

Getting the Message Out About Cognitive Health: A Cross-Cultural Comparison of Older Adults' Media Awareness and Communication Needs on How to Maintain a Healthy Brain

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Abstract:

Purpose: Evidence suggests that physical activity and healthy diets may help to maintain cognitive function, reducing risks of developing Alzheimer's disease and vascular dementia. Using a cross-cultural focus, we describe older adults' awareness about cognitive health, and their ideas about how to inform and motivate others to engage in activities that may maintain brain health. **Design and Methods:** Nineteen focus groups were conducted in 3 states (California, North Carolina, South Carolina) with 177 adults aged 50 years and older. Six groups were with African Americans (AAs), 4 with Chinese, 3 with Vietnamese, 4 with non-Hispanic Whites, and 2 with American Indians (AIs). A qualitative thematic analysis was conducted. **Results:** Many participants did not recall reading or hearing about brain health in the media. Participants recommended a multimedia approach to inform others about brain health. Both interpersonal and social/group motivational strategies were suggested. Word of mouth and testimonials were recommended most often by Chinese and Vietnamese. AAs and AIs suggested brain health education at church; AAs, Chinese, and Vietnamese said brain health slogans should be spiritual. Participants' perceived barriers to seeking brain health information included watching too much TV and confusing media information. **Implications:** Findings on communication strategies for reaching racial/ethnic groups with brain health information will help guide message and intervention development for diverse older adults.

Article:

Cognitive decline affects one in four community-dwelling adults older than 70 years (Plassman et al., 2008; Unverzagt et al., 2001). Cognitive decline can reduce quality of life and independence, and is a risk factor for developing dementia (Plassman et al.). Dementia is a major cause of functional disability among older adults. According to the Alzheimer's Association (2008), 5 million people aged 65 years or older have Alzheimer's disease, a number that will grow by 50% by 2030.

Research shows that being physically active may help to promote brain plasticity, maintain cognitive function, and reduce the risk of developing dementia (Colcombe et al., 2004; Hendrie et al., 2006). Exercising is often associated with enhanced social environments, which have also been linked to reduced risk of developing dementia (Hendrie et al.). Heart-healthy diets are also associated with maintaining cognitive health (Emerson-Lombardo, Volicer, Martin, Wu, & Zhang, 2006; Hendrie et al.).

In response to these recent findings, research scientists and public health officials have concluded that it is now appropriate to develop communication interventions to educate the public about ways to maintain brain health (Albert et al., 2007; Centers for Disease Control and Prevention & the Alzheimer's Association, 2007). One goal of Healthy People 2010 is to develop effective, culturally appropriate health communication strategies (U.S. Department of Health and Human Services, 2000). Such strategies could contribute notably to reducing

the national burden of cognitive decline. Prohaska and Peters (2007) propose that intended message recipients should provide input into the development of cognitive health messages. This research responds to their proposal.

Preferences for health information sources are influenced by numerous factors, including age, physical health, education, and socioeconomic status (Ramanadhan & Viswanath, 2006). Sources may also differ by ethnicity (G. T. Nguyen & Bellamy, 2006). Results from the 2003 Health Information National Trends Survey found that Asian Americans preferred print media for health-related information (Rutten, Squiers, & Hesse, 2006). Although Asians and Whites used media at similar rates, Asians were less knowledgeable about preventive health behaviors (G. T. Nguyen & Bellamy). American Indians often prefer verbal communication and to learn about health through testimonials from individuals in their culture (Friedman & Hoffman-Goetz, 2007). African Americans rely on multiple media (books, pamphlets, TV, etc.), physicians, and social networks for health information (Talosig-Garcia & Davis, 2005). To optimize the effectiveness of communication interventions and messages, they should be developed and disseminated with sensitivity to cultural differences in health information preferences and needs (Neuhauser & Kreps, 2008).

Little is known about older adults' awareness of brain health information or their attitudes about maintaining brain health. This formative research was designed to increase understanding of culturally appropriate communication strategies for educating diverse older adults about brain health. Particularly important are the attitudes and knowledge of racial/ethnic groups that are disproportionately affected by cognitive decline, such as African Americans (Alzheimer's Association, 2008). Drawing on data from the Healthy Brain project, a large, multisite primarily qualitative study (J. N. Laditka et al., 2009), and using a cross-cultural focus, this study examines older adults' recommendations for developing brain health promotion messages and communication strategies for reaching other older adults with this information.

Two theories guide this study, the diffusion of innovations (DOI) model (Rogers, 1995) and the elaboration likelihood model (ELM) of persuasion (Petty & Cacioppo, 1986). Rogers' DOI theory examines how new ideas spread through cultures and social systems. The five-step DOI decision process for adopting innovations is as follows: knowledge (gaining awareness), persuasion (forming attitudes), decision (adopting/rejecting innovation), implementation (engaging in innovation), and confirmation (evaluating decision made about implementation). Clear, effective, and culturally relevant brain health message development, dissemination strategies, and health campaign implementation will be critical for guiding people through these five steps. The ELM, a persuasive communications framework, focuses on the processes through which individuals interact with health messages. According to the ELM, individuals are more likely to engage in active processing of information if they perceive it to be relevant to themselves. The framework posits that when people are motivated and have time to pay attention to a message, they can process it rapidly and directly, increasing the likelihood of behavior change. In contrast, when they are paying less attention or the message is not perceived to be relevant, they are more likely to focus on surface characteristics of the communication. For example, they may focus on a compelling speaker rather than on the message. In these cases, changes in attitudes or behaviors are less likely. Thus, targeting brain health messages to specific groups of older adults could enhance their attention to the messages, and increase the likelihood both that they will discuss the information with others and that they will change behaviors.

Design and Methods

Participant Recruitment

This study reports results from 19 focus groups conducted with an ethnically diverse group of older adults living in the community (African American, Chinese, Vietnamese, non-Hispanic White, American Indian) across three states (California, North Carolina, South Carolina). Inclusion criteria for participation were as follows: age 50 years or older and not having a self-reported cognitive impairment. Participants were recruited using word of mouth, flyers, and announcements at group meetings and at seniors' centers. Focus groups were conducted in locations convenient for participants (e.g., recreation centers, churches, seniors' community centers, seniors' housing complexes).

Participants in each focus group shared the same self-reported racial/ethnic background. They were informed in writing and orally of the purpose of the focus groups, and assured that all information discussed would be kept confidential. They were also compensated for their time and participation with a modest honorarium. Recruitment and data collection procedures were approved by the institutional review boards of the participating universities: University of California, Berkeley; University of North Carolina at Chapel Hill; and University of South Carolina.

Focus Group Protocol and Analysis

A focus group discussion guide was developed to elicit participants' perceptions, attitudes, and knowledge about topics related to aging and cognitive health (J. N. Laditka et al., 2009). This study analyzes questions related specifically to seniors' awareness and communication of brain health information.

At the beginning of each focus group, participants completed a questionnaire (Bryant, Laditka, Laditka, & Mathews, 2009). All focus groups were conducted in English except for three Vietnamese and three (of a total of four) Chinese groups. The consent form, discussion guide, and survey for these six groups were translated; sessions were conducted by native-speaking moderators and assistants. Native speakers listened to focus group recordings and conducted simultaneous translation-transcriptions. Focus groups recorded in English were transcribed verbatim into Microsoft Word. Details of the coding process are described elsewhere (S. B. Laditka et al., 2009). Transcripts were imported into ATLAS.ti 5.0 (Muhr, 2004) for qualitative data management and coding. Coded data were examined for relationships among codes that represented themes, a method often called "axial coding" (Strauss & Corbin, 1990). Quotations representing themes were noted and used to validate researchers' coding.

Results

Participant Demographics

A total of 177 older adults participated in 19 focus groups: Six groups were with African Americans ($n = 55$; North Carolina, South Carolina), 4 with non-Hispanic Whites ($n = 41$; South Carolina), 4 with Chinese ($n = 36$; California), 3 with Vietnamese ($n = 26$; California), and 2 with American Indians ($n = 19$; North Carolina). The mean age of participants was 69.8 (± 9.7) years; nearly 65% were between 65 and 84 years. The majority (77.5%) was female; most were either married (43.8%) or widowed (33.5%). Nearly one third (32.9%) reported high school or General Educational Development test as their highest level of education, followed by some college (23.9%), less than high school (25.0%), and college degree (18.2%). More Chinese participants (33.3%) had a college degree or higher education, compared with other groups. More than half (52.1%) of all participants who reported income were in the less than \$20,000 category, and many (28.9%) also reported incomes of \$20,000–\$39,999. Additional participant characteristics by race/ethnicity are reported in Table 1.

Table 1.

Demographic Description by Race of Focus Group Participants (19 focus groups, $N = 177$ participants)

Variable	African American ($n = 55$) ^a	White ($n = 41$) ^a	American Indian ($n = 19$) ^a	Chinese ($n = 36$) ^a	Vietnamese ($n = 26$) ^a	Total ($N = 177$) ^a
Age (years), M (SD)	68.66 (8.73)	76.84 (7.87)	72.08 (8.75)	69.01 (8.32)	60.65 (7.75)	69.78 (9.69)
Body mass index, M (SD)	31.63 (8.61)	27.18 (4.37)	30.37 (5.58)	23.32 (3.16)	22.37 (3.26)	27.33 (6.85)
Age in years (Whites: $n = 40$), %						
50–55	7.3	2.5	5.3	8.3	30.8	9.7
56–64	25.5	2.5	10.5	19.5	46.1	20.4
65–74	41.8	30.0	47.4	44.4	15.4	36.4
75–84	21.8	45.0	26.3	27.8	7.7	26.7
85–90	3.6	20.0	10.5	0.0	0.0	6.8
Age collapsed, in years (Whites: $n = 40$), %						
50–64	32.8	5.0	15.8	27.8	76.9	30.1

Variable	African American (<i>n</i> = 55) ^a	White (<i>n</i> = 41) ^a	American Indian (<i>n</i> = 19) ^a	Chinese (<i>n</i> = 36) ^a	Vietnamese (<i>n</i> = 26) ^a	Total (<i>N</i> = 177) ^a
65–90	67.2	95.0	84.2	72.2	23.1	69.9
Gender (AA: <i>n</i> = 39)						
Female	84.6	87.8	77.8	69.4	57.7	77.5
Male	15.4	12.2	22.2	30.6	42.3	22.5
Marital status (Whites: <i>n</i> = 40), %						
Single	14.6	7.5	10.5	13.8	3.8	10.8
Married	32.7	32.5	52.6	55.6	61.5	43.8
Separated	3.6	0.0	0.0	5.6	3.9	2.8
Divorced	9.1	7.5	0.0	5.6	23.1	9.1
Widowed	40.0	52.5	36.9	19.4	7.7	33.5
Marital status collapsed (Whites: <i>n</i> = 40), %						
Married	32.7	32.5	52.6	55.6	61.5	43.8
Not married	67.3	67.5	47.4	44.4	38.5	56.2
Highest education completed (Whites: <i>n</i> = 40), %						
<High school	27.3	27.5	21.1	19.4	26.9	25.0
High school graduate or GED	36.4	27.5	47.4	22.2	38.5	32.9
Some college, technical or vocational	27.3	25.0	10.5	25.0	19.2	23.9
≥College degree	9.0	20.0	21.0	33.3	15.4	18.2
Annual income ^b (AA: <i>n</i> = 38; Whites: <i>n</i> = 32), %						
<\$20,000	57.4	51.6	50.0	50.0	46.2	52.1
\$20,000–\$39,999	29.8	24.2	31.2	25.0	38.5	28.9
\$40,000–\$64,999	6.4	24.2	18.8	13.9	15.4	14.6
\$65,000–\$99,999	0.0	0.0	0.0	11.1	0.0	2.5
>\$100,000	6.4	0.0	0.0	0.0	0.0	1.9

- *Notes:* GED = General Educational Development.

- ^a Number responding is 55 for African Americans (AA), 41 for Whites, 19 for American Indian, 36 for Chinese, 26 for Vietnamese, and 177 for the total sample, unless otherwise noted in the variable column.

- ^b Item response was optional.

Focus Group Findings

Focus group themes are organized into three topical areas: (a) brain health information heard/seen in the mass media, (b) communication strategies for informing others about brain health, and (c) suggested approaches for motivating people to engage in preventive behaviors and activities to reduce the risk of cognitive decline. Table 2 lists categories and themes by focus group question. Figure 1 summarizes participants' suggested communication strategies.

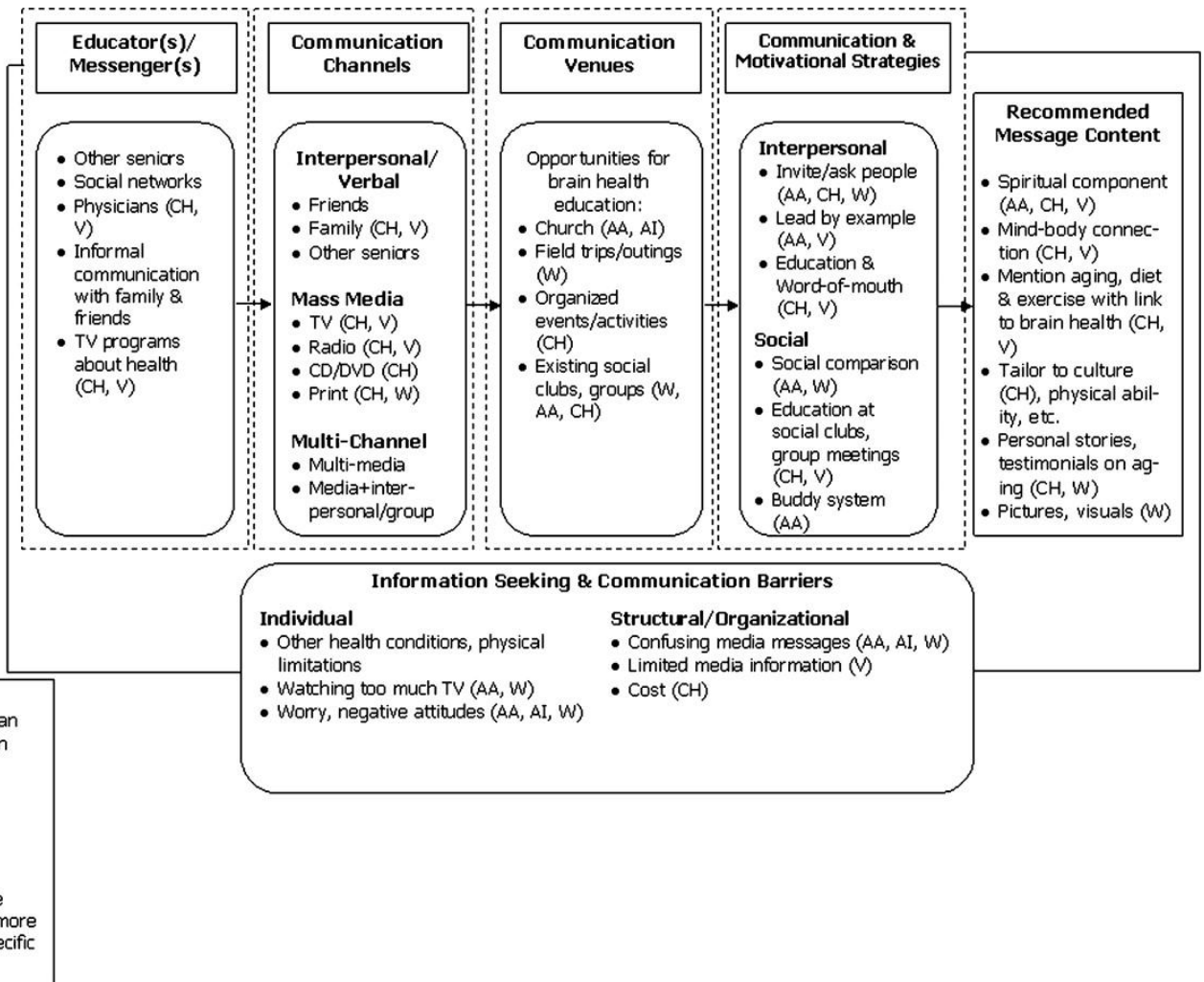


Figure 1. Summary of communication strategies suggested by focus group participants.

Table 2. Focus Group Categories and Themes

Focus group topic/question	Category/theme	Subthemes
	Lack of information	Diet and nutrition Physical activity Brain "exercises"
Media messages heard about brain health	Specific content	Medication and supplements Research advances
	Conflicting information	Diet and nutrition Existing
	Message content	New spiritual slogans Testimonials Media
Communication strategies (informing others)	Communication channels	TV Radio CD/DVD Print: newspapers/magazines Multimedia approach
	Social	Field trips/outings
	Educators/message source	Social networks Other seniors

Focus group topic/question	Category/theme	Subthemes
Motivational strategies		Medical specialists at existing group meetings Invite/ask people
	One-on-one strategies	Lead by example Word of mouth—tailor the information
	Social approaches	Social comparison Participation in social groups/clubs
	Motivational barriers	Individual Negative attitudes TV as a distraction Structural Cost

Media Messages Heard About Brain Health.—

Multiple themes regarding brain health messages heard in the media were identified: (a) lack of information about brain health, (b) specific content, with an emphasis on lifestyle factors such as diet and physical activity, and (c) conflicting messages about brain health.

Lack of brain health information in the media.

Participants often mentioned the media channel(s) where they learned about health. However, many said there was little or no information in the media about brain health. Chinese participants mentioned Chinese newspapers and magazines as sources of information about brain health and diet. American Indian and White participants also recalled reading about brain health in selected print publications. Most participants reported watching a lot of TV. Yet, many had heard nothing about brain health from TV. Vietnamese, in particular, and some African Americans had not heard anything on TV or radio about maintaining brain health: Cancer and all that, but this one, I guarantee I have not heard it. (Vietnamese) I watch TV and ... don't hear much about the brain, you know ... I don't hardly hear nothing for the brain. (African American)

Media content about brain health: A focus on lifestyle behaviors.

Diet and nutrition: Participants reporting exposure to brain health media messages were most likely to mention hearing that healthy diets protect the brain. Chinese, Vietnamese, African Americans, and American Indians said they heard about the need for a balanced diet—with fruits, vegetables, and fish—to keep a healthy brain. One participant stated, “They [the media] say Japanese people live longer because they eat a lot of fish” (Chinese). Others reported that the media “always talks about eating fish” (American Indian) and that “salmon is especially helpful” (African American). White participants mentioned dieting as a way to promote brain health: “... to have so many diet things on TV. Every time, just about, a commercial comes on, it's something about diet” (White).

Alcohol and soft drinks were viewed negatively; participants reported hearing from the media that they could reduce cognitive health. Whites were more likely than others to have heard that illicit drugs and alcohol were bad for brain health.

Physical activity: Following nutrition and diet, physical activity was the next most commonly reported media message linked with brain health. More Whites mentioned physical activity than others: Just recently, I read something about conductors. They live longer because of the exercise that they do. ... You ought to see me going around the house now. Every time I hear music, I am conducting. (White)

Chinese participants mentioned dancing as a form of physical activity that could slow the development of Alzheimer's disease. African Americans and American Indians did not mention hearing about the relationship between physical activity and brain health in the media.

Brain “exercises”: Some participants recalled media messages about brain exercises or puzzles, such as Scrabble and Sudoku. Mostly Chinese groups, and some groups with Whites, reported hearing about “brain

games” in the media. They stated, “Even playing poker every day is good for keeping a healthy mind,” and “Play Mah Jong to keep your brain working. That is what I usually read about” (Chinese). Chinese participants mentioned reading about brain health specifically in Chinese newspapers.

Medication and supplements: Participants also recalled media messages about protective effects of medication, vitamins, and supplements. African Americans discussed medication more than others. American Indians and Whites mentioned effects of nutritional supplements on brain health. They reported hearing media messages about protective effects of fish oil capsules, omega-3 fatty acids, ginkgo, ginseng, and vitamin B12 supplements.

Research advances: All participant groups, except American Indians, said that they had heard about research advances that could prevent or slow cognitive decline, and about particular brain diseases. Participants recalled stories about slowing Alzheimer's disease, as distinguished from its prevention: It seems like there is more about Alzheimer's than before, all you hear about is a new drug or it's always they did this for that, but it still goes back to that “after the loss” and not to prevent it. (African American)

Conflicting media messages about brain health.

A final theme, identified in responses of African Americans, American Indians, and Whites, was confusion caused by conflicting and changing media messages about both general and brain health: They changed the [food] pyramid so you don't know which is healthy and which is bad. (African American)

Some participants did not trust the media: I don't know if there's anything left that really they [media] know that is healthy for you. (American Indian)

Communication Strategies for Informing Others About Brain Health.—

When asked for strategies on how to inform others about brain health, participants offered ideas about (a) message content, (b) communication channels, and (c) potential educators or sources of brain health information.

Brain health message content.

Regarding message content, participants suggested using slogans and testimonials to inform the public about maintaining brain health. Ideas for new slogans to improve or maintain brain health were recommended mainly by White participants, and they included “braintastic,” “boost your brain power,” “wake up and live,” “no matter your age, get fit,” “eat right, stay happy,” and “aging can be fun.” Chinese and Vietnamese participants suggested slogans linking brain health with physical health: “A healthy brain requires a healthy body.” African Americans most often recommended using existing spiritual slogans as a reminder to engage in healthy behaviors. One suggested, “Pull it up, Puff it Up and Praise it Up. ... Pull It Out the Bed, and Pump It Up, you know, you're exercising, and you're giving praise to God” (African American). In addition, Chinese and White participants suggested using older adults' testimonials or personal stories about health as a communication strategy. Chinese participants, in particular, referred to the use of oral tradition and learning through conversations and stories from other seniors.

Communication channels for brain health information.

Despite reported confusion with media health information, TV was the leading communication source suggested for promoting brain health, especially among Chinese and Vietnamese participants, due to its convenience and popularity. Chinese participants mentioned broadcast media more often than others: “I think promotions on television are the most convenient and beneficial” (Chinese). Another preferred TV because, “Seminars reach a limited audience and I would like to reach a broader audience” (Chinese).

Despite participants' reported use of TV and recommendation of broadcast media as a communication channel for brain health promotion, overuse of TV was considered a major barrier to engaging in healthy behaviors. Some participants suggested that watching too much TV would “fry your brain” (White). Although TV was

considered to be cognitively stimulating, and valuable for health-related programming, it was also thought to be “no good for you” (African American). Participants noted that TV could become addictive, a barrier to healthy activities: “TV ainapos;t going to teach you nothing. It's not gonna help you in any way” (African American); “So many people are tied up with TV” (White).

Radio was recommended as an important outlet for communicating brain health messages, especially among Chinese and Vietnamese participants. Chinese participants also suggested making CDs and DVDs with health information for individuals to watch or listen to at home, as well as for groups to use during seminars or in discussions. They said that this medium had advantages because, “if the information is on a CD or DVD, then they [the patients] can watch it at home. If you broadcast it, they can only listen to it. But, if you put it on a DVD, then they can watch it on their own time” (Chinese).

Print materials including newspapers, magazines, posters, flyers, and educational manuals were considered valuable for brain health education because individuals could bring them to their homes and review them on their own and with family. Whites mentioned the need for visuals in all printed educational materials: “pictures for senior citizens are real important”; “I read pictures more than I do the words.” Newspaper and magazine articles were mentioned as important information sources in all groups, particularly by Chinese participants. However, cost was cited as a barrier to purchasing newspapers or magazines: “Some old folks think newspapers are too expensive. It's too much money for them” (Chinese). White and Chinese participants suggested using newsletters to spread the word about maintaining brain health.

When offering suggestions on how to communicate brain health information, participants often mentioned multiple media outlets and information channels (e.g., newspapers, flyers, and TV). Education both through the mass media and within social groups was also mentioned. In addition, media outlets in their native languages were mentioned as key information sources by Chinese and Vietnamese participants.

In addition to mass media channels, venues suggested for brain health communication were field trips and outings. Whites said that taking these trips would increase general and brain health knowledge and outcomes because “people ... want to be active, people ... want to exercise, [so you should] pick out places that they could go and exercise, and just, you know, eat.” Group outings were thought to facilitate a healthier diet, physical activity, entertainment, and mental stimulation. Finally, African Americans and American Indians most often mentioned the church as an appropriate setting for peer education about brain health: “Just promote ... healthy lifestyles, healthy eating, you know, especially in church here” (African American).
Brain health educators.

Some participants believed that peer education, particularly within seniors' social networks, was the best way to reach people with brain health messages. All groups suggested targeting preexisting social groups, such as 4H (head, heart, hands, and health) Youth Development programs through extension services, alumni associations, and seniors' centers, to teach and train established groups to discuss brain health. It was also suggested that medical specialists be invited to conduct sessions at existing group meetings. I think in order to keep one healthy and sharp, it's important to have a type of meeting like this or get everybody to discuss health. Invite doctors, medical specialists to give speech(es) so we can broaden our knowledge. (Chinese)

The following quote illustrates the benefits of group education over media messages: Discussion groups are realistic, which makes the idea realistic. People put it into practice right away. They see clearly, “Ahh ... this man is 90 years old and is still like that, how is that possible?” Those discussion groups are better than TV, newspapers, and magazines. (Vietnamese)

Other than as guest speakers at group meetings, physicians were rarely mentioned as preferred sources for brain health information. Mainly Chinese and Vietnamese participants discussed doctors and other health professionals as sources of health information. Due to my poor health and my lack of medical knowledge,

relying on doctors, of course. I need to trust the doctor's recommendation as a precautionary measure. (Chinese)

Motivating Others to Keep Their Brains Healthy.—

When asked how they would motivate others to keep their brains healthy, specifically in terms of diet, physical activity, and social involvement, participants suggested both one-on-one and group approaches. They also suggested barriers to motivating others to participate in activities that would help maintain cognitive health.

One-on-one motivational approaches.

Inviting/asking people: Focus groups most often suggested interpersonal communication as a strategy for motivating others to keep their brains healthy. Inviting and reminding people to engage in healthy behaviors, in person or by telephone, was mentioned most often by all racial/ethnic groups. For example, one White participant said: I have a couple of sisters. ... I mean, there are too many things out there to do. Get outside and walk. They won't—you just have to ask them, that's all—that's the only thing you can do. (White)

Chinese participants stressed the importance of simply asking others to get involved in activities: Sometimes I would ask if they want to play Mah Jong on Sundays. If they wanted to play, I would find people to come play with them. They would play for 2 to 3 hours. (Chinese)

Leading by example: Motivating others by example was suggested by all groups, except for American Indians. This was particularly stressed by African Americans and Vietnamese. Participants said that you can motivate people because, "We can do it, and they can follow" (Vietnamese). "I think people can follow your lead and be exposed to the opportunities that exist. ... I think the worst thing is to sit at home, shut in. ... Take them with you if you go dancing. ... Take them for singing. If they like it, they join" (Chinese).

Participants also suggested motivating others by encouraging them to engage in healthy behaviors, and to get out and socialize: I do a lot of talking and my friends ... they just stay home in the house. You should try to encourage them to come out, get motivated. If you don't do nothing but just come out three times a week, that will be plenty. (African American) Remind them every day. Each day, remind them ... explain to them, encourage people 50 years old and up to exercise, avoid certain foods, and take vitamins. (Vietnamese)

Education and word of mouth: Motivating other older adults through education and increased knowledge was suggested only by Chinese and Vietnamese participants. "I think it is helpful for old people to learn health tips on how aging people can stay healthy. It's important to learn what we've talked about just now. It's terrible if people don't want to learn. If they don't learn, they'll be ignorant" (Chinese). Educating others could continue when the new learners pass the information on: You're going to spread information, right? How do you let a person know that fish is good for the brain? A lot of people don't know. You have to introduce it to them so it's easy to digest. Automatically, they'll spread it among each other. (Vietnamese)

Participants provided specific examples of important diet and lifestyle information that should be explained to others regarding brain health: Explain to them, for example, eating fish is better than eating meat. Vegetables are better than meat. (Chinese)

Tailoring educational information was important to Chinese participants, who mentioned that "everyone has his own unique way," and activities will "differ from person to person ... depending on the physical condition" (Chinese).

Social approaches.

Social comparison: Another form of motivation discussed was use of social comparison. Primarily White and African American participants recommended that other older adults could be motivated to engage in healthy behaviors by comparing them to others of their same age: I had a neighbor, I was trying to tell her how to eat

and remind her of my sister, you know, and how one was doing and how the other one was doing. (African American)

Others discussed the importance of witnessing individuals with physical impairments becoming physically active. One participant gave the example: I think if you watch the Olympics and this other guy's skiing with one leg ... that would motivate anybody if he can do that. (White)

Participation in social groups/clubs and buddy systems: Participants also suggested that social groups in the community or at seniors' centers could help mobilize people to maintain cognitive health. One participant boasted: This is the best senior citizen place I've been to ... and the things and the food ... that they have here. Even trips they take you on. ... (American Indian)

White and Chinese participants believed that promoting these group activities as "fun" would motivate people to get involved.

Chinese and Vietnamese participants mentioned ways to encourage healthy behaviors at support groups. In particular, support groups for people living with various health conditions could be helpful for motivating participants to engage in activities that promote brain health. Only Chinese participants suggested organizing activities to help promote brain health. "Organize more activities, and invite others to join free. It could be a field trip or physical exercise" (Chinese). Exercise classes, educational seminars, and group activities outdoors were all suggested: "Some doctors sometimes offer public seminars in hotels. I think those are very good. I have participated in one" (Chinese). "The park management should organize activities like Tai Chi or aerobic classes. ... This can attract more people to go out to the park to exercise" (Chinese).

Another method, recommended by African Americans, was a "buddy system," or pairing two older adults together who could motivate each other to engage in healthy behaviors. "Bring the friend. You encourage each other" (African American).

Barriers to motivating others.

A number of barriers to motivating older adults to keep their brains healthy emerged. Individual and structural barriers were discussed.

Individual barriers: Some participants expressed concerns about being able to motivate others, saying "nothing works" for influencing people to take care of their health. One person remarked, "You cannot motivate others, they've got to want to do it themselves" (African American). African American, Chinese, and White participants most often said that it is extremely difficult to motivate others to take care of their health: You can take the horse to water, but you cannot make it drink. Because there are a lot of people out here that just have no interest in all these things until something happens to them. It's really a hard thing to do. (Chinese)

African American, American Indian, and White participants reported negative attitudes and stubbornness as barriers to motivating others. A lot of them say I don't want to go. I know all about that stuff. I'm not gonna change my eating habits. (American Indian)

Structural barriers: Finally, some participants reported cost as a barrier to healthy behaviors: It's like when we want to learn something, we need to pay a fee. I don't know how much is the fee ... but once old people heard they needed to pay, they quit considering to participate in those activities. (Chinese)

Discussion

This study examined older adults' awareness of media information about brain health and their recommendations for effectively communicating brain health information in culturally diverse communities. Primarily Vietnamese groups, and some African American and Chinese, said that they had not heard anything about brain health in the media. A previous study on Vietnamese Americans, focusing on health information

seeking, found that participants received most of their health information from Vietnamese-language print and electronic media (B. H. Nguyen, Vo, Doan, & McPhee, 2006). Efforts are needed to develop language-appropriate and culturally suitable brain health resources for older adults whose first language is not English and to ensure that brain health messages are in ethnic media.

Media messages heard most often by participants related to physical activity and nutrition reflect recent evidence supporting the link between these factors and cognitive risk (Hendrie et al., 2006). African Americans, American Indians, and Whites who had heard about brain health in the media found information about diets and supplements to be confusing and contradictory. They reported mixed messages from the media about scientific evidence regarding relationships between healthy behaviors and health outcomes. Other research also shows older adults' concerns with the quality of health and medical information in the media (Friedman & Hoffman-Goetz, 2003). Media coverage of health issues does not always accurately reflect disease rates or risk factors (Bomlitz & Brezis, 2008).

Participants identified both individual and structural barriers to seeking brain health information. An interesting finding was that although many participants recommended TV as an important channel for communicating brain health information, they also said that too much TV was a barrier because it distracted attention from seeking health information and engaging in physical activity. This view was particularly common among African Americans. Further research, guided by the DOI model, is needed to better understand the implications of the mixed perceptions about TV, especially given participants' consistent recommendations for broadcast media communication of brain health information.

Only Chinese and Vietnamese participants stated explicitly that messages should explain the link between physical activity and brain health. This implies that not all participants may completely understand the association between lifestyles and brain health. Further research will be needed to assess older adults' understanding of risk factors associated with cognitive decline. Only White participants suggested including visuals with brain health messages. Based on the ELM, including relevant visuals and illustrations could improve attention to health messages, and their comprehension. For example, culturally appropriate representations of women undergoing mammograms have successfully promoted breast screening among African Americans with low literacy (Paskett, Tatum, Wilson, Dignan, & Velez, 1996).

This study has limitations. The sample was purposively selected from seniors' centers and other organizations, and may not represent perceptions and opinions of older adults who are not members of these organizations. Participants were asked about their awareness specifically of brain health messages in the media. However, an analysis of brain health resources in the project states' media markets was not conducted. Participants' responses may be limited by those brain health resources. For example, if a local media market offered few brain health resources or resources in native languages were not available for minority populations, participants might be unlikely to express "awareness" about such resources. One published study has examined the volume and scope of cognitive-related information in the media. Clarke (2006) evaluated the portrayal of Alzheimer's disease in the 20 highest circulating English-language magazines published between 1991 and 2001. Future research is needed to analyze cognitive health promotion messages in the popular media and to compare older adults' media awareness with actual media content about how to maintain a healthy brain.

Differences in health information needs and sources, and in barriers associated with language or culture, may influence health communication efforts designed to influence older adults (Sparks & Nussbaum, 2008). This study provided communication strategies for reaching diverse populations with brain health messages. Without attention to older adults' information sources and preferences for diffusion of health information in communication efforts, they may not realize that the information is pertinent to them, especially if it is not delivered through appropriate channels or does not incorporate their ideas and attitudes about disease risk and prevention. Findings suggest that it would be useful to evaluate the quality of brain health content in the mass media and to explore older adults' opinions about the trustworthiness and quality of media messages.

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