

## LIFESTYLE FACTORS AND MENTAL HEALTH

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### SUMMARY

A number of lifestyle factors have been recognised to play an important role in positively modifying medical and psychiatric diseases and their associated morbidity and mortality. These include, eating healthy food, greater physical activity, cessation of smoking, avoidance of alcohol and illicit substances. Additional lifestyle factors for healthy living include, safe and peaceful environment, optimal sleep, de-stressing and enjoyable activities, social connections/support and healthy mental activities. Physicians from the ancient times, through the middle ages to the early 20<sup>th</sup> century have recommended adoption of healthy lifestyle factors such as diet and exercise to manage medical and psychiatric disorders without really understanding their scientific basis.

In this short paper, we discuss the important role lifestyle factors play in morbidity and mortality related to many important and common medical and psychiatric diseases. We explore how and if positively modifying lifestyle factors can help to improve and or prevent medical and psychiatric disorders with particular emphasis on food, diet and exercise.

**Key words:** lifestyle factors - food - diet - exercise - medical and psychiatric diseases

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*Brain is there to be used  
Body is there to be moved  
Rashid Zaman*

### INTRODUCTION

A wide ranging and increasing number of medical and psychiatric diseases are recognised to be caused and modified by the way individuals live with associated lifestyle factors playing major part.

A number of lifestyle factors have been recognised to play an important role in positively modifying medical and psychiatric diseases and associated morbidity and mortality. These include, eating healthy food, greater physical activity, cessation of smoking, avoidance of alcohol and illicit substances. Additional lifestyle factors for healthy living include, healthier environment, optimal sleep, de-stressing and enjoyable activities, social connections/support and healthy mental activities.

Whilst slogan such as “no mental health without physical health” and “no physical health without mental health” are being widely used by health providers, most of the public and many professionals in healthcare are not aware of the important growing research evidence explaining how and why adopting of healthier lifestyle factors leads to positive benefits for both physical and mental health.

In this short paper, we discuss the important role lifestyle factors play in morbidity and mortality related to many important and common medical and psychiatric diseases. We explore how and if positively modifying lifestyle factors can help to improve and or prevent medical and psychiatric disorders with particular emphasis on food, diet and exercise.

### LIFESTYLE FACTORS AND DISEASES

Using a broader definition, lifestyle factors generally include, level of physical activity, use of tobacco smoking, amount of food consumed, level of obesity, consumption of healthy/unhealthy food, level of alcohol consumption, use of illicit substances, sexual health and access to 'healthy' environment.

The term lifestyle diseases refer to the diseases which are associated with the way individuals live their lives. These diseases are commonly caused by a number lifestyle factors, such as smoking, alcohol, drug misuse, unhealthy eating, lack of physical activity and exposure to unhealthy environment.

Numerous diseases have been recognised as lifestyle diseases, including, Alzheimer's disease, atherosclerosis, asthma, cancer, liver diseases, type 2 diabetes, metabolic syndrome, renal diseases, osteoporosis, stroke and depression.

The number and types of lifestyle diseases are rising with increasing contribution of psychiatric diseases. Whilst depression and type 2 diabetes may appear to be widely apart in their nature and presentations, they are not only linked, but are likely to have same underlying pathology. Indeed, there is growing evidence that the common underlying pathology for both type 2 diabetes and depression is chronic inflammation as is the case in many chronic diseases (Stuart 2012, Baumeister et al. 2014), with varying amount of genetic contribution.

Genetics and other common modifiable lifestyle risk factors are often the underlying cause for the development of most chronic medical and psychiatric diseases. These risky/unhealthy lifestyle factors include, unhealthy diet (Munoz et al. 2008), obesity (Whitlock et al. 2009),

physical inactivity (Paganini-Hill et al. 2011), tobacco smoking (World Health Organization 2011), excessive alcohol consumption (Murray & Lopez 2013), misuse of drugs, risky sexual behaviour (Penner et al. 2019), high blood pressure (Gabin et al. 2017) and metabolic syndrome (Brenda et al. 2018).

Whilst, identification and addressing of specific unhealthy lifestyle factor is helpful, it is important to recognise that more often individuals have multiple unhealthy lifestyle factors. For example four common risky lifestyle factors, smoking tobacco, excessive alcohol consumption, limited physical activity and poor diet often go hand in hand. Excessive food consumption with limited physical activity can lead to obesity, however, presence of additional risk factors such as smoking and excessive alcohol consumption can further exacerbate the negative impact of obesity and lack of exercise alone, since smoking can worsen fitness level, leading to further inactivity, whilst excessive alcohol consumption can cause sleep deprivation thus further worsening obesity. Therefore, co-existing unhealthy lifestyle factors not only work synergistically to exacerbate worsening of physical and mental health, they are also difficult to address when compared to managing just single unhealthy lifestyle factor acting in isolation.

Much of epidemiological research has shown that lifestyle factors, such as diet, exercise, mental activity and stress, are significant influences on health extension (Li et al. 2018).

## **LIFESTYLE FACTORS, HISTORICAL ASPECTS**

Despite, lacking modern scientific understanding of mental disorders and with no real understanding of how lifestyle factors influence morbidity and mortality related to psychiatric (and medical) disorders, physicians throughout the history have recommended use of lifestyle modifications such as diet and exercise to treat psychiatric disorders such as depression. For example, Hippocrates (400 BCE) suggested treating melancholia (historical name for depression) by bloodletting, bathing, exercise and dieting. In the middle ages muslim physicians also emphasised the beneficial role of diet, exercise and emotional support through counselling and behaviour therapy. As Europe emerged from the dark ages, enlightened physicians such as Robert Burton in 1621 (who published the *Anatomy of Melancholy*), suggested various treatments which included, dietary measures, exercise along with distraction, travel, cleanses, bloodletting, herbal remedies, marriage and music therapy (Zaman 2018).

However, despite expanding scientific knowledge, little attention appeared to have been paid to the important role lifestyle factors were playing with regards to health until well into mid 20<sup>th</sup> century when smoking began to be recognised as a crucial lifestyle factor causing lung cancer (Doll & Hill 1950) and later other cancers, as well as, multitude of other diseases. Tobacco is said be the leading risk factor for at least 5 of the 10

leading causes of death worldwide which include, ischemic heart disease, cerebrovascular disease, tracheal, bronchial and lung cancers, lower respiratory infections, and chronic obstructive pulmonary disease (Murray & Lopez 2013).

## **CAN POSITIVELY MODIFYING LIFESTYLE FACTORS HELP IMPROVE OR PREVENT MENTAL HEALTH DISORDERS?**

Much of epidemiological research has shown that lifestyle factors, such as diet, exercise, mental activity and stress have significant influences on health extension (Li et al. 2018). The research evidence for improving and preventing psychiatric disorders by positively modifying the lifestyle factors continues to grow (Cotman et al. 2007, Rohrer et al. 2005, Tanka & Shirakawa 2004, Scheewe et al. 2013). As described above smoking has clearly been shown to cause significant morbidity and mortality through the development of various cancers and number of other diseases, which in turn have negative impact on mental health (Kadan-Lottick et al. 2005, Ganz et al. 2003, Ormel et al. 2007, Aras et al. 2017).

Apart from smoking, diet and exercise (discussed below), other important lifestyle factor that can modify mental health is social connections/interactions. Whilst, the value of social connections is generally argued to be positive for mental health, the relationship is not straight forward as argued by some. Kawachi and Berkman (Kawachi & Berkman 2001) point out that whilst social ties generally have beneficial role, their protective effects on mental health vary amongst different groups and sexes. The type of social support derived from social networks appear to differ amongst men and women. It is noted that social connections may paradoxically increase levels of psychiatric symptoms amongst women with low resources, particularly if these women are obliged to provide social support in return. They argue that “despite some successes reported in social support interventions to enhance mental health, further work is needed to deepen our understanding of the design, timing, and dose of interventions that work, as well as the characteristics of individuals who benefit the most.”

The idea that everyone, regardless of age, gender, educational level, social and cultural background will benefit from increased social network, particularly online is somewhat simplistic, given the changing complexities of human connections (Pantic 2014) and effects of pre-existing mental illness (Leff & Vaughn 1981).

## **FOOD, DIET AND EXERCISE**

In ancient times, human survival dependent upon their ability to obtain enough food (availability was somewhat haphazard) and survive other predators (humans were the food!). Hence, both required humans to be physically active. Therefore, obesity (unless due to particular medical condition) would not have been much

of an issue. As human began to grow food and were able to store it, food supply generally became less of an issue, whilst the need to survive predators persisted and therefore, physical activity persisted. As human moved into the modern times, they were no longer the food for the predators, food supply became plentiful and stable (with some exceptions) and with presence of transport system and ever increasing automation, the need to move (physical activity) decreased substantially, leading to obesity and its related physical and mental health problems.

Obesity is described as chronic relapsing disease where abundance of food (particularly those high in energy density, such as sugar rich, fat-laden, low fibre and processed food) is a primary cause that interacts with low level of physical activity and other environmental factors along with genetic susceptibility to lead to positive energy balance. The body stores this positive energy as fat (mostly visceral fat) which results in metabolic, hormonal and inflammatory changes, which cause damage to various body organs such as the arteries, brain, heart, liver, muscle and pancreas (Bray et al. 2107). This results in emergence of several chronic diseases (lifestyle diseases), such as Alzheimer's disease, atherosclerosis, asthma, cancer, liver diseases, type 2 diabetes, metabolic syndrome, renal diseases, osteoporosis, osteoarthritis, stroke and depression. Without doubt obesity has become a global health issue which is likely to get worst (Kelly et al. 2005), unless urgent worldwide public health measures are taken to address it.

Obesity has been rising exponentially for last 70 years (Caballero 2007). It is suggested that dietary changes have been major contributory factor. These changes include, rise in proportion of sugar and carbohydrate (particularly food with high glycaemic index) rich food (processed food). This has contributed to exponential rise in metabolic diseases such as type 2 diabetes which has been associated with psychiatric disorders such as depression possibly due to same underlying inflammatory pathology (Stuart & Baune 2012).

The role of dietary modification to lose weight and exercise is well recognised for healthy living. However, more specific advice is needed as to what type of dietary modification should be adopted to lose weight. For example those who are overweight with possible family history of type 2 diabetes and therefore likely to be vulnerable to development of insulin resistance and hence eventual progression to type 2 diabetes, would best be advised not just to lose weight but also to lose weight by reducing the proportions carbohydrate rich food (particularly with high glycaemic index) and carryout appropriate exercises.

Arguments between proponents of various diets to reduce obesity, type 2 diabetes and other physical and mental health disorders are rife. These diets include, low to no-carbohydrate/ketogenic diets, Mediterranean diet, paleo diet and vegetarian diet. It is beyond the scope to this paper to discuss these various diets. However, overall, large body of evidence suggests that consumption of

well-balanced meals, rich in fruits and fibre, with optimal amount of protein and healthy fats and relatively low level of sugar and carbohydrates (particularly those with high glycaemic index) along with overall lower amount of food (hence calories) promotes good physical and mental health.

In addition to dietary measures, the importance of exercises leading to positive benefits for physical and mental health cannot be overemphasised.

Scheewe and colleagues (Scheewe et al. 2013), reported that exercise therapy, when performed once to twice a week, improved mental health and cardiovascular fitness and reduced need of care in patients with schizophrenia.

Exercise has numerous beneficial effects. It has social benefits (being with others in gym, by taking part in group sports) and medical benefits since it reduces peripheral risk factors such as diabetes, hypertension and cardiovascular disease and hence provide protection for psychiatric (depression) and neurological diseases (Alzheimer's disease).

The improvement in blood circulation has positive benefits for brain function through various ways. It increases neuroplasticity (hence memory function), improves synaptic structure and strength through its positive action on neurogenesis, metabolic pathways and vascularity.

Exercise also leads to increase in levels of brain-derived neurotrophic factor (BDNF) and other growth factors which increase resistance to brain insult and improve learning and mental performance (Cotman et al. 2007).

BDNF has been shown to promote survival and differentiation of 5-HT neurons. It is also reported that administration of selective serotonin reuptake inhibitors (SSRIs) antidepressants enhance BDNF gene expression (Martinowich & Lu 2008).

## CONCLUSION

Clearly large body of research evidence points to importance of lifestyle factors in medical and psychiatric diseases. Research also suggest that positive modification of lifestyle factors is essential for both improvement and maintaining of physical and mental health.

Each individual is unique and hence requires their own unique set of programmes of lifestyle modification. Indeed, it is helpful to recognise that each lifestyle factor is linked to and influences other lifestyle factors through various underlying mechanisms such as improvement in inflammatory processes which can result from inactivity, over consumption of unhealthy/inflammatory foods, obesity and smoking. Whilst it may be easier to take a step by step approach by modifying of one lifestyle factor at one time, efforts should be made to modify all lifestyle factors in conjunctions, since they tend to work synergistically and are likely to have greater effect on positively modify morbidity and mortality related to physical and mental health.

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**Contribution of individual authors:**

Rashid Zaman conceived the idea of the paper, carried out literature search and wrote the paper.

Ahmed Hankir & Monem Jemni reviewed the literature and contributed to the final draft.

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