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ORIGINAL RESEARCH

Mental health and aging initiative: intervention component effects

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ABSTRACT

Introduction: The objective of this investigation is to evaluate the Mental Healthiness and Aging Initiative (MHAI) intervention. The MHAI was created to promote awareness and knowledge about mental health/substance (MH/SA) use and aging issues in rural Kentucky, USA, due to limitations in formal and informal mental health care and treatment resources as a result of multilevel barriers in rural regions and effects on health, wellbeing and quality of life.

Methods: This investigation took place between 2010 and 2011 in two rural counties in Kentucky. Participants from two counties were recruited through an email solicitation sent to Kentucky cooperative extension agents (university-affiliated community liaisons). Individuals participated in a two-hour intervention session covering facts and information, application exercises, and community tools for addressing late-life mental health and substance abuse. Effectiveness was evaluated by examining changes in attitudes and knowledge about MH/SA and aging from pre-test to post-test and again 3 months and 6 months later. The evaluation survey examined mental health and substance abuse awareness (six questions) and knowledge (13 questions) and was previously piloted and designed for the current study ensuring face validity. Seven individual linear mixed models were analyzed using each of the six awareness questions and an additional model using an aggregate score across the knowledge questions representing the total percent correct for knowledge questions.

Results: The participating sample (n=55) was 65.35 years of age on average, with the majority being female (85%), white (100%), married (69%), living with a spouse/partner only (68%), high school educated (57%) and having a total household income averaging US$44,199. The findings indicated sustained improvement in awareness and knowledge about MH/SA and aging. Results also

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indicated that there is a need to improve maintenance of knowledge regarding older adult alcohol consumption risk, clinical provider communication about mental health, identifying/recognizing mental health problems, and older adult retention of their mental abilities based on long-term retention rates. These indicators had below 90% correctness at 6 months, despite having 90%+ accuracy at post-assessment, immediately after the intervention administration.

Conclusions: This study demonstrates that community interventions for MH/SA awareness and knowledge are effective within majority rural regions. As currently designed, implementing the MHAI intervention program is feasible. Evidence from the current study indicates that community residents (including rural individuals) can be recruited to participate in a program about MH/SA and aging, and as an outcome have increased awareness and knowledge about MH/SA and aging. Future research will need to explore how to utilize MHAI-type intervention programs to a point where the mental health of rural adults can be improved. Specifically, further investigation is needed to examine whether community mental health awareness interventions, such as the MHAI intervention program, can lead to earlier detection of MH/SA issues among older adults and increase treatment rates. If so, community mental health workers and facilities can expect such interventions to increase local residents' awareness of their services and likelihood of utilizing mental health services. Future research needs to enhance generalizability and ensure that improved knowledge and awareness translates into improved mental health in rural regions.

Key words: awareness, community intervention, community mental health, knowledge, USA.

Introduction

Public health efforts to promote mental health among older adults in rural communities through increased awareness and knowledge are impeded by stigma regarding psychiatric disorders and treatment[1] as well as stigma about aging[2]. Further, treatment outcomes suffer when individuals' symptoms become more complex and severe due to delayed management[3]. Efforts to inform and empower rural and remote community residents about mental health/substance abuse (MH/SA) and aging are vital to the promotion of mental health and quality of life among older adults in such areas. Community-based efforts to promote mental health may help rural residents recognize the need for mental health treatment at the earliest sign of a problem and also obtain that treatment when necessary.

Addressing mental health in rural and remote communities can be extremely challenging for several reasons. As Lawrence and McCulloch[4] noted, many individuals prefer not to discuss their mental health and would rather keep thoughts on their mental health private. Denial, fear of stigmatization, and avoidance are common responses to the prospect of discussing one's mental health status[5]. In rural areas in particular, there are limitations in formal and informal mental health care and treatment resources as a result of social, economic, psychological, demographic and physical barriers[6,7]. For instance, much of the difference between rural and urban residents' mental health status is explained by financial and educational disparities across these regions[8]. In addition, in rural and remote environments an emphasis on independence and self-reliance can make intervening in residents' lives difficult[9]. Also, in remote areas seeking out resources may be difficult because of geographic barriers (eg traveling on mountainous roads in Appalachian Kentucky) and lack of adequate transportation to services[10]. Further, the healthcare resources that are available in remote and rural areas may be inadequate or outdated[11]. Given these challenges, mental health research and interventions need to focus on empowering residents to identify and address their own MH/SA problems while simultaneously promoting high quality community living for individuals experiencing mental health issues in rural and remote areas[12].

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Addressing MH/SA is important for several reasons. Mental illness can be detrimental to older adults but often goes unrecognized[13,14] and is frequently misrepresented as a normal part of aging[15]. Mental health disorders, such as depressive syndromes, lead to poor health trajectories in areas such as morbidity, functioning and mortality[16,17], particularly among older adults[18]. Severe mental illness, such as depression, can reduce life expectancy by nearly 25 years; this reduction is attributable to poor health behaviors and the presence of preventable diseases[19].

Depression is one of the most common mental health problems. Depression affects approximately 14.8 million United States adults (6.7%) in a given year[20], with approximately 27% of community-residing adults over the age of 60 reporting depressive symptoms[21]. Further, up to 50% of older adults in rural areas meet criteria for depressive disorders[22]. According to the WHO, depression is one of the leading causes of disability[23]. Further, depression increases the risk for disability[24], ischemic events[25], cancer[26], pain[27] and mortality[28,29].

The presence of substance dependence, another major MH/SA problem, leads to continued chemical use and risky driving behaviors[30]. Heavy alcohol consumption in particular has been associated with poor health behavior patterns[31], multiple risk behaviors[32] and low use of preventive health services[33]. Further, less than half of adults in treatment for alcohol disorders exercise regularly, partly due to low self-efficacy for physical exercise[34]. Compounding the negative effects of substance abuse in general, older adults are more vulnerable to risks associated with alcohol consumption[35,36]. Changes in physiology associated with aging contribute to this increased risk[37] and the need to decrease levels of alcohol consumption[38]. Older adults are hospitalized for alcohol-related complications as much as for myocardial infarctions[39] . In addition, the elevated use of medications can interact with alcohol, putting older adults at heightened risk for poor outcomes when consuming alcohol[40]. Prescription drug safety is a vital area for health promotion due to increases in fatal medication errors related to alcohol and illicit drug use occurring more so than deaths from medication or alcohol/illicit drug use alone[41] . Older rural residents are among the highest risk for experiencing prescription drug misuse issues[42] . Overall, substance abuse can lead to poorer health behavior patterns and ultimately poor health outcomes.

In addition to the poor health and behavioral outcomes associated with MH/SA disorders, the need for appropriate treatment is also necessary. Across the USA, only 48–62% of individuals with depression problems[43] and 34–48% of individuals with substance abuse problems receive recommended care[44], leaving approximately 38–66% of individuals without appropriate treatment. Even among individuals who have been properly diagnosed and provided with an opportunity to engage in MH/SA treatment, across age groups, only 50% attend scheduled appointments for treatment[45]. These results are likely to underestimate the numbers of people with untreated MH/SA problems, since individuals in need of MH/SA treatment are not always identified[46].

With the prevalence of MH/SA disorders among older adults, the serious ramifications and the frequent lack of identification, MH/SA is a greatly needed area for intervention among older adults. Unfortunately, provision of MH/SA services for older adults is insufficient to meet the growing mental health needs[47]. Thus, there is a need for the development of improved MH/SA community management services to increase identification and subsequently treatment planning and treatment engagement to avoid negative mental and physical health outcomes. Special attention must be paid to older adults due to their higher levels of health burden[48,49] and their lower rates of treatment compared to younger adults[50]. Attention is needed in rural areas, in particular, due to a greater limitation on mental health resources and trained professionals[51].

The Mental Healthiness Aging Initiative (MHAI) was developed to promote the mental health of rural older adults (aged 65+ years) by (i) developing community relationships in rural areas of Kentucky through partnerships with cooperative extension agents, (ii) creating discussion in the

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community regarding MH/SA and aging and (iii) implementing a community MH/SA educational intervention program using the information diffusion process[52]. In application, the program was designed to communicate key messages about MH/SA and aging, increase knowledge about MH/SA and aging, and ultimately decrease mental health related disadvantages experienced by older adults, particularly those residing in rural communities[53,54]. Specifically, the intervention component of MHAI was designed to empower community members to manage and promote mental health. Our earlier work on this topic identified community beliefs about the importance of mental health while aging, which served as the foundation for developing and implementing MHAI[55] and the effectiveness of a train-the-trainer MHAI program[56]. Examining the macro-level effect of MHAI, it was found that target communities demonstrated greater knowledge and awareness of mental health and aging issues with MHAI programming exposure. However, the effect of the intervention component on individuals (micro-level effects) participating in the project, and the long-term effects, were left unclear[57]. The goal of the current study is to assess the immediate and sustained effect of the MHAI intervention component on individuals over time in an independent rural community sample. This information will support a tool that can be used to promote the mental health of older adults in rural communities through increased awareness, knowledge and social support for mental health problems.

Methods

The study sample (n=55) was recruited through two rural Kentucky counties through local cooperative extension service offices. The Kentucky Cooperative Extension Service serves as a link between the state's university and the communities to help individuals and communities improve quality of life through education, research and outreach. In the state of Kentucky, there is at least one cooperative extension office in each of the 120 counties. Two Kentucky cooperative extension agents were recruited through an email solicitation. Once recruited, the individual extension agents recruited participants within their jurisdictions. At the designated time, all interested participants came to attend the MHAI intervention at their local cooperative extension office. The intervention session lasted approximately 1 hour, which included a pre-assessment and a post-assessment. Thereafter, participants were contacted over the telephone 3 months and 6 months after the initial assessment to collect follow-up retention data.

The MHAI intervention program consisted of three key components: facts and information, application exercises, and community tools. These components were conceptualized through the information diffusion process to aid participants with the five stages of adoption: knowledge, persuasion, decision making, implementation and confirmation[52]. For instance, the knowledge stage was reached through the facts and information section, which included information and discussion about the signs and symptoms of MH/SA disorders. In the facts and information section, reaching the persuasion stage was done through the presentation of and discussion of MH/SA outcomes, suggestions for promoting good mental health and strategies for the management of MH/SA. The information for this section was acquired from current geriatric mental health scientific literature and focused on depression, alcohol use and prescription drug safety as the most prevalent and pertinent geriatric MH/SA issues[13-15,37,38,47,58-69] . The facts and information component was expected to create an increase in MH/SA knowledge and greater acknowledgement of the MH/SA crisis to facilitate the adoption process.

The application exercise section was designed to promote the stages of decision making and implementation through a tutorial describing steps for implementing a community action plan entitled PALS – 'Pay attention, Ask questions, Listen actively, and Show support'. The PALS system was designed to empower participants to become mental health promotion agents in their communities by paying attention to their surroundings (in the context of mental health), talking to and listening to community members in possible need of mental health promotion and providing support in any requested way – whether the support be simply talking or

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even taking a friend to a doctor's visit to get mental health care. Participants were informed about how to use the PALS system when identifying possible MH/SA symptoms in community residents. The action plan was created in reaction to a need, expressed by cooperative extension agents, for a tool to practically disseminate and utilize MHAI information. Agents asked for an action plan/tool, in addition to facts and information, that would enable them to apply the knowledge learned in the MHAI program, and that they could use specifically when they suspected MH/SA problems in community residents. Having an action plan aids with a deeper level of adoption, empowers participants and can prevent the newly learned knowledge from lying dormant due to lack of application skills.

Finally, the confirmation phase was designed to be reached through the community tools section. The community tools sections provided complementary tools for distribution that represented and confirmed the key ideas presented in MHAI. The tools included bookmarks, pamphlets and note pads listing signs and symptoms of depression and alcohol abuse and strategies for promoting good mental health. The recommended strategies for promoting and managing mental health were within physical, mental, social and financial domains, such as engaging in exercise, practicing proper nutrition and focusing on mind–body wellness. As part of the toolbox, participants were also given a 'Talking to your doctor about mental health' handout to use as a communication tool when an MH/SA problem was suspected. Participants were instructed that contacting a primary care physician is a first response to suspected mental health problems. The community tools component is another method to aid participants with adoption, and provide participants with the means to actively disseminate and confirm knowledge retained from the MHAI program.

Measurement variables

Each participant was evaluated prior to receiving the intervention (pre) and immediately after receiving the intervention (post) to determine whether MH/SA knowledge and beliefs had improved. Participants were also assessed over the telephone at 3 months and 6 months after participating in the intervention to examine whether changes were sustained. The evaluation survey consisted of the following sections: (i) demographics, (ii) MH/SA awareness (six questions) and (iii) MH/SA knowledge (13 questions). The demographic section contained standardized (census-based) questions about date of birth, gender (ie male/female), race (ie white, black, Asian, Native American, Pacific Islander, Hispanic, other), marital status (ie marred, single, divorced, widowed, cohabitating, separated), educational level (ie highest degree) and income level (ie annual household). The evaluation survey was designed specifically for this program to address MH/SA aging issues, ensuring face validity. The awareness section focused on perceptions of MH/SA and aging issues, as well as participants' own perceived ability to manage mental illness. Response options for the awareness questions were in a Likert scale format to assess the level of agreement. The knowledge questions focused on common myths about MH/SA and aging and were presented in true/false format; responses were aggregated to create a knowledge summation score. The evaluation survey was previously piloted in a state-wide MHAI implementation[57].

Data analysis

Seven individual linear mixed models were analyzed using SAS v9.1 (www.sas.com), one for each of the awareness questions and one for the total percent correct knowledge questions. Convergence criteria were met for all linear mixed models analyzed, indicating fit. Mixed models offer the best fit for repeated measures to account for time effects (change/growth) on the dependent variable[70] . The models included time (four levels: pre, post, 3 month follow-up and 6 month follow-up) as the main independent variable. MH/SA awareness (six items) and MH/SA knowledge (aggregate score) were the main dependent variables and were treated as continuous variables. In addition to means, modes and medians are provided to present normality.

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Ethics approval

All study procedures were ethically approved by the University of Kentucky Institutional Review Board (IRB) (Number 09-0896-F4S). Accordingly, all participants signed an IRB approved consent form prior to participation.

Results

Sample characteristics

A total of 55 individuals participated in the current study. The average age of the sample was 65.35 years (median=65, mode=68), with an average income of US$44,199 (median=US$44,000, mode=US$60,000). The majority of the sample was female (85%), white (100%), married (69%), living with a spouse/partner only (68%) and high school educated (57%); the mean education in years was 14 years (median=12, mode=12). There were no county differences across demographics; therefore, county was not considered in analyses. The return rate for the sample was 94% at post-test, 73% at the 3 month follow-up and 76% at the 6 month follow-up.

Awareness

There was significant improvement across the indicators for mental health awareness ($p<0.05$; Table 1). Specifically, mean trends indicate that over time there was an improvement in understanding that mental illness is not a normal part of aging. Over time there was also an improvement in agreement about: (i) older adults successfully being treated for mental illness; (ii) having the tools and knowledge to recognize mental illness; (iii) mental illness negatively affecting mental and physical health; and (iv) perceiving they can personally assist older adults that have mental illness. There were no awareness indicators that did not show improvement over time. Further, improvement was sustained at 6 month follow-ups.

Knowledge

There was significant improvement across the indictors for mental health knowledge as indicated by the total correct score ($p<0.05$; Table 1). Improvement was sustained at the 6 month follow-up, with the peak of improvement being at the post-test administered immediately after the intervention session.

When examining specific knowledge indicators, frequency distributions indicated that improvement was sustained over the 6 month follow-up for most knowledge indicators. However, certain items may require enhanced intervention efforts to produce sustained knowledge. Frequency trends indicated that participants did not sustain knowledge for the following concepts: (i) older adults who do not drink a lot can have drinking problems; (ii) during regular medical check-ups, doctors rarely advise about mental health and aging issues; (iii) the most common symptom of depression is crying; (iv) it is easy and obvious to identify which older adults are having mental health problems; (v) it is a problem when older adults state that drinking is the only thing they look forward to; and (iv) most people over 65 years retain their normal mental abilities. These indicators had below 90% accuracy at 6 months, despite having 90%+ accuracy at post-assessment immediately after the intervention administration.

Discussion

The goal of the current study was to assess the immediate and sustained effect of the MHAI intervention component on individuals over time in an independent sample of rural community members. Findings indicated sustained improvement across awareness and knowledge indicators. Results also indicated a need to improve sustained knowledge about clinical mental health communication, identifying/recognizing mental health problems, retention of mental abilities and alcohol consumption risk.

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Table 1: Sample survey responses pre-intervention and post-intervention, and at 3 month and 6 month follow up (*n*=55)

Item	Intervention¶		Follow up¶		*P*-value
	Pre	Post	3-month	6-month	
Awareness† - mean agreement (median; mode)					
Mental illness is a normal part of aging	2.29 (2.0; 1.0)	1.71 (1.0; 1.0)	1.87 (1.0; 1.0)	1.79 (1.0; 1.0)	.0216*
Elders can be successfully treated for their mental illness.	4.56 (5.0; 6.0)	5.09 (6.0; 6.0)	5.46 (6.0; 6.0)	5.38 (6.0; 6.0)	.0047*
I am aware of mental resources in the area.	3.39 (3.0; 3.0)	3.98 (4.0; 5.0)	4.75 (6.0; 6.0)	4.54 (5.0; 6.0)	.0002*
I feel that I have the tools and knowledge to recognize potential mental illness.	3.53 (4.0; 4.0)	4.59 (5.0; 5.0)	5.09 (5.0; 6.0)	5.10 (5.5; 6.0)	.0001*
Mental illness can negatively affect both an individual's mental and physical health.	4.91 (6.0; 6.0)	5.27 (6.0; 6.0)	5.73 (6.0; 6.0)	5.74 (6.0; 6.0)	.0074*
I feel that I can assist elders who may have a potential mental illness when necessary. For example by providing support, advising the individual to seek assistance by talking to their friends/family, and advising them to go directly to their primary care clinician to seek care.	4.19 (4.0; 6.0)	5.00 (5.0; 6.0)	5.13 (5.0; 6.0)	5.11 (5.5; 6.0)	.0001*
Knowledge (% correct)					
Older adults who do not drink a lot can have drinking problems. (True)	63.46	94.44	77.50	73.81	--
Feeling sad or depressed is a part of growing old. There is nothing you can do to help old adults experiencing such emotions. (False)	92.73	98.15	97.50	92.86	--
Over the counter medicine and alcohol can always be used safely together. (False)	100	100	97.50	100	--
Depression and anxiety can only be caused by a loss in one's life. (False)	94.44	98.18	87.50	92.86	--
During regular medical checkups, doctors rarely advise about mental health and aging issues. (True)	88.89	96.30	75	73.81	--
The most common symptom of depression is crying. (False)	81.82	98.18	77.50	83.33	--
It is easy and obvious to identify which older adults are having mental health problems. (False)	92.59	90.91	75	85.71	--
It is a problem when older adults state that drinking is the only thing they look forward to. (True)	92.73	98.18	70	88.10	--
Only men have trouble with alcohol. (False)	98.15	100	100	100	--
Treating mental health in older adults is a waste of time. It's too late for them to change their behavior. (False)	100	100	100	97.62	--
When older adults misuse their medications, for example regularly take too much, use other people's medications, mix medications against recommendation, or just don't follow instructions, they are abusing drugs. (True)	83.64	98.18	90	97.62	--
Most people over 65 retain their normal mental abilities. (True)	61.11	96.36	90	85.71	--
Older adults are treated for mental illness less than younger adults. (True)	72.22	90.74	80	90.48	--
Total correct	11.07 (11.0; 12.0)	12.53 (13.0; 13.0)	11.20 (11.5; 13.0)	11.54 (12.0; 13.0)	.0001*

†1 = Strongly Disagree – 6 = Strongly Agree (Higher scores indicate more agreement); ¶Return rate: post (94%), 3-month follow-up (73%); 6-month follow-up (76%).
*Statistically significant.

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This research adds to a limited body of evidence investigating mental health and substance abuse education-based interventions. Based on recent literature, there is a clear need for mental health educational interventions[71-74] . Most research in this area focuses on clinical and community gate keeper samples, not specifically community members as in the current study. Some research has focused on community workers to increase their knowledge about MH/SA[75-77] . Much research exists on training clinicians about managing and treating MH/SA[78,79] . Across the literature there is a limited focus on older adults. Accordingly, the current work expands the scientific literature as it includes a focus on older adults and community members in MH/SA educational interventions.

In relation to the study findings, there is a need for sustained improvement across specific awareness and knowledge indicators to improve MHAI effectiveness, specifically in the areas of clinical mental health communication, identifying/recognizing mental health problems, retention of mental abilities and alcohol consumption risk. Unfortunately, prior studies have indicated that mental health providers often do not communicate about mental health effectively and inadequate mental health provider communication can lead to treatment mismanagement[80]. More emphasis is needed in MHAI on MH/SA clinical communication. Also, identifying and recognizing mental health problems is very challenging and denial is one of the most common responses to mental illness[81]. Proper identification and recognition are initial important steps on the road to mental health recovery. Due to the difficulty in identifying mental health problems, the annual use of screening tools can be further reinforced in the MHAI intervention program. As such, more emphasis is needed in the MHAI intervention to convey how mental health appointments and screening tools are important for ensuring that mental health needs are addressed and clinical MH/SA communication can be reinforced.

As indicated through the study findings, there is a need to increase awareness that 90% of individuals do retain normal mental health capabilities into old age. It is well documented that older adults retain their mental abilities, with only a small portion of older adults (approximately 10%) experiencing mental or cognitive health issues[61]. With most late life mental abilities intact, the MHAI intervention needs to be adjusted to reinforce the need for continued planning and wellness in old age in order to live a fulfilled life. Further, individuals tend to underreport and underestimate the effects of alcohol[82]. Knowledge about alcohol risk, in particular, can be enhanced in the MHAI by placing greater emphasis in the intervention on the dangers of alcohol consumption and signs or symptoms of substance misuse.

Implementing the MHAI intervention program, as currently designed, is feasible in rural regions. Evidence from the current study indicates that rural community residents can be recruited to participate in a program about MH/SA and aging, and as an outcome have increased awareness and knowledge about MH/SA and aging. Future research will need to explore how to utilize MHAI-type intervention programs to a point where the mental health of rural adults can be improved. For instance, further investigation is needed to examine whether community mental health education interventions, such as the MHAI intervention program, can lead to earlier detection of MH/SA issues among older adults and increased treatment rates. If so, community mental health facilities and workers can experience MH/SA education interventions to increase local residents' awareness of their services and likelihood of utilizing mental health services.

When interpreting the results of this study, there are some limitations to consider. For instance, it is important to consider issues of clinical significance and practical significance[83]. Some of the statistically significant findings highlighted in this study require further research to ensure that better ratings of one's beliefs/knowledge about MH/SA issues and aging lead to improved mental health for rural older adults. Future research also needs to reduce sample attrition and place emphasis on expanding the sample size to provide sufficient power to compare results with a control group[84]. As indicated in the sample characteristics, the

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current sample is limited in diversity, with a higher distribution of white individuals living in a geographically limited region. With an increase in sample size, attempts need to be made to improve representation of non-white older adults with lower income and education levels and from diverse regions to ensure effectiveness across diverse demographics and cultural contexts. It is also important to note that the evaluation survey was designed, considering face validity, specifically for this program. Future studies need to examine the psychometric properties of the evaluation instrument to replicate study findings. Another factor to consider when reviewing study findings is that this study was completed in the state of Kentucky, a majority rural state with high levels of health impairment that can affect individual mental health[85]. Research conducted in Kentucky is generalizable to at least 16.6 million Americans across the USA who also reside in Appalachian rural environments[86] , but future studies need to examine the effectiveness of community mental health interventions like the MHAI in other rural locales, and in larger and more diverse samples.

Conclusions

The MHAI program serves as a useful tool for improving community members' knowledge and awareness of MH/SA risks, symptoms and outcomes among older adults. The MHAI intervention program is one of the first evidence-based community MH/SA and aging education programs targeting older adults in rural communities. Special attention to older adults is needed due to their higher rates of morbidity and their lower rates of psychiatric treatment, especially among those residing in rural areas. The MHAI program is underscored by the exacerbated implications of MH/SA issues in older adults, who are more likely to also be faced with multiple morbidities, polypharmacy, stigmatization (related to both age and MH/SA) and physiological changes. Also, because mental health disorders, such as depression, may be viewed as normal aging, older adults are less likely to have mental health problems identified or addressed by healthcare workers. Promoting individual community members' awareness and knowledge of MH/SA can foster the proper management of such issues in older adults.

Results of the current study demonstrate that community interventions focusing on mental health and substance abuse can be implemented successfully within rural communities. Results indicate that some components of the MHAI intervention were effective, but more work is still needed to enhance effectiveness. Future research should examine whether increased community awareness and knowledge translates into higher rates of MH/SA detection, proper clinical management of MH/SA and, ultimately, improved physical and mental health among older adults in larger, more diverse samples.

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