Mind-Body Medicine for Schizophrenia and Psychotic Disorders: A Review of the Evidence

Article *in* Clinical Schizophrenia & Related Psychoses · February 2013

DOI: 10.3371/CSRP.HESA.020813 · Source: PubMed

2 authors, including:

Chanel Heermann
Saybrook University
6 PUBLICATIONS **55** CITATIONS

SEE PROFILE

Mind-Body Medicine for Schizophrenia and Psychotic Disorders: A Review of the Evidence

Chanel Helgason [1], Jerome Sarris [2, 3]

Abstract

Over half of psychiatric patients use some kind of Complementary and Alternative Medicine, with Mind-Body Medicine (MBM) being the most commonly used collective modality. To date however, to our knowledge, no overarching review exists examining MBM for psychotic disorders. Thus the purpose of this paper is to present the first review in this area. A MEDLINE search was conducted of articles written in English from 1946 up to January 15, 2011 using a range of MBM and psychotic disorder search terms. Human clinical trials and, where available, pertinent meta-analyses and reviews were included in this paper. Forty-two clinical studies and reviews of MBMs were located, revealing varying levels of evidence. All studies included used MBMs as an adjunctive therapy to usual care, including medication. Overall, supportive evidence was found for music therapy, meditation and mindfulness techniques. Some positive studies were found for yoga and breathing exercises, general relaxation training, and holistic multi-modality MBM interventions. Due to insufficient data, a conclusion cannot be reached for hypnosis, thermal or EMG biofeedback, dance or drama therapy, or art therapy. No clinical trials were found for guided imagery, autogenic training, journal writing, or ceremony practices. For many techniques, the quality of research was poor, with many studies having small samples, no randomization, and no adequate control. While the above techniques are likely to be safe and tolerable in this population based on current data, more research is required to decisively assess the validity of applying many MBMs in the mainstream treatment of psychotic disorders.

Key Words: Schizophrenia, Psychotic Disorder, Mind-Body Medicine, Mind-Body Interventions, Complementary Medicine

Introduction

Mind-Body Medicine (MBM) is among a number of non-conventional healing practices actively sought out by today's patients, often at their own expense. Up to 63% of psychiatric patients already use Complementary and Alternative (CAM) therapies (1). In this small sample of 82 psychiatric inpatients, 9% of whom carried a diagnosis of schizophrenia, 30% reported using some kind of MBM. Although the exact percentage of MBM usage among patients with psychotic diagnoses was not reported by these authors, MBM treatments were the most commonly used CAM approach for addressing psychiatric symptoms in this population. Notably, although over half of these patients used some kind of CAM therapy, almost 80% of these patients did not reveal this use to their psychiatrists.

MBM is defined by the National Center for Complementary and Alternative Medicine (NCCAM) as: "Techniques designed to enhance the mind's capacity to affect bodily function and symptoms" (2). According to the Center for Mind-Body Medicine in Washington, DC: "MBM focuses on the interactions between mind and body and the powerful ways in which emotional, mental, social and spiri-

[1]Saybrook University, School of Mind-Body Medicine, San Francisco, CA
[2]The University of Melbourne, Department of Psychiatry, Melbourne, Australia
[3]Swinburne University of Technology, Centre for Human Psychopharmacology, Melbourne, Australia

Address for correspondence: Dr. Jerome Sarris, The University of Melbourne, Department of Psychiatry, The Melbourne Clinic, 2 Salisbury Street, Richmond, Victoria 3121, Australia
Phone: 03 9420 9350; Fax: 03 9427 7558;
E-mail: jsarris@unimelb.edu.au

Submitted: June 2, 2011; Revised: July 12, 2011;
Accepted: September 9, 2011

tual factors can directly affect health." These are "… scientifically validated techniques that respect and enhance each person's capacity for self-knowledge and self-care … Mind-Body approaches use the conscious mind to directly affect the workings of the brain and the rest of the body" (3). It is notable that Mind-Body techniques have been collectively studied in the widest variety of clinical conditions compared to other CAM techniques (4).

Some core philosophical tenets of MBM are part of conventional psychiatric practice. Both MBM and conventional psychiatry emphasize relationship-based care as a cornerstone of the healing partnership. Conventional psychiatry has also routinely included some Mind-Body approaches which were once considered CAM, such as relaxation techniques (2). Other modalities, while sometimes practiced by conventionally trained psychiatrists, are not standard parts of the residency curriculum. These may include mindfulness, meditation, guided imagery, hypnosis/self-hypnosis, biofeedback, art therapy, music therapy, dance therapy, breathwork, autogenic training, journal writing, and ceremony practices.

Current clinical practice offers few guidelines regarding the application of MBM for those with psychotic disorders. These are questions which have not often been asked in the past, possibly either due to lack of information about these methods, or perhaps preconceived ideas about which groups of people have the capacity to benefit from self-healing techniques. Some of these techniques have, however, been scientifically studied in this population, often with encouraging results. One benefit of psychosocial-based techniques over conventional pharmacotherapy (pharmacotherapies are recognized as a vital prescriptive element) is the improved safety profile, with significantly fewer participants who undergo these interventions discontinuing in clinical studies. This is evidenced in a 2010 meta-analysis of seventy-four psychosocial studies in schizophrenia by Villeneuve et al. (5), which revealed a modest 13% drop-out rate (compared to an average of 42% using pharmacotherapies).

Mind-Body techniques act, in healthy populations, largely through their direct physiologic effects on the autonomic nervous system and hypothalamic-pituitary-adrenal axis, among other mechanisms (6). MBM techniques, although very different in their methods, have a common endpoint of eliciting relaxation via these mechanisms. As such, anxiety reduction is a frequent outcome of utilization of MBMs. Examining the evidence to support Mind-Body techniques in those with psychosis is especially important since, given high-anxiety levels often found in those with psychosis, there is great potential to impact quality of life. Research indicates people with schizophrenia have higher arousal at baseline (7). Patients with high levels of anxiety, specifically those with comorbid anxiety disorders, show greater functional impairment, both globally and in social and work function, as well as reduced quality of life compared to those without anxiety disorders (8). Anxiety is also more closely related than depression to poor life satisfaction in psychotic patients over time (9). Thus, anxiety reduction is a potential mechanism by which MBMs could conceivably improve outcomes. While some MBMs may not have a direct antipsychotic effect on reducing positive symptoms of schizophrenia, such interventions may potentially still improve effects on negative symptoms, anxiety levels, or overall quality of life.

For client-centered mental health practitioners, a review of the evidence for MBM in psychosis is both vital and long overdue. There is a need to rigorously assess the current evidence level for a range of MBMs in order to determine which may have a potential role in the treatment of schizophrenia and other psychotic disorders, and which are potentially ineffective. More importantly, patients are already using these techniques, often spending limited resources to obtain them. Thus, the purpose of this paper—the first specific review in this area to our knowledge—is to review the evidence base regarding the use of MBMs in people with psychotic disorders, and advise on judicious clinical application.

For client-centered mental health practitioners, a review of the evidence for MBM in psychosis is both vital and long overdue.

Methods

Articles were located by doing a computerized literature search of MEDLINE from 1946 up to January 15, 2011 using the search terms *"schizophrenia"* OR *"psychotic disorder"* OR *"psychosis"* in combination with a range of MBM interventions *"mind-body medicine"* OR *"psychosocial"* OR *"biofeedback"* OR *"autogenic"* OR *"meditation"* OR *"mindfulness"* OR *"yoga"* *"qigong"* OR *"tai chi"* OR *"relaxation training"* OR *"guided imagery"* OR *"music therapy"* OR *"art therapy"* OR *"dance therapy"* OR *"drama therapy"* OR "*bibliotherapy.*" These topics were chosen based on review of the NCCAM website, as well as that of the Center for Mind-Body Medicine, to determine the most commonly used and researched techniques. The search did not have gender, ethnicity, or age limits, but the review was limited to English-language publications. The reference lists for key articles were also searched manually for relevant references. Psychological techniques (such as cognitive behavioral therapy) and exercise were excluded from the review as these were considered to be mainstream interventions. Acupuncture was omitted

as it was considered as part of the whole-systems approach of Traditional Chinese Medicine (TCM). Inclusion criteria consisted of human studies, that were either open or controlled, involving MBM interventions for participants with diagnosed schizophrenia or any other psychotic disorder (e.g., bipolar disorder type I with psychotic features). Meta-analyses and major reviews such as Cochrane Reviews were also included in the review of literature. The term "significant" refers to a p value of <0.05.

Results

Overview

The initial search of literature revealed a total of 9,695 hits on MEDLINE, with a total of 42 clinical trials and reviews included in this paper. The results of the search revealed clinical trials in the treatment of schizophrenia and other psychotic disorders for meditation, yoga and breathwork, multi-modality interventions, hypnosis, biofeedback, relaxation, art therapy, music therapy, dance and drama therapy, and have been categorized under these headings.

Meditation

Meditation is a common technique for stress reduction, which has also been used in patients with psychotic disorders. Our review found eight studies, four of which were controlled (one randomized). Results provided consistently positive outcomes, although the studies were mostly small (over 295 patients total over the eight studies), and some were uncontrolled and/or had subjective outcomes. Safety data were also favorable to meditation, with only three case reports of negative outcomes found (due to intensive, extended practice).

In one multi-arm pilot study, 116 mixed-diagnosis inpatients trained in mantra meditation twenty minutes twice daily showed a significant global improvement at discharge, as measured by factor scores obtained from automated nursing notes, as well as patient self-report via Minnesota Multiphasic Personality Inventory (MMPI) scores, when compared to matched inpatient controls (10). The other treatment arm using alpha-wave biofeedback proved too difficult for participants (resulted in increased anxiety), while compliance in the autogenic training arm was poor due to the challenge of maintaining interest after several weeks. The exact number of patients with psychosis was not reported but, based on typical demographics of patients in state hospital settings, this can be assumed to be a significant proportion of the subjects.

Mindfulness, a specific meditative technique focusing one's attention non-judgmentally on present experience, has been studied in a small qualitative pilot study as a treatment for anxiety symptoms in patients with psychosis (11). The sixteen-session group was a modification and combination of both Mindfulness Based Stress Reduction and Mindfulness Based Cognitive Therapy, with a focus on developing self-compassion. Five stable, male patients with schizophrenia or schizoaffective disorder diagnosed through SCID interview were studied. Modifications to accommodate psychotic illness included limiting silence within meditation to less than two minutes, limiting group size to five participants, presenting information in concrete language with short sentences, and reducing daily home practice recommendations to thirty minutes. These patients reported improvement in ability to manage psychotic symptoms using these techniques, improved control of impulsive behaviors, greater self-awareness and self-acceptance, better management of stress, reduced anxiety and social withdrawal, with no worsening in psychotic symptoms as measured by face-to-face interviews at weeks four and eight.

A non-controlled study examined eleven patients with chronic, distressing psychotic symptoms of at least two years' duration (nine with diagnosed schizophrenia and two with schizoaffective disorder per *DSM-IV* criteria); these eleven subjects, from the originally recruited fifteen, completed a six-session mindfulness group and showed significant improvement in Clinical Outcomes in Routine Evaluation (CORE) scores, a scale assessing well-being, problems, and functioning, with no adverse effects. The subjects also showed a 36.6% increase in their ability to be mindful with psychotic symptoms, measured by the Southampton Mindfulness Questionnaire (SMQ). The group format was modified to accommodate those with psychotic symptoms, by reducing the length of meditation sessions to two ten-minute sessions, limiting teaching to mindfulness of breath, encouraging but not requiring homework, by guiding all meditations, and by balancing focus on structure versus therapeutic relationship/process. Mindfulness was also taught as "choiceless attention," rather than concentration, which could, theoretically, elicit hallucinations. This format was acceptable for six of eleven people who chose to attend a second group series (12).

Another small pilot qualitative study was conducted using a one-hour mindfulness training intervention offered weekly on an inpatient unit to a mixed-diagnosis group, including patients with paranoid schizophrenia (13). There was an average of five patients per group. The exact number of patients with psychosis was not reported. This study was designed to elicit more information about the subjective experience of participants in mindfulness-based therapies. The subjects participated in a minimum of two and an average of five sessions. Based on in-depth interviews of eight subjects, thematic analysis of the data found themes of positive changes in cognition, especially related to reduced identification with negative thoughts, improved concentration, greater relaxation, acceptance, ability to cope with exposure

to difficult intrapersonal experiences, awareness, and self-management. Participants expressed some concerns about availability of follow-up after discharge and shared difficulties adjusting to the skills and expectations of the technique. There were also mixed reports about whether side effects of medications interfere significantly with participation.

A randomized controlled study of mindfulness in twenty-two patients with schizophrenia per *DSM-IV* diagnosis used twice-weekly group sessions for five weeks followed by five weeks of home practice with CDs. The focus was on developing a more positive relationship with their voices, rather than reducing the voices themselves. The primary analyses (CORE, SMQ, Psychiatric Symptom Rating Scale [PSYRATS], Southampton Mindfulness Voices Questionnaire [SMVQ], Beliefs About Voices Questionnaire revised [BAVQ-R]) showed no differences between mindfulness training and wait list control. However, secondary analyses of completers showed improvements in clinical function and mindfulness of distressing thoughts and images on CORE and SMQ scores, with medium effects sizes. There was good acceptability to patients and no adverse events (14).

A seven-session uncontrolled case study of group loving-kindness meditation treatment for negative symptoms in schizophrenia found the treatment was both feasible and acceptable to patients. The three subjects had diagnoses of schizophrenia, schizoaffective disorder, or psychosis not otherwise specified (NOS), per chart review. Subjects were evaluated by interview at baseline, post-treatment, and at three-month follow-up on psychiatric symptoms, emotions, and psychological recovery. Improvements were noted in all patients, although not necessarily related to negative symptoms. Most patients reported an increase in positive emotion, with resulting increased recovery-building behaviors and improved function (15).

A recent uncontrolled study by Johnson et al. (16) examined loving-kindness meditation for eighteen patients with schizophrenia spectrum disorders, diagnosed by chart review (44% with schizophrenia, 33% with schizoaffective disorder, 22% with either psychosis NOS or schizophreniform disorder). The intervention consisted of weekly group sessions. Outcomes were measured using group attendance and self-report measures, as well as the Modified Differential Emotions Scale (mDES), the Day Reconstruction Method (DRM), the beta version of the Clinical Assessment Interview for Negative Symptoms (CAINS beta), the Temporal Experience of Pleasure Scale (TEPS), the Savoring Beliefs Inventory-Future subscale (SBI), the Scales of Psychological Well Being (SPWB), the Trait Hope Scale (THS), and the Satisfaction with Life Scale (SWLS). Intent-to-treat results found the treatment acceptable to patients, as well as large increases in positive emotions, which persisted at three-month follow-up. There were also large decreases in total negative symptoms and anhedonia as well as medium effect size improvements in asociality—also persisting at three-month follow-up—although these results were confounded by an unblinded outcome measure. Large post-test improvements were also found in environmental mastery, self-acceptance, and satisfaction with life, with persisting medium to large effects at follow-up. There was little or no effect on hope and purpose in life. Given the uncontrolled design, however, the clinical effect may be inflated.

Acceptance and Commitment Therapy (ACT) is a psychotherapy technique based in mindfulness training. This method encourages acceptance of life events, awareness of thoughts without judging them true or false, and identifying valued goals in conjunction with actions toward those goals. This technique has advantages over coping strategies that attempt to suppress or ignore symptoms, which can actually increase symptom intensity, as well as subjective distress. A four-session individual ACT intervention, with a treatment as usual control, studied eighty state hospital inpatients with mixed diagnoses and active, primary psychotic symptoms. The treatment group was notable for having half the rate of rehospitalization over the four-month follow-up period, staying out of the hospital an average of 22 days longer than the control group, despite no differences in prior hospitalization frequency, symptom frequency, distress, nor medication compliance (all significant effects). Additional self-report data (seven-point Likert-type scale and a 1–100 rating system) found significantly greater willingness to report symptoms, as well as less belief in those symptoms. Patients with significant delusions who continued to deny symptoms, however, did not improve in this study (17).

A follow-up randomized controlled pilot study using ACT was performed in forty inpatients with psychotic symptoms and either a primary psychotic disorder or an affective disorder with psychotic features per *DSM-IV* diagnosis. Results revealed overall improvements, as well as improved mood symptoms, social function, and reduced distress related to hallucinations ($p<0.05$) after an average of three ACT sessions, per the BPRS and Clinical Global Impression (CGI), as well as self-report as per the prior study, and the Sheehan Disability Scale (SDS). Symptom frequency and believability were not significantly different until the post-treatment measure, in which believability decreased in the ACT group. Clinically significant symptom improvement was found in more ACT subjects at discharge, compared to the control group, with a number-needed-to-treat of three. Four-month rehospitalization rates were 28% for ACT subjects versus 45% for controls, although this difference was nonsignificant. This study was randomized but not blinded, which has the potential to introduce bias in clinician ratings, although would not affect patient self-report or hospitalization rates (18).

One of the reasons meditation is not utilized more frequently in patients with schizophrenia is related to fears of exacerbating symptoms. The present review of the literature uncovered only three case reports of psychotic breaks in patients with schizophrenia related to meditation. All three were precipitated by intensive meditation practice, involving meditating all day, for several days straight. Psychotic symptoms began on day four, six, and ten, respectively, in these three cases. One of the cases (symptoms arising on day six) had been fasting and restricting sleep to one to two hours beginning on day three of the retreat. A second case (symptoms arising on day six) had been meditating eighteen hours daily. The generalizability of these findings to more standard meditation recommendations, such as twenty-minutes twice daily, is questionable, however (19). The current absence of other negative reports should be taken as at least preliminary evidence in favor of the safety and tolerability of meditation in a psychotic population. While meditation (mindfulness and loving-kindness) and related techniques (specifically ACT) have some initial positive studies to support their use and safety in this population, many of the studies were poorly designed or had small samples; therefore, future robust studies are required to reach a firm conclusion on efficacy.

The present review of the literature uncovered only three case reports of psychotic breaks in patients with schizophrenia related to meditation.

Yoga and Breathwork

Yoga is a healing tradition that began in India, but has since spread throughout mainstream Western culture. It includes a combination of postures, breathwork techniques, and meditation, among other aspects. Two studies of these techniques for psychosis—one randomized and single-blinded, the other uncontrolled—both found positive effects.

A randomized, single-blinded study of sixty-one subjects with schizophrenia randomly assigned to yoga (including asanas and breathwork but without meditation) or physical exercise showed improvements in psychopathology for both groups (20). However, the yoga group made significantly greater improvements, with a moderate-to-large clinical difference in psychopathology, social and occupational function, and improved quality of life. There were no serious adverse events (i.e., delirium, confusion, suicidality, serious physical complications).

An uncontrolled study of 113 mixed-diagnosis inpatients, 31% of whom had a psychotic illness, receiving weekly yoga therapy in 45-minute sessions, found significant improvements in negative mood (21). Five of the six scales on the Profile of Mood States (POMS) improved, including tension-anxiety, depression-dejection, anger-hostility, fatigue-inertia, and confusion-bewilderment, although no changes were noted in the vigor-activity scale. Effects were consistent, regardless of whether subjects completed one or more than one yoga session, nor did they differ for psychotic versus non-psychotic subjects. Although there are some concerns about the logistics and applicability of yoga programs in other settings (22), these initial results are promising.

Hypnosis

Hypnosis is a state of focused concentration used to access the resources of the subconscious. It has been utilized with psychotic patients in two published studies: one controlled and one focused on mechanism of action. The area has also been subject to a Cochrane Review.

In one three-arm trial, a hypnosis intervention was used with fifty-four hospitalized patients with schizophrenia compared to music-only, relaxation-suggestions, or confidence-enhancing suggestions (23). Outcome measures included the Negative Symptom Rating Scale, the Nurse Observation Scale for Inpatients (NOSIE), and the BPRS. The groups all showed improvement, including some improvement in positive symptoms, as well as reduced need for sleeping medications. The relaxation-suggestions group showed non-significant trend to being more helpful after one month, possibly because encouraging suggestions can be interpreted as demanding by some patients. The patients were very receptive to the treatment.

In another study, two groups of patients with schizophrenia—one group with low susceptibility and the other with medium-to-high hypnotic susceptibility—were studied using hypnosis compared to passive learning. Based on their results, specifically the different recall order for subjects with schizophrenia versus normal controls, it is hypothesized that the mechanisms underlying suggested amnesia in schizophrenia is different from that of normal subjects. This offers an interesting insight into changes in cognitive processes as a result of this illness (24).

A 2007 Cochrane Review of the aforementioned research concluded there were only three small studies of hypnosis with persons with schizophrenia, including the two above (25). In general, hypnosis was concluded to be as acceptable as relaxation, music, and standard treatment. However, thus far it appears that mental state and neurocognitive function are not significantly affected. It was rated as possibly helpful, but the research evidence is of poor quality. Jung and Newton's review (26), based upon the Cochrane analysis, concurred that hypnosis currently has insufficient evidence to warrant inclusion in standard practice. The cur-

rent evidence for hypnosis in schizophrenia is promising, but insufficient to recommend at this time.

Biofeedback

Biofeedback is a popular technique which trains users in control of autonomic body functions with the use of equipment, ranging in complexity from simple thermometers to devices displaying EEG waves in real time. It is often used for relaxation and other purposes, which has some evidence to support its use in schizophrenia. Five studies with mixed results are reviewed here, addressing thermal, EEG, and EMG biofeedback techniques.

One four-armed study compared thermal biofeedback, relaxation, both techniques, and a minimal treatment control (subjects instructed to relax and were monitored) in forty inpatients with diagnosed schizophrenia (27). Outcomes were measured using the BPRS, the Hamilton Anxiety Scale (HAS), and the State-Trait Anxiety Inventory (STAI). All treatment groups showed significant anxiety reduction, with no significant differences between groups. A subset of "anxious" patients continued to show anxiety reduction one year after the intervention.

EEG slow cortical potentials (SCPs), which differ between participants with schizophrenia and controls, are thought to reflect regulation of attention and cortical excitability. With training, the patients were able to increase or decrease SCPs to resemble controls in one study (28). It is notable that patients were able to be trained in operant conditioning of SCPs in two different studies, especially interhemispheric control, despite their cognitive deficits (29).

One small biofeedback study looked at ten inpatients with schizophrenia and ten with psychoneurosis, diagnosed by chart review, who were compared to ten normal controls. All groups were given six recorded sessions of relaxation training along with EMG biofeedback as an adjunct to standard treatment. Outcomes were measured using the MMPI, the Ward Behavior Inventory (WBI), and the Psychiatric Behavior Rating Scale (PBRS), as well as psychiatrist and nursing staff ratings. The group with schizophrenia showed significant differences in muscle tension pre- and post-treatment. The researchers also noted improvements in both psychiatric symptoms and behavioral problems on all scales (30). In addition, the length of hospitalization significantly decreased, by an average of 5.6 days, and re-admission rate was lower compared to treatment-as-usual controls.

In another study, EMG biofeedback with muscle relaxation was studied in thirty long-term inpatients with diagnosed schizophrenia. Biofeedback plus relaxation was significantly more effective than relaxation alone in reducing muscle tension, and both were significantly more effective than control. There was no significant change in tension-anxiety on outcome measures, but global ratings of social interactions significantly improved (31).

An interesting small study of note used EEG biofeedback in nine patients with schizophrenia (32). The subjects were able to temporarily alter their EEG pattern to resemble the EEG pattern of patients who are improved on neuroleptic medications. The results for biofeedback in psychotic disorders are mixed, although some subpopulations may benefit from the combination of EMG biofeedback and relaxation training.

Relaxation Techniques

Relaxation is a state of balance between the sympathetic and parasympathetic nervous systems. General relaxation exercises have evidence for many psychiatric illnesses, including some studies on schizophrenia. Four studies are reviewed, with three showing evidence of positive effect, and only one adverse event noted.

One study examined thirty-nine volunteers with schizophrenia, per medical record review, recruited from an outpatient Veterans Administration clinic. The study compared twenty-seven subjects given either six weeks of Applied Relaxation Training (deep muscle relaxation plus social support) or an Anxiety Management Training (a combination of deep muscle relaxation, stressful imagery, and training in reducing anxiety), with both groups receiving six weekly 45-minute sessions. These subjects were compared to twelve wait list controls (33). Anxiety in both groups was reduced compared to control on both the STAI and on an eight-item clinical scale completed by their regular therapists, who were blinded, with no significant difference between the groups. In addition, their therapists noted improvements in other non-targeted symptoms such as therapy engagement, anger management, and goal-directed behavior.

Another study (34) examined fifty-one psychiatric inpatients, 90% with diagnoses of either schizophrenia or severe depression. They were taught two types of relaxation training: progressive relaxation, with instructions to tense and relax muscles, and an imaginal relaxation group, instructed just to relax. Both groups were instructed via tape by trained nursing staff. There was a significant increase in relaxation on the Relaxation Inventory for both groups after five 20-minute sessions, with no difference between the groups (although only the first three sessions were evaluated due to high dropout and discharge rates). When these two groups were compared to normal student controls, the psychiatric patients were found to achieve somewhat less relaxation. There was only one withdrawal due to negative reaction to the training, with only a few unpleasant side effects (i.e., intrusive thoughts, muscle cramps) reported.

Chen et al. (35) conducted a randomized controlled trial

of Progressive Muscle Relaxation in eighteen inpatients with schizophrenia, per *DSM-IV* diagnosis, and a Beck Anxiety Inventory (BAI) score >7. The subjects had no prior relaxation training. The subjects were given eleven daily sessions of twenty-five minutes each, presented via audio recording. Baseline comparability of the groups was determined using the Mini-International Neuropsychiatric Interview (MINI), the Scale for the Assessment of Positive Symptoms (SAPS), and CGI. Outcomes were measured using finger temperature and BAI. There was a significant reduction in reported anxiety, as well as a significant increase in finger temperature, indicating lower sympathetic nervous system activity compared to the control group after treatment. Improvement was maintained one week post-treatment. There was, however, no difference between the groups on the MINI, SAPS, or CGI. Furthermore, benefits began to wane after one week without practice, although were still significantly improved as compared to controls.

Not all studies have, however, shown benefit. Relaxation Response training was studied with twelve patients with chronic undifferentiated schizophrenia, per *DSM-III*, and twelve with antisocial personality disorder as controls. The groups were randomized to either Relaxation Response training or a general presentation about relaxation and stress. There was no difference on an attentional task between groups trained in the relaxation response and a placebo exercise, although only two sessions of relaxation were provided, limiting the generalizability of these findings (36).

Relaxation has been shown to be generally tolerable to patients. In one study specifically addressing this question, sixty-four inpatients, 23% with a diagnosis of schizophrenia, were offered seven days of alternating progressive and passive relaxation in small groups via audio recording, with randomly alternating order of interventions. Using a side-effects checklist, subjects reported few side effects, with 82% reporting three or fewer, and with both procedures showing a similarly low rate of side effects. Only one patient was removed for adverse effects (37).

Relaxation training has some promising evidence, but research has shown mixed results, and further study is warranted.

Art Therapy

Art therapy is self-expression through art that is designed to promote physical, psychological, and spiritual wellness. There is limited published data available for its use in psychosis, although three review papers have been published, including one from the Cochrane group. One study of note compared art therapy versus "phantasy therapy," which is an "experience and expression oriented approach" to group therapy, and standard care in 205 inpatients (38). After four sessions, the results revealed that patients' judgments of improvement were more in favor of phantasy therapy, with clinician-judged psychosocial communication skills improving over other treatments. It should be recognized that this study was poorly designed and poorly reported, thus no firm conclusions can be reached about the effect of art therapy.

In conclusion, the use of art therapy for schizophrenia appears to be well received by patients but has insufficient evidence to recommend at this time.

The Cochrane Review notes two studies on adjunctive art therapy, which showed poor methodology and underpowered design but promising results in improving mental state, though not quality of life or socialization (39). Art therapy was found to also be well received by patients. Jung and Newton's review (26), which was based upon this analysis, determined that art therapy had inconclusive evidence to warrant inclusion in standard practice. Another review noted three studies, including the two from the Cochrane paper, as well as a Chinese study which showed improved social functioning and mental health, but which used questionable methodology. The overall conclusion was that art therapy improved social function as well as negative symptoms, and was enjoyable for patients. Despite concerns, there were no noted cases of psychotic symptoms worsening as a result of art therapy (40).

It is interesting to note that a large clinical trial of art therapy involving 100 people with schizophrenia has recently been concluded, with the results currently under analysis. The three-arm, randomized, controlled "MATISSE" study (ISRCNT46150447) (41) compared the effect of art therapy over twelve months versus standard care and an attention control activity group. As researchers conducting the outcome assessments are masked and the sample is robust, the results of this study are highly anticipated. In conclusion, the use of art therapy for schizophrenia appears to be well received by patients but has insufficient evidence to recommend at this time.

Music Therapy

Music therapy is the use of music to improve health. Six studies were located for review, in addition to two meta-analyses. A 2005 Cochrane Review (42) analyzed four studies meeting quality criteria for inclusion and found global improvements in patients with schizophrenia provided with adjunctive music therapy of at least twenty sessions. There

was also improvement in functioning and mental state, especially related to negative symptoms, with a suggestion of a dose-response relationship. These results support the conclusion of a 2003 meta-analysis by Silverman (43), which liberally included nineteen studies using music for psychosis, finding a significant result and large effect size in favor of music therapy. Interestingly, no difference was found between the type of music (e.g., classical or self-selected), listening or active music making or therapist directed. Jung and Newton's review (26)—based upon this analysis—ranked music therapy among the four treatments having a sufficiently high level of evidence to warrant inclusion in standard practice.

One rigorous study of note is a randomized controlled study of music therapy and standard care versus standard care alone (44). The twelve-week study involved eighty-one participants with *ICD-10*-diagnosed schizophrenia. The music therapy sessions were therapist conducted involving participants "expressing themselves" using a range of instruments once per week for forty-five minutes. Results revealed at conclusion after twelve weeks that a significant reduction occurred on PANSS for music therapy over standard care. The subscales, however, showed no significant difference for positive or negative symptoms, nor improved quality of life.

In another controlled study, seventy-six patients with residual-type schizophrenia, per *DSM-IIIR*, were provided with one month of nineteen-hours-long sessions involving music therapy intervention that combined both listening and active participation, in addition to usual treatment, and compared to treatment-as-usual control. Outcomes were measured using the Chinese versions of the Scale for the Assessment of Negative Symptoms (SANS), the World Health Organization's Disability Assessment Scale (DAS), and a nursing log to assess sleep patterns. There was a significant improvement in negative symptoms over control in every subscale as well as total SANS score. The researchers also noted significant improvements on the DAS, specifically in increased interest in external events, as well as improved social interaction, including both ability to converse and reduced social withdrawal (45). There were no side effects noted, and the intervention, overall, was quite inexpensive as well.

Another five-week study utilized music therapy for thirty-seven patients with schizophrenia (73%), schizoaffective disorder, schizotypal disorder, drug-induced psychosis, or psychotic depression, per *ICD-10* criteria (46). Subjects were randomly assigned to group music therapy or treatment-as-usual control. Subjects received an average of 7.5 therapy sessions, of 1.5 hours each. Outcomes were measured using the Giessen Test self-assessment (GTS), and the Giessen Test observer-assessment (GTFm), with the mean score of two trained observers being used for analysis. The authors also measured negative symptoms with the Scale for the Assessment of Negative Symptoms (SANS) and quality of life with the Scales for Mental Health (SPG). Results found self-reported improvement in social behavior, though observer ratings showed no change. There was no significant difference in negative symptoms between the groups at the conclusion of the study, although there was a trend toward reduced negative symptoms, especially in the subgroup of patients with a diagnosis of schizophrenia. There was no effect on quality of life, with music therapy having no adverse effects, and only a moderate cost.

Another double-blind, controlled study compared six weeks of karaoke therapy with simple singing in a sample of four matched pairs of participants with chronic schizophrenia, per *DSM-IIIR*. Outcomes were measured using the several self-rating scales (the Interaction Anxiousness Scale [IAS], the Audience Anxiousness Scale [AAS], the Index of Self-Esteem [ISE]), as well as observer ratings of negative symptoms (the Negative Symptom Rating Scale and NOSIE). Results showed significant improvement in willingness to initiate conversation with others at six weeks. However, there was a significant increase in anxiety on the AAS, indicating karaoke treatment may, unsurprisingly, provoke anxiety symptoms in some patients (47).

A later randomized controlled study used up to twelve weekly, 45-minute sessions of adjunctive music therapy for eighty-one hospitalized patients diagnosed with schizophrenia or schizophrenia-like psychosis (48). Significant improvements were found in both positive and negative symptoms on the Positive and Negative Syndrome Scale (PANSS). However, no improvement was found in either patient satisfaction, per the Client Satisfaction Questionnaire (CSQ), or in global functioning, per the Global Assessment of Functioning Scale (GAF).

Overall, the evidence of music therapy was consistently positive and of sufficient quality to warrant inclusion with standard treatment options.

Dance and Drama Therapy

Theatrical and dance-based therapy research in psychotic patients is still in its infancy. Drama and dance therapies are a form of therapy that seeks to achieve a therapeutic outcome via enhanced expression of emotions via a theatrical and/or movement-based experience. A Cochrane Review including one single-blind study of dance-movement therapy in forty-five patients with schizophrenia, diagnosed per *DSM-IV*, found a 20% reduction in negative symptoms on the PANSS, as well as reduced negative symptoms overall at the close of the study. However, these effects were not found on positive symptoms, nor total PANSS score. Furthermore, differences were not found for quality of life and

patient satisfaction, measured using the Client Assessment of Treatment Scale (CAT) and the Manchester Short Assessment of Quality of Life (MANSA) (49). The results for dance therapy in psychosis are promising but preliminary, and warrant further study.

A Cochrane Review conducted by Ruddy and Dent-Brown (50) of drama therapy for schizophrenia included five studies (n=210). These studies involved the use of role-playing and/or psychodramic elements. The authors stated that it was difficult to draw conclusions from the data in the studies due to poor methodology, and from two studies being written in Chinese.

Multi-Modality Interventions

Research using combination MBM treatments may be worthwhile, as multiple MBMs are often used in clinical practice. A small series of studies on multi-modality groups for schizophrenia were located, both with positive results.

One qualitative pilot study was conducted in state hospital patients using a stress management protocol (Project SMART—Stress Management And Relaxation Training) (51), which included skills training, education on dietary stimulants and stress, reinforcement and encouragement, aerobic and stretching exercises, breathing and relaxation exercises, non-guided special place imagery, and biofeedback with bio-dots. Five patients with chronic diagnoses of schizophrenia (paranoid or undifferentiated type) per chart review were studied. Forty-five minute sessions were offered over a longer period (up to eight months), rather than the usual 90- to 120-minute sessions over eight weeks, in order to accommodate attention problems related to negative symptoms of schizophrenia. Breathwork was taught using shorter breath cycles due to low baseline physical fitness and high incidence of smoking. Two of the subjects reported distress during visual imagery, which was thereafter modified to include a relaxation tape, which removed the requirement to generate one's own images. As hypothesized by the researchers, these patients were able to learn and utilize these stress management skills based on subjective self-report (52).

In another multi-modality group study, a ten-week group was offered to twenty-eight male inpatients with diagnosed schizophrenia, per *DSM-III* and CATEGO class S schizophrenia criteria. The program included exercise, yoga, mantra meditation, stress education, nutrition education, and positive reframing of their illness, and was compared to intensive social skills training. Outcomes were measured using the Symptom Checklist 90 (SCL-90), the Psychiatric Assessment Scale (PAS), the Nurses Global Impression Scale (NGIS), the Tennessee Self-Concept Test (TSC), as well as quizzes on the material presented. Comprehension of the didactic material was good, and both groups were helpful in the short term, similarly reducing psychopathology, and without significant adverse effects. However, these improvements were not maintained at two years, with the techniques not being utilized, and both groups had similar relapse rates during the follow-up period. It is notable that there was a nonsignificant trend to holistic group being more helpful in the initial measures (53). These mixed-modality groups have some promising initial research to support their use for those with psychotic symptoms.

Table 1 Mind-Body for Psychotic Disorders—Summary of the Evidence

Mainly Supportive Evidence
• Music therapy • Meditation and meditation-based psychotherapy techniques (i.e., mindfulness)
Some Supportive Evidence
• Holistic multi-modality Mind-Body groups • Yoga and breathing exercises • Relaxation training
Currently No Sufficient Evidence
• Dance therapy • Drama therapy • Art therapy • Hypnosis • Thermal biofeedback plus relaxation training • EMG biofeedback plus relaxation training

Discussion

Overall, results revealed supportive evidence for music therapy, meditation, and mindfulness techniques. Some positive studies were also found for holistic multi-modality interventions, yoga, and relaxation training. Currently, due to insufficient data, a conclusion cannot be reached for hypnosis, thermal or EMG biofeedback, dance or drama therapy, or art therapy. No results were found for guided imagery, autogenic training, journal writing, bibliotherapy, or ceremony practices. A summary of the results is included in Table 1, with the judgment on level of evidence based on mutual decision by the authors after weighing the evidence, including such factors as number of studies, quality of study design, and robustness of results. For many modalities, the quality of research was poor, with many studies having small samples, no randomization, and no adequate control. In some instances, the evidence of the MBM was from non-controlled studies conducted over thirty years ago. Thus, the overall body of evidence of MBM in the treatment of schizophrenia is currently limited, and rigorous research will be required to draw any firm conclusions. However, even in the absence of firm conclusions, it may be reasonable to implement these techniques with certain patients,

based on individualized factors, such as patient preference or personal enjoyment of the techniques. Also, MBMs offer the possibility of improved quality of life with minimal possibility for adverse reactions and, as such, may be reasonable to include in a particular patient's treatment plan, even prior to publication of conclusive evidence. Additionally, the current limited evidence should not be seen as advice to stop offering MBMs to those with psychosis until the evidence is in. Clinical judgment is still advised, and if an MBM is working and is relatively safe and inexpensive, then it would seem wise to continue it. Based on the lack of reported adverse outcomes, and promising results in several areas, then, MBM is felt to be clinically relevant as a low-risk, possibly effective intervention for many patients.

All studies included used MBMs as an adjunctive therapy to usual care, including medication. It is unclear how concurrent therapy with MBM and pharmaceuticals would differ from MBM offered in lieu of medication, but this cannot be recommended at this time. It is possible these therapies act synergistically with medications, with combinations being more effective than either alone, similar to results found with combination therapy in chronic depression (54).

These mixed-modality groups have some promising initial research to support their use in those with psychotic symptoms.

One factor that may have impacted the results of many of these studies is the use of groups as the Mind-Body therapy format. It is unclear how much the group supports itself, which can be a significant positive influence on its own, and may be impacting these findings.

Limitations of this review include the selection of particular Mind-Body techniques for inclusion, which are still under discussion within the field. We were also limited by our restriction to English-language publications. In addition, this was not a systematic review and, thus, may not have uncovered every relevant paper in the area. The review is limited by the quality of the research itself, which was often limited by uncontrolled designs, small sample sizes, and lack of objective or standardized outcome measures.

The World Health Organization defines health as "a state of complete physical, mental and social well being, not merely the absence of disease or infirmity" (55). Health, when defined in this way, as truly whole-person healing, is the focus of Mind-Body Medicine. It is an approach based on the belief that all people, regardless of their mental health challenges, have the capacity to improve their own well-being. Based on the current evidence, some MBMs may offer a number of helpful, practical treatment options for supporting a focus on healing, both for the provider and the patient. Utilizing some of these techniques, in addition to other evidence-based, conventional treatments, may offer a potentially compelling approach to improving the lives of those with chronic psychotic illnesses. While the above techniques are likely to be safe and tolerable in this population, based on current data, more research is required to decisively assess the validity of applying many MBMs in the mainstream treatment of psychotic disorders.

Health … as truly whole-person healing, is the focus of Mind-Body Medicine.

Acknowledgments

This publication is a collaboration from The International Network of Integrative Mental Health (www.INIMH.org). Dr. Jerome Sarris is funded by an Australian National Health and Medical Research Council fellowship (NHMRC funding ID 628875), in a strategic partnership with The University of Melbourne and Swinburne University of Technology.

Conflicts of Interest

None noted.

References

1. Elkins G, Rajab MH, Marcus J. Complementary and alternative medicine use by psychiatric inpatients. Psychol Rep 2005;96(1):163-166.
2. CAM Basics: Complementary, alternative, or integrative health: what's in a name? Bethesda (MD): National Center for Complementary and Alternative Medicine. Accessed on 4/14/09 from http://nccam.nih.gov/health/whatiscam.
3. Gordon J. What is Mind-Body medicine? Washington (DC): Center for Mind-Body Medicine. Accessed on 4/14/09 from www.cmbm.org/downloads/What_is_Mind_Body_Medicine.pdf.
4. Pelletier K. Mind as healer, mind as slayer: MindBody medicine comes of age. Adv Mind Body Med 2002;18(1):4-15.
5. Villeneuve K, Potvin S, Lesage A, Nicole L. Meta-analysis of rates of drop-out from psychosocial treatment among persons with schizophrenia spectrum disorder. Schizophr Res 2010;121(1-3):266-270.
6. Gordon J. Biological underpinnings of mind-body therapies. Center for Mind-Body Medicine Professional Training Program; 2010; Washington DC, Hyatt Crystal City Hotel; p. 119-173.
7. Van Hassel JH, Bloom LJ, Gonzalez AM. Anxiety management with schizophrenic outpatients. J Clin Psychol 1982;38(2):280-285.
8. Braga RJ, Mendlowicz MV, Marrocos RP, Figueira IL. Anxiety disorders in outpatients with schizophrenia: prevalence and impact on the subjective quality of life. J Psychiatr Res 2005;39(4):409-414.
9. Huppert JD, Smith TE. Longitudinal analysis of subjective quality of life

in schizophrenia: anxiety as the best symptom predictor. J Nerv Ment Dis 2001;189(10):669-675.

10. Glueck BC, Stroebel CF. Biofeedback and meditation in the treatment of psychiatric illnesses. Compr Psychiatry 1975;16(4):303-321.
11. Davis LW, Strasburger AM, Brown LF. Mindfulness: an intervention for anxiety in schizophrenia. J Psychosoc Nurs Ment Health Serv 2007;45(11):23-29.
12. Chadwick P, Taylor KM, Abba N. Mindfulness groups for people with psychosis. Behavioural and Cognitive Psychotherapy 2005;33:351-359.
13. York M. A qualitative study into the experience of individuals involved in a mindfulness group within an acute inpatient mental health unit. J Psychiatr Ment Health Nurs 2007;14(6):603-608.
14. Chadwick P, Hughes S, Russell D, Russell I, Dagnan D. Mindfulness groups for distressing voices and paranoia: a replication and randomized feasibility trial. Behav Cogn Psychother 2009;37(4):403-412.
15. Johnson DP, Penn DL, Fredrickson BL, Meyer PS, Kring AM, Brantley M. Loving-kindness meditation to enhance recovery from negative symptoms of schizophrenia. J Clin Psychol 2009;65(5):499-509.
16. Johnson DP, Penn DL, Fredrickson BL, Kring AM, Meyer PS, Catalino LI, et al. A pilot study of loving-kindness meditation for the negative symptoms of schizophrenia. Schizophr Res 2011;129(2-3):137-140.
17. Bach P, Hayes SC. The use of acceptance and commitment therapy to prevent the rehospitalization of psychotic patients: a randomized controlled trial. J Consult Clin Psychol 2002;70(5):1129-1139.
18. Gaudiano BA, Herbert JD. Acute treatment of inpatients with psychotic symptoms using Acceptance and Commitment Therapy: pilot results. Behav Res Ther 2006;44(3):415-437.
19. Walsh R, Roche L. Precipitation of acute psychotic episodes by intensive meditation in individuals with a history of schizophrenia. Am J Psychiatry 1979;136(8):1085-1086.
20. Duraiswamy G, Thirthalli J, Nagendra HR, Gangadhar BN. Yoga therapy as an add-on treatment in the management of patients with schizophrenia--a randomized controlled trial. Acta Psychiatr Scand 2007;116(3):226-232.
21. Lavey R, Sherman T, Mueser KT, Osborne DD, Currier M,Wolfe R. The effects of yoga on mood in psychiatric inpatients. Psychiatr Rehabil J 2005;28(4):399-402.
22. Machleidt W, Ziegenbein M. An appreciation of yoga-therapy in the treatment of schizophrenia. Acta Psychiatr Scand 2008;117(5):397-398.
23. Ihalainen O, Rosberg G. Relaxing and encouraging suggestions given to hospitalized chronic schizophrenics. Int J Clin Exp Hypn 1976;24(3):228-237.
24. Lieberman J, Lavoie G, Brisson A. Suggested amnesia and order of recall as a function of hypnotic susceptibility and learning conditions in chronic schizophrenic patients. Int J Clin Exp Hypn 1978;26(4):268-280.
25. Izquierdo de Santiago A, Khan M. Hypnosis for schizophrenia. Cochrane Database Syst Rev 2007 Oct 17;(4):CD004160.
26. Jung XT, Newton R. Cochrane Reviews of non-medication-based psychotherapeutic and other interventions for schizophrenia, psychosis, and bipolar disorder: a systematic literature review. Int J Ment Health Nurs 2009;18(4):239-249.
27. Hawkins RC 2nd, Doell SR, Lindseth P, Jeffers V, Skaggs S. Anxiety reduction in hospitalized schizophrenics through thermal biofeedback and relaxation training. Percept Mot Skills 1980;51(2):475-482.
28. Schneider F, Rockstroh B, Heimann H, Lutzenberger W, Mattes R, Elbert T, et al. Self-regulation of slow cortical potentials in psychiatric patients: schizophrenia. Biofeedback Self Regul 1992;17(4):277-292.
29. Gruzelier J. Self regulation of electrocortical activity in schizophrenia and schizotypy: a review. Clin Electroencephalogr 2000;31(1):23-29.
30. Nigl AJ, Jackson B. Electromyograph biofeedback as an adjunct to standard psychiatric treatment. J Clin Psychiatry 1979;40(10):433-436.
31. Pharr OM, Coursey RD. The use and utility of EMG biofeedback with chronic schizophrenic patients. Biofeedback Self Regul 1989;14(3):229-245.
32. Schneider SJ, Pope AT. Neuroleptic-like electroencephalographic changes in schizophrenics through biofeedback. Biofeedback Self Regul 1982;7(4):479-490.
33. Van Hassel JH, Bloom LJ, Gonzalez AM. Anxiety management with schizophrenic outpatients. J Clin Psychol 1982;38(2):280-285.
34. Rickard HC, Collier JB, McCoy AD, Crist DA, Weinberger MB. Relaxation training for psychiatric inpatients. Psychol Rep 1993;72(3 Pt 2):1267-1274.
35. Chen WC, Chu H, Lu RB, Chou YH, Chen CH, Chang YC, et al. Efficacy of progressive muscle relaxation training in reducing anxiety in patients with acute schizophrenia. J Clin Nurs 2009;18(15):2187-2196.
36. Puente AE, Peacock LA. Effects of relaxation response training on attentional deficits in schizophrenics. Percept Mot Skills 1988;66(3):789-790.
37. Rickard HC, McCoy AD, Collier JB, Weinberger MB. Relaxation training side effects reported by seriously disturbed inpatients. J Clin Psychol 1989;45(3):446-450.
38. Schmid GB, Wanderer S. Phantasy therapy: statistical evaluation of a new approach to group psychotherapy for stationary and ambulatory psychotic patients. Forsch Komplementmed 2007;14(4):216-223.
39. Ruddy R, Milnes D. Art therapy for schizophrenia or schizophrenia-like illnesses. Cochrane Database Syst Rev 2005 Oct 19;(4):CD003728.
40. Crawford MJ, Patterson S. Arts therapies for people with schizophrenia: an emerging evidence base. Evid Based Ment Health 2007;10(3):69-70.
41. Crawford MJ, Killaspy H, Kalaitzaki E, Barrett B, Byford S, Patterson S, et al. The MATISSE study: a randomised trial of group art therapy for people with schizophrenia. BMC Psychiatry 2010;10:65.
42. Gold C, Heldal TO, Dahle T, Wigram T. Music therapy for schizophrenia or schizophrenia-like illnesses. Cochrane Database Syst Rev 2005 Apr 18;(2):CD004025.
43. Silverman MJ. The influence of music on the symptoms of psychosis: a meta-analysis. J Music Ther 2003;40(1):27-40.
44. Talwar N, Crawford MJ, Maratos A, Nur U, McDermott O, Procter S. Music therapy for in-patients with schizophrenia: exploratory randomised controlled trial. Br J Psychiatry 2006;189:405-409.
45. Tang W, Yao X, Zheng Z. Rehabilitative effect of music therapy for residual schizophrenia. A one-month randomised controlled trial in Shanghai. Br J Psychiatry Suppl 1994;(24):38-44.
46. Ulrich G, Houtmans T, Gold C. The additional therapeutic effect of group music therapy for schizophrenic patients: a randomized study. Acta Psychiatr Scand 2007;116(5):362-370.
47. Leung CM, Lee G, Cheung B, Kwong E, Wing YK, Kan CS, et al. Karaoke therapy in the rehabilitation of mental patients. Singapore Med J 1998;39(4):166-168.
48. Gold C. Music therapy improves symptoms in adults hospitalised with schizophrenia. Evid Based Ment Health 2007;10(3):77.
49. Xia J, Grant TJ. Dance therapy for schizophrenia. Cochrane Database Syst Rev 2009 Jan 21;(1):CD006868.
50. Ruddy RA, Dent-Brown K. Drama therapy for schizophrenia or schizophrenia-like illnesses. Cochrane Database Syst Rev 2007 Jan 24;(10):CD005378.
51. Flannery RB Jr. Becoming stress resistant through the Project SMART program. New York (NY): Continuum Press; 1990.
52. Starkey D, Deleone H, Flannery RB Jr. Stress management for psychiatric patients in a state hospital setting. Am J Orthopsychiatry 1995;65(3):446-450.
53. Lukoff D, Wallace CJ, Liberman RP, Burke K. A holistic program for chronic schizophrenic patients. Schizophr Bull 1986;12(2):274-282.
54. Manber R, Kraemer HC, Arnow BA, Trivedi MH, Rush AJ, Thase ME, et al. Faster remission of chronic depression with combined psychotherapy and medication than with each therapy alone. J Consult Clin Psychol 2008;76(3):459-467.
55. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19–22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.