Evaluation of the Healthy-Heart, Healthy-Brain Program

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Evaluation of the Healthy-Heart, Healthy-Brain Program

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Abstract

**Purpose:** The purpose of this study was to evaluate the effects of a group-based, psychoeducational program on the knowledge of healthy diet and eating behaviors of adults with mental-health diagnoses in an inpatient psychiatric setting.

**Background and Significance:** In a given year, adults with mental-health diagnoses have a higher risk of mortality relative to the general population. Mortality from natural causes among individuals with mental-health disorders is similar to the leading causes of death found nationwide, including cardiovascular diseases. There is a growing body of evidence showing a relationship between the health of clients’ hearts and brains. Thus, it is critical to link ‘heart health’ and ‘brain health’ in healthcare delivery. As many cardiovascular disease risk factors are modifiable, controlling such risk factors may be one of the most expedient and cost-effective approaches in protecting brain health. Game-based activities can improve health-related skills, enhance self-esteem and self-efficacy, promote social support, and ultimately motivate positive changes in health behaviors among physically ill clients. Thus, a game-based intervention to promote healthy diet and eating behaviors may be a promising method, worthy of further exploration with people with mental-health diagnoses.

**Procedures:** This study examined retrospective program data (six-month period) from the Healthy-Heart, Healthy-Brain Program (H3B) and clients’ medical charts at a large state mental health hospital. A univariate descriptive design was used to assess participation rates and client satisfaction with the program. A retrospective, one-group pre-test and post-test design was used to determine changes in clients’ knowledge of healthy diets and attitudes toward healthy eating behaviors.

**Results:** An average of 22% of the unit census joined the activity daily. The sample was predominantly female (53.5 %) and Caucasian (98.8%). The mean age was 57.1 (SD = 13.6) years. Most participants (33.7%) had a primary diagnoses of psychotic disorders. There was no significant differences in changes in knowledge of heart-healthy diets or engagement in heart-healthy eating behaviors between the pre- and post-test group. However, participants from the post-test group were more likely to get at least 80% correct responses [48% vs. 52%, \( p = .049 \)], and the post-test group had a slightly higher mean score in their willingness to engage in heart-healthy eating behaviors [\( \text{Mean} = 4.35 \text{ (SD} = .911) \) vs. \( \text{Mean} = 4.38 \text{ (SD} = .987) \)]. The mean scores on clients’ satisfaction with the group activity and educational content, based on a five-point Likert scale, were 4.6 (SD = 0.8) and 4.5 (SD = 0.8), respectively.

**Implication for Nursing Practice** This innovative, group-based, psychoeducational board game may improve mental-health clients’ healthy eating knowledge and behaviors. Nurses and other health-care providers may consider adapting the program to other facets of clients’ health and well-being. Ideally, such an intervention could lead to a step forward in mental-health education and provider-client relationships as providers and clients learn to have fun together while learning.
Evaluation of the Healthy-Heart, Healthy-Brain Program

**Background & Significance**

In 2014, according to the National Institute of Mental Health (NIMH), approximately 18.1% or 43.6 million adults in the U.S. experienced mental illnesses, and about 4.2% or 9.8 million U.S. adults suffered from serious mental illnesses (NIMH, 2016). According to the Agency for Healthcare Research and Quality (AHRQ), the cost of mental illnesses was about $48.2 billion between 2009 and 2011 (AHRQ, 2014). The government is the primary source of spending on mental health, with Medicaid being the largest payer of mental health services. Eleven percent of Medicaid enrollees use mental-health services, and mental-health services constitute 30% of all Medicaid expenditures (U.S. Department of Health & Human Services, 2012). Most mental-health expenditures are due to indirect costs such as loss of income due to unemployment, expenses for social supports, chronic disability (Soni, 2009), and comorbid medical illnesses (Colton & Manderscheid, 2006). The Substance Abuse and Mental Health Services Administration (SAMHSA) has estimated that adults with mental illnesses die on average 11 years earlier than the general population, not due to the mental illnesses but because of comorbid medical conditions (SAMHSA, 2016). This disproportionate mortality rate may reflect a lack of prevention and treatment of comorbid medical conditions among people with mental-health diagnoses (Nasrallah et al., 2006).

Most notably, people with mental-health diagnoses are at a two- to three-fold higher risk of cardiovascular disease (Bresee, Majumder, Patten, & Johnson, 2010; De Hert, 2009; De Hert et al., 2011), due to medication (De Hert, Detraux, van Winkel, Yu, & Correll, 2012) and lifestyle factors (Osborn, Nazareth, & King, 2007). As compared to the general population, individuals with mental illnesses are more likely to engage in behaviors that increase the risk of
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cardiovascular disease, including unhealthy diets, smoking, and lack of physical activity (Standley & Laugharne, 2012; Osborn et al., 2007). The adverse effects of psychiatric medications may also account for elevated cardiovascular risks among people with mental illnesses (Schwartz, Nihalani, Jindal, Virk & Jones, 2004; Marano et al., 2011). However, the benefits of medications may outweigh their potentially detrimental effects on cardiovascular health (Marano et al., 2011). Thus, it may be preferable to help clients make lifestyle changes rather than take them off their medications in order to maintain their physical health without sacrificing their mental health.

Moreover, beyond just maintaining mental health, lifestyle changes may improve clients’ mental health. A growing body of evidence demonstrates a relationship between the health of clients’ hearts and brains (Ako, Sudhir, Fariuque, Honda, & Fitzgerald, 2006; Dong, Zhang, Tong, & Qin, 2012; Gunstad et al., 2009; Hillman, Erickson, & Kramer, 2008). As many cardiovascular disease risk factors are modifiable, controlling cardiovascular risk factors may be one of the most cost-effective and helpful approaches in protecting and improving brain health.

Yet, unfortunately, people with mental-health diagnoses are currently less likely to receive treatments that prevent adverse cardiovascular outcomes due to a lack of integration between medical and mental healthcare (Stanley & Laugharne, 2012). Mental-health nurses can play a key role in improving the physical health of people with mental-health diagnoses. Particularly in the inpatient setting, mental-health nurses should be cognizant of the interrelations between mental and physical health (Bradshaw & Pedley, 2012; Happell, Platania-Phung, & Scott, 2013), competent in addressing clients’ physical health (Happell, Scott, Platania-Phung, & Nankivell, 2012), and willing to provide advice regarding healthy lifestyle choices (Blythe & White, 2012). Only treating mental-health problems without recognizing and taking physical
issues into account is not in keeping with the holistic nature of nursing. Providing clients with education on healthy lifestyles might be a low-cost approach to improve both their heart health and brain health as well as to bridge the gap between physical and mental health (Littrell, Hilligoss, Kirshner, Petty, & Johnson, 2003; World Health Organization, 2012, pp. 222-226).

It may not be easy for nurses to educate people with mental-health diagnoses because cognitive impairments can act as a barrier to most educational approaches (Medelia & Lim, 2004). Fortunately, several studies combine to provide four keys to unravel the enigma of how to educate people with mental-health diagnoses. The first key is *psychoeducation*, which helps this population learn in addition to enhancing their daily activity level (Redden, 2008), well-being, and ability to cope (Pekkala & Merinder, 2002; Haynes et al., 2005). The second key is *group-based activities*, which can further support the ability of cognitively-impaired clients to engage in social activities (Flicker, Lautenschlager, & Almeida, 2006). The third key is the *therapeutic relationship* between client and staff, which has a positive impact not only on clients’ education (Crowe, O’Malley, & Gordon, 2001; Maguire & Pitceathly, 2002; Allen, Carpenter, Sheets, Micco, & Ross, 2003) but also on their self-esteem (Walsh, 2009). Finally, the fourth key is *combining different educational methods* (a group discussion, a question-and-answer session, and a competition), which has been shown to improve clients’ knowledge and satisfaction (Jones et al., 2001; Proudfoot et al., 2003; Haynes et al., 2005). Thus, in theory, a staff-led, psychoeducational, group-based board game that combines different educational methods should synthesize all four of these keys in order to confer all of the aforementioned benefits.

**Objectives**

The Healthy-Heart, Healthy-Brain (H3B) Program offers a psychoeducational intervention focused on healthy eating behaviors for adults with mental-health diagnoses who are
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receiving treatment on an inpatient unit. The program utilizes an innovative, group-based, board game to promote heart-healthy dietary choices and to encourage discussion, learning, and social skills among participants. The goal of the program is to improve clients’ knowledge of the connection between healthy eating and brain health so that they may adopt better eating behaviors during hospitalization and after discharge.

The purpose of this evaluation project is to assess the effectiveness of this innovative educational program to improve clients’ healthy eating knowledge and behaviors in an adult inpatient, psychiatric unit. The aims of this evaluation program are examine:

- Program participation
- The effect of the educational program on clients’ knowledge of heart-healthy diets
- The effect of the educational program on clients’ intention towards healthy eating behaviors, and
- Client satisfaction with the program

Methods

Program Description

The Healthy-Heart, Healthy-Brain (H3B) Program is a psychoeducational intervention that was created at Eastern State Hospital in Lexington, Kentucky. The educational goal of the program is to improve clients’ knowledge of heart-healthy eating and its connection with brain health so that they may adopt better eating behaviors during hospitalization and after discharge. The program is part of a regular nursing group at the hospital in which nurses are assigned to lead daily educational group activities on their units. In addition, the program is guided by the Social Learning Theory, which posits that learning takes place within social contexts and that, as a cognitive process, learning requires social interaction and observation of behavior (Bandura,
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1963). The program implements this theory by allowing clients to learn by interacting not only with the nurse but also with other participants.

Sample

The sample for this program evaluation consisted of 162 records from clients who attended the H3B program between November 30, 2015 and May 30, 2016. Inclusion criteria for the program were the records of those who were admitted to the Allen 2 unit at Eastern State Hospital, had at least one mental-health diagnosis, were able to communicate, understood simple English, and were at least 18 years old. Excluded from the evaluation were the records of those who were admitted to other units besides Allen 2, those whose symptom burdens made participation impossible (for example, clients who were responding only to internal stimuli and clients who were exhibiting physical aggression toward self or others), those unable to communicate, and those who could not understand simple English.

Study Design

This program evaluation used a univariate descriptive design to assess participation rates and client satisfaction with the program. For the main outcomes, a retrospective, one-group pre-test and post-test design was used to determine changes in clients’ knowledge of healthy diets and attitudes toward healthy eating behaviors.

Measures

Demographics. Information on clients’ demographics (gender, age, race/ethnicity) and medical and mental diagnoses were available in the program paper record as part of its ongoing evaluation and quality improvement.
Primary outcome measures. The primary measures for this program evaluation were program attendance, knowledge of heart-healthy diets, intention to engage in heart-healthy behaviors, and client satisfaction (see Table 1).

1. Program attendance. Program attendance data was obtained from the Active Treatment Attendance records and Group Notes (see appendix A) available on the Allen 2 unit.

2. Knowledge of heart-healthy diets. Client knowledge of heart-healthy diets was based on a questionnaire (see appendix B and C) developed by staff nurses at Eastern State Hospital. It consisted of eight items of which five are healthy (green beans, dark chocolate, water, banana, and baked fish) and three are not (fried chicken, coffee, and Crystal Light with four packs of sugar). Ideally, to demonstrate knowledge, participants needed to select only the five heart-healthy choices. This measure was developed for simplicity and so that even people with mental-health disorders with minimal literacy could still participate. The measure was assessed before and after the program activity.

3. Intention to engage in heart-healthy eating behaviors. Clients’ intentions to engage in heart-healthy eating behaviors was based on a one-item question on a five-point Likert scale (from strongly disagree to strongly agree). This measure was developed for simplicity and so that even people with mental-health disorders with minimal literacy could still participate. The measure was assessed before and after the program activity (see appendix B and C).

4. Client satisfaction. Client satisfaction was measured by two questions on a five-point Likert scale (from strongly disagree to strongly agree) regarding satisfaction with the group activity and satisfaction with the educational content. The measure was assessed after the program activity only (see appendix C).
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Outcome Evaluations

The main outcome evaluations were program participation, pre- to post-attendance changes in clients’ knowledge of heart-healthy diets, pre- to post-attendance changes in clients’ intentions toward healthy eating behaviors, and client satisfaction (see Table 1).

Program attendance. Program participation was calculated by taking the average of the daily participation rates, which was calculated by dividing the number of program participants by the total number of clients on the unit, both of which were found in the Group Notes. Since some participants joined the activity after it started and others left before it ended, for each day, the number of program participants was calculated by taking the average of the number of pre- and post-test participants.

Changes in clients’ knowledge. Changes in clients’ knowledge of heart-healthy diets pre- and post-program attendance were measured by comparing the response to each food and drink item. In addition, a summary score of the correct responses was calculated using a criteria of 80% or greater. A Chi-square of independence test was used to assess changes in the summary score from pre- to post-test.

Changes in clients’ intentions. Changes in clients’ intentions towards heart-healthy eating behaviors pre- and post-program attendance were measured by comparing the scores from the pre- and post-test given to participants before and after each activity session. An independent-sample t-test was used to evaluate these data.

Client satisfaction. Data on client satisfaction was analyzed using descriptive statistics, specifically using means and standard deviations.
Research Procedures and Privacy

Because the H3B program is routine patient care (as part of required nurse-led patient education groups), no subject recruitment occurred. Rather, all clients who were able and willing participated in the program as part of their ongoing, routine care. The program evaluation took place from July 1st, 2016 to January 31, 2017. The primary investigator reviewed existing data available from November 30, 2015 to May 30, 2016 from the program documents and the unit census records available on Allen 2 unit at Eastern State Hospital. A waiver of the documentation for informed consent was obtained for this program evaluation. The research procedure was approved by the University of Kentucky’s International Review Board (IRB).

Data Analysis

Data analysis was conducted with IBM SPSS Statistics, version 23. Descriptive statistics were used to describe the sociodemographic characteristics of participants and their satisfaction scores, both with the group activity and with the educational content. Frequency distributions with percentages were used to measure all nominal data including gender, race, psychiatric diagnosis, and medical diagnosis. Means with standard deviations were used to measure selected continuous variables including age and satisfaction with the group activity and with the educational content, both of which were measured on a Likert scale. For each food or drink, a Chi-square test of independence was used to assess if participants from the pre- and post-test groups differed in how they identified the item as being part of a healthy- or unhealthy-heart diet. Another Chi-square test was also conducted to examine the relationship between pre- and post-test groups and participants’ knowledge (80% or greater correct responses). An independent sample t-test was conducted to examine the changes between participants’ intentions to engage
in heart-healthy eating behaviors on pre- and post-tests. $P$ values less than 0.05 (2-sided) were defined as statistically significant.

The pre-test group consisted of $n = 86$ and the post-test group of $n = 76$. The discrepancy was due to the fact that some participants came to the group room after the pre-test session and others left the activity prior to the post-test session. However, since participants’ identification data was intentionally excluded from pre- and post-tests to preserve confidentiality, the investigator could not determine which participants missed which tests and overall group differences by pre-test vs. post-test were assessed.

Results

Sociodemographic Variables of the Sample

The sociodemographic results are summarized in Table 2. Based on the design of the questionnaire, the sociodemographic data were derived from the pre-test group only. The sample was predominantly female (53.5 %) and Caucasian (98.8%). The mean age was 57.1 ($SD = 13.6$), with a range of 24 – 75 years of age. Out of 86 participants from the pre-test group, 29 (33.7%) had primary diagnoses of psychotic disorders (schizophrenia, schizoaffective, and psychosis, not otherwise specified [NOS]), 29 (33.7%) of cognitive disorders (dementia, Alzheimer’s and traumatic brain injury), 25 (29.1%) of mood disorders (major depressive disorder, bipolar, and mood disorder, NOS), and three (3.5%) of anxiety disorders (generalized anxiety disorder, post-traumatic stress disorder, and obsessive-compulsive disorder). The majority of participants (58.1%) had at least one medical diagnosis of a heart-related disease.

Program Attendance

An average of the unit census was 21 clients, and an average of four clients (22%) joined the activity on each day.
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Changes in Knowledge of Heart-Healthy Diets

Changes in correct responses by individual food and drink items are summarized in Figure 1. Relative to the pre-test group, there was a higher percentage of correct responses given by participants in the post-test group on Crystal Light with four packs of sugar [82.6% vs. 82.9%, \(X^2(1, N = 162) = .00, p = .96\)], baked fish [93.0% vs. 94.7%, \(X^2(1, N = 162) = .21, p = .65\)], banana [84.9% vs. 89.5%, \(X^2(1, N = 162) = .75, p = .39\)], coffee [66.3% vs. 67.1%, \(X^2(1, N = 162) = .01, p = .91\)], dark chocolate [53.5% vs. 63.2%, \(X^2(1, N = 162) = 1.55, p = .21\)], and green beans [90.7% vs. 97.4%, \(X^2(1, N = 162) = 3.1, p = .08\)], whereas a lower percentage of correct responses was derived from the post-test group on water [93.0% vs 92.1%, \(X^2(1, N = 162) = .05, p = .82\)]. The analysis failed to reveal a significant difference in changes in participants’ knowledge of individual item heart-healthy diets between the two groups. However, there was a marginally significant increase in correct response in the case of fried chicken [76.7% vs. 88.2%, \(X^2(1, N = 162) = 3.58, p = .059\)]. In addition, participants from the post-test group were more likely to get at least 80% correct responses as compared to the pre-test group [48% vs. 52%, \(X^2(1, N = 162) = 3.89, p = .049\)].

Changes in Engagement with Heart-Healthy Eating Behaviors

There was no significant effect of participating in the activity on participants’ intentions to engage with heart-healthy eating behaviors, \(F(2, 160) = .05, p = .82\). The result suggests that participating in the activity does not have an effect on changing the intentions of engaging in heart-healthy eating behaviors. However, the post-test group had a slightly higher mean score in their intentions to engage in heart-healthy eating behaviors as compared to the pre-test group [Mean = 4.35 (SD = .911) vs. Mean = 4.38 (SD = .987)] (see Figure 2).
Client Satisfaction with the Group Activity and Educational Content

Based on a five-point Likert Scale, on the post-test, the mean scores each on clients’ satisfaction with the group activity and educational content were 4.6 (SD = 0.8) and 4.5 (SD = 0.8), respectively (see Table 3).

Discussion

In 2007, SAMHSA partnered with the U.S. Food and Drug Administration’s Office of Women’s Health to introduce the Wellness Initiative program to promote wellness among mental health populations (SAMHSA’s Wellness Initiative, 2011). One of the Wellness Initiative program strategies is motivating and training mental-health providers to work toward improving heart health, reducing risk factors, and preventing premature death from cardiovascular diseases among this vulnerable population (SAMHSA, 2017). According to SAMHSA (2011), choosing healthy foods is one of the Eight Dimensions of Wellness to help clients develop positive lifestyle changes in order to improve their physical and mental health. With this national call to recognize the significance of integrating physical health to improve mental health practice, it may be time for inpatient psychiatric-mental health nurses (PMHNs) to promote incorporating clients’ physical health into their daily practice.

Psychoeducation is one of the most important group activities used in the field of mental healthcare (Bossema et al., 2011). However, thus far, few studies have focused on using psychoeducation, in the form of group-based board games, to teach people with mental-health disorders. In addition, even fewer studies specifically use board games to educate clients in acute inpatient settings. Thus, this study could be the first step toward helping PMHNs use group-based board games to educate people with mental-health difficulties who are receiving treatment in inpatient mental-health units.
The findings of this study support the use of group-based board games to educate people with mental-health diagnoses. In reviewing the sociodemographic variables, most participants were diagnosed with psychotic disorders (33.7%) including schizophrenia, schizoaffective disorder, and psychosis NOS. Interestingly, Vaskinn et al. (2008) found that, relative to other mental-health clients, learning among people with schizophrenia is less negatively impacted by their neurocognitive issues. In addition, Choi & Medalia (2009) found that, among participants in a motivational group, people with schizophrenia were more intrinsically motivated, felt more self-competent, and showed a greater ability to pay attention. These studies suggest that the H3B program may be particularly effective for people with schizophrenia because their learning is less impaired by their cognitive problems and because they tend to have greater motivation, self-efficacy, and attention spans. In the H3B board game, participants take turns answering questions, and when they get an answer right, they get to move ahead with a positive feedback. However, when a participant gets an answer wrong, they do not have to move backward, and they get no negative feedback. In this way, the activity helps to build self-efficacy of each person. The use of positive feedback in the H3B program may make the activity more effective for individuals without schizophrenia and others who may have lower self-efficacy.

Since the board game was intended to teach clients about heart-healthy diets, this study assessed knowledge gains between pre- and post-test groups. The main findings were that, if participants had 80% or more correct responses, they demonstrated an increase in general knowledge (48% vs. 52%). This apparent learning could be attributed to some combination of the effectiveness of the board game activity, the teaching and therapeutic communication skills of the nurses, and the learning skills and motivation of the participants. A study by Cleary, Hunt, Horsfall, & Deacon (2012) found that the most effective mental-health nurses were those who
deployed not only professional, therapeutic communication skills but also informal, interpersonal communication skills in dealing with clients. Likewise, Hem and Heggen (2003) found that – while nurses should generally maintain “a balancing act between intimacy and distance, between human and professional ways of acting” (p. 107) – opening up about ones’ own foibles “can be a constructive element in patient care.”(p. 107). This H3B board game and the ensuing conversations give nurses the opportunity to interact with clients on a less formal basis and even to connect with clients by admitting that they too sometimes crave unhealthy foods.

Moreover, the study provides some evidence that group-based psychoeducational activities using board games may be promising tools to educate people with mental-health diagnoses in an inpatient setting. Board games stimulate the mind via learning and social interactions, which could help prevent cognitive decline (Null, 2005; Shankle, 2004), increase brain activity (Atherton, Zhuang, Bart, Hu, & He, 2003), and improve one’s mental well-being (Perlmutter, 2004). Furthermore, Khazaal et al. (2006) found that board games can have therapeutic effects for people with schizophrenia. Future studies are needed to better understand and improve game-based interventions to help inpatient mental-health clients learn and bridge the gap between physical- and mental-health.

Another result was that clients’ maintained high attitudes toward engaging in healthy eating behaviors before and after the intervention (score 4.35 pre intervention and 4.38 post intervention). A study by Kavanagh, Duncan-Mcconnell, Greenwood, Trivedi, & Wykes (2003) showed that group education successfully helped acutely mentally-ill clients realize the value of taking their medications. Kavanagh et al. (2003) also found that clients asked more questions about their medications after the group activities than before. Likewise, during the H3B study, nurses reported anecdotally that, after the board game, participants started asking questions about
the food they were served during dinner. In addition, clients’ improved attitudes toward healthy eating behaviors may suggest that they are willing to take responsibility for their own health, in this case, for their cardiovascular health. A study shows that patient education is a vital part of care for psychiatric clients as it also enhances their empowerment and problem-solving skills so that clients can take control and responsibility over their illnesses (Knutson, Newberry, & Schaper, 2013).

Another valuable aspect of the H3B program is the group-based board game’s role in helping clients engage in constructive socialization, as supported by the overwhelmingly positive ratings they gave on the survey questions asking how much they enjoyed the activity and how much they thought they learned. Interestingly, while the change in clients’ knowledge about heart-healthy diets increased by only 6% (from 48% to 52%), their perceptions of their learning and enjoyment of the group activity were very high (4.5 and 4.6 out of 5, respectively). This finding may suggest that clients enjoyed participating not primarily because they were learning a lot but because the activity allowed them to enjoy the company of staff and other clients in a fun, informal setting.

**Implication of Nursing Practice and Research**

Trying to initiate systemic or cultural changes to improve nursing practice may cause staff to feel overwhelmed. The preliminary results from this study have several implications for mental-health nursing practice, especially to support the concept that planned activities can increase clients’ learning. It is also crucial for mental-health hospitals to support nursing staff development programs, specifically those focused on therapeutic communication skills, to improve staff-client relationships and related elements of daily clinical practice. Moreno-Poyato et al. (2017) have pointed out that theoretical knowledge of communicative and interpersonal
skills alone was not sufficient since PMHNs need training in the practice of these skills. Practice of these skills can ensure that socially unacceptable methods such as segregation and coercion do not become working norms in mental-health inpatient care (Hall, 2004).

According to Sharac et al. (2010), who performed a literature review of evidence from inpatient mental-health units in seven countries over 35 years, 50% of staff time was spent in contact with clients, but only 4% - 20% of their time was used for delivering therapeutic activities, and there was little evidence of social engagement with clients. The fact that staff are only spending small fractions of their time delivering therapeutic activities and socially engaging clients shows that there is a lot of room for improvement and that training on therapeutic communications and social games like H3B have the potential to improve clients’ outcomes.

Staff often complain that other routine work, such as charting, distracts them from spending time interacting with their clients. Even though it is important to maintain a high staff-client ratio, the study from Sharac et al. (2010) suggests that simply increasing this ratio may only lead to minimal (4% - 20%) increases in therapeutic time spent with clients. Hence, in addition to maintaining appropriate staff levels, hospitals should also help nursing staff create more structured opportunities for therapeutic interactions with their clients.

The H3B program not only creates opportunities for therapeutic interactions, it also fosters social interactions both among clients and between staff and clients, thereby creating a social environment on the unit. A study from Binnema (2005) showed that, when units have poor social environments, clients spend much of their time not engaging in any activities, which created isolated passive behaviors, and further exacerbated clients’ mental-health symptoms. Binnema (2005) also suggested that social engagement and group activities created a positive
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social environment on the unit by creating meaningful social opportunities for clients; which further reduced their boredom, a frequent result of the isolated passive behaviors.

Because nurses play a critical role in teaching clients, they are well positioned to help bridge the gap between clients’ physical and mental health. From a practice standpoint, educating clients in a group setting may be effective since it stimulates socialization and builds healthy relationships that are so vital for this population. Encouraging clients to take an active role in learning and training staff to provide non-judgmental coaching could be the keys to promoting clients’ self-esteem. Such methods to promoting clients’ self-esteem are consistent with the recent emphasis on recovery and self-management skills in mental-health care. Further studies are needed to understand other influences to increase inpatient mental-health clients’ learning about and improving their cardiovascular health.

Because this study may be the first to focus on using a group-based, psychoeducational board game in an acute inpatient setting, more research is needed to validate the H3B program. For example, one could have a control group and compare other measures such as changes in social interactions, perceived social support, perceived depression, aggressive behaviors, and other quality of life measures. Finally, evaluation of the stability of results from this intervention is needed before one can conclude that it should be adopted by other hospitals.

**Limitations**

This study has several limitations. The main limitation is related to the design, as no control group was included, so the cause of the increases in the measures could not be established. However, since participation was voluntary, and since some participants joined the activity after it had begun and others left before it had ended, the pre- and post-test groups were rarely identical. As such, using an independent sample t-test to test group differences is limited
by the fact that in some instances, the same clients may have responded to both the pre-test and post-test groups.

Furthermore, the intervention was carried out only on one unit, which limits the generalizability of the findings. The data are based on questionnaire responses and on the records of the unit staff, hence the information is limited to self-reporting. There may have been biases in the questionnaire’s design. The correct answers to the questionnaire were not always perfectly obvious. For example, in the question regarding whether coffee is a healthy choice, the question is unclear as to whether the coffee is black or full of sugar and cream. Likewise, it is unclear to what extent different factors such as the board game, the staff’s skills, or participants’ motivation and learning skills were responsible for the increases in knowledge, satisfaction, and attitudes toward healthy eating. Another limitation is the length of the study period. Only six months of data were collected. There was no way to know whether the observed increases would have been maintained.

One criticism of the H3B activity is that, since it was voluntary, it may have attracted the clients who were most open to learning about healthy diets and most sociable. A study from Gupta (2011) stated that group therapy was most useful for clients who are willing to be influenced by the groups. It is possible that those who participated in the H3B program were already motivated to learn and, therefore, more likely to indicate high satisfaction with the program.

Despite the study’s limitations, one of its strengths is that it could be the first study to assess psychoeducation using a group-based board game among people with mental-health diagnoses. Another strength of the study is that, whereas most other studies of creative approaches to psychoeducation focus on outpatient settings, this study focuses on an inpatient
setting. A final strength of this study is that it indicates the success of an intervention that is easy to scale up since it is inexpensive, not reliant on technology, and only requires limited training.

**Conclusion**

One of the main challenges mental-health providers face in seeking to provide holistic care to their clients is bridging the gap between physical and mental health. One reason for this gap is that many mental-health providers focus almost exclusively on their clients’ mental issues, sometimes forgetting that many of these clients also face actual or potential physical health issues (such as cardiovascular problems). This study examined the effects of H3B, a group-based, psychoeducational board game, on the diet-related knowledge and behaviors of adults with mental-health diagnoses in an inpatient setting. The main benefits of the program lie in its potential to improve clients’ understanding of heart-healthy diets and to foster their engagement in healthy eating behaviors. Future studies could include examining the apparent benefits that the program produces in clients’ social functioning. Overall, the study provides useful information to assist nurses and other health-care professionals in creating interventions to promote physical health among people with mental-health diagnoses in an inpatient setting.
HEALTHY-HEART, HEALTHY-BRAIN

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HEALTHY-HEART, HEALTHY-BRAIN


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<table>
<thead>
<tr>
<th>Outcome</th>
<th>Measures</th>
<th>Design</th>
<th>Sources of Data</th>
<th>Data Analysis</th>
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<tbody>
<tr>
<td>Program attendance</td>
<td>Census rate and number of participants per activity session</td>
<td>Post-test only</td>
<td>The unit’s Group Notes</td>
<td>Percentage</td>
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<tr>
<td>Knowledge of heart-healthy diets</td>
<td>Healthy Heart Diet Questionnaire</td>
<td>Pretest &amp; post-test</td>
<td>Healthy Heart Diet score collected from participants</td>
<td>Chi-square test of independence</td>
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<tr>
<td>Intention to engage in heart-healthy eating behavior</td>
<td>Healthy Eating Behavior Questionnaire</td>
<td>Pretest &amp; post-test</td>
<td>Attitude on Healthy Eating Behavior collected from participants</td>
<td>Independent-sample t-test</td>
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<tr>
<td>Client satisfaction</td>
<td>Attitude Toward the Program – Likert-scale</td>
<td>Post-test only</td>
<td>Attitude Toward the Program score collected from participants</td>
<td>Mean and standard deviation</td>
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Table 2 *Sample Characteristics (N = 86).*

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<tr>
<th>Variable</th>
<th>Frequency</th>
<th>Percent (%)</th>
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<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>46</td>
<td>53.5</td>
</tr>
<tr>
<td>Male</td>
<td>40</td>
<td>46.5</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White or Caucasian</td>
<td>85</td>
<td>98.8</td>
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<td>African American</td>
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<td>1.2</td>
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<tr>
<td><strong>Psychiatric diagnosis</strong></td>
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<td>33.7</td>
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<td>Mood disorders</td>
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<td>Anxiety disorders</td>
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<td>3.5</td>
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<td>Cognitive disorders</td>
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<td><strong>Medical diagnosis</strong></td>
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<td>Non-heart-related disease</td>
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<tr>
<td>Heart-related disease</td>
<td>50</td>
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<tr>
<td><strong>Age (M, SD)</strong></td>
<td>57.05</td>
<td>13.64</td>
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Table 3. *Satisfaction with Group Activity and Educational Content Scores (Likert scale of 1 to 5) (N = 76).*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Standard deviation</th>
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<tr>
<td>Satisfaction with the group activity</td>
<td>4.57</td>
<td>0.754</td>
</tr>
<tr>
<td>Satisfaction with the educational content</td>
<td>4.53</td>
<td>0.774</td>
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</table>
Figure 1. Changes in Correct Responses by Individual Food Items and by 80% or More Correct Total Score.
Figure 2. Changes in Participants’ Intentions toward Heart-Healthy Eating Behavior Scores.
## Appendix A

### Group Note

#### Eastern State Hospital

**Address:** 1350 Bull Run Road • Lexington, KY • 40511 • 859-246-6000  
- [ ] Eastern State Hospital  
- [x] Eastern State Hospital Long Term Care Facility

### EDUCATION PROGRESS NOTE

<table>
<thead>
<tr>
<th>Date:</th>
<th>Time:</th>
<th>Description</th>
<th>Mall</th>
<th>Unit</th>
<th>Group</th>
<th>PRP* Focus Area:</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Topic/Action:**  
- [x] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Comments/Impression:**  
- [ ] Continued discussion about group participation  
- [ ] Encouraged participant to take more active role  
- [ ] Participant showed increased engagement  
- [ ] Goal achieved: increased participation in group activities

---

**Plan:**  
- [x] Continue in Group with Additional Education  
- [x] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Date:**  
- [ ] Time:  
- [ ] Description:  
- [ ] Mall | Unit | Group | PRP* Focus Area:  
- [ ] 1:1

**Topic/Action:**  
- [ ] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Comments/Impression:**  
- [ ] Improved engagement in group discussions  
- [ ] Encouraged participant to share more personal experiences  
- [ ] Goal achieved: increased participation in group activities

---

**Plan:**  
- [x] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Date:**  
- [ ] Time:  
- [ ] Description:  
- [ ] Mall | Unit | Group | PRP* Focus Area:  
- [ ] 1:1

**Topic/Action:**  
- [ ] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Comments/Impression:**  
- [ ] Improved engagement in group discussions  
- [ ] Encouraged participant to share more personal experiences  
- [ ] Goal achieved: increased participation in group activities

---

**Plan:**  
- [x] Continue in Group with Additional Education  
- [x] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Date:**  
- [ ] Time:  
- [ ] Description:  
- [ ] Mall | Unit | Group | PRP* Focus Area:  
- [ ] 1:1

**Topic/Action:**  
- [ ] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Comments/Impression:**  
- [ ] Improved engagement in group discussions  
- [ ] Encouraged participant to share more personal experiences  
- [ ] Goal achieved: increased participation in group activities

---

**Plan:**  
- [x] Continue in Group with Additional Education  
- [x] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Date:**  
- [ ] Time:  
- [ ] Description:  
- [ ] Mall | Unit | Group | PRP* Focus Area:  
- [ ] 1:1

**Topic/Action:**  
- [ ] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Comments/Impression:**  
- [ ] Improved engagement in group discussions  
- [ ] Encouraged participant to share more personal experiences  
- [ ] Goal achieved: increased participation in group activities

---

**Plan:**  
- [x] Continue in Group with Additional Education  
- [x] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Date:**  
- [ ] Time:  
- [ ] Description:  
- [ ] Mall | Unit | Group | PRP* Focus Area:  
- [ ] 1:1

**Topic/Action:**  
- [ ] Continue in Group with Additional Education  
- [ ] Encourage Self-Study  
- [ ] Change Strategy *(Specify)*  
- [ ] Goal Achieved *(Specify)*  
- Clinician’s Signature:

**Comments/Impression:**  
- [ ] Improved engagement in group discussions  
- [ ] Encouraged participant to share more personal experiences  
- [ ] Goal achieved: increased participation in group activities
 Appendix B
 Pre-test Questionnaire

Healthy-Heart, Healthy-Brain: Pre-test

Put X in front of each item that is good for your HEART:

_____ Green beans  ____ Coffee
_____ Fried chicken  ____ Banana
_____ Dark chocolate  ____ Baked fish
_____ Water  ____ Crystal Light with 4 packs of sugar

Healthy Eating Behavior Questionnaire:

I plan to eat healthy for my HEART.

1__________ 2__________ 3__________ 4__________ 5
Strongly disagree Disagree Neutral Agree Strongly agree

Thank you! Are you ready for the game?

For staff use only:

Sex: _____
Age: _____
Race: _____
County: ___________________

Mental-health diagnosis: _____________________________
Medical diagnosis: _____________________________

Date of activity: __________
Appendix C
Post-test Questionnaire

Healthy-Heart, Healthy-Brain: Post-test

Put X in front of each item that is good for your HEART:

____ Green beans  _____ Coffee
____ Fried chicken  _____ Banana
____ Dark chocolate  _____ Baked fish
____ Water  _____ Crystal Light with 4 packs of sugar

Healthy Eating Behavior Questionnaire:

I plan to eat healthy for my HEART.

1 2 3 4 5
Strongly disagree  Disagree  Neutral  Agree  Strongly agree

Attitude toward the program:

I enjoyed this group activity.

1 2 3 4 5
Strongly disagree  Disagree  Neutral  Agree  Strongly agree

I learned about healthy-heart diets from this group activity.

1 2 3 4 5
Strongly disagree  Disagree  Neutral  Agree  Strongly agree