

Nutrition, fitness and mental health: A case study in fitness centers in Algiers

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Abstract:

Through this study, we searched for some cases that rely in their daily life on a healthy balanced dietary program with an acceptable practice of movement and physical activity and tried to find out the extent of the impact of this on the level of their mental health by adopting quantitative approach and the case study technique and its tools: A semi-structured clinical interview and a questionnaire on physical fitness and healthy eating.

The results indicated that some of the study subjects self-reported that their mental health improved after a period of adopting a balanced diet and practicing movement or some sports activities.

Keywords: Nutrition; fitness; mental health.

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1. INTRODUCTION

Since the beginning of the study of the human psychology humans have sought to understand the relationship between it and the body.

It is recognized in modern times that the influence between mental health and physical health is reciprocal.

In the past, humans lived with nature and tried to adapt to its difficulties, but after the amazing development that humans have reached, difficulties have become far from what is natural, and today they are almost virtual difficulties caused by the interaction of people with virtual worlds created by modern technology and artificial intelligence.

The psychological stress caused by sitting in front of a computer for hours, or those psychological pressures caused by individuals lying idle for hours browsing social media sites on their cell phones, are pressures that do not find an appropriate place for emotional catharsis or discharge.

The absence of movement and physical activity has become a characteristic of modern individuals, despite their constant intellectual preoccupation.

What makes the matter worse is the fast food that has become a favorite of everyone at all ages and in both sexes, male and female.



In the United States, it has been observed that poor families living in the city center are more likely to consume fast food that is high in saturated fat and added sugar.

The cost of buying a fancy meal at a well-rated restaurant is too high for these families this makes them resort to processed meats and high-calorie sodas.

These same families belonging to the poor classes are unable to exercise in clubs and gyms, which are often expensive as well.

In our local environment, we as researchers have noticed a significant change in the food pattern and our transition from the Mediterranean pattern, which is considered by nutritionists to be one of the best food patterns in the world.

The impact of globalization has been very significant on the Algerian lifestyle, as the preferred meals have become those known globally.

Especially among young people, university students and employees, and this may be due to several reasons.

As for movement and physical activity, a significant decline can also be observed.

Some local statistics present high percentages of individuals with mental and psychological disorders, which may be due to the increased awareness of individuals and their orientation

towards screening and diagnosis. or it may be due to several other factors.

In this study, we try to identify some cases that relied on improving their diet and practicing some physical activities, and how their mental health level was during and after this period.

First, the theoretical side:

1) Mental health:

it refers to a person's emotional, psychological, and social well-being. It affects how individuals think, feel, and act, and it also influences how they handle stress, relate to others, and make decisions.

Good mental health is more than the absence of mental illness; it involves the ability to manage life's challenges, maintain healthy relationships, and contribute to one's community. Factors such as life experiences, family history of mental health problems, and biological factors like brain chemistry can affect mental health.¹ (WHO, 2022).

1- 1 Measuring mental health :

involves assessing various aspects of an individual's emotional, psychological, and social well-being. Common tools and



methods used to evaluate mental health include:

- **Self-Report Questionnaires**: Standardized surveys such as the Beck Depression Inventory (BDI) or the General Health Questionnaire (GHQ) help individuals assess symptoms of depression, anxiety, or other mental health concerns.
- **Clinical Interviews**: Conducted by mental health professionals, these interviews involve open-ended questions to explore thoughts, feelings, and behaviors in-depth.
- **Psychological Testing**: Formal psychological assessments like the Minnesota Multiphase Personality Inventory (MMPI) provide detailed insights into an individual's mental health status, including potential psychological disorders.
- **Observational Methods**: In some cases, mental health can be evaluated through behavioral observations by clinicians or caregivers, especially in settings like schools or hospitals.
- **Physiological Measures**: Some researchers use physiological indicators such as cortisol levels (a stress hormone) or heart rate variability to assess how the body responds to mental overstress.
- **Social Functioning and Quality of Life Assessments**: These assessments measure how well an individual is functioning in their personal, professional, and social environments.² (Neurolaunch, psychological scales,2024)

2) A balanced diet:

is one that provides the body with all the essential nutrients, vitamins, and minerals it needs to function effectively. It involves eating a variety of foods in the right proportions to maintain good health and support bodily functions. A balanced diet typically includes:

- **Carbohydrates**: Found in foods like bread, rice, pasta, and cereals, providing energy for the body.
- **Proteins**: Essential for growth and repair, sourced from meat, fish, eggs, beans, and legumes.
- **Fats**: Needed for energy and cell function, sourced from healthy fats like nuts, seeds, and oils, particularly unsaturated fats.
- **Vitamins and minerals**: Found in fruits, vegetables, dairy products, and whole grains.
- **Water**: Critical for hydration and bodily functions. (WHO, 2020)³

2- 2) Type of diet:

There are various types of diets, each designed to meet different health, lifestyle, or weight-related goals.

- **Mediterranean Diet**: Based on traditional eating patterns of Mediterranean countries, this diet emphasizes fruits, vegetables, whole grains, healthy fats (like olive oil), and lean proteins (such



as fish). It's associated with numerous health benefits, particularly for heart health.

- **Ketogenic Diet (Keto)**: A high-fat, low-carbohydrate diet that forces the body into a state of ketosis, where it burns fat for energy instead of carbohydrate. It's often used for weight loss and managing certain medical conditions, such as epilepsy.

- **Paleo Diet**: Based on the idea of eating like our Paleolithic ancestors, this diet focuses on whole foods, including meats, fruits, vegetables, nuts, and seeds, while avoiding processed foods, grains, dairy, and legumes.

- **Vegan Diet**: A plant-based diet that eliminates all animal products, including meat, dairy, eggs, and honey. People choose vegan-ism for health, ethical, or environmental reasons.

- **Vegetarian Diet**: Similar to the vegan diet but less strict, it excludes meat but may allow dairy, eggs, and other animal by-products depending on the type (e.g., lacto-ovo vegetarian).

- **Low-Carb Diet**: This diet restricts carbohydrate intake, focusing on proteins and fats. The goal is usually weight loss or blood sugar control.

- **DASH Diet** (Dietary Approaches to Stop Hypertension) Focused on reducing high blood pressure, this diet emphasizes fruits, vegetables, whole grains, and lean proteins, with a

reduced intake of sodium, sweets, and red meat.

- **Intermittent Fasting**: Not a traditional "diet" but a pattern of eating that alternates between periods of eating and fasting. Popular approaches include the 16:8 method (16 hours of fasting, 8 hours of eating) or the 5:2 method (eating normally for five days, fasting for two).

- **Gluten-Free Diet**: Designed for individuals with celiac disease or gluten intolerance, this diet eliminates all sources of gluten (found in wheat, barley, and rye).⁴.(Harvard T.H. Chan School of Public Health,2022)

➔ **The Algerian diet**: Algeria is a Mediterranean country and our diet is dominated by the Mediterranean diet.

Most of the local dishes are homemade dishes.

In the past, even restaurants used to prepare the usual local dishes, which are mostly whole wheat and not white bread. It also relies on local vegetables such as tomatoes and local cheeses.

In addition to the widespread consumption of olive oil and the complete absence of re-hydrogenated fats such as margarine.

As for sweets, they are often made from wheat and honey, or date paste.

Local sweets were not dependent on large amounts of white sugar in their preparation.



In terms of physical activity and movement, Algerian society was characterized by a society that worked in the agricultural sector. Even women worked in the fields. This indicates that physical activity was considered inevitable in the lifestyle of most Algerians.

3) Fitness and mental health:

The release of endorphins and adrenaline during exercise positively affects mood.

- **Endorphins:** Known as the “happiness hormone,” they reduce the feeling of pain and promote a sense of well-being. Endorphins increase relaxation and reduce stress and anxiety, leading to an improved mood.

- **Adrenaline:** Released during exercise as a response to physical stress, they increase energy levels and alertness. It helps boost motivation and a sense of vigor and vitality.

Exercise reduces feelings of anxiety and depression and helps promote feelings of happiness and vigor. Many studies point to the importance of physical fitness in improving mental health and well-being: the study of **Matt D.Hoffmann, Joel D.Barnes, Mark S. Tremblay, Michelle D.Guerrero** on 2022 in

University of Pennsylvania, usa titled by **Associations between organized sport participation and mental health difficulties** and conducted on Data from over 11,000 US children and adolescents .

The results show that participation in team sports is associated with reduced mental health problems such as anxiety and depression compared to non-participation or involvement in individual sports. However, individual sports may not offer the same strong benefits and can sometimes be linked to psychological pressures. The study highlights the need to explore factors like gender and environmental influences. ⁵ (**Matt D. Hoffman J and all ,2022**)

Exercise is an effective way to relieve symptoms of depression. According to comprehensive systematic reviews, evidence suggests that regular physical activity can be as effective as antidepressant medications in some cases, especially in reducing the severity of depressive symptoms. Forms of aerobic exercise such as walking or running, as well as resistance training, have shown significant positive effects on improving mood and reducing feelings of sadness and stress. Furthermore, exercise contributes to a sense of accomplishment and self-confidence This is what the study of **Timothy Olds,Rachel Curtis, and**



others on 2022 in University of South Australia, proved it⁶

3) **Nutrition and mental health :**

Most of the neurotransmitters responsible for mental and psychological health need a set of proteins, amino acids and vitamins to be re synthesized, and it is known that serotonin, dopamine, endorphins, and other transmitters and hormones are important in modifying and stabilizing mood and reducing anxiety, depression and stress.

The diagram below shows, for example, the most important elements needed to synthesize serotonin.

There are many studies that have been conducted on the topic of mental health and food, including: the study of **Solomis Solomou , Jennifer Logue and others on 2022 in** Faculty of Health and Medicine, Lancaster University, Bailrig, Lancaster LA1 4YW, UK and 2Faculty of Health Studies, University of Bradford, Richmond Road, Bradford, West Yorkshire BD7 1DP, UK

The article systematically reviews the relationship between diet quality and mental health in college students, highlighting implications for health education practices. This review aims to

analyze the available evidence to determine how diet affects mental health in this important age group.

- **Importance of diet quality:** Diet quality has a significant impact on mental health. Diets rich in fruits, vegetables, whole grains, fish, and nuts are positively associated with better mental health.

Conversely, diets high in sugars, saturated fats, and processed foods are associated with an increased risk of anxiety and depression.

- There is general agreement that improving the quality of diet can have a positive impact on mental health. Students with unhealthy diets show higher rates of anxiety, depression, _____ and _____ stress.

- **Recommendations for health education practices:**

Higher education institutions should incorporate nutrition education into their programs to promote mental health. Offer workshops and awareness campaigns on the importance of proper nutrition.

Provide healthy food options on campus to support students in adopting healthy lifestyles..⁷ (Solomis ,jenefer_ and all, 2022)

Through what has been reviewed in the theoretical aspect, we realize the importance of both food and sports activity in the formation of the most important neurotransmitters that maintain mental and psychological integrity and give individuals a moderate mood away from fluctuations, depression, anxiety and stress.

These studies were conducted in an environment different from our local environment and the researchers faced many difficulties, so in this research we wanted to look for the backgrounds of nutrition, fitness and mental health in our local community and the results will be addressed in the theoretical aspect of the current article.

Secondly, Applied aspect:

First, the exploratory study:

Objectives :

- 1) To verify the presence of cases and their cooperation with us.
- 2) Checking the possibility of answering the questionnaire questions.
- 3) Checking the possibility of answering the interview questions.

Procedure :

1. Identify private psychiatric clinics as a starting point for researching cases.
2. Identify cases suffering from psychological disorders that are subject to psychotherapy.
3. Identify cases that have been recommended to synchronize psychotherapy with diet and exercise.

Spatial boundaries :

Private clinics in Biskra and fitness centres in Algiers .

Temporal boundaries :

May 2023 through April 2024.

Results:

- 1) Difficulty in communicating with patients attending private clinics.
- 2) Better communication with patients attending fitness centers.
- 3) Distributing the questionnaire to 10 cases in fitness centers, and selecting cases that declared the existence of diagnosed or undiagnosed psychological suffering.
- 4) Eight well-cooperative cases were identified and selected for the main study.

Second: Methodology and tools of the study:

For this study, we chose the qualitative method by identifying the cases who meet the conditions of the study and who cooperated with us, where the questionnaire was distributed at different times to the cases, and approximately 10 questionnaires were collected, including cases that do not suffer from psychological disorders or complain of difficulties.

The cases were then identified and a qualitative study was conducted through the clinical approach and case study technique.

Finally, we conducted a semi-structured clinical interview based on the mental health scale developed by Sayed Youssef.

Thirdly, the study results:

Through the results of the questionnaire provided to the cases, we came up with the following findings:

Case	age	Sex	jobs	Economic level	Socializing	Mental illnesses
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1	42	f	teacher	Medium	Fair /good	Disturbed mood
2	50	m	Employee	Weak	Fair /better	diagnosed anxiety
3	24	m	Student	medium	Good /better	no
4	31	m	Mechanical engineer	Good	Fair /good	Agitation, anger
5	32	m	Architect	Good	Fair /good	Diagnosed depression
6	33	m	Informatics engineer	Good	Fair/good	Agitation, anger
7	23	m	electrician	Medium	good /better	no
8	32	f	Unemployed	Weak	Fair/fair	Diagnosed bipolar disorder

Despite the difference in ages, practicing sports and adhering to the diet was not limited to a specific age or gender, where we noticed more commitment in older cases, which may be due to the level of psychological maturity, while the lack of commitment for the last case was mainly due to the difficulty of the psychological disorder she suffers from.

Most of the cases relied on a program customized for them by the coach.

Most of the diets were free of sugar and bread, and some cases adhered to different types of sports, and all cases showed an improvement in the psychological state during the diet and sports for more than two months, as well as most cases showed an improvement in social communication and relationships.

This is consistent with the results of previous studies where a diet high in fiber and protein and free of sugar promotes the release of mood-inducing hormones and neurotransmitters such as dopamine and serotonin.

the physical activity adopted by the cases was summarized as follows: Walking, jumping rope, weight lifting, Zumba, running and HIIT, with two cases indicating an inability to continue physical activity.

According to the studies referred to in the theoretical aspect of the study, exercise also plays a role in the secretion of these neurotransmitters.

The profession and economic level of the cases have an impact on the quality of the food adopted in daily life as well as on the commitment to physical fitness classes, and the student's condition indicates difficulty in adhering to the diet and often

returning to junk food due to the unorganized timing of the lessons.

This explains the case's inability to adhere.

The low economic level of the employee may be the reason for the high-calorie diet, as families with large numbers and low incomes tend to eat this type of food.

This may reflect negatively on the levels of neurotransmitters in the brain, which explains the moods and outbursts of anger.

The improvement of the cases' relationships during the coaching program encouraged the cases to continue as most studies indicate that social support is necessary to improve mental health.

The brain releases neurotransmitters that modify mood in positive social situations, and practicing sports collectively in the gyms of the cases is a helpful factor for them.

The last case showed a willingness to participate in the research, although it did not correspond to most of the other cases, as it indicates the futility of treatments of all kinds and denies any improvement, whether after practicing diet or sports, which she indicated great difficulty in adhering to them, as she indicated a

complete lack of desire to communicate or create social relationships.

This may be mainly due to the type of bipolar disorder she suffers from, as well as the presence of an unfavorable family atmosphere, according to her statement.

The lack of a job or profession on the part of the case may also be a contributing factor to the situation.

Most of the cases indicated that the main reason for trying to take care of physical health is the presence of excess weight, or general dissatisfaction with body image in general.

Most of the cases indicated that the interest was also due to mere imitation or because of the motivation they found through some TV programs.

The majority denied the goal of improving mood or mental health, although they expected this as an inevitable result after improving their appearance, All the subjects in the study denied recognizing a relationship between healthy food and mental health.

The male cases were more committed to exercise than the female cases ,This may be because woman's bodies don't

show changes as quickly, which makes them lose interest in continuity.

A general results analyzing:

- The majority of the study subjects expressed a positive opinion regarding the relationship between mental health and physical health. Which is consistent with the results of previous studies that were discussed in the theoretical aspect, which indicated that changes in hormones and neurotransmitters occur at the level of neurotransmitters that promote mental health

Neurotransmitters are synthesized from proteins and foodstuffs eaten by individuals, and the absence of food without the necessary portions of vitamins may cause an imbalance in the production and manufacture of these transmitters and hormones, which makes the individual vulnerable to various disorders, and once the body is provided with various healthy foodstuffs, it returns to a state of equilibrium.

- The majority indicated that body satisfaction leads to greater self-satisfaction. As most of the psychological

theoretical heritage points to the importance of accepting body image in achieving psychological equilibrium.

Body image is an essential component of mental health, and body image distortion is a contributing factor to the development of various mental health issues.

- According to the cases, practicing sports helped them to socialize, especially those who participated in gyms. And The role of social relationships in maintaining mental health cannot be neglected.

In effective and positive social relationships, the brain releases Oxycontin, a hormone responsible for positive emotions and reduces stress and anxiety, This explains why the majority of cases are attached to the gym and fellow practitioners.

- Some referred to the role of sports in improving mood, especially in male cases. This is due to the release of the hormone adrenaline, which supports feelings of excitement and mood modulation.
- The only case that denied any relationship was the one that did not improve psychologically and was suffering from

depression. This may be due to several different factors, such as the stage of depression and the extent of the patient's adherence to pharmacological and psychological treatment.

- Concern for mental health is considered an important culture in society, and the fact that cases are concerned with their physical health is an indicator of awareness among the various cases, despite the presence of cases with mental health issues.
- The cases' primary goal in adopting a healthy diet was not, according to them, to improve mental health. This may be mainly due to the culture of the society.
- However, most of the cases were suffering from low self-esteem, which may be due to dissatisfaction with their appearance, but not necessarily, especially for cases with mental health issues.
- Panic, depression, anxiety and bipolar disorder are conditions that are mainly caused by neurotransmitter imbalances, which are affected by the type of food an individual relies on in their daily life.

- A change in the production of neurotransmitters after following a healthy diet and exercise cannot be proven, especially in some cases of taking psychotropic medications that modify.
- However, the majority of cases are satisfied with their psychological state, indicating that there may be real changes in the functioning of neurotransmitters after dietary modification, especially in cases that do not suffer from psychiatric disorders and show a marked improvement in mood and relationships.
- The economic aspect cannot be neglected in this study, as cases that suffer from financial weakness are very difficult to adhere to healthy dietary programs and pay gym memberships, which may hinder attempts to improve the quality of life and thus reflect negatively on the mental health of individuals.
- Finally, the bipolar disorder case study seems to need more psychological counseling and psycho therapeutic programs to be able to accept diet and exercise in the first place.

- She also needs a job that suits the nature of her illness so that she can improve her communication skills.

conclusions:

Through the results of our study, during which we adopted the qualitative quantitative approach, we found that the sample members achieved some psychological comfort after adopting a healthy diet and practicing physical activity, and this is consistent with previous studies that were referred to in the theoretical aspect, which adopted the quantitative statistical method.

These results remain specific to the study cases only, and cannot be generalized.

However, it can be used to conduct other studies in our local environment that link the psychological and medical aspects through an integrated team between nutritionists, sports trainers and psychologists.

Finally, the culture of physical health and healthy nutrition should be encouraged and the awareness of the relationship between them and mental health should be raised and disseminated in various socialization institutions across all age groups.



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