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Formative Research for a Community-Based Message-Framing Intervention

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Abstract

Objective—To inform a community-based message framing intervention encouraging physical activity and fruit and vegetable consumption among medically underserved adults.

Method—Key informant interviews, focus groups, and a survey were conducted with limited-literacy Hispanics in the northeastern United States.

Results—Barriers to healthy lifestyle behaviors exist at individual, community, and policy levels. A strong degree of networking among local organizations and elected officials exists that can be used to encourage healthy lifestyle initiatives.

Conclusions—Community-based health communication interventions must address neighborhood realities, the literacy levels of the target population, and existing networks of providers and consumers.

Keywords

formative research; social-ecological model; Hispanics; healthy lifestyle; message framing

Lack of health care coverage and low socioeconomic status are 2 of the primary factors contributing to cancer-related health disparities in the United States.¹ Among Hispanics, cancer is the second leading cause of death, accounting for 20% of deaths overall.² Although Hispanics represent about 13% of the population,³ they make up 30.4% of the nation's uninsured, making them the largest group of uninsured persons in the country.⁴ Uninsured Hispanics are 2 to 3 times more likely to have cancer diagnosed at a later stage than are those with insurance coverage, making it less treatable.⁵ A strong body of evidence links healthy behaviors such as not using tobacco, engaging in physical activity, and eating a healthy diet to reduced cancer risk.⁶ Thus, encouraging prevention (eg, physical activity, fruit and vegetable consumption) and detection (eg, cancer screening) behaviors is a critical strategy for addressing cancer health disparities among Hispanics. Community-based behavior change interventions are a primary vehicle for promoting prevention and detection behaviors, particularly among medically underserved Hispanic populations.

Community-based interventions require a multifaceted approach grounded in local socioeconomic realities. By design, they take into account the perspective and needs of the target population and key informants and tap into local resources that ultimately may aid in sustainability. This approach has demonstrated effectiveness. For example, Paskett and colleagues conducted a community-based intervention aiming to increase breast and cervical cancer screening among a low-income minority population.⁷ The multifaceted intervention included clinic-based strategies (targeting staff and patients) and community-out-reach strategies (targeting the public at large, the media, and church groups) and led to a significant increase in breast and cervical cancer screenings in the intervention group compared to the control group. Another study showed an increase in breast cancer screening after a multi-component intervention consisting of a community education campaign and physician involvement. Increased screening was observed in both groups, with the intervention group also demonstrating greater awareness, enhanced understanding of barriers, and an increased proportion of women getting screened.⁸ These findings exemplify the potential impact of comprehensive community-based interventions when encouraging health promotion behaviors in underserved populations.

When designing and conducting community-based interventions to address health disparities, formative research is an important initial step.^{9,10} *Formative research* is described as a multidisciplinary approach to defining and gathering information about the target population.¹¹ Using semistructured interviews, focus groups, and surveys, among other methods, formative research efforts focus on the target population and those with access to it but who are not members themselves – eg, doctors or nurses working in a neighborhood health clinic. Ultimately, formative research should help prioritize intervention goals and objectives by giving a voice to the target population, such that individual and community needs are identified and defined. In the absence of formative research, interventionists risk developing health messages and programs that may be inappropriate for the target population or misunderstood by the intended audience.¹² Message framing interventions described in the literature are limited by a lack of formative research to guide message development and delivery.

The formative research described in this paper was part of a larger intervention aimed at developing framed messages that encourage physical activity and fruit and vegetable consumption across the cancer continuum. Framed messages may emphasize either the benefits of engaging in a behavior (*gain framed*) or the consequences of failing to engage in a behavior (*loss framed*). Message framing guidelines suggest that loss-framed messages are most effective for encouraging detection behaviors (eg, mammography)¹³ whereas gain-framed messages more effectively persuade prevention behaviors (eg, physical activity).¹⁴ Additional research is needed to determine whether framed health messages encouraging health-promotion behaviors are effective among the medically underserved.¹⁵

The American Cancer Society recommends a social-ecological approach to encouraging nutrition and physical activity behaviors in a community-wide fashion for cancer prevention purposes.¹⁶ The social ecological model for health promotion (SEM) provides a comprehensive framework for guiding the formative research process.¹⁷ The SEM is derived from Brofenbrenner's¹⁸ ecological model and proposes that social-environmental determinants are equally as important as those at the individual level in designing health promotion interventions. The model assumes that individuals and their environments maintain a reciprocal relationship, in that changes to the social and physical environment can change individual behavior and that the support of the community is necessary for instituting environmental changes.¹⁷ In recent years, the SEM has been used as the theoretical foundation for health-promotion interventions in a variety of settings and populations.^{19–25} Researchers use the model as a guide in their attempts to intervene and

affect the health of individuals at the intrapersonal, interpersonal, institutional, community, and public policy levels. The application of the SEM suggests that investigators should target elements at several or all levels of the model that encourage unhealthy behaviors.

Despite its widespread acceptance and use to develop interventions, there is a paucity of literature applying the SEM to *formative* research aiming to inform the design of community-based message framing interventions and to gain an understanding of the specific health disparities affecting the local community. Newes-Adeyi and colleagues²⁶ applied the SEM in the formative stage of the development of a Women, Infants, and Children (WIC) training program in New York state. However, they addressed only the levels of the SEM that they considered plausible to change through a training program. Applying the SEM to formative research using a comprehensive approach provides a road map of where and how best to intervene. The primary purpose of this paper is to highlight the importance of formative research in the planning and development of a community-based health-messaging intervention by demonstrating the application of the SEM to a formative research phase. The formative research was designed to inform the development of an intervention targeting urban, medically underserved, Latino immigrants. Many of the message framing interventions described in the literature are not community-based and are limited by a lack of formative research; however, more recent literature shows a growing interest in community-based messaging interventions.^{27,28} Thus, the current study findings have important implications for guiding the development and delivery of health promotion messages directed toward medically under-served populations.

METHOD

Description of the Formative Research Demonstration Study

The formative research we describe was conducted to provide a context for a message framing intervention encouraging health promotion in a community setting. All phases of the reported research were approved by the Yale University Institutional Review Board. Our specific objectives for this formative phase were 3-fold: to identify (1) current physical activity and fruit and vegetable consumption behaviors, knowledge, attitudes, and barriers; (2) the information-seeking behaviors of participants, including preferred channels for receiving health information; and (3) the resources and networks at multiple levels of the social ecological model that support healthy lifestyle behaviors. The SEM was used as a guide to develop research questions at each level of the model, as illustrated in Table 1. The questions, in turn, helped determine the ideal key informants and focus group participants.

Our target population included residents and service providers from a medium-sized, urban community in the northeastern United States. The neighborhood profile included 13,753 residents, 51.8% of whom were Hispanic, 42.0% white, 25.6% black, and 26.3% other.²⁹ In terms of educational attainment, 32.1% of the population 25 years or older had a high school diploma or equivalent.²⁹ Nearly 14% (13.9%) were foreign born, and 47.3% spoke only Spanish at home.²⁹

Participants

Community residents and service providers participated in key informant interviews (n = 6) or a focus group (total n = 40). Some focus group participants (n = 31) also completed a behavioral assessment survey. For one group, there was insufficient time to complete both the focus group questions and the survey. Key informants were community leaders from the public and private sectors including clinic staff from a local federally qualified health center (FQHC), staff from local nonprofit organizations, local political leaders, and local business leaders. The informants were chosen because they worked for organizations with a history

of serving the intended target population and/or because they had been recommended by another key informant. The number of key informants was limited to include the organizations and individuals we were interested in collaborating with for the larger intervention. Key informants had an average of 7.83 years ($SD = 10.55$) of work experience and were selected purposely for their knowledge of the organizations and/or programs in which they worked as well as their extensive familiarity with the local community. Focus group participants were Hispanic adults at least 18 years of age. They were recruited in person from the waiting room at the FQHC and through an English as a Second or Other Language (ESOL) program sponsored by a local nonprofit organization.

Measures

Key informant interviews—Semistructured interview questions for key informants targeted barriers to and supports for healthy lifestyle behaviors. Key informants were asked to reflect on these barriers and supports as a member of their organization and the community at large. Table 2 describes the types of formative data collected and the topics covered. The interviews lasted approximately one hour.

Focus groups—Using a semistructured interview guide, the facilitator asked focus group participants about their knowledge, attitudes, barriers, and motivation for healthy lifestyle behaviors and information-seeking behaviors. Participants also were asked to reflect on the resources available to them in their community that encourage physical activity and healthy eating. Focus group discussions lasted approximately one hour, and participants were provided with dinner and a monetary incentive for participating.

Survey—In a 13-item survey in Spanish prior to the start of the focus group, participants were asked about their current physical activity and fruit and vegetable consumption behaviors. Physical activity was measured by the International Physical Activity Questionnaire (IPAQ) short-form.³⁰ The IPAQ measures frequency of physical activity and categorizes activity into 3 different levels: high, moderate, and low. From the IPAQ Guidelines for Data Processing and Analysis, a high level of physical activity means at least 12,500 steps per day, or the equivalent in moderate and vigorous activities.³¹ This represents at least an hour or more of moderate-intensity activity or half an hour of vigorous-intensity activity. A moderate level of activity is equivalent to half an hour of at least moderate-intensity physical activity on most days. A low level of physical activity means not meeting any of the criteria for the previous categories.

Fruit and vegetable consumption was measured by asking participants to recall the average number of cups of fruits *and* vegetables consumed per day over the previous 2 weeks.³² Participants' responses were coded according to the CDC's dietary recommendations.³³ Women who consumed 1.5 to 2 cups of fruits and 2.5 to 3 cups of vegetables per day were considered to be meeting guidelines. Men who consumed 2 to 2.5 cups of fruits and 3 to 4 cups of vegetables every day were considered to be meeting guidelines. With regard to perceptions of physical activity and fruit and vegetable consumption, participants were asked whether engaging in the behavior is something they "should" do versus something they "like" to do. This measure has been used to assess people's thoughts about behaviors³⁴ and has potential implications for how messages should be framed.

Approach to Data Analysis

Descriptive statistics from the survey data were calculated using SPSS (SPSS for Windows, Rel 15.0.0. 2006. Chicago: SPSS Inc). Interviews and focus groups were audio recorded, transcribed verbatim, and where appropriate, translated into English. Two coders trained in qualitative methods independently read and systematically analyzed the transcripts using

NVivo8 (QSR International Pty Ltd Version 8, 2008). Key themes were identified and inconsistencies resolved. These themes are described below with supporting excerpts from the focus group and interview scripts.

RESULTS

Thirty-one focus group participants completed the demographic survey. Some participants chose to skip questions they were not comfortable answering; therefore, the sample size for each of the variables does not always equal 31. Fifty-nine percent were female, and the sample had an average age of 40.39 years ($SD=10.01$). Participants had lived in the neighborhood for an average of 2.90 years ($SD=3.62$). Only one participant (3%) accessed WIC benefits. Forty percent of respondents reported eating 0–1 cups of fruits *and* vegetables on an average day over the past 2 weeks. Seventeen percent reported eating 1.5–2.5 cups, one-third (33%) reported eating 3–4 cups, and 10% reported 4.5 or more cups. Thus, according to the CDC guidelines, more than half of respondents (57%) consumed less than the daily-recommended amounts of fruits and vegetables. Fifty-three percent stated that eating fruits and vegetables was something they “like” to do versus 47% who stated it was something they “should” do. In terms of physical activity, 42% of participants reported engaging in high levels of physical activity, 23% moderate, and 35% low. Fifty-two percent perceived exercise as something they “like” to do versus 42% who perceived it as something they “should” do. Two participants (6.5%) responded that they “didn’t know.”

Knowledge, Attitudes, and Barriers

Our first objective was to identify knowledge, perceptions, barriers, and current physical activity and fruit and vegetable consumption behaviors among participants. Focus groups revealed that acculturation, basic needs, and personal safety were all factors in determining levels of engagement in healthy lifestyle behaviors. Each of these factors is explored below.

Acculturating to a less healthy lifestyle—Much like in their country of origin, focus group participants described the role of women in their families as one of particular importance. Mothers, wives, grandmothers, sisters, and girlfriends were described as the primary caregiver in terms of personal health, well-being, and diet. Women also were described as the primary person to grocery shop and prepare and cook meals. At the same time, participants acknowledged that women’s roles are made more challenging upon immigrating, given the significant lifestyle changes and, for many, the language barrier. More specifically, participants explained that assimilating to the American lifestyle causes detrimental changes to healthy behaviors practiced in one’s country of origin. Assimilation, according to participants, entails working long hours, including weekends; walking less and driving more; and having less time for leisure-time physical activity and for preparing healthy meals.

In terms of fruit and vegetable consumption, most focus group participants understood how to maintain a healthy diet and prepare healthy meals, such that knowledge did not seem to be a barrier. In fact, some participants explained in detail the staples of a healthy diet in their country of origin:

Since in Ecuador there are...4 regions. In the coast region fish is consumed most, with yucca, plantains, and in the mountain area, we are from the mountain also, they mostly eat, what we call green beans, plantains, yucca, potatoes...we eat cole, carrots...all kinds of vegetables. In the eastern region, we have what is known as plantains, yucca, split peas.

Even so, other participants expressed their knowledge of a healthy diet in the form of nutrition myths, suggesting that targeting general nutrition information to this population may be in order:

[People] don't know how to combine what is a protein; in the same plate they will serve beans, and then beef, and there you are combining 2 proteins that are competing with each other because the organism assimilates vegetables more. So if you look at it, you are eating the meat and the vegetable. Your organism assimilates the vegetable protein, and it doesn't take in the meat. And what it does is ferment itself inside you and gives you gas problems, or colon problems, so...your diet should have a plate of beans, and that day you don't consume any meat. Leave it for the next day.

Participants described a process of acculturating to the American lifestyle whereby their healthy eating habits dissipate over time. This is due to 3 primary barriers: lack of time to prepare healthy meals, high cost of healthy foods, and a limited selection of local food stores offering affordable healthy choices. One participant noted, "In our diet, we never, we don't even never, never, eat that kind of things [*sic*] in our countries, nothing. We never open a can, to you know, even to cook our beans, or veggies." Others noted:

It's different the way we eat in our countries because in our countries there is everything, rice, natural fruit juices. Here we don't. Here there is no time; here we only cook rice and fried meats, and if there are frozen veggies, if anything. The diet here is very bad.

We go to regular markets – [names several out of town supermarkets]. [They (local markets)] are getting very expensive. Very expensive! Super expensive! Look, with the amount of money that I use to buy a carton of skim milk over here, I buy 2 at [out of town supermarket], I buy 2! The soy milk they sell over there costs \$2.79, and here it costs around \$4–5. I buy one gallon over here that costs \$7.29, and with those \$7.29, I buy 2 at [out of town supermarket].

Others explained that they made healthy changes to their diet to avoid getting sick as they are unable to afford medical expenses:

In my country I used to make chips out of...chicken skin...but here I don't make it in order not to get sick. Some rice dishes are made with a lot of [pork] fat. I don't do that sort of thing [here].... In Cuba they make rice and they add pork lard, which is delicious, and we can't over here.

The extent to which participants engage in healthy eating habits is influenced by nutrition knowledge including myths, time and money constraints, and a fear of ill health due to limited access to health care.

Regarding physical activity, focus group participants discussed the physical, mental, and emotional benefits of engaging in physical activity, expressing a clear understanding of its significance to living a healthy lifestyle. Alternatively, participants also discussed how assimilating to the American lifestyle has brought about negative changes to leisure-time physical activity (LTPA) habits. Barriers to engaging in regular LTPA included lack of time, lack of local facilities for indoor activity, general lack of safety and added to that increased neighborhood violence making it unsafe to exercise outdoors. Participants discussed changes in LTPA habits after arriving in the United States and expressed concerns that acculturation leads to a more sedentary lifestyle. For example, "in Mexico all the time, walk, walk. Over here, I use the car. That change [*sic*] us a lot, a lot of our good customs, we are losing all that here." Others noted:

The thing is, one of our customs, because in our countries, there is no difference, I am from Peru, he is from Mexico, from Central America...we walk a lot. Everything that we do; we walk.... We have to go the hospital, to the doctor, to the party, with friends, we walk...maybe in the capitals we use the bus, but other than that, it's... a custom. Here is where we get lazy because we got [sic] cars here, so to go to Wal-Mart...[to] my mother's sometimes, 4 blocks, I take the car. And I used to walk every single day.

What makes me sad, and I say sad, because I have a lot of nephews here, this new generations [sic], boys, 5, 7, 10, like my nephews and they have...no clue about this, because they [are] growing up in this country that has all this [sic] toys that we don't have because our economy or different factors in our country. They rather to be [sic] sitting watching TV or with the little thing that just take their minds for 3 or 4 hours and they don't go out to exercise and...the TV that's another thing...there is a big new generation that is coming and especially here, you can see a lot...of kids and they are losing all this.

Participants also hypothesized that the decline in physical activity behaviors occurs in large part because of meeting basic needs (eg, paying rent, buying food, etc) and concerns for personal safety.

Primacy of meeting basic needs over personal health concerns—Although participants demonstrated an understanding of the link between physical activity and positive health outcomes, they made it clear that their jobs were their first priority, which resulted in a lack of time to exercise. For example, one participant said, “The problem is that we don't have time; at least from Monday through Friday there is no time to. What helps us is our jobs. Lots of work”; and another commented, “What we do is work. Physical exercise doesn't go with me; besides, I don't have time for that. But work. Work on Monday, Tuesday, Wednesday, Thursday, Friday, and Sunday.” Some explained that although work is their priority, they take better care of themselves than they did in their country of origin. This is to avoid getting sick because they cannot afford the medical expenses:

Let's also say that we are more dedicated to our jobs, we focus more on our jobs than our health. We are...more focused on working, working, working. So we take care not to get sick because we cannot afford medical expenses...so what we do is take care of ourselves. We work 12-hour days from 7:00 [AM] to 7:00 [PM]. We work 7 days a week.

Participants also discussed how their jobs are their primary form of exercise, albeit on an inconsistent basis. Some sample responses included “At work during our 10 am break...we walk around the factory. We walk for about 15 minutes more or less.” Others “carry boxes...at work, from one place to the other, sweating, working. I only do weights at work.” Still others noted that they get more exercise at work in the summer:

The only exercise that I do is my job, where I take care of elders, so cleaning, vacuuming, and all that. And walking, sometimes during the summer I take them to play tennis, to the park when the weather is good to do exercise.

Another participant noted, “I think in summer time we work very fast...while we are working, we make a lot of exercise because we work faster...so we are sweaty all day...so I think that helps to exercise, too. You know the boss: if you work hard, they love you.”

Concerns for personal safety—Most participants expressed an interest in engaging in regular physical activity and inquired about local resources. Lack of neighborhood safety

and of a local indoor facility for exercise were cited as the primary reasons for not being active:

I'm not walking now because I don't know the area where I live very well. I only have been there for 2 months, but before I used to walk a lot and I would exercise in the morning and went for walks in the afternoon.

Another participant noted, "I haven't been to the gym in months, but in Cuba I always used to exercise. I haven't been there in a few months, but here ... there isn't a gym nearby." Participants with certain health problems were prescribed exercise but explained that they encounter multiple barriers including the cold weather, lack of time, and lack of safe indoor facilities:

I have diabetes and I also have this thing with my bones, my spine hurts, and so they have detected advanced arthritis, so I have to do this knee exercise every day, walk every day for an hour, but since it's cold I can't walk. Before, I used to walk when the weather was nicer...I would walk around the area that I'm familiar with until I reached an hour, or I would go to the supermarket, and I would take my walks there.

OK, I have high blood pressure, turns out I have prediabetes, and I had surgery for breast cancer. It's been 2 years since I had surgery...and the doctor tells me I have to exercise a lot because...my blood pressure is always high. But it's very difficult for me to exercise because I work. I get home at...5:15 [PM] and I'm afraid...to go out around here. It has to be around a safe place...like a school...but there aren't such programs here like for group exercise.

The extent to which participants engage in regular physical activity then, is influenced by their adoption of a more sedentary lifestyle, the primacy of meeting basic needs, and concerns about the increase in neighborhood violence and its impact on their personal safety.

Information Seeking

Our second objective was to identify the information-seeking behaviors of participants, including preferred channels for receiving health information. Among focus group participants the primary manner they learned about resources in the community was by word-of-mouth. They explained that they had established a rapport with one another, taking classes together and socializing outside of the classroom, facilitating the exchange of information. Participants also expressed a strong degree of trust and respect for the staff of the agencies in which they participate. They found the staff were trustworthy sources of information concerning community resources and explained that the staff had their best interests at heart.

One key informant described the influence of trusted peers as a primary and reputable source of healthy lifestyle information. She provided an example as to how obtaining health information from a peer can result in health behavior change:

The whole idea is ... if people are used to eating white bread and that's all they've ever had ... and all of a sudden you try to tell them, 'Oh, look: wheat bread is really good for you', they might have this mentality of ... 'Who are you? This is what I've always eaten, and I'm fine.' And they might be 30 pounds overweight.... But ... if your friend tells you, 'Oh my God! This tastes so good! You should really try it,' ... it just becomes part of your daily life. You eventually get accustomed to that, and you don't want white bread anymore.

Participants' ideal setting and source of healthy lifestyle information is one-on-one with their primary care physician. They also expressed interest in receiving information from nutritionists and physical trainers in a one-on-one setting. Most participants also agreed that receiving health information in a group setting amongst their peers is an acceptable format.

The preferred medium for receiving health information was orally from their physician, but print (pamphlets, brochures, health columns in newspapers, and flyers), radio, and Spanish language television also were widely used and acceptable formats. Younger participants used the Internet frequently to look up health information. As one participant explained, "The Internet is good because when you need to know something about your body, if you don't choose to talk to nobody [*sic*]...you are a little shy to speak to another person, so you go to the Internet." Information-seeking behaviors of focus group participants consisted of periodic face-to-face encounters with their physicians, conventional forms of print (pamphlets, newspaper), audio (radio), and video (television). Few adult participants accessed health information on the Internet.

Resources and Networks

Our final objective was to identify the resources and networks at multiple levels of our guiding model (SEM) that would support healthy lifestyle behaviors. Several key informants discussed community-organizing efforts aimed at improving the quality of life of neighborhood residents. In particular, key informants discussed a process of sharing resources through a network of partnerships amongst social service-providing agencies, business associations, school administrators, local government officials, and law enforcement. The most recent incarnation of such a partnership is described by a key informant as follows:

We decided to start a group ... of all the service providers. We meet once a month to talk ... and work with each other. It's not just service providers,...[names several organizations: business associations, social service providing agencies] are there, even the principals in the schools...our police lieutenant, elected officials go, so anybody who...serves the area or resides or who's a leader. The list goes on [names several more community organizations: half-way houses, local health clinics]. We just meet once a month, go around the table and [share]...which is good because I want everyone...on the same page [to] help each other to move forward.

In addition to the impact that organizations and community partners have on the health of neighborhood residents, other key informants discussed the wider policy-related connection between economic diversity, health status, and neighborhood safety. They argued that the physical and economic infrastructure must be in place in order for residents to be exposed to multiple LTPA and healthy eating options: "You know...if we want to encourage people to walk and to cycle...we need to invest in cycling lanes and...safe sidewalks, and lighting. [The] infrastructure needs to be there." Others noted:

Right now there is pretty much a bodega on every corner and there's about 3 or 4 pawnshops on the main strip...that doesn't really lend itself to a healthy, diverse economy or a healthy neighborhood.... They're just basically abusing people's poverty and taking advantage of them. And...not to say that, especially the bodegas, I don't think they are going out of their way to do that.... It's just the nature of that business where...you see this in...a lot of communities, 'Well you know, my friend does this and he makes good money, so I'm going to do it too.'

It's going to grow the economic district because as people see pedestrian friendly embedded there is a possibility to make money; then you're going to increase the economic diversity and have different types of businesses there, which...hopefully

will also have healthier products.... In a walking area, people who like to walk are going to tend to like healthier things, so it all builds on each other and it's all intertwined. So our main goal is to create that infrastructure so that that can take place.

Regardless of the evident barriers, key informants expressed a deep desire to improve the opportunities and resources available for neighborhood residents to live a healthy lifestyle and be productive members of their community.

Discussion

The primary purpose of this paper was to highlight the importance of formative research in the planning and development of a community-based health-messaging intervention by demonstrating the application of the SEM to a formative research phase. We used the SEM to guide a formative research process by which we explored multilevel influences on the physical activity and diet behaviors of an urban, medically underserved, Latino immigrant population in the north-eastern United States. As a result of our multilevel approach, we developed a comprehensive understanding of the social, structural, and individual-level barriers to and facilitators of health behaviors in our target population. Study findings have implications for the development and delivery of messages encouraging healthy lifestyle choices among a limited-literacy, medically underserved, community-based sample. Specifically, we found that barriers to healthy lifestyle behaviors exist at multiple levels of the SEM and touch upon 3 main themes.

First, most participants felt they were acculturating to a less healthy lifestyle. The influences of the acculturative process occurred at the individual level in that participants cited lacking time to prepare healthy meals, walking less and driving more, and having less time for leisure-time physical activity. At the organizational level, prohibitive factors include the high cost of healthy foods and the limited selection of local food stores offering affordable healthy choices. Lack of indoor exercise facilities also contributed to a sedentary lifestyle. This theme of acculturating to a less healthy lifestyle is consistent with previous research. In a systematic review of the relationship between acculturation and diet, Ayala and colleagues found that although acculturation was not associated with micronutrient intake, foreign-born Latinos in the United States had healthier levels of micronutrient intake (Vitamins A, C, E, and folate, calcium, and zinc) than did US-born Latinos.³⁵ Additionally, level of acculturation was negatively correlated with fruit, rice, bean, and total fruit and vegetable intake, such that greater assimilation entailed eating a less healthy diet.³⁵ In terms of physical activity, a review of the literature describing the relationship between physical activity and acculturation revealed mixed results. The majority of the articles reviewed showed a positive correlation between physical activity and acculturation such that greater assimilation entailed increased physical activity. Still, several studies have shown the opposite effect, making the relationship between physical activity and acculturation less clear³⁶ and exemplifying the need for a mixed-methods approach.

Second, participants acknowledged and defended the primacy of meeting basic needs over personal health concerns. Leisure-time physical activity was discussed as an important but frivolous health behavior, except for those who had the extra time to engage in exercise. Most stated they did not have the time or the energy to exercise after work. At the interpersonal level though, most participants cited the ability to find a supportive friend or relative who could help them achieve their healthy lifestyle goals.

Third, at the community level, despite the noted increase in community policing initiatives, concerns for personal safety kept participants from exercising outside. Additionally, information regarding the existence of community resources for physical activity was not

disseminated in a community-wide fashion. This is consistent with what Emmons and colleagues found in a 2003 randomized-control trial in which nearly one third of their sample of low-income multi-ethnic adults felt that they “did not have a safe or accessible place to exercise.”³⁷

The formative research discussed above has several implications for community-based message framing interventions. First and foremost it is prudent for researchers to tap into local nonprofit groups that have been working with and organizing in the neighborhood. Other disease-prevention interventions have relied upon supportive community agencies as a widely accepted protective factor for behavior change.³⁸ Many of these groups understand their constituents’ needs and know how best to address them. Researchers must gain trust from and collaboration with these groups in order to access their client populations for message delivery. Addressing the target population in a setting that is safe and familiar to them, surrounded by peers and leaders whom they trust, will facilitate message delivery and acceptability.

Once these relationships have been established and nurtured, the intervention design and contents must address the neighborhood realities. For example, the intervention should not use messages encouraging conventional forms of physical activity when residents do not feel safe exercising outside and when they do not have exercise facilities in their neighborhood. Rather, the messages must suggest alternative exercise strategies. Such strategies described by focus group participants include forming walking groups with friends, relatives, and neighbors for group safety; hosting an exercise class in which residents are taught specific exercises that can be performed at home; generating a list of community resources that residents can access for free or very little money such as public schools offering open gym hours for walking, basketball, and swimming.

Interventions also must take into account the level of literacy of the target population. Our target population consisted of primarily Latino immigrants, most of whom were not literate in English and some of whom were not literate in their native language either. Given that low literacy is associated with poor health outcomes³⁹ in the United States, it is imperative that level of literacy be taken into account during message development. Message delivery may have to occur in more than one medium such as video/radio announcements coupled with low-literacy print materials, or more labor-intensive media such as lay health workers or peer-to-peer delivery. A more structured setting such as adult-education classrooms may also facilitate effective multidose message delivery. Finally, message framing interventions must address the role of women as the primary caregiver in Latino communities and families.⁴⁰ Messages that address this role and interventions that build women’s self-efficacy for engaging in healthy behaviors may facilitate message acceptance and subsequent behavior change.

There are several limitations to this research. In terms of participant recruitment, our findings are limited by our sampling methodology for the key informant interviews and the surveys. Key informant sampling began with a focus only on the organizations and individuals with whom we intended to collaborate for the larger intervention. We then transitioned to a respondent-driven sampling method to identify additional key informants. This approach is biased given the initial narrow focus and the partial dependence of the sample on the professional networks of the key informants. With regard to the survey sampling, we chose to survey only the focus group participants given time constraints; however, a larger sample could have been obtained by recruiting from the general clinic or nonprofit populations (eg, anyone in the waiting room).

These findings are limited to medically underserved Latinos in a medium-sized urban area whose primary language is Spanish. With that said, similar barriers to physical activity and a healthy diet are shown in other medically underserved urban groups. Despite these limitations, the current findings demonstrate the utility of applying the SEM to formative research for community-based message framing interventions and have provided us with a road map for intervening in a community-based setting. As more is learned about message framing with this population, formative research must play a key role in developing and disseminating appropriately framed health messages.

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Table 1Using the Social-Ecological Model to Develop Research Questions¹⁷

Social-Ecological Model Level	Research Questions
Individual	What barriers do clients face to increasing their fruit and vegetable (FV) intake and physical activity (PA) habits? What ideas do clients have to increase their FV intake and PA habits? What would motivate them to do more? Who would be best to deliver health messages?
Interpersonal	What can staff members tell us about their client population with regard to FV, PA and healthy living in general? How do staff encourage clients to advocate for their healthy lifestyle needs? Is it effective?
Organizational	Which organizations or business are interested in improving the quality of life of community residents? What do they envision their role to be in the process?
Community	What activities or programs are currently being implemented in the community with regard to FV consumption and PA?
Policy	What laws or policies are in effect to make it easier or more affordable for an urban, medically underserved Latino population to eat healthy and exercise regularly?

Table 2

Types of Formative Data Collected

Type of data	Stakeholders	Topics	Number Completed
Key Informant Interviews	Clinic staff	Current programming in cancer prevention, physical activity, and nutrition Intervention feasibility Patient advocacy Barriers to healthy lifestyle in the neighborhood Collaborations	1
	Local non-profit staff	Health advocacy efforts Collaborations Barriers to success	3
	Local political leaders	Constituent needs Barriers to addressing those needs Health advocacy efforts Collaborations	1
	Local business leaders	Health advocacy efforts Collaborations Barriers to success	1
Focus Groups	ESOL students; FQHC patients	Attitudes, intentions, motivations and barriers to physical activity and fruit and vegetable consumption	4
Behavioral Assessment Surveys	ESOL students	Physical activity behaviors Nutrition behaviors	31