The importance of diet and nutrition in severe mental health problems

Elaine Jennings

As with many conditions, diet has a crucial but often underrated relationship with serious mental health problems. In this article the author examines how diet, nutrients and different food types can have a deleterious or beneficial effect on mental health problems such as dementia, schizophrenia and bipolar disorder. Understanding the complex reactions between healthy eating and cognitive and emotional development can help community nurses provide holistic care for their patients.

KEYWORDS: Nutrition ■ Mental health ■ Dietitian ■ Dementia ■ Schizophrenia

Diet and nutrition has a complex relationship with mental health and there is evidence that specific micronutrients may have an effect on mood — particularly depression — and also on the risk of developing and progress of dementia.

It is important for community nurses who may come across people with mental health problems to think holistically about diet and how this is affected by mental illness, for example people may start to eat less when depressed, or when their memory is deteriorating, or if they have delusional beliefs which may affect what they choose to eat.

People can also use food as a way of trying to manage difficult emotions. If a mental health problem is undiagnosed then changes to eating patterns and weight can often be an indicator that further investigation is needed. Diet can also have a significant impact on the physical health of this group, in terms of both under- and over-nutrition.

BACKGROUND

Approximately 1% of the population will develop psychosis/schizophrenia at some point in their lifetime (National Institute for Health and Care Excellence [NICE] 2014). In people with this type of severe mental health problem, weight gain due to increased appetite (a side effect of second generation antipsychotics such as clozapine and olanzapine), can be significant, with an average weight gain of 5-6kg within 6-8 weeks of starting these drugs, in addition to the associated metabolic changes (Allison and Casey, 2001).

There is also a two-way interaction between obesity and depression (Luppino et al, 2010), with people who are obese having a 55% increased risk of developing depression over time; whereas those with depression have a 58% increased risk of becoming obese.

Conversely, under-nutrition is a common problem for people with dementia. This tends to be progressive, with weight loss often preceding the onset of dementia (Prince et al, 2014).

In general, diet is often a cornerstone of treatment for many chronic diseases commonly seen in primary care such as diabetes and obesity. However, empowering patients to self-manage these long-term conditions successfully can be much more challenging in people with serious mental health problems such as schizophrenia and bipolar disorder, particularly when it is taken into account that the incidence of diabetes is 2-3 times higher in these patients than in the general population, and that they have a two-to-three-fold relative mortality risk (De Hert, 2009).

Conversely, people with long-term physical health problems, such as diabetes and cardiovascular disease are 2-3 times more likely to have depression, with long-term comorbid mental health problems raising total health costs by at least 45% for each person (Naylor et al, 2012).

The Department of Health's (DH) policy document for England No Health Without Mental Health (DH, 2011), contains a specific objective for the physical health of people with mental health problems, namely that 'more people with mental health problems will have good physical health, and fewer people with mental health problems will die prematurely, and more people with physical ill health will have better mental health'.
Similarly, in an effort to reduce premature mortality, NHS England (2014) has a CQUIN (commissioning for quality and innovation) specifically attached to the physical health of people with mental health problems.

**MICRONUTRIENT INTERACTIONS**

Given that mental health disorders are the second greatest cause of disability in the UK, with 16.2% people in England estimated to have a chronic mental health problem such as depression or anxiety (McManus et al, 2007), it is not surprising that potentially cost-effective and life-improving interventions such as the effect of micronutrients in the diet (Table 1) are being investigated.

**Folate**

There has been interest in the relationship between folate (a type of vitamin B) and depression for many years, based on the knowledge that patients with depression often have a folate deficiency; that folate deficiency correlates with severity of depression and poor response to treatment; and that folate is required to synthesise neurotransmitters linked to depression (Das, 2008). One systematic study looking as folate as a treatment for depression suggested that there may be a role for folate in augmenting other treatments (Taylor et al, 2004).

Another trial investigated whether adding 5mg folic acid as an adjunct to antidepressant medication would improve clinical and cost-effectiveness (Bedson et al, 2014). However, the study did not generate any evidence that folic acid was clinically or cost-effective in augmenting antidepressant medication. This negative finding is consistent with improving understanding of the one-carbon folate pathway suggesting that methylfolate (the biologically active form of folate in humans) is a better candidate for augmenting antidepressant medication than folate itself. This important biochemical consideration may in future prove to be the missing link between clinical improvement in depression and folate supplementation.

**Zinc**

Preclinical studies have suggested a potential role for zinc in reducing or preventing depression, with epidemiological evidence for an association between low zinc status and depression. One systematic review suggested that zinc may have a role as an adjunctive treatment to antidepressant medication or as standalone therapy, but there was a lack of controlled trials and the authors concluded that further research is required (Lai et al, 2012).

**Fatty acids**

Anthropological and epidemiological studies have indicated that at a molecular level human beings evolved on a diet where the essential polyunsaturated fatty acids — omega-6 and omega-3 — were found in a ratio of approximately 1:1. However, in contemporary Western diets the ratio is more like 15:1 to 17:1 (Simopoulos, 2006). This is significant because unlike omega-6 omega-3 has an anti-inflammatory effect and is an important nutrient in modulating many chronic diseases, including depression.

Grosso et al (2014a) reviewed the evidence and mechanisms for a relationship between omega-3 fatty acids and depression. They concluded that it was difficult to tease out the exact mechanisms that would explain the relationship between omega-3 fatty acids and depression. Epidemiologically there seems to be an inverse relationship between the intake of oily fish (the main source of omega-3) and depression or bipolar disorder, but the picture is confused by other factors in Western countries, e.g. the overall quality of diet, stressful lifestyles, etc.

Similarly, a Mediterranean diet with a high proportion of cereals, fruits, fish and vegetables appears to have a favourable effect on depression (Sanchez-Villegas et al., 2006). However, this may due to some of the other nutritional benefits of this diet besides omega-3 fatty acids, such as the role of B vitamins.

However, in a meta-analysis of omega-3's effect in treating depressive disorders (Grosso et al, 2014b), the authors concluded that there was good evidence for its use in patients with major depressive disorders (as well as those who may be depressed without a diagnosis of major depressive disorders). The studies mainly used eicosapentaenoic acid (EPA) rather than docosahexaenoic acid (DHA) in the preparation, and the omega-3 polyunsaturated fatty acids as an adjunct rather than as a monotherapy (Nelson, 2014).

In the UK it is currently recommended that individuals eat two portions of fish per week of,

---

**Table 1: Dietary sources of micronutrients (Gandy, 2014)**

<table>
<thead>
<tr>
<th>Micronutrient</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin C</td>
<td>Fruit: kiwi, oranges, lemons, satsumas, blackcurrants, guava, mango, papaya, Vegetable: pepper, Brussels sprouts, broccoli, sweet potato</td>
</tr>
<tr>
<td>Vitamin E (fat soluble)</td>
<td>Wheat germ oil, almonds, sunflower seeds and oil, safflower oil, hazelnuts, peanuts, peanut butter, corn oil</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>Meat, wholegrain cereals, fortified cereals, bananas, nuts, pulses</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>Meat and meat products, eggs, milk and dairy products, fish and fish products, yeast products, fortifies vegetable extracts, fortified breakfast cereal</td>
</tr>
<tr>
<td>Folate (vitamin B9)</td>
<td>Rich sources: Brussels sprouts, kale, spinach</td>
</tr>
<tr>
<td></td>
<td>Good sources: fortified bread and cereals, broccoli, cauliflower, cabbage, green beans, peas, chickpeas, kidney beans</td>
</tr>
<tr>
<td>Zinc</td>
<td>Very rich sources: lamb, beef, offal, shellfish, crab, leafy/root vegetables</td>
</tr>
<tr>
<td></td>
<td>Rich sources: pork, whole grains</td>
</tr>
<tr>
<td>Omega-3 fatty acids (EPA/DHA)</td>
<td>Oily fish, e.g. mackerel, sardines, kippers, fresh tuna, salmon, trout, herring, and functional foods, e.g. enriched eggs, margarine and bread</td>
</tr>
</tbody>
</table>

---
which at least one should be oily fish (Public Health England, 2004).

DEMENTIA

A number of well-known clinical phenomena point to the possibility that micronutrients (or the lack of) may play a role in the development of dementia. Homocysteine levels in the blood rise when there is a deficiency in B12 and folate, which is more common in older people and is associated with cardiovascular disease, depression and cognitive decline.

It has also been postulated that the antioxidant vitamins (C and E) can positively influence the neural inflammation and oxidative damage which takes place in the development of dementia (Quadri et al, 2004; Devore et al, 2010). Finally, omega-3 fatty acids are also an essential element in combatting the inflammation and amyloid bundles that develop in dementia (amyloids are ‘folded’ proteins that do not break down easily and can build-up in tissues and organs) (Hjorth et al, 2013).

However, Prince et al (2014) reviewed the evidence for combating dementia through supplementary micronutrients and found ‘no clear evidence for a causal protective role for vitamins B6, B12, C or E, folate, or omega-3 PUFA (polyunsaturated fatty acids)’.

There is consistent evidence that adherence to a Mediterranean diet may lower the risk of cognitive decline and dementia. Martinez-Lapsina et al (2013) compared a Mediterranean diet (with high cereal, fruits, fish, legumes, and vegetable content) supplemented with either extra virgin olive oil or mixed nuts, with a low-fat diet. The six-and-a-half-year study showed encouraging results — participants that supplemented a Mediterranean diet with extra virgin olive oil but not mixed nuts had better cognitive function and less incidence of mild cognitive impairment than the control group.

Prince et al (2014) looked at overall energy intake in dementia, concluding that the reasons for weight loss and poor nutrition in dementia are complex, multifactorial, and only partly understood. Reduced appetite, increased activity, and — in the more advanced stages of the disease — the disruption of eating behaviours by cognitive and behavioural problems all play a part.

Prince et al (2014) also found that an inherent feature of some forms of dementia is that the central regulation of appetite and metabolism is disturbed. A key finding in this report was that weight loss is a common problem for people with dementia and undernutrition should be avoided. Indeed, this review of trials in the use of oral nutritional supplements indicated that it is possible to stabilise or even increase the weight of people with dementia over relatively long periods, thereby reducing mortality risk.

In practice, this means that community nurses should be alert to undernutrition in people at all stages of dementia, using appropriate screening tools to identify it before fortifying or supplementing the diet using local clinical pathways if possible. The Malnutrition Universal Screening Tool (MUST) is a good example of one such screening tool (Elia, 2003).

SEVERE MENTAL ILLNESS

It is clear that good dietary nutrition can help to maintain mental health. However, a systematic review of 31 heterogeneous studies (Dipasquale et al, 2013) concluded that people with schizophrenia often have a poor diet characterised by a high intake of saturated fats in conjunction with a low consumption of fruit and fibre, as well as a low intake of polyunsaturated and monounsaturated fatty acids. These findings are concerning given the high risk of cardiovascular problems in this group.

Very few of the studies examined by Dipasquale et al (2013) mention the influence of antipsychotic medication on diet, despite the well-documented effect on weight gain (Allison and Casey, 2001). However high-fat and low fibre diets were common in drug-naive patients (i.e. those not used to psychotropic medication), with no change six months after antipsychotic medication was started; nor were there any significant differences in the quality of patients’ diet depending on the antipsychotic treatment they were taking. Similarly, McCreadie (2003) found poor diets in men and women with schizophrenia in Scotland, despite a considerable amount of professional support.

What to do?

There are a number of interventions and resources that community nurses can use to support people with serious mental health problems to improve their diet and physical health.
The charity Rethink Mental Illness (2013) highlighted the risks to physical health for people with severe mental illness, but simultaneously identified the lack of screening offered to this client group. Even when identified as having specific physical health needs requiring dietary input, people with mental health problems are at a disadvantage when trying to access structured diabetes education, for example (NICE, 2008).

There are multiple reasons for this — as well as cognitive deficits (Bowie and Harvey, 2006), people with severe mental health problems may be anxious about attending meetings or struggle with early morning sessions because of the side-effects of medication (Rethink, 2013).

Dickerson et al (2005) assessed diabetes knowledge in people with schizophrenia and found it significantly worse than in the general population, particularly in relation to diet. Subsequently, Dickerson et al (2008) compared cognitive function in people with diabetes alone; schizophrenia alone; and schizophrenia and diabetes. He found that the latter group scored lowest due to the combined cognitive vulnerability of each illness being amplified, with a more recent study (Han et al, 2013) also suggesting that diabetes and schizophrenia may influence cognitive deficits, particularly immediate memory and attention.

Cognitive dysfunction in schizophrenia is related to issues with attention, memory and executive function such as responding to unpredictable events or planning (Rund and Borg 1999; Takayanaqi et al, 2012; Han et al, 2013). Recognition of these cognitive challenges may help community nurses to ensure that interventions are appropriately tailored for people with serious mental health problems.

There are several specific interventions for weight management, healthy living and diabetes management in people with severe mental health problems (Jennings, 2011), including 12-week diabetes education programmes, incorporating psycho-education, dietetic-led dietary intervention and activity, and intensive behavioural and nutritional interventions for people with serious mental health problems who have gained weight (STEPWISE is a current Sheffield-based randomised controlled trial exploring the extent to which structured lifestyle education can support weight loss in adults with schizophrenia and first episode psychosis in a community mental health setting — visit: www.shef.ac.uk/scharr/sections/dts/ctrui/stepwise).

When it came to group-based interventions such as dietary education and activity in particular, certain features were thought to be helpful in this client group, for example not setting a defined end-point; engaging patients in the process and a holistic approach to lifestyle management. NICE (2014) also recommended more integrated communication between primary care teams and specialist mental health services.

Incentives and barriers to lifestyle interventions for people with serious mental health problems have been investigated from the patient’s perspective (Roberts and Bailey, 2013) with environment, facilitator style, group ownership and cohesion, and information and learning identified as important. Social networking was also identified as crucial.

**CONCLUSION**

Given the constrained budgetary health environment that community nurses now find themselves working in, it is important that the dietary status of patients is factored into all consultations — this will have preventative as well as treatment benefits.

Equally, the mental health of patients presenting to community nurses with physical health problems should be routinely considered when deciding how best to plan care. Overall, regular and consistent healthy eating messages should be routinely included in holistic nursing careplan.

**REFERENCES**


**Five-minute test**

Answer the following questions about this article, either to test the new knowledge you have gained or to form part of your ongoing practice development portfolio.

1 - Can you explain how the community nurse can recognise poor nutrition?
2 - What is the main role of nutrition in mental health?
3 - What are some of the key nutrients involved in good mental health?
4 - How might certain vitamins aid mental health?
5 - What are the benefits of providing appropriate dietary advice to patients with mental health problems?


