13 | 39.39 | |
| 2 | 10 | 30.30 | |
| 3 or More | 10 | 30.30 | |
| *Participants could select more than one option | | | |

About twelve percent (12.12%) of respondents were employed, and 69.70% received some form of disability benefits. None received Temporary Assistance for Needy Families (TANF), but 9.09% received General Assistance (GA) for single adults (New Jersey is one of the few remaining states to offer this very limited public benefit for adults without children). About twelve percent (12.12%) of respondents received

some amount of financial support from family or friends. Three quarters received Supplemental Nutrition Assistance Program (SNAP) benefits. All but one of the participants had health insurance.

The majority of respondents rated their health as Poor (24.24%) or Fair (42.42%). The remainder rated their health as Good (24.24%), Very Good (6.06%), or Excellent (3.03%). The most frequent health conditions identified by the participants included hypertension (78.79%), obesity (45.45%), high cholesterol (36.36%), and diabetes mellitus (27.27%). The largest group of respondents (39.39%) identified only one health problem, followed by 30.30% identifying two health problems, and 30.30% identifying three or more.

Quantitative results

Program planning questions

Participants were asked about what health interventions they would like to see in their communities. More than half endorsed options including exercise activities (66.67%), cooking classes or healthy prepared meals (66.67%), and community gardens or farmers markets (51.52%). Regarding specific program activities they would be interested in, more than half endorsed healthy meals or food baskets (84.85%), learning to relax in stressful situations (60.61%), and cooking demonstrations (54.55%). When asked what program features would be most important in supporting their personal health goals, participants identified “having someone who knows what I’m going through” (57.58%), “people to share the experience with” (54.55%), “a support network so I don’t feel isolated/alone” (51.52%), and “people who won’t judge me” (51.52%). Table 3 presents the full list of program preferences.

Table 3
Program planning

| | Frequency | Percentage |
|--|-----------|------------|
| Health interventions you would like in your community. | | |
| Walking programs/exercise activities | 22 | 66.67 |
| Community gardens/farmer's markets | 17 | 51.52 |
| Cooking classes/healthy prepared meals | 22 | 66.67 |
| Incentives/coupons | 16 | 48.48 |
| Other | 4 | 12.12 |
| Most important in a program, to meet health goals | | |
| Someone who knows what I'm going through | 19 | 57.58 |
| Support network so I don't feel isolated/alone | 17 | 51.52 |
| People who won't judge me | 17 | 51.52 |
| People to share the experience with | 18 | 54.55 |
| Role models I can look up to | 8 | 24.24 |
| Place where I can be myself and "feel normal" | 14 | 42.42 |
| Quiet space to relax | 12 | 36.36 |
| Place to exercise | 14 | 42.42 |
| As part of this program, I would be interested in... | | |
| Learning ways to relax in stressful situations | 20 | 60.61 |
| Yoga/gentle yoga class | 14 | 42.42 |
| Exercise instruction/group class | 16 | 48.48 |
| Information on ways to exercise on a budget | 13 | 39.39 |
| Cooking demonstrations | 18 | 54.55 |
| Getting healthy meals/baskets of nutritious foods | 28 | 84.85 |
| Answers to my questions about a healthy diet | 14 | 42.42 |
| Tours of local food stores with advice on healthy diet | 12 | 36.36 |
| Not sure | 3 | 9.09 |

Resources and barriers questions

Participants often lacked basic resources that are typically needed as part of cardiac prevention programs. Table 4 presents the results for participant resources and barriers. Twenty-one percent lacked an oven and the same percentage lacked a stove for cooking. A third did not have a nearby location where they could buy healthy food. In spite of lacking resources, the majority of respondents (66.67%) stated that they prepared at least one meal a day at home. Just 57.58% of respondents had smartphones. Twelve percent did not have a phone of any type. The majority of respondents stated that they have a safe place to walk or exercise (81.82%), but 9.09% said they did not, and 9.09% were unsure or declined to answer. The biggest barriers to healthy choices cited by participants were transportation (51.52%), cost (48.48%), stress (48.48%), access to healthy food (42.42%), and access to exercise equipment or a place to exercise (33.33%).

Table 4
Resources and barriers

| | Number | Percentage |
|---|--------|------------|
| Appliances owned | | |
| Microwave | 30 | 90.91 |
| Stove | 26 | 78.79 |
| Hot plate | 8 | 24.24 |
| Oven | 26 | 78.79 |
| None | 1 | 3.03 |
| Prep one meal daily | 22 | 66.67 |
| Place to buy healthy food | 20 | 60.61 |
| Safe place to exercise | 27 | 81.82 |
| Have a phone, any type | 29 | 87.88 |
| Have a smartphone? | 19 | 57.58 |
| Barriers to making healthy lifestyle choices | | |
| Not enough time/too busy | 2 | 6.06 |
| Getting there/transportation | 17 | 51.52 |
| Safety or security concerns | 6 | 18.18 |
| Access to healthy food | 14 | 42.42 |
| Cost of maintaining a healthy lifestyle | 16 | 48.48 |
| Access to equipment or place to exercise | 11 | 33.33 |
| Too much stress about housing/family/other problems | 16 | 48.48 |
| Other barrier | 3 | 9.09 |

Qualitative results

Goals

When participants were asked about health-related goals they readily shared their individual visions for positive change. The most prevalent themes for these goals were diet and weight loss. Among those who wanted to change their diet, many stated that they wanted to eat more fruits and vegetables. Others

described foods they needed to eliminate from their diets. One participant illustrated both of these themes:

I need to stop eating such fried foods, everything is like fried. I need to start eating more fruits and vegetables. Like I love spinach and eggs, I can eat that almost every other day, I love 'em. I need to stop frying and stuff all the time with the oil and it's greasy, it's no good.

Others wanted to cook more, or gain knowledge about how to prepare and enjoy healthy foods.

Barriers towards meeting health-related goals

We asked specifically about barriers that impacted diet and physical activity. For diet, by far the most frequently mentioned barrier was the cost of healthy food. The next most common factor was distance to vendors that sold healthy food. These issues frequently overlapped, with the nearby options having either no healthy food, or healthy food that was too expensive for the participants to purchase. As one focus group member stated:

If there was a market that just had fruits and vegetables that was reasonable that would be good. But if I could say its variety is not there and the cost is too high and it's like I go to [name of supermarket] and get depressed. Oh God it's like same thing, it's like I want something different, you know what I mean, and it's not there.

The next most frequent barrier to eating healthy foods raised by participants was preference, habit, or history. Participants said they just did not like the taste of foods that were recommended to them. They often looked at it as a chore to learn to like these foods: "I don't like salad but I know I have to learn how to— I have to learn how to eat [it]." Others described growing up eating unhealthy foods.

While family was often a support, several participants noted family responsibilities as making it more difficult to stick with a healthy diet. For example, one stated: "It's just hard—it's hard sticking to that diet. You know, you can get on a roll but you break, holidays come and, you know, the kids come and you gotta...I gotta cook the fries..."

Only a few participants mentioned lack of knowledge as a barrier to eating better, although several said they would welcome cooking and nutrition information as part of a potential group activity. Providers were viewed as a source of knowledge, but were not described as taking participants' preferences into account

The most frequent comments about physical activity barriers centered on participants' health limitations. Participants described a number of health conditions that typically impact physical activity, including orthopedic injuries, chronic pain, respiratory problems, and obesity. One participant shared:

I cannot twist, I cannot bend, I cannot stoop down. So, but I ordered a Tai Chi complete program and whatever I can do because, you know, Tai chi is very slooow...I'm excited waiting for it because I used to

do yoga but now I'm going for the Tai chi. And I would invite any one of you who wants to come and join me, you can come.

After health limitations, the most commonly shared barriers were similar to those for improving diet: cost and access. Places to exercise were either too expensive or too far away. Transportation overlapped with access, because participants either did not have cars or could not afford transit fare.

Weather also presented a barrier for those in this group who had no place to exercise indoors. One participant whose main exercise was walking outdoors stated: "You can't get by, you know. Especially when you have a walker, you know, like, and then, all the snow is so piled up all to- all over. I mean there's like... Up, you know. You can't, there's no way." For these participants, cost and access to indoor exercise locations combined with lack of other resources to make exercise much more difficult.

Several participants mentioned depression as a barrier, and one participant stated that stress lies beneath all of the barriers they experienced: "See, the real heart of the matter concerning these topics likely, number one, can be summed up, just under stress."

Coping strategies

Participants were resourceful in identifying many individual coping skills to reduce stress. These included activities such as venting, reading, doing puzzles, watching sports, and going outdoors. Some participants stated that caring for others, or even a pet, could be a source of strength for them. Participants identified a number of sources of support, especially friends and family. For example:

Yes, I go to my sister because I do get stressed and she's the calmer one, she calms me down. [laughter] She's like, 'It's not that bad. It's not that-.' She's like, 'Breathe, take it easy.' I'm stressed out and I call her and she gets me back down a level.

A number of participants found faith as a strong source of support in their lives. This took a range of forms, including praying, reading the Bible, and attending a house of worship. One participant stated: "So I go to the Bible a lot and I just read it and it calms me down with the things that I'm going through. I do, I just pray.

Almost all the participants endorsed the idea of a group intervention. They felt that peer support was important, and would help them reach the goals they had shared earlier in the focus group:

Yeah well, if you want to join together as a goal to lose weight and support each other in the goals as part of maybe the exercise part, weigh-ins and the recipe of the week or whatever's a reason to come together, because it's so much easier to do with someone than it is to do, particularly if you live alone, than you do by yourself, you know.

Some participants asked if they could sign up for the program on the spot. During the focus groups, participants asked for and gave each other advice, turning the focus groups into a sort of peer support

group. In their comments about a future intervention, participants connected their focus group experience to anticipation of a future program: “Having groups like this, this is wonderful.”

Participants had suggestions for features of the group intervention. For physical activity, yoga was the most common suggestion. Others asked for swimming, tai chi, and group walks. For diet, the most common responses centered on healthy cooking class, nutrition information, recipes, and potluck meals. There were many suggestions for stress reduction, including meditation, music, reading, pet therapy, and art therapy. Some specifically mentioned peer support: “I think support groups like talking like he said, just support.” Participants expressed that stress reduction was an important feature of the planned program. A number of them described stress as being at the center of their issues. As noted above, one participant identified stress as being “the heart of the matter” relating to health risks and barriers.

Self-determination constructs

Table 5 presents participant quotes linked with the SDT core constructs of autonomy, competence, and relatedness. The ability to choose from a range of options that are personally appealing and attainable supports autonomy. When participants described strategies they had developed on their own, that aligned with their own needs and preferences, their statements were positive and change-oriented. In contrast, their quotes about providers who counselled them on actions they “have to” take indicated challenges to adherence. Although Table 5 groups statements according to individual SDT constructs, considerable overlap exists. For example, while the lack of variety in available foods undermines the autonomy to make individual choices, the lack of affordability undermines the competence to buy healthy food at all. Depression was linked to difficulty initiating health behaviors as well. Quotes connecting to relatedness included comments on loneliness and the motivational benefits of peer support. Additionally, participants described interactions with providers that thematically connected to not feeling listened to and recognized as individuals.

Table 5
Self-Determination Theory constructs

| Construct | Undermines this construct (quotes) | Supports this construct (quotes) |
|---|--|----------------------------------|
| Autonomy Definition: The need to choose and pursue goals that are personally meaningful, rather than being given directive advice) | <p>“I’ve learnt to– I’m learning that no, I love rice but then I prepare shredded vegetables with a lick of rice just to, ya know, trick myself. So I have a lick of rice but it’s more vegetables. It’s nice. I’ve done that three days now. Three days I have been doing that and I’m going to continue, and I do my own recipes, just invent.”</p> <p>But also, made a deal with myself actually to cook for myself, because I live alone, and I really, even if I only take one day a week to cook some meals.</p> | |
| <p>Note. Bolding added by authors for emphasis</p> | | |

Discussion

In this study, we aimed to learn the perceptions of health-related needs among low-income urban residents at risk of cardiac disease. We asked about goals, barriers, and sources of strength relating to cardiovascular risk. We additionally sought participant input as part of program planning for a group intervention. In our analysis, we assessed whether participant responses aligned with Self-Determination Theory.

Health-related goals

Participants' primary health-related goals were overwhelmingly related to diet and nutrition. They were aware of the importance of these factors in addressing a significant burden of self-identified fair to poor health. Despite the many day-to-day housing and food insecurity challenges known to exist at this income level, participants appeared eager to pursue their health goals. Their goals generally aligned with well-accepted approaches to reducing cardiovascular risk. However, they also shared many barriers towards meeting their personal health goals.

Barriers

Many of the barriers to healthy diet and exercise identified by participants were directly related to cost. For many, healthy food was nearby but not affordable. This dilemma is captured in Sullivan's (8) concept of food deserts (lack of supermarkets) versus food mirages (nearby, but unaffordable, markets). For this group of low-income individuals, problems relating to poverty provided the most powerful barriers to meeting their health goals. Further, participants recognized that stress – correlated with poverty – was a significant barrier to cardiovascular health.

The lack of resources described by our participants aligns with the SDT construct of competence, because the lack of money and accessible resources translates to a lack of tools to complete a desired task. For persons living in poverty, the SDT basic psychological need for competence is undermined because participants do not have the opportunity and resources to attain their goals. Ingrained assumptions view the inability to attain these goals as personal failures, and our participants made statements that suggested they had internalized these assumptions when they indicated that they wanted to follow certain directives that they were unable to. Therefore, the concrete barriers are compounded by the thwarting of the basic psychological needs that support taking action.

Participants also faced challenges relating to their need for autonomy, the need to have input into goals and activities that are personally meaningful. Taste, preference, and habit or history were important to participants in selecting healthy foods. While participants' goals were consistent with standard recommendations, they needed (due to barriers) and wanted (due to preferences) to design individual strategies to meet them. Advice from healthcare providers, however, was frequently directive rather than collaborative. Those in poverty more commonly experience directive medical communications than those

of higher socioeconomic status and dominant groups (26). To support autonomy, and enhance goal attainment, low-income individuals at cardiovascular risk should have a collaborative partnership with their healthcare provider to develop individualized goals that are personally meaningful and realistic for them.

Participant quotes linked to relatedness highlight the impact of loneliness, often connected to physical limitations or depression. Indeed, poverty can make the SDT need for relatedness harder to meet. Their quotes about providers expressed perceptions of not being seen as individuals and of not being listened to, and underscored the importance of being cared for by their providers. The lack of autonomy support and individualized care by providers described above undermines relatedness.

Stress is a key barrier for those in poverty. Illustrative of this is one participants' statement that stress lies beneath all of the barriers they experienced. Stressors multiply under the constraints of poverty; they are caused by and cause poverty in an iterative fashion. The psychological need of competence is supported by setting attainable goals (27). Expecting major changes in health behavior without recognizing the challenges caused by stress undermines competence. Providing stress-reducing measures supports this need. Participants clearly believed peer support would empower them to address stress and move forward with positive change.

Implications for program planning

The use of focus groups allows effective identification of the concrete barriers impacting specific populations. Additionally, it supports SDT needs of autonomy, competence, and relatedness by valuing participant input and respecting their choices, thus empowering participants to overcome barriers with creative solutions as a team. Participants suggested activities that would be attainable with their physical limitations, habits, and cultural preferences. They embraced group activities that align with research-based approaches e.g. yoga for stress reduction (28), peer support (29), and information-sharing about better nutrition and exercise (30). Participants' comments demonstrated a richness of suggestions and an enthusiasm about coming together and supporting each other to explore those suggestions.

Limitations and future research

Our study provides much information about the needs and wishes of low-income urban residents at risk of heart disease. In some cases, our qualitative data suggested additional questions that would have clarified the quantitative survey. The qualitative questions elicited a much more substantial constellation of interrelated barriers than our quantitative data, which targeted a limited number of specific barriers. Follow-up quantitative research could incorporate the qualitative findings to enhance survey research.

Our analysis found that SDT constructs are useful in framing the perspectives of participants, however we did not include focus group questions that explicitly asked about SDT core components. Future research that incorporates questions more directly focused on SDT would add to knowledge of how these ideas can be incorporated in program planning. Ideas raised by our participants could provide direction for future research on SDT. For example, using statements by focus group participants to train medical residents in SDT constructs could potentially equip residents in better supporting autonomy, competence,

and relatedness in patients. An evaluation of such a program could be a fruitful application of the ideas raised by our participants. Our focus group data was used in designing a cardiac prevention program which is in progress. Results from this research, which specifically asks participants about perceived competence pre and post intervention, will shed light on the effectiveness of a program design based on SDT.

Conclusions

This focus group research underscores the need for assessing concrete barriers, and SDT-related impacts of our communities' lived experiences. This is key to planning programs and policies that effectively combat cardiovascular health disparities. Multiple concrete barriers prevent low-income populations from addressing CVD risk. Our focus groups demonstrated how these barriers impacted our study population. At the same time, our participants' responses indicated a lack of support of the three basic SDT needs of autonomy, competence, and relatedness. While SDT is frequently studied among non-poor populations, we argue that this framework may be even more important in supporting core psychological needs in a low-income population.

Because the needs of autonomy, competence, and relatedness are supported or thwarted by the environment or context, concrete and SDT-related barriers are intertwined in a way that is difficult to separate. Poverty-related concrete barriers prevent task completion, and these barriers also make it less likely for individuals to be supported in basic psychological needs. These two types of barriers combine to create disparities in cardiovascular wellness, leading to disability that in turn creates more barriers. Prevention programs for low-income populations must address these concrete barriers in order to be successful. Program staff must also be aware of the both the challenges and strength of low-income neighborhoods, in order to sensitively and effectively design and facilitate program components. At the same time, because persons living in poverty have environments that undermine autonomy, competence, and relatedness in medical settings, it is also essential to support these needs with health-promoting programs and policies that are mindful of SDT constructs. Focus groups of low-income individuals are a way to clarify how these two approaches – concrete barrier removal and SDT basic needs support – operate in a particular population. We must hear the voices of our low-income communities to understand their needs and goals for preserving cardiovascular health, both to inform our providers and to create effective risk reduction programs. Concrete barrier removal and SDT must be implemented in tandem in order to truly and equitably support attainment of health-related goals in a low-income population.

Declarations

Ethics approval and consent to participate

Approval for this study was obtained from the Geisinger/Atlanticare IRB (reference #2018 – 0155) and the Stockton University IRB (reference #2020.032). All participants provided written consent to participate in

this study.

Consent for publication

There are no images or videos as part of this publication. Individual quotes have had any identifiable information removed.

Availability of data and materials

The datasets used and/or analyzed during the current study are not publicly available due to the qualitative nature of our project. Personal narrative can be more easily associated with individuals. Data may be made available on reasonable request and approval by our institutional review boards.

Competing interests

The authors declare that they have no competing interests.

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Stockton University Research and Professional Development Funds provided a grant for research assistants, corresponding author's time for summer work, and qualitative analysis software. Stockton had no role in study design, implementation, analysis, or write-up.

Authors' contributions

RK and IR were co-principal investigators for the study. RK led study design. IR organized and implemented the focus groups. RK completed quantitative analysis and led the research team for coding and analysis of qualitative data. MP assisted with literature review and made substantial contributions to coding and analysis of focus group transcripts. RK and IR wrote the majority of the manuscript. MM gave expert input on Self-Determination Theory and wrote the related manuscript sections. All authors assisted with editing the manuscript, and read and approved the final draft.

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