Nonmedical Interventions for Schizophrenia
A Review of Diet, Exercise, and Social Roles

Daniel S. Helman, PhD

Schizophrenia is a major mental illness with a disease course that is influenced by lifestyle. The risk-benefit ratio for alternative interventions is more favorable than for antipsychotics in long-term treatment. Dietary interventions may target autoimmune features, vitamin or mineral deficiencies, abnormal lipid metabolism, gluten sensitivity, or others. Examples of interventions involving diet, physical activity, or physical processes or social interventions including talk therapy exist in the literature. Notwithstanding, the general utility of these types of interventions remains inconclusive, awaiting long-term randomized trials. A perspective that separates the cause of the disease from its symptoms may be helpful in treatment planning and is warranted to distinguish between short-term and long-term recovery goals. 

KEY WORDS: alternative mental health, compliance, long-term recovery, psychiatry, schizophrenia

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The symptoms of mental illness are socially mediated, that is, they coexist with social and cultural constructions, and this makes them difficult to study. Some symptoms of mental illness may be communicable in the same way that alcoholism is communicable via social learning. This social mediation of mental illness symptoms suggests a holistic framework for exploring treatment wherein an evidence base is difficult to establish yet that evidence base ought to form a guide nonetheless to treatment planning.

There are several competing models for the cause of the disease that also suggest competing frameworks for understanding the disease progression and treatment. One category of these models imagines the sufferer as akin to a machine that has some flaw—for the organism this may be in its neurology, metabolism, genetics, nurturance, exposure to infection, microbiome, immune condition, exposure to emotional stress or trauma, or others—and the task of the practitioner is to patch the machine by understanding the flaw and creating a fix for it. Reliance on long-term psychiatric medication is one example of this type of fix.

Yet, a mechanical fix may be problematic. Psychiatric medications include major health risks from effects that appear during long-term adherence. Some medications cause weight gain and thus increase the risk of morbidity and mortality. Others produce a variety of long-term effects and histological changes such that it is clear that the use of psychiatric medications for long-term treatment comes with health trade-offs that are marked and include decreased life span and quality of life.

The risk-benefit ratio for lifestyle interventions and alternative and complementary treatments thus may be much better than for psychiatric medications in the long term, supposing that alternative treatments can be found and applied in a remarkably effective manner. This is an elusive goal. Obviously, the short-term crisis states ought to be managed in the safest manner possible. Yet, long-term outcomes could improve from a deeper exploration of treatment options that include alternative treatment planning.
One type of linkage between the causal aspects of the disease and its treatment is to cast the symptoms as an internally arising intoxicated state. This separates the cause from its effect in the mind of the practitioner and allows for more flexibility in designating a path to successful recovery. This approach also supports the conception of schizophrenia as a group of illnesses with separate causes that each may produce the symptoms recognized in the disease. To provide an illustrative example, it is not yet clear whether a cure in one case arising from bone marrow transplant for a patient who at the same time had suffered from acute myeloid leukemia was due to a bone marrow transplant improving the immune response to cure the schizophrenia by coincidence along with the cancer or whether the symptoms had been caused initially by a paraneoplastic syndrome wherein the immune system attacked the client’s neurology in addition to the cancer and thus the attack resolved once the cancer had cleared. Thinking of cause and effect as separate mechanisms helps the practitioner to treat each patient uniquely, and this is an important approach until more is known about the disease, which itself is defined in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)* by symptoms rather than by causes.

Another type of causal model for schizophrenia places the impetus for disease completely within the social sphere and suggests that it is society that is pathological and that the symptoms of the disease are a healthy reaction to a pathological context. The 1950s/1970s-era Soviet diagnosis of schizophrenia was often a political excuse to remove supposed undesirables from society, people who perhaps did not meet the diagnostic criteria for the disease currently used. Notwithstanding, this causal model also legitimately calls for improvement of social conditions and a rethinking of the social and ecological impacts that an economy produces. The desire to have community-based treatment available for the person with schizophrenia historically arose from this category of model and has had positive benefits in its realization.

Ironically, if the main component of the disease is found to be autoimmune, the distinction between social and somatic causes will be moot, as the immune system responds to both types of input. A holistic approach to schizophrenia recognizes these complications. Notwithstanding, progress is difficult.

Practitioner definitions for recovery from schizophrenia have undergone a socially mediated change recently. The mechanical conception within health science is that recovery ought to be defined as managing mental health symptoms and living a meaningful life while being medication compliant. In the social sphere model, it may be necessary to coin a term for clarity, medication-free recovery, to capture an ideal recovery (and what some have achieved), as distinct from this mechanical medical model. It is the cessation of symptoms and the presence of a meaningful life once medication treatment has been withdrawn for a period of several years. Respect is given to the body as a whole. Within this context, it makes sense to explore long-term alternative and complementary nonmedical treatment options for the symptoms of schizophrenia.

**LITERATURE REVIEW**

The literature related to schizophrenia is vast. This project is limited to a few relevant themes: to what helps with nonmedical recovery—hypothesized: food, exercise, and society—and to questions of medication and creativity. The selection criteria were related to personal experience in recovery from the disease. These topics are treated in order.

The review itself was undertaken in 3 stages. In the first stage, primary research studies on hand from previous projects were organized. These had originally been gathered via word of mouth and with key word searches related to alternative and complementary treatment options for schizophrenia in a snowball fashion, that is, new treatment searches were implemented on the basis of previous mentions in search results and articles over the course of a few years. Many of these are older studies that have not been pursued more recently. They are included and are meant as a background to the subject where an initial understanding of what has been pursued already is important for generating future treatment ideas. These form the basis for the initial results in each section.

In the second stage—a general evidence-based search—undertaken on February 24, 2018, the following search term was entered into the database Google Scholar, and the first 226 results were examined: Cochrane schizophrenia. Relevant articles were retained. The results of this stage are presented in Table 1.

Stage 3 searches were performed on February 24, 2018. In stage 3—categorical evidence-based searches—the following search terms were entered into the database Google Scholar: Cochrane schizophrenia diet; Cochrane schizophrenia exercise;
Cochrane schizophrenia life skills. These are relevant for each of the categories studied. An estimate was made of the number of relevant articles in each of the last 3 stages, and representative articles were noted.

The results for each topic (diet, exercise, and society) are treated initially with the results of the first-stage review. Next, the Cochrane sources are listed and discussed clearly below these in a new paragraph. These start with distinctive language to alert the reader that these are articles following a Cochrane protocol.

**Food as cause, food as treatment**

Lakhan and Vieira\(^1^1\) look at the connection between nutritional disorders and mental illness generally. For schizophrenia specifically, there is some evidence that the gut in people with schizophrenia has excessive interleukin-2 levels and receptors,\(^1^2\) an indication of an autoimmune correlation between diet and the disease. Mineral or vitamin deficiencies may be present.\(^1^3,1^4\) Abnormal lipid metabolism has been widely studied and may be strongly correlated with schizophrenia.\(^1^5-2^0\) Likewise, a strong correlation between celiac or gluten sensitivity and psychosis has been noted.\(^2^1,2^2\) Amino acid supplementation has sometimes been tried as therapy, with significant results.\(^2^3\) Likewise, fasting has sometimes been met with functional success.\(^2^4\)

The second (general) search stage produced the following results from the Cochrane literature. Two of the 3 Cochrane articles on diet and schizophrenia are related to weight gain management and attribute significant modest benefits from pharmacological and/or social/cognitive interventions in one but not the other.\(^2^5,2^6\) These are unrelated to diet as a treatment modality for the disease but may be useful for practitioners in helping their patients manage weight gain and its associated morbidities. The remaining Cochrane article from the general evidence-based search examines the effectiveness of polyunsaturated fatty acid supplementation in treating schizophrenia.\(^2^7\)

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**TABLE 1.** Search Results of Google Scholar on February 24, 2018: Cochrane Schizophrenia—With Diet, Exercise and Society (and Related) Interventions in Bold

| Topic                                                   | Number of Articles |
|---------------------------------------------------------|--------------------|
| Psychiatric medication treatment outcomes               | 113                |
| **Cognitive and psychological therapies treatment outcomes** | 13                 |
| Quality of studies                                      | 9                  |
| **Social or life skills therapies outcomes**             | 9 (not enough data: 7)(withdrawn: 2) |
| Symptoms assessment                                     | 8                  |
| Epidemiology and prevalence of schizophrenia and its treatment | 8                  |
| Professional clinical guidelines                        | 6                  |
| History of the field and the Cochrane methodology       | 6                  |
| Treatment of psychiatric medication side effects        | 6                  |
| Unrelated or duplicate results                          | 6                  |
| Comorbidities                                           | 5                  |
| Social compliance outcomes                              | 5                  |
| Health effects on and treatments for families and caregivers | 5                  |
| Medication compliance                                   | 4                  |
| Professional research guidelines                        | 4                  |
| Treatment overviews                                     | 3                  |
| **Dietary intervention outcomes**                       | 3 (related to weight gain: 2) |
| Physically coercive treatment (seclusion, restraint) outcomes | 2                  |
| **Exercise outcomes**                                   | 2 (not enough data: 1) |
| Music therapy                                           | 2                  |
| Herbal medication treatment outcomes                    | 1                  |
| Intermittent antipsychotic medication therapy           | 1                  |
| Economic interventions                                  | 1                  |
| Electroconvulsive therapy for schizophrenia             | 1                  |
| Acupuncture treatment outcomes                          | 1 (not enough data: 1) |
| Drama therapy outcomes                                  | 1                  |
| Public perception of schizophrenia                      | 1                  |
| Total                                                   | 226                |
Omega-3 improved mental state in several small studies, but medium-term effects were insignificant. Likewise, omega-3 supplementation improved psychotic symptoms whether used in conjunction with antipsychotic medication or not in one small study. The dose response to omega-3 fatty acids is not clear; nor is there a differential benefit known between different types of fatty acids studied. All studies are small and results are thus considered preliminary. A large-scale longitudinal study is needed.

The second (general) search stage produced the following results from the Cochrane literature: of the 2 evidence-based results in the 226 articles studied, one study (on dance therapy) lacked sufficient data to draw any conclusions; while the other study was able to report only suggestive results owing to small sample sizes: Gorczynski and Faulkner report amelioration of negative symptoms (but not positive symptoms) and improvement of mental state and overall health in 2 small trials testing exercise as an intervention in schizophrenia whose results are significant and follow an evidence base.

The third (categorical) search stage produced approximately 70 relevant evidence-based articles related to exercise and schizophrenia. Firth et al report that approximately 90 minutes of moderate-to-vigorous exercise per week significantly reduced psychiatric symptoms in a systematic review; Scheewe et al report similar results (from exercise once or twice a week) in a small randomized controlled trial (n = 31). Other articles show similar results—highlighting the need for larger, well-designed trials. Likewise, several articles, for example, Varambally et al, show amelioration of symptoms from yoga intervention in randomized controlled trials. Ho et al show symptom amelioration from Tai Chi that is significant yet less than traditional exercise in a randomized controlled trial. The evidence base for exercise as a valid treatment modality for schizophrenia, especially in assessing amount and type, is inadequate at present. Although promising, these treatments remain experimental.

Physical treatment

There are a few factors to indicate that physical activity may have an impact on recovery. Schizophrenia and intelligence (while young) are correlated, while the disease itself manifests in some cognitive (ie, memory) deficits. Thus, interventions that increase cognitive function, such as physical activity, may reasonably be attempted. In fact, there are some studies showing positive impacts with exercise.

Yoga has been demonstrated to have some efficacy as well, as has meditation. A meta-study by Lee et al showed some treatment promise with acupuncture. Likewise, cold as a therapy has been met with some success, as has natural light therapy. Some of the genes that code for circadian rhythm functions are shared with the disease. Notably missing are studies with any more than moderate physical activity used as treatment. It is an open question whether extreme physical activity would be curative.

Social difficulties, treatment

Schizophrenia can be defined or diagnosed according to language evaluation, a result that implies a social element to the disease. Likewise, religion plays a part in the disease, with some symptoms overlapping with religious experiences. Furthermore, social standing may influence disease outcomes. Various strategies have been likewise employed to provide treatment within the social realm, notably occupation or work serving as therapy. Music has been used as a promising treatment as well.

By far the largest social treatments of schizophrenia are various talk therapies, and cognitive therapy has had some demonstrated success. Various studies address healing presence in therapy as well as spirituality. There are also extant studies strongly focused on the beneficial effect of recovery of a client living within the community and of how communities
can be therapeutic. The opposite, structural violence, has been demonstrated to have detrimental effects. Jung and Newton provide a broad overview of nonmedication treatments.

There is also some evidence that narrative, that is, giving voice to a client, helps significantly with recovery. Several studies have attempted to give voice to patient experience. Others have looked at the material artifacts of those who are in recovery. There also exist larger works, such as Davidson’s Living Outside Mental Illness: Qualitative Studies of Recovery in Schizophrenia and Pilgrim’s Understanding Mental Health: A Critical Realist Exploration. These are in addition to recent accounts of recovery from major mental illness, such as those by Elyn Saks and Sandra MacKay. A common theme is one of emergent process, perhaps leading to healthy outcomes.

The second (general) search stage produced the following results from the Cochrane literature. Cognitive and psychological (talk) therapies received the most attention, with 13 relevant studies appearing in the search results compared with 113 for the next highest topic, psychiatric medication treatment outcomes. Results range from inconclusive to enduring increased perception of control over psychotic symptoms. Jones et al report considerable variability in the findings of various studies that meet the evidence-based criteria. It is currently not possible to form a strong, evidence-based opinion of the efficacy of cognitive behavioral therapy or other psychological interventions for schizophrenia.

The general evidence-based review stage also found 9 articles related to socially attuned interventions, for example, related to assuming positive roles in society, or training in life skills. Of these, 2 have been withdrawn and 7 lack enough data to draw any useful conclusion. A notable article explored the use of a behavior therapy technique (ie, a token economy, wherein something of value is given in exchange for a desired behavior) that had previously been used in various settings. Yet, not enough data exist to form an evidence base for treatment adoption. The third (categorical) review stage produced much the same result, with life skills or other social programs showing inconclusive results from lack of data.

Medication

A brief section on medication is included here to provide a basis for comparison. As with other drugs, psychiatric medications have been shown to affect electroencephalograms. A moderate percentage of clients who take psychiatric medications regularly have a stable life, enough so that the concept of recovery has been redefined professionally to refer to patients on medication who are asymptomatic for a long period of time. By extension, drug regimen compliance by patients has become a major focus of some professionals. Several authors have also looked at treatment outcomes broadly. Several recent studies looking at outcomes have issued broad recommendations to stay the course. Others want minor adjustments in professional tools, such as diagnostic instruments.

On the other side of the fence are authors who question whether psychiatric medications are ultimately beneficial. There has been abundant research on the side effects of psychiatric medications or other negative impacts of taking psychiatric medications; for example, in PubMed, there are more than 2200 articles about side effects of antipsychotics. There are several studies that suggest that outcomes that include fewer psychiatric medications or none at all are better in the long term than those with more medications.

Likewise, outcomes vary by country, and long-term patient outcomes in countries with poor or moderate economies (where psychiatric medications are scarce) are better than long-term outcomes in wealthy countries (where psychiatric medications are prevalent). A few professionals recommend a new course of treatment that de-emphasizes psychiatric medications for long-term care. Notwithstanding, the evidence base for this type of assertion remains indeterminate from lack of data. Moreover, it ought to be emphasized that schizophrenia and related disorders are grave and potentially fatal illnesses. Short-term treatment modalities especially ought to reflect the severity of the disease and emphasize client/patient safety. Fully half the number of articles (ie, 113/226) that appear in the stage 2 (general) search results are related to the evidence base of psychiatric medication treatment outcomes. An evidence base clearly exists for the efficacy of medications in the short term. More details are not given here, and the reader is encouraged to
explore the numerous offerings available elsewhere.93,94

DISCUSSION

The results of the literature review are summarized in Table 2. One can readily see that there have not been enough double-blind, randomized controlled trials to allow for conclusive evidence-based results. In one regard, it is a tragedy that so much has been afforded to studies of psychiatric drug trials; yet, important and promising information about potentially safer lifestyle interventions remains inconclusive. On the other hand, a sensitive clinician or other practitioner might find utility in these results. They provide new directions for empirical and experimental work on a case-by-case basis with patients.

The practice of guiding recovery from schizophrenia ought to recognize both short-term and long-term strategies for success. Up until this point, the focus on medication-based treatments, coupled with an array of genetic studies to try to understand differences between individuals with schizophrenia and the general population, has created a decades-long sense of hope that outcomes for schizophrenia will be decent for most patients. Thus, long-term studies of obvious nonmedical interventions are needed for an evidence base to provide practitioners with a much larger array of tools with which to consider and treat both causes and symptoms. Having a clear notion that cause and symptom ought to be examined separately for short-term treatment and holistically for long-term health supports the type of future progress that is hoped for.

The first-stage research articles were gathered by the author on the basis of personal interest and experiences of recovery from the disease. As such, they do not meet the standard of a basis for general recommendations but provide preliminary hypotheses for alternative or complementary treatment options.

TABLE 2. Preliminary Review of Causes, Features, and Treatments of Schizophrenia Found in the Scholarly Literature

| Causes, Features, and Treatments of Schizophrenia | Preliminary Ideas | Evidence Base |
|--------------------------------------------------|-------------------|---------------|
| **Dietary causes**                               | • Autoimmune related to diet | Inconclusive |
|                                                  | • Vitamin or mineral deficiencies |               |
|                                                  | • Abnormal lipid metabolism |               |
|                                                  | • Gluten sensitivity |               |
| **Dietary treatments**                           | • Amino acid supplementation | Inconclusive |
|                                                  | • Fasting |               |
| **Physical activity treatments**                 | • Exercise |               |
|                                                  | • Yoga |               |
|                                                  | • Meditation |               |
|                                                  | • Acupuncture |               |
|                                                  | • Cold exposure |               |
|                                                  | • Natural light exposure |               |
| **Social features**                              | • Language use | Not assessed |
|                                                  | • Religious sentiments |               |
|                                                  | • Social standing |               |
|                                                  | • Structural violence |               |
| **Social treatments**                            | • Work as therapy | Inconclusive |
|                                                  | • Music |               |
|                                                  | • Talk therapy (especially cognitive therapy) |               |
|                                                  | • Spirituality |               |
|                                                  | • Communal living (community-based recovery) |               |
|                                                  | • Narrative as therapy |               |
| **Medication treatments**                        | • Affect EEG | Not assessed |
|                                                  | • Promote patient stability |               |
|                                                  | • Compliance focus |               |
|                                                  | • Possible poorer outcomes in the long term |               |

Abbreviation: EEG, electroencephalogram.
The Cochrane results likewise are of interest, and it should be noted that several protocols were found in the search results of future planned studies. Eventually, the evidence base should catch up to the practice. Until that time, one might adopt a view of looking at a relevant risk-benefit ratio in deciding for experimental modalities. Nonmedical interventions can be attempted modestly, but to be effective, for example, having a trainer help with 20 hours of exercise per week, the evidence base needs to be more complete so that funding for supports such as this can be instituted. Small-scale efforts will help patients, but this is not enough. Schizophrenia is one of several major mental illnesses, and long-term treatment efforts have the potential to transform the treatment of several.

CONCLUSIONS

Mental illness exists within community. The symptoms are socially mediated and may arise from different causes in different individuals. Evidence-based studies of nonmedical interventions for long-term recovery from schizophrenia are warranted. These will have a large impact on the medical community: the distal impacts are unknown, as with any model, but might be predicted to include a benefit to larger national cultures, and an economic benefit to the society as more people attempt to live a healthier lifestyle. The aim of this review was to summarize the literature and identify themes that will initiate further study, and this has been accomplished.

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