Healthy Aging Project-Brain: A Psychoeducational and Motivational Group for Older Veterans

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Introduction: Positive health behaviors can promote brain health with age. Although healthy lifestyle factors are often encouraged by health care providers, many older adults experience difficulty incorporating these into their daily life.

Methods: To address this gap, we developed a novel health education and implementation group for older veterans (aged > 50 years). The primary objectives of this group were to provide psychoeducation about the link between behaviors and brain health, increase personal awareness of specific health behaviors, and promote behavior change through individualized goal setting, monitoring, and support. Based on input from medical providers, group content targeted behaviors known to support cognitive functioning: physical activity, sleep, cognitive stimulation, and social engagement.

Results: Thirty-one veterans participated in six 90-minute weekly classes and attended 5 of the 6 groups on average. The average age for the predominantly male (90%) and white (70%) group was 71 years. Qualitative feedback indicated high satisfaction and increased awareness of health behaviors. Results of paired samples *t* tests comparing baseline to posttreatment self-report measures revealed a significant decline in depressive symptoms ($P = .01$) and increases in satisfaction with life ($P = .003$) and self-efficacy ($P = .008$).

Conclusions: This development project showed evidence of increased awareness of health behaviors and improved mood. Expanded data collection will strengthen power and generalizability of results (increase sample diversity). It will also allow us to examine moderating factors, such as perceived self-efficacy, on outcomes.

With a rapidly growing older adult population, increased attention has been given to cognitive changes that occur with age, with a focus on optimizing the cognitive health of aging individuals.[1] Given the absence of pharmaceutical treatments to prevent cognitive decline, there is an increased need for health care systems to offer alternative or behavioral interventions that can mitigate the effects of cognitive decline in aging.

Notably, many individuals are able to maintain or even improve cognitive functioning throughout their lifespan, with some research implicating health behaviors as an important factor for promoting brain health with age. Specifically, sleep, exercise, eating habits, social engagement, and cognitive stimulation have been linked to improved cognitive functioning.[2-8] In addition to the potential benefits for brain health, there is evidence that greater investment in attaining health goals is associated with subjective reports of higher well-being, fewer mental health symptoms, lower physical health stresses, decreased caregiver burden, and increased functional independence linked with longer independent living.[9] The latter has a substantial financial impact, such that the positive consequence of increased independence is likely staving off the need for admission to assisted living and adult family homes, which can be costly.

Despite the role of health behaviors in brain aging and overall health and functioning, research indicates that only a small number of older adults (12.8%) follow recommended guidelines for healthy lifestyle factors.[10] Education has been identified as one factor associated with the likelihood of engaging in positive health behaviors, prompting the delivery of health-education interventions. Most psychoeducational interventions have traditionally focused on one aspect of behavior change at a time (eg, sleep); however, Gross and colleagues conducted a meta-analysis of cognitive interventions and in addition to the overall positive benefits (effect size 0.38), they also found suggestive evidence that interventions that combined multiple training strategies were associated with larger training gains ($P = .04$) after adjusting for multiple comparisons.[11] For example, Miller and colleagues found a significant improvement on both subjective and objective measures of memory following a multicomponent approach that combined training in memory skills, stress reduction, nutrition, and physical activity.[12]

In addition to the potential positive impacts of health behaviors on brain health,

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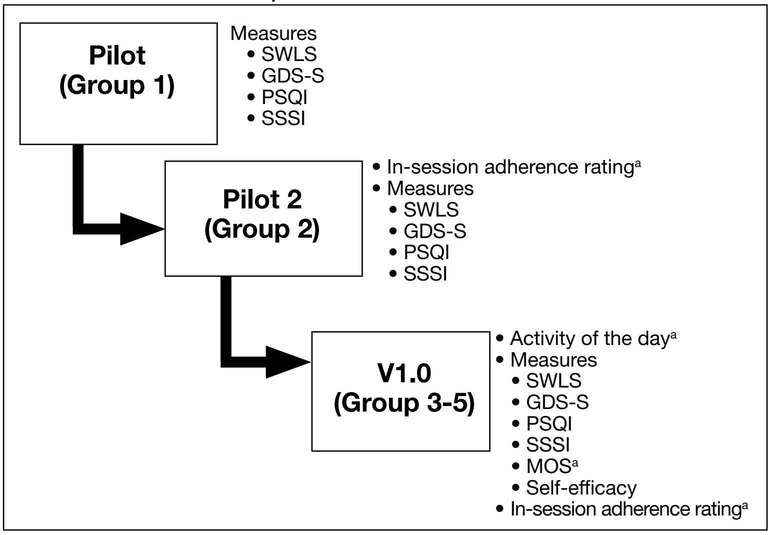
FIGURE Manual Development



Abbreviations: GDS-S, Geriatric Depression Scale-Short Form; MOS, Medical Outcomes Survey; PSQI, Pittsburg Sleep Quality Index; SSSI, Social Support Survey Instrument; SWLS, Satisfaction With Life Scale.
[a]New additions.

findings suggest that targeted emphasis on health behavior change may have the potential to stave off mild cognitive impairment (MCI) or dementia even if for a short time. Given the increasing prevalence rates of MCI with age (6.7% in adults aged 60-64 years, reaching 25.2% in adults aged 80-84 years[13]) and dementia (prevalence of MCI converting to dementia is 18-40%[14]), as well as the corresponding emotional, financial, and family-oriented consequences (eg, impact on the well-being of family caregivers), the need for behavioral interventions that seek to optimize brain health is becoming increasingly apparent.

More than 9 million veterans are now aged ≥ 65 years.[15] In addition to representing nearly half of all veterans and a sizable portion of aging adults in the US, older veterans are at increased risk of frailty, mortality, and high rates of chronic medical/mental health conditions that can lead to accelerated cognitive aging.[6-17] Together, these conditions highlight the importance of developing comprehensive psychoeducational and behavioral interventions in this population. To address this need, we developed a novel psychoeducation and behavior change group called the Healthy Aging Project-Brain (HAP-B, pronounced "happy"). The HAP-B intervention was designed to promote healthy brain aging by using empirically supported health behavior change strategies, including education, personalized goal setting, and community support. The primary aim of this project was to develop and implement an intervention that was feasible and acceptable (eg, could be implemented in our setting, was appropriate for a veteran population) and to determine any positive outcomes/preliminary effects on overall health and well-being.

METHODS

We recruited veterans aged ≥ 50 years through primary care clinics and self-referrals via flyers in the US Department of Veterans Affairs (VA) Puget Sound Health Care System (VAPSHCS), Seattle Division hospital. We targeted the "worried well" and welcomed veterans with MCI and mental health diagnoses. Notably, if there were significant mental health and/or substance use concerns, we encouraged veterans to seek focused care and stabilization prior to or concurrent with group participation. Exclusion criteria included presence of suicidality/homicidality, untreated or unstable substance use disorder, or a diagnosis of dementia. Exclusion criteria were assessed by the referring health care providers (HCPs), when appropriate, and through a health record review. Group facilitators used their clinical judgment to monitor participants if they began experiencing more severe cognitive impairment or acute mental health concerns. Although we did not encounter any of these instances, facilitators were prepared to discuss any concerns with the veteran and their referring HCP. Participants sampled were from 1 of 5 groups offered between January 2018 and March 2019. A waiver from the institutional review board was obtained after meeting criteria for quality improvement/quality assurance (QI/QA) for this study.

Procedures

At the initial stages of development, our team conducted a needs assessment to identify health-related areas where HCPs felt veterans would benefit from additional education and support. The needs assessment was conducted across primary care, geriatric extended care, and the Geriatric Research, Education, and Clinical Center (GRECC) at VAPSHCS. Combining the needs assessment results with the available research base, we identified sleep, physical activity, social engagement, and cognitive stimulation as areas for focus. Notably, although nutrition has been identified as an important factor in cognitive aging, a diet and nutrition class was already available to older veterans at the Seattle VA; hence, we chose to limit overlap by not covering this topic in our group.

The group was offered on a quarterly basis as six 90-minute psychoeducational classes to allow time for didactics, discussion, and practice without overloading participants with information. Each group consisted of 4 to 9 veterans led by 2 cofacilitators. Group structure allowed for feedback and ideas from group members as well as accountability for engaging in behavior change. Cognitive functioning was not formally evaluated. Attendees were asked but not required to complete questionnaires before the classes began and again at completion. In addition at the completion of each group, feedback was collected from veterans and used to modify group content (Figure).

Two pilot groups were implemented in early and mid-2018 with iterative changes after each group. Then we revised the assessment battery and implemented the current version (v1.0), which was first offered in the fall of 2018 and was used with the final 3 groups. Noteworthy changes included weekly check-ins to assess use of health behavior logs and progress toward individual goals, additional pre-and postgroup measures, and in vivo skills practice relevant to the topic being discussed that day.

Each session began with a check-in, which included a review of daily logs and SMART (specific, measurable, attainable, relevant/realistic, and timebound) goals from the previous week.[18] This allowed for praise/reinforcement of health behaviors as well as discussion of potential barriers. Second, an overview of research focusing on the relationship between aging, brain health, and the topic of the day was presented. As an example, in the discussion of social engagement, research was presented about the link between social isolation and cognitive decline; the indirect benefits of social support (eg, social support is linked to improved physical and mental health, which, in turn, is associated with less cognitive decline); and the direct benefits of social support (eg, high levels of emotional support are associated with better cognitive function) (Table 1).[6]

Next, facilitators reviewed skills and strategies to improve functioning in the topic of discussion. During the social engagement group, for example, facilitators discussed tips to improve social skills (eg, asking open-ended questions) and how to build social support into a daily routine (eg, scheduling weekly phone calls with family and friends). Following this discussion of skills, an activity was practiced, reinforcing learned material. During the social engagement group, veterans were invited to use small talk strategies with fellow group members. Finally, group sessions ended with each participant identifying a SMART goal for the coming week and troubleshooting potential barriers to success. SMART goals were kept broad, so veterans could choose a goal related to the topic discussed at the group that day (eg, scheduling a phone call with a friend twice in the coming week during the social engagement-focused group) or choose any other goal to focus on (eg, a sleep-related goal). Similarly, goals could change week to week, or could remain the same throughout the 6-week classes.

Measures

The questionnaires used for QI/QA analyses included the Satisfaction with Life Scale (SWLS); Geriatric Depression Scale-Short Form (GDS-S); Social Support Survey Instrument (SSSI); Pittsburg Sleep Quality Index (PSQI); Medical Outcomes Survey-Short Form (MOS-36 SF); and a self-efficacy scale (adapted from Huckans and colleagues for traumatic brain injury).[19-24] Written feedback was collected at the end of the last group to assess perception of progress, self-perceived behavior change, what was helpful or unhelpful, and how likely the participants were to recommend the group to other veterans (0 to 3, very unlikely to very likely).

To promote consistency with other health and behavior change interventions at the VA, HAP-B used resources from the Whole Health model SMART goals. Research supports the use of self-monitoring techniques like SMART goals for behavior change.[25]

To facilitate skills practice and self-monitoring between classes, veterans were

TABLE 1 Class Curricula

Titles	Topics	Activities
Introduction	• Course overview	• Confidentiality, doing the home practice • Myths of aging • What is a SMART goal? • Setting SMART goals for the week • Using the tracking log
Social engagement	• Review of homework • Overview of research • Skills • Activity of the day • VA and community resources • SMART goals for the next week	• SMART goals and tracking log • Research on social isolation and cognitive decline, benefits of social support • Skills to improve social support - Finding activities in the community - Scheduling calls with family/friends • Small talk practice
Sleep	• Review of homework • Overview of research • Skills • Activity of the day • VA and community resources • SMART goals for the next week	• SMART goals and tracking log • Research on sleep and cognitive decline, benefits of quality sleep • Skills to improve sleep - Basic sleep hygiene • Progressive muscle relaxation
Physical activity	• Review of homework • Overview of research • Skills • Activity of the day • VA and community resources • SMART goals for the next week	• SMART goals and tracking log • Research on physical activity and cognitive decline, benefits of leading an active lifestyle • Skills to increase daily activity - Choosing appropriate activities by intensity and duration - Setting up walking times with a buddy • Sitting yoga
Cognitive stimulation	• Review of homework • Overview of research • Skills • Activity of the day • VA and community resources • SMART goals for the next week	• SMART goals and tracking log • Cognitive stimulation and cognitive decline, benefits of cognitive stimulation • How to use memory tricks - Mnemonics - Focused attention • Puzzles
Wrap-up	• Review of homework • Tips for continued practice • VA and community resources • Questionnaires and feedback	• SMART goals and tracking log • How to create a habit • Continued tracking

Abbreviations: SMART, specific, measurable, attainable, relevant/realistic, and timebound; VA, US Department of Veterans Affairs.

asked to complete 2 homework assignments. First, at the end of each group, each veteran identified a specific SMART goal to focus on and track in the coming week. Goals were unique to each veteran and allowed to change from week to week. Group discussion around SMART goals involved plans for how to address potential barriers; progress toward goals was discussed at the beginning of the following group. Second, veterans were asked to complete a worksheet used to track progress toward the weekly SMART goal and the specific health behaviors related to the 4 domains targeted by HAP-B. For example, when tracking sleep behaviors, veterans noted bedtime, waketime, number of times they woke up during the night, and length of daytime naps if applicable. Tracking logs were provided at the end of each class for personal purposes only. We asked veterans to rate themselves each week on whether they used the tracking sheet to monitor health behaviors; and how successful they were at accomplishing their previously identified SMART goal. We recorded responses on a 0 to 2 scale (0, not good; 1, fair; 2, good). This rating system was developed and implemented in later groups to promote self-monitoring, accountability, and discussion of potential barriers. However, due to the small sample that completed these ratings and the

TABLE 2 Pre- and Postgroup Measures

Measures	Pregroup, mean (SD)	Postgroup, mean (SD)	Participants, No.	*P* Values
GDS-S	5.96 (3.8)	4.48 (3.8)	23	.01
SWLS	18.08 (6.8)	22 (8.1)	25	.03
PSQI	9.04 (5.4)	8.13 (5.3)	24	.09
SSSI	3.17 (0.9)	3.13	25	.79
Self-efficacy scale	3.69 (0.5)	4.10 (0.5)	15	.08
MOS				
General health	56.07 (19.3)	57.85 (17.0)	14	.54
Well-being	60.01 (21.9)	75.14 (14.9)	14	.02
Social functioning	64.48 (23.4)	75 (14.7)	14	.06
Physical functioning	56.23 (24.3)	65 (19.8)	14	.01
Role limitations due to physical	26.79 (41.0)	50 (44.9)	14	.04
Role limitations due to emotional	47.62 (40.8)	71.43 (36.6)	14	.04
Energy/fatigue	44.64 (22.2)	58.21 (19.0)	14	.01
Pain	53.75 (26.1)	56.07 (23.1)	14	.60

Abbreviations: GDS-S, Geriatric Depression Scale-Short Form; MOS, Medical Outcomes Survey; PSQI, Pittsburg Sleep Quality Index; SSSI, Social Support Survey Instrument; SWLS, Satisfaction With Life Scale.

absence of objective corroborating data, these ratings were not included in the current analyses.

Every participant received a manual in binder format, which provided the didactic information for each group session, skills and strategies discussed in each session, and relevant resources in both the VA and community. For example, social engagement resources included information about volunteer opportunities, VA groups that focus on developing interpersonal skills, and recommendations from past group members on social events (eg, dance lessons at a senior center). We also developed a facilitator version of the manual in which we added comments and guidance on topics for discussion. Materials were developed with the goal of optimizing the ease of dissemination to other sites.

RESULTS

Across the 5 groups, 31 veterans enrolled as participants and completed the initial intake measures, with an average of 6 participants per group (range 4-9). The majority (80%) attended at least 5 of the 6 classes. The mean age was 70.7 years, and 90% of participants were men. Seventy percent of participants self-identified as white, 32% African American, and 3% Native American, which is consistent with VAPSHCS demographics. Of the 31 participants, 16 had a mental health diagnosis, and 6 had a cognitive diagnosis.

At the start of the class, the mean (SD) reports of participants were mild depressive symptoms 5.96 (3.8) on the GDS scale, moderate levels of self-efficacy 3.69 (0.5) on the self-efficacy scale, and moderate levels of satisfaction with life 18.08 (6.8) on the SWLS scale (Table 2). Data from 25 of 31 veterans who completed both pregroup and postgroup surveys were analyzed and paired samples *t* tests without corrections indicated a reduction in depressive symptoms ($P = .01$), improved self-efficacy ($P = .08$), and improved satisfaction with life ($P = .03$). There were no significant differences in self-reported sleep quality or perceived social support from pregroup to postgroup evaluations. Because the sample size was smaller for the MOS-36, which was not used until group 3, and the subscales are composed of few items each, we conducted exploratory analyses of the 8 MOS-36 subscales and found that well-being, physical functioning, role limitations due to physical and emotional functioning, and energy/fatigue significantly improved over time (*Ps* < .04).

Twenty-eight veterans provided written feedback following the final session. Qualitative feedback received at the completion of the group focused on participants' desire for increased number of classes, longer sessions (eg, 2 participants recommended lengthening the group to 2 hours), and integrating mindfulness-based activities into each class. Participants rated themselves somewhat likely to very likely to recommend this group to other veterans (mean, 2.9 [SD, 0.4]).

DISCUSSION

The ability and need to promote brain health with age is an emerging priority as our aging population grows. A growing body of evidence supports the role of health behaviors in healthy brain aging. Education and skills training in a group setting provides a supportive, cost-effective approach for increasing overall health in aging adults. Yet older adults are statistically less likely to engage in these behaviors on a regular basis. The current investigation provides preliminary support for a model of care that uses a comprehensive, experiential psychoeducational approach to facilitate behavior change in older adults. Our aim was to develop and implement an intervention that was feasible and acceptable to our older veterans and to determine any positive outcomes/preliminary effects on overall health and well-being.

Participants indicated that they enjoyed the group, learned new skills (per participant feedback and facilitator observation), and experienced improvements in mood, self-efficacy, and life satisfaction. Given the participants' positive response to the group and its content, as well as continued referrals by HCPs to this group and low difficulty with ongoing recruitment, this program was deemed both feasible and acceptable in our veteran health care setting. Questions remain about the extent to which participants modified their health behaviors given that we did not collect objective measurements of behaviors (eg, time spent exercising), the duration of behavior change (ie, how long during and after the group were behaviors maintained), and the role of premorbid or concurrent characteristics that may moderate the effect of the intervention on health-related outcomes (eg, sleep quality, perceived social support, overall functioning, concurrent interventions, medications).

Strengths and Limitations

This study had a limited sample size and no control group. However, evidence of significant improvements in depressive symptoms, self-efficacy, and life satisfaction in the development groups without a control group is encouraging. This is particularly noteworthy given that older veterans as a group have higher rates of frailty and mortality than do other similarly aged counterparts.[17] An additional weakness is the absence of a brief cognitive assessment or other formal assessment as part of the inclusion/exclusion criteria. However, this program development project provides data from a realistic condition (recruited broadly and with few exclusions, offered in similar format as other VA classes), thus adding strength to the interpretation and possibly the generalizability of these findings.

CONCLUSIONS

Future directions include disseminating HAP-B materials and procedures across a variety of sites, both VA and non-VA. In line with this goal, we hope to increase sample size and sample diversity while optimizing protocol integrity during the exportation phase. With a greater sample size and power, we aim to examine the role of self-efficacy and other premorbid factors (eg, cognitive functioning at baseline) as mediators for observed changes in pre-/postmeasures and outcomes. We also hope to incorporate objective measures of behavior change, such as fitness trackers, heart rate/pulse monitors, and actigraphy for monitoring sleep. Finally, we are interested in conducting follow-up with past and future participants to detect changes that may occur with learning new skills following the completion of the group (eg, changes in sleep behavior that take time to take effect) and the extent to which participants continue to use the health behavior skills and strategies to maintain or enhance progress in behavioral goals. Finally, although this intervention was initially designed for use with older veterans receiving health care through the VA, we believe the concepts and work products described here can be used with older adults across a wide range of health care settings.

Providers interested in trialing HAP-B at their local site are encouraged to contact the authors.

Author disclosures

The authors report no actual or potential conflicts of interest with regard to this article.

Disclaimer

The opinions expressed herein are those of the authors and do not necessarily reflect those of *Federal Practitioner,* Frontline Medical Communications Inc., the US Government, or any of its agencies..

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