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Mental Health and Learning Disabilities
Research and Practice



Nutrition and Mental Health Recovery

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Nutrition and Mental Health Recovery

Katie Adams, Virginia Minogue, Mike Lucock

Abstract

This review examines the relationship between nutrition and mental health recovery. It examined 22 papers and found that there is substantial evidence to show that people with mental health problems are more likely to engage in poor dietary practices compared to the general population. In addition, there is growing evidence supporting the link between diet and mental health and the benefits of the practical applications of nutritional interventions within mental health services. However, many of these studies are of association and do not prove causation. Therefore, further research is needed on nutrition interventions that utilise specific outcome measures and focus on nutrition in isolation to other factors such as physical activity. The implications of these findings are discussed focusing on mental health practice. This review will be relevant to individuals at all levels within the mental health service, including service users, carers, mental health professionals, managers and directors.

Key words: Mental Health, Recovery, Nutrition, Dietary Practices

Introduction

It is widely accepted that maintaining a healthy lifestyle, specifically nutrition and exercise will improve physical health and aid recovery from physical health problems (Doyle et al, 2006). In particular, Hughes (2006) discusses the positive role that nutrition and physical activity has on the general wellbeing of the community, and there is increasing research on the role of nutrition in the rehabilitation of major physical problems such as cancer (Greenwald, 2001; Doyle et al, 2006). Although there is some research about the impact of nutrition on mood and mental health problems, such as depression (Su et al, 2003; Peet and Strikes, 2005) it is a relatively new area of research. For instance, the Food and Behaviour Research organisation and the Mental Health Foundation promote the importance of nutrition in the prevention and management of mental health conditions. The World Health Organisation (WHO) have also documented that poor nutrition is one of the social risk factors of mental health problems in children (WHO, 2004). However, the role that nutrition plays in the mental health recovery process is not completely understood or explored.

Recovery in a mental health context does not mean a loss of symptoms per se. In fact, the recovery approach to mental health places an emphasis on the ability to improve a person's quality of life and positive identity (Bradstreet, 2004). There are also certain concepts or factors that are common to recovery. For instance, Anthony (1993) identifies recovery as a process of changing a person's attitudes, values, feelings, goals, skills and roles and as such, a person's lifestyle may be included in this process. It is recognised that people with mental health problems tend to lead chaotic lifestyles and can neglect their personal needs, particularly nutrition and exercise (Green et al, 2003). Consequently, more focus on such aspects may be needed in the rehabilitation of mental health problems. Therefore, the purpose of this review is to examine the mental health literature to see what role lifestyle, particularly nutrition, has on mental health recovery. This is important because if nutrition can aid the recovery process, this has implications for service users, carers and mental health professionals who could be practically involved in improving their

own lives, or the lives of those with mental health problems by being more aware of the benefits and applications of nutrition.

The term diet refers explicitly to a person's pattern of eating and drinking. Dietary practices extend the meaning of diet by representing certain behaviours, such as consuming only food considered healthy or restricting food for religious reasons and both are influenced by social, economic, biological, and cultural factors (Gupta, 1992; Yang et al, 2005). Dietary practices then impact on a person's nutrition, which is the intake of nutrients or chemical substances in the food that the body needs for energy and maintaining organs, such as the brain. There then may be a link between a person's nutrition and their mental health.

Aims of the Review

This review will examine the evidence that suggests people with mental health problems are more likely to engage in poor dietary practices compared to the general population. Following this, it will examine the evidence of the link between nutrition and mental health. The relationship between mental health and omega-3 fatty acids is one well researched area where a link between nutrition and mental health is demonstrated. This will be evaluated. It will then look more closely at the role of nutrition in mental health recovery by examining the research on the practical applications of nutritional interventions within mental health services. It will also highlight gaps in the research and the importance of policies and procedures in the management of physical health care of people with mental health problems.

Literature Search Strategy

This literature search was carried out using Ovid Online and included the databases Medline, Embase, PsylInfo, Cinahl, British Nursing Index dating back to 1950. For each database, individual searches were performed using the keywords mental health, mental disorders, recovery, nutrition, diet and dietary practices. The search strategy also combined terms within each database, for example, 'mental health and nutrition' and 'mental health and dietary practices'. Specific nutrition journals were also searched and a total of 324 papers were found. The inclusion criteria was English language, the examination of nutrition in adults aged 18-60 years old with a mental illness or some component of mental health recovery or rehabilitation. Therefore, papers where the main subject was children, older adults, dual diagnosis or a physical health condition were excluded. Other papers were discarded if physical activity as a form of rehabilitation was the main focus or where databases had produced duplicate papers. After excluding these, 22 papers remained.

Dietary Practices of People with Mental Health Problems

Research suggests that people with mental health problems are more likely to engage in poor dietary practices compared to the general population. For instance, Hutchinson (1996) found that nutrient intake was significantly poorer for individuals with psychiatric disabilities compared to the general population. Compton et al (2006) completed a review of the literature utilising the Medline database and found that compared to those without a mental illness, individuals with a mental illness were more than twice as likely to smoke cigarettes and more than 50% were likely to be overweight, which the author attributed to a unhealthy diet and physical inactivity. In addition, Hoyle and Hazzledine (2004) carried out a cross-sectional exploratory survey of mentally ill adults to establish their dietary patterns, compared with the general population. The findings showed that the diets of those with mental health

problems were nutritionally poor, with frequent consumption of saturated fat and refined sugar. Therefore, they suggested that dietary education programmes are required and made specific recommendations. However, the main limitation of the study was a small sample size which prevented the authors establishing those most at nutritional risk. They recommended that future research in the form of larger studies was needed to ascertain if other factors, such as medication have an effect on dietary patterns (Hoyle and Hazzledine, 2004).

Henderson et al (2006) conducted a cross-sectional study evaluating the dietary intake of patients with schizophrenia or schizoaffective disorder and found that the schizophrenia group consumed significantly fewer of the nutritional variables apart from caffeine. Porter and Evans (2008) also report on international studies which have indicated that people with a mental illness have greater rates of obesity, lower rates of physical activity and poorer dietary habits than the general population (Elmslie et al, 2000, 2001). The research discussed has shown that people with mental health problems are more likely to engage in poor dietary practices and highlights the importance of tackling this problem. The evidence of a link between nutrition and mental health problems will now be examined.

The Link between Nutrition and Mental Health

Dohan (1966) was one of the first people to investigate this issue examining the link between wheat consumption and schizophrenia. He found a correlation between the number of women admitted to hospitals for the first time with schizophrenia and the amount of wheat consumed. He also discussed the possible relationship between schizophrenia and celiac disease (Black, 1964; Graff and Handford, 1961). Gupta (1992) also found correlations with the proportion of total calorific intake of fat and outcome of mental disorders.

More recently, Peet (2004) has provided evidence for the link between diet and mental health. His paper highlights that patients with schizophrenia and depression have a higher rate of lifestyle diseases such as diabetes and coronary heart disease (Robson and Gray, 2007; Parker et al, 2006). He emphasises the pattern of food intake in the aetiology of these physical illnesses and thus suggests a relationship between nutrition and mental illness. In order to examine this he conducted an ecological analysis of international variations in food supply in relation to epidemiological data. This investigation found that outcome of schizophrenia and prevalence of depression was associated with dietary factors. The overall finding was that a greater consumption of refined sugar was associated with a worse outcome of schizophrenia and a greater prevalence of depression. Reduced prevalence of depression was also associated with a dietary intake of fish and seafood.

Peet (2004) presents the findings in relation to previous studies, particularly the literature by Hibbeln (1998) confirming the relationship between fish consumption and international variations in rates of depression and by Christensen and Christensen (1988) with correlations between meat and dairy products and outcome of schizophrenia. In addition, Peet (2004) emphasises the predictive value of sugar consumption. Peet has played an important role in this area of research. His investigations have particularly focused on omega-3 fatty acids and depression and schizophrenia (Peet, 2007; Peet et al, 2006; Peet and Stokes, 2005) all of which support the link between diet and mental health.

In fact, the relationship between omega-3 fatty acids and mental health is one area of research where there is sufficient evidence to demonstrate a link between mental

health and nutrition. A comprehensive review by Parker et al (2006) discusses epidemiological and treatment studies supporting the antidepressant role of omega-3 supplementation and identifies a number of hypotheses, in particular whether omega-3 fatty acid, eicosapentaenoic acid (EPA) or docosahexaenoic acid (DHA) have a greater benefit. Following this, Owen et al (2008) conducted a review to examine the recent evidence of the association between omega-3 deficiency and the development of mood disorders. The authors illustrate that case-control studies have shown that patients suffering with depression have significantly lower levels of omega-3 (Ross, 2007) and clinical trials have indicated the effectiveness of omega-3 for unipolar depression (Peet and Horrobin, 2002; Nemets et al, 2002). A more recent systematic review by Turnbull et al (2008) has also shown the beneficial effects of omega-3 in bipolar disorder.

Freeman et al (2006) provides a review of the literature on the use of omega-3 fatty acids (EPA) with other psychiatric disorders, focusing on epidemiological, experimental and clinical trials. For schizophrenia, the findings are contradictory, in that some studies have shown a greater improvement with the use of EPA (Peet et al, 2001, Emsley et al, 2002) whereas another study found it only to be effective with patients treated with clozapine (Peet et al, 2002). Fenton et al (2001) found no significant difference.

For personality disorders, Zanarini and Frankenburg (2003) report one placebo-controlled study that showed a decrease in hostility and aggression with the use of omega-3, which was also found among prisoners receiving omega-3 (Gesch et al, 2002). There are several studies supporting the link between attention-deficit hyperactivity disorder and omega-3 (Mitchell et al, 1987; Richardson and Puri, 2002; Stevens et al, 2003; Richardson and Montgomery, 2005) with the exception of Bekaroglu et al (1996) and Voigt et al (2001) who did not find a link. The Food and Behaviour Research summarises the importance of this report by Freeman et al (2006), saying it gives a far more complete picture than most conventional systematic reviews (FAB Research, 2006).

Nutrition Based Interventions

Research has not just focused on the link between nutrition and mental health but also on the practical applications of nutritional interventions provided within mental health services. For instance, there are certain papers highlighting the importance of incorporating healthy lifestyle programmes into mental health service delivery (Richardson et al (2005). Compton et al (2006) argues that many of the same preventive approaches developed for general medical populations are likely to be effective in people with mental health problems.

In a study by O'Sullivan et al (2006) patients were referred to one of three programme modules designed to address nutrition, physical health and community activities. The patients were asked to complete a satisfaction survey evaluating the programs. The findings included positive feedback by patients who also identified lifestyle changes they planned to make as a result of attending the program. Brown and Chan (2006) point out that, this study did not measure outcomes and the interventions were not properly evaluated. Therefore, they conducted a randomised control trial (RCT) of a health promotion intervention using validated research instruments to measure outcome. The results showed small but statistically significant gains in exercise and weight loss and improved subjective wellbeing in those that had received the health promotion sessions compared to those that did not (Brown and Chan, 2006). There are also other studies recommending

programmes targeting physical health to improve mental health, for example, Rohrer et al (2005).

These studies have investigated nutritional based interventions, provided as part of a wider health promotion, healthy living intervention. The findings suggest that nutrition based interventions are now being recognised as an adjunct in mental health treatment and are accepted by patients. There is also limited evidence that this leads to improvements in physical health and may lead to gains in mental wellbeing.

Role of Mental Health Services

Mental Health services can clearly play a significant role in promoting healthy eating in those with mental health problems. For example, Jensen et al (2006) emphasises the importance of psychiatric nurses in assessing health promoting lifestyles in individuals with serious mental health problems. Porter and Evans (2008) also highlight the important role dieticians can play in improving the nutritional status of individuals with mental health problems. Other professionals such as doctors, social workers and occupational health professionals can also play a role. Thus, multidisciplinary team working may be the most effective way to support the introduction of nutrition in the rehabilitation of mental health problems. However, it has been suggested that many mental health clinicians lack the training or expertise to provide these services (Crompton et al, 2006). Furthermore, a study showed that the mental health system was perceived as placing a low priority on the role of nutrition and exercise in rehabilitation and recovery (Hutchinson, 1996). This may be a result of the policies and practices that mental health clinicians adhere to.

Policies and Guidelines

The physical healthcare of patients with psychiatric disorders is incorporated in the National Institute for Health and Clinical Excellence (NICE) clinical guidelines. There are guidelines on depression and chronic health problems and for monitoring physical health in eating disorders, bipolar disorder and for schizophrenia (Greening, 2005). However, they do not provide specific guidance on nutrition or improving dietary practices for those with psychiatric disorders, presumably due to the limited evidence base, with the exception of the NICE guidelines for eating disorders (NICE 2004). Citrome and Yeomans (2005) conducted a review of UK and US guidelines for the management of individuals with schizophrenia and bipolar disorder. They found quite different approaches particularly in relation to the management of physical health. The UK guidelines acknowledge the risk of physical morbidity in individuals with severe mental illness but lack details specifically regarding the monitoring of physical health and lifestyle management. In contrast, the US guidelines provide more details in terms of monitoring, but there are inconsistencies between organisations and research suggests the guidelines are not always adhered to (Citrome and Yeomans, 2005). The authors conclude that in order to integrate physical and mental healthcare, thus improving the general wellbeing of mental health patients, clearer guidelines and specific recommendations are needed.

A report by the Associate Parliamentary Food and Health Forum (2008) concluded that the government should provide adequate resources to enable more research to be conducted in the field of nutrition and behaviour. The report suggests that policy makers will need to apply the information gathered to make recommendations about nutrition and how to change dietary habits. It is also recommended that the

Department of Health should emphasise the importance of a balanced diet for optimum mental as well as physical health. However, the report was limited by focusing primarily on the role of essential fatty acids, excluding other evidence of the links between diet and behaviour.

Discussion

The evidence appears to suggest that the prevalence of certain psychiatric disorders is associated with dietary factors (Dohan, 1966; Hibbeln, 1998; Peet, 2004; 2006; 2007). However, a primary limitation of these studies is that the results highlight an association but do not infer causality. Studies have also found similar correlations when examining climate, geographic location and occupation (Gupta, 1992). This shows that these variables are highly inter-correlated, which makes it very difficult to distinguish their effects. Therefore, future research in the form of intervention studies to investigate the link between nutrition and mental health, taking into account such complexities is essential.

There is also evidence in the form of case control studies and clinical trials of the effectiveness of omega-3 supplementation with a range of psychiatric disorders. However, more clarity about optimal dose and type of omega-3 supplement for each disorder is still needed. The results of these studies should also be viewed with some caution due to the failure of case-control studies to control for all the confounding variables which can often lead to an overestimation of the effect of such studies. Clinical trials are also known for problems preserving study blinding because of adverse effects associated with treatment (Parker et al, 2006, Freeman et al, 2006). Later reviews such as Turnbull et al (2008) highlight that studies showing beneficial effects of omega-3 have similar methodological problems relating to sample size, confounders and concealment of blinding. Inconsistencies are also found between the review by Freeman et al (2006) and that by Turnbull et al (2008), with the former noting that most positive trials used EPA primarily rather than DHA (FAB Research, 2006), whereas the latter reported that a combination of EPA and DHA demonstrated a significant improvement. This in addition to the inconsistencies found for certain disorders and the methodological problems discussed, further emphasises the need for more research in this area.

Similarly, although certain studies suggest that nutrition based interventions can lead to improvements in physical health, there is limited evidence that they may lead to gains in mental wellbeing. The quality and generalisability of studies by Richardson et al (2005) and Brown and Chan (2006) are weakened by factors such as small sample size and poor retention and it is also unclear to what extent participants were actually able to make real changes in their diet to improve nutritional intake. The remaining evidence takes the form of descriptive studies, all of which highlights the need for higher quality research in this area.

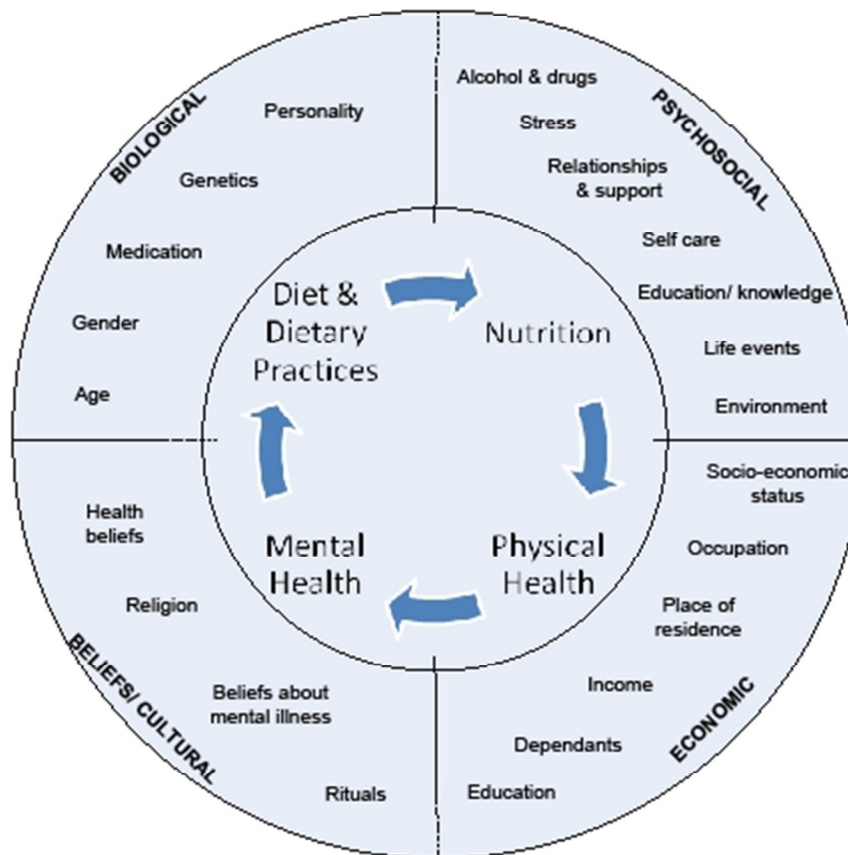
Moreover, a large part of the research is about improving physical health and wellbeing and the effect such interventions have on mental health recovery is still unclear. Further research is required to investigate the benefits for mental health and the mechanisms by which such improvements occur. For example, it is possible that improvements in mental health associated with nutrition based interventions are mediated by improvements in physical health and psychological factors such as self esteem. Furthermore, some of the interventions investigated combine both nutrition and physical activity, thus to determine the true benefits of nutrition, research investigating nutrition interventions in isolation are required. It should also be noted that all of the studies identified in the search found that the

interventions were beneficial which may suggest a publication bias has occurred if studies reporting no benefit have not been published.

It would appear to be a simple concept that altering what a person eats will result in improved physical and mental health. However, dietary practices are often deeply engrained into a person's routine. Furthermore, people with mental health problems may also face other constraints that affect their ability to maintain a healthy lifestyle, such as many social, psychological and financial barriers. Therefore, what in theory appears simple may in fact be a very difficult and complex process. Indeed, the relationship between dietary practices, nutrition and mental health is clearly complex with obvious examples where mental health problems impact on a person's eating habits, such as loss of appetite in depression, comfort eating (Abayomi and Hackett, 2004) and eating disorders (Santos et al, 2007). Again, this highlights the need for future research to identify a causal link to clarify whether poor dietary practices and nutrition lead to mental health problems and the processes involved, and the extent to which mental health difficulties impact on a person's ability to have good dietary practices and nutrition. The process is likely to be cyclical as represented in figure 1.

Research has also suggested that the physical health of people with mental illness is not solely related to food intake but medication side effects and inactivity may play a part (Henderson et al, 2006, Limosin et al, 2008). There are increasing amounts of literature regarding the role of exercise in improving mental health and the potential of physical fitness as a rehabilitation intervention for people with mental illness (Faulkner and Biddle, 2002; Hutchinson et al, 1999; McDevitt et al, 2005). Ultimately, many intervention programmes should include both nutrition and physical activity. It is also clear that there are many other factors that need to be considered. Figure 1 shows that there are many biological, social, economic and cultural factors associated with a person's dietary practices and nutrition and these same factors are associated with physical and mental health (Gupta, 1992). The aim of figure 1 is not to present an exhaustive list but to demonstrate the complex nature of this area, especially as many of the individual factors are not exclusive to any one category. The complexity of this area needs to be understood when investigating a causal link between nutrition and mental health as some of these factors will become confounders.

Figure 1 The link between dietary practices nutrition and mental health



Conclusion

Overall, what was once considered a limited area has now seen a growth in the amount of research demonstrating the link between nutrition and mental health. Larger intervention studies that take into account the complex nature of this area are needed to establish a causal relationship. The benefits of nutrition are also being recognised as an additional intervention in mental health rehabilitation, usually as part of a wider health promotion, healthy living approach. However, future studies examining nutrition interventions in isolation are needed that utilise specific outcome measures, with a focus on mental health recovery. Moreover, the mechanisms by which nutrition and mental health are related needs to be better understood, examining whether it could be via physiological mechanisms or psychological factors such as self esteem. Nutritional advice and interventions are important and justified in terms of improvements in physical health but it is also important to consider possible direct or indirect improvements in mental health as well.

Implications for Practice

Despite the limited evidence for nutrition based interventions on mental health recovery, there is an acknowledgement that people with mental health problems have poorer nutrition and physical health than those without mental health problems. The importance of physical health and well being is being highlighted in the New

Horizons strategy for mental health in the UK which may lead to a greater emphasis on these factors in practice.

These findings may have important implications on individuals at all levels within the mental health system. For instance, it may become necessary to include improved nutrition and physical activity uniformly within mental health treatment. Such interventions may take the form of dietary advice and education, shopping and cooking skills, budgeting methods, general aspects of daily routine, and health promotion. Interventions may also explore any barriers that prevent service users incorporating health promotion into their routine and provide extra support where needed. In terms of more specific treatment such as omega-3 supplementation, there is still a need for further research to confirm the effectiveness of omega-3 on psychiatric disorders before supplementation can be recommended.

The evidence cited also suggests that multidisciplinary team working may be the most effective way to support the introduction of nutrition in the rehabilitation of mental health problems as part of a healthy living, self management approach. Of course this way of working is largely adopted in mental health services with psychiatrists, nurses, social workers, occupational therapists and support workers often working together. Therefore, they can build on this by incorporating improved nutrition interventions into their practice, facilitated by working more closely with professionals that specialise in that field, such as dieticians and health psychologists.

This way of working requires support through the availability of specific training and guidance. Training would be essential to give mental health professionals the expertise to develop and implement such interventions and help individual professions to understand their role in the context of the multidisciplinary team. Guidelines and policies on improving the dietary practices of those with psychiatric disorders would encourage mental health professionals to adopt nutrition and health promotion into their practice as part of a more holistic approach. This means in the UK, NHS Trusts need to place a higher priority on the role of nutrition and exercise in recovery (Hutchinson, 1996).

However, responsibility should not just rest with the mental health service. Service users and carers should also play a more active role in the recovery process through increased awareness of the benefits of nutrition and more control over their nutritional regime, with support from the multidisciplinary team.

Recommendations for Practice:

- Mental health professionals should keep up-to-date with recent literature on nutrition and physical and mental health.
- Mental health services should consider including improved nutrition and physical activity uniformly within mental health treatment.
- Multidisciplinary team (MDT) working should be used to support health promotion and the introduction of nutrition in the rehabilitation of mental health problems.
- MDT working should be used to encourage service users and carers to play a more active role in the recovery process through increased awareness of the benefits of nutrition.
- NHS Directors and higher personnel should consider the development of policies and guidelines to encourage healthcare professionals to adopt nutrition and health promotion into their practice.
- Training should be considered so that mental health professionals have the expertise to provide nutrition and health promotion services.
- Psychiatrists and nurse prescribers should be aware of the growing omega-3 literature and consider supplementation in treatment of psychiatric disorders if the evidence becomes more robust.

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