Healthy lifestyle to reduce Psychiatric and physical morbidity: a path to prevention across Medicine

Daniele La Barbera, MD - Giuseppe Maniaci, PhD
Department of Biomedicine, Neuroscience and Advanced Diagnostic Section of Psychiatry – University of Palermo
OVERVIEW OF THIS TALK

1. Lifestyle medicine: behaviours related to wellness

2. The association of a healthy diet in the treatment of depression: a pilot study
Lifestyle medicine is an evidence-based approach to preventing, treating and even reversing diseases by replacing unhealthy behaviors with positive behaviors.
According to the World Health Organization (WHO) and the United Nations (UN) more than 70% of diseases worldwide (cardiovascular diseases, type 2 diabetes, some types of cancer, high blood pressure, obesity etc) is due to factors related to Lifestyle
“We’re going to introduce a new curriculum through public health teaching, which will educate students on nutrition, physical activity, and sleep, and give them skills in behavioural change.”

Anne Swift
EMOTIONAL
Coping effectively with life and creating satisfying relationships.

ENVIRONMENTAL
Good health by occupying pleasant, stimulating environments that support well-being.

INTELLECTUAL
Recognizing creative abilities and finding ways to expand knowledge and skills.

PHYSICAL
Recognizing the need for physical activity, diet, sleep, and nutrition.

FINANCIAL
Satisfaction with current and future financial situations.

SOCIAL
Developing a sense of connection, belonging, and a well-developed support system.

SPIRITUAL
Expanding our sense of purpose and meaning in life.

OCCUPATIONAL
Personal satisfaction and enrichment derived from one’s work.

Let’s change perspective

Healthy lifestyle behaviors can be viewed not only as a way for reducing the risk of illnesses but also as a path for improving our performance and more generally our QoL (D. La Barbera)
7 superheroes are protecting our lives..
Which superheroes?

1. Diet and nutrition
2. Physical activity
3. No use of legal and illegal drugs
4. Sleep (quality and duration)
5. Relational well-being (perceived social support)
6. Low stress levels
7. Free time activities
1. Diet and nutrition

“We are what we eat..”

Ludwig Feuerbach
1. Diet and nutrition

Ruopeng An*

Diet quality and physical activity in relation to childhood obesity

Keywords: childhood obesity; diet; physical activity.

THE LANCET

Volume 365, Issue 9435, 1 January 2005, Pages 36-42

Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis

Megan C. Whatnall 1, Clare E. Collins 1, Robin Callister 2 and Melinda J. Hutchesson 1,*
Is there an association between diet and depression in children and adolescents? A systematic review

Sundus Khalid*, Claire M. Williams and Shirley A. Reynolds
School of Psychology and Clinical Language Sciences, University of Reading, Earley Gate, Whiteknights, Reading RG6 7BE, UK
(Submitted 23 May 2016 – Final revision received 27 October 2016 – Accepted 30 November 2016)
This study suggests a protective effect of an overall diet rich in fruits, vegetables and fish, whereas an overall diet rich in processed meat, chocolates, sweetened desserts, fried food, refined cereals and high-fat dairy products seems to be deleterious for depression.
Greater consumption of vegetables with the evening meal (7 nights/week) was associated with higher test scores in the domains of spelling and writing.

Increased consumption of sugar sweetened beverages was associated with significantly lower test scores in reading, writing, grammar/punctuation and numeracy.
2. Physical activity
The more physical activity, the greater the health benefit.

Even modest amounts of physical activity can have health benefits in high-risk youngsters (e.g., obese).

Children aged 5-17 years old should accumulate an average of at least 60 minutes per day and up to several hours of at least moderate intensity physical activity.

Aerobic activities should make up the majority of the physical activity. Muscle and bone strengthening activities should be incorporated on at least 3 days of the week.
3. Substance use
• Smoking is associated with increased risk of heart failure.
• The risk decreases with increasing duration since smoking cessation.
The contribution of cannabis use to variation in the incidence of psychotic disorder across Europe (EU-GEI): a multicentre case-control study

Marta Di Forti, Diego Quatrone, Tom P Freeman, Giada Tripoli, Charlotte Geyer-Anderson, Harriet Quigley, Victoria Rodriguez, Hannah E Jongen, Laura Ferraro, Caterina La Cascia, Daniele La Barbera, Ilaria Tamicone, Domenico Berardi, Andrei Szőke, Colo Arango, Andrea Tortelli, Eva Velthorst, Miguel Bernardo, Cristina Marta Del-Ben, Paulo Rossi Menezes, Jean-Paul Selten, Peter B Jones, James B Kirkbride, Bart PF Rutten, Lieuve de Haan, Pak C Sham, Jim van Os, Cathryn M Lewis, Michael Lynskey, Craig Morgan, Robin M Murray, and the EU-GEI WP2 Group

- This multicentre case-control study across ten European and one Brazilian sites replicates the strong effect of daily use of high-potency cannabis on the odds for the psychosis onset;
- This effect was particularly strong in London and Amsterdam;
- Moreover it was provided the first direct evidence that cannabis use has an effect on variation in the incidence of psychotic disorders.
4. Satisfying sleep
• Adults should sleep 7 or more hours per night on a regular basis to promote optimal health.

• Sleeping less than 7 hours per night on a regular basis is associated with adverse health outcomes: weight gain and obesity, diabetes, hypertension, heart disease and stroke, depression, increased risk of death, impaired immune function, increased pain, impaired performance, increased errors and greater risk of accidents.

• Sleeping more than 9 hours per night on a regular basis may be appropriate for young adults, individuals recovering from sleep debt, and individuals with illnesses.
Maintaining good sleep quality, at least in young adulthood and middle age, promotes better cognitive functioning and serves to protect against age-related cognitive declines.
5. Relational well-being

Can anybody find me somebody to love?
• Intimate, supportive and positive relationships have a beneficial effect on mental and physical health.
• The more one perceives that social relations satisfy basic psychological needs, the greater the degree of well-being.
Can the content of an emotional support conversation between parents and children convey real reassurance?
6. Stress and emotional life
Increased stress levels are associated with a rapid decline in cognitive function in adults aged 65 and older.
There is a strong association between high levels of stress and poor quality of life in university students.
• Greater number of chronic stressors and greater perceived stress were associated with higher total energy intake.
• Greater recent perceived stress was associated with lower diet quality.
7. Free time activities
Meeting friends, playing sports and holiday contribute positively to life satisfaction.

The excessive use of the Internet and spending too many hours in front of the TV are negatively correlated to the degree of life satisfaction.
• Physical health is positively related to leisure activities.
• Leisure activities are positively related to well-being.
RESULTS

Our results showed that academic success is positively correlated with perceived social support ($r = .097; p = .038$) and negatively with internet use ($r = -0.097; p = .037$). In this regard an excessive internet use and a lower perceived social support are associated with a lower academic performance.

Lower academic success is associated with use of illegal drugs ($\chi^2 (1) = 11.126; p = .001$) and physical inactivity ($\chi^2 (1) = 3.977; p = .046$).

I don’t really have any hobbies.

464 students attending 16 different courses of the University of Palermo (mean age = 24.21; male = 26.5%)
Take-home message

Two different ways for improving our quality of life and increasing our lifespan...
Adopting and maintaining healthy lifestyle behaviors can increase our lifespan.
This study revealed that the probability of a character dying within the first hour after first being introduced on screen was about 14%.
The association of a healthy diet in the treatment of depression: a pilot study
Background

The role of immune genes in the association between depression and inflammation: A review of recent clinical studies

Chiara Bufalino a, b, Nilay Hepguil a, Eugenio Aguglia b, Carmine M. Pariante a, c, d

Role of inflammatory cytokines in depression: Focus on interleukin-1β (Review)

RAI KHALID FAROOQ 1, KASHIF ASGHAR 2, SHAHZINA KANWAL 3 and ALI ZULQERNAIN 4

Levels of serum interleukin (IL)-6, IL-1β, tumour necrosis factor-α and leptin and their correlation in depression

Kun Yang, Guangrong Xie, Zhongxing Zhang, Changhong Wang, Wenbo Li, Weiqiang Zhou, Yanqing Tang
Pro-inflammatory cytokines can contribute to the development and worsening of depressive symptoms
Diet

This study revealed an increased risk of incident depression over five years for people consuming a Western style dietary pattern.

Moreover, a reduced risk for those eating a whole foods diet pattern was observed.
AIMS

1. Verify the efficacy of a protocol of a body-oriented psychotherapy for depression
2. Verify if the association of a healthy diet with the treatment increase the outcomes (depression, self-esteem, QoL)
3. Verify the effect of the combined treatment on the inflammation related to depression
Inclusion criteria

• men and women reported a BDI-II score over than 13;
• age between 18 and 60 yo;
• drugs free;
• able to understand and sign informed consent;
Exclusion criteria:

- schizophrenia or other psychotic disorders;
- primary anxiety disorder;
- eating disorders;
- bipolar disorder;
- IQ < 65;
- BMI less than 18.5 or more than 30;
- substance abuse or dependence (excluding nicotine);
- chronic inflammatory diseases;
- severe hepatic failure;
- serious infections (such as HIV, HBV and HCV);
- cancer in the previous 6 months;
- regular use of anti-inflammatory drugs for more than 15 days/month;
- difficulty in reading Italian or participation to other clinical trials;
• 6 psychotherapists trained in Functional Psychology method, applied the intervention protocol.
• 3 psychologists administered the psychodiagnostic assessment;
• 1 nurse drew the blood samples;
• 1 nutritionist prescribed the diet (or a diet diary in the control group);
Psychological assessment

**T0**
- Millon Clinical Multiaxial Inventory – III;
- WAIS –brief version;
- Beck Depression Inventory - 2;
- Basic Self-Esteem Scale;
- World Health Organization Quality of Life – brief version;

**T1**
- Beck Depression Inventory - 2;
- Basic Self-Esteem Scale;
- World Health Organization Quality of Life – brief version;

**T2**
- Beck Depression Inventory - 2;
- Basic Self-Esteem Scale;
- World Health Organization Quality of Life – brief version;

Exclusion criteria

Outcomes measures
RCT DESIGN

T0

- Eligible Patient
- Anthropometric Parameters
- Blood Sample
- Psychological Assessment
- Allocation

T1 (End of Treatment 3 Months)

- Psychological Assessment
- Anthropometric Parameters
- Blood Sample
- Psychotherapy + Nutritional Consultation (FMD)

T2 (Follow-Up 3 Months After T1)

- Psychological Assessment
- Anthropometric Parameters
- Blood Sample
- Psychotherapy + Nutritional Consultation (Diet Diary)
Anthropometric measurements

- Weight
- Height
- BMI
- Waist circumference
Blood sample

- LOOH, GSH
- IL-6, TNF $\alpha$, IL-1 beta
- Total cholesterol, HDL, triglycerides, AST / ALT, blood glucose, PCR, fibrinogen, PAI-1
PSY-FMD group

• 20 individual sessions of Functional Psychotherapy;
• each session lasted one hour and attended twice a week for the first 8 weeks and once a week for the remaining 4.
• Nutritional consultation and prescription of a Fasting Mimicking Diet
Fasting Mimicking Diet

- FMD includes the consumption of vegetable-based soups, energy bars, infusions etc.
- Duration: 5 days a month for a total of 3 cycles: the first day of the diet will provide 1090 kcal (10% protein, 56% fat, 34% carbohydrate), the days 2-5 will be identical in the formulation and will provide 725 kcal (9-10% protein, 44-56% fat, 34-47% carbohydrate).
- Between cycles of FMD the subjects stayed on a free diet.
RCT DESIGN

**T0**
- Eligible Patient
- Psychological Assessment
- Anthropometric Parameters
- Blood Sample
- Allocation

**T1** (End of Treatment 3 Months)
- Psychological Assessment
- Anthropometric Parameters
- Blood Sample
- Psychotherapy + Nutritional Consultation (FMD)

**T2** (F-up 3 Months after T1)
- Psychological Assessment
- Anthropometric Parameters
- Blood Sample
- Psychotherapy + Nutritional Consultation (Diet Diary)
• 20 individual sessions of Functional Psychotherapy;
• each session lasted one hour and attended twice a week for the first 8 weeks and once a week for the remaining 4.
• Nutritional consultation plus food diary
<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>PSY (n = 9) M (SD)</th>
<th>PSY-FMD (n = 9) M (SD)</th>
<th>T Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>30.11 (8.00)</td>
<td>32.22 (13.30)</td>
<td>-.408 NS</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Socio-demographic characteristics</th>
<th>PSY (n = 9) Frequency (%)</th>
<th>PSY-FMD (n = 9) Frequency (%)</th>
<th>χ²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>Females: 7 (77.8%)</td>
<td>Females: 5 (55.6%)</td>
<td>χ² (1) = 1.000 NS</td>
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<tr>
<td>Marital status</td>
<td>Married: 3 (33.3%)</td>
<td>Married: 2 (22.2%)</td>
<td>χ² (1) = .277 NS</td>
</tr>
<tr>
<td>Educational level</td>
<td>8y: 3 (33.3%); 13y: 5 (55.6%); 16y: 1 (11.1%); 18: 0 (0%)</td>
<td>8y: 1 (11.1%); 13y: 4 (44.4%); 16y: 3 (33.3%); 18: 1 (11.1%)</td>
<td>χ² (3) = 3.111 NS</td>
</tr>
</tbody>
</table>

NS Not significant * p < 05; ** p <01; *** p < 005; **** p < 001
<table>
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<tr>
<th></th>
<th>PSY ((n = 9))</th>
<th>PSY-FMD ((n = 9))</th>
<th>T Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Q.</td>
<td>92.66 ((19.46))</td>
<td>108.77 ((17.12))</td>
<td>-1.864 NS</td>
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</tbody>
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NS Not significant * \(p < 05\); ** \(p < 01\); *** \(p < 005\); **** \(p < 001\)
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<tr>
<th>Personality disorders</th>
<th>PSY (n = 9) Frequency (%)</th>
<th>PSY-FMD (n = 9) Frequency (%)</th>
<th>χ² Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizoid</td>
<td>2 (22.2%)</td>
<td>1 (11.1%)</td>
<td>χ² (1)  = .400 NS</td>
</tr>
<tr>
<td>Avoidant</td>
<td>1 (11.1%)</td>
<td>3 (33.3%)</td>
<td>χ² (1)  = 1.286 NS</td>
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<tr>
<td>Depressive</td>
<td>4 (44.4%)</td>
<td>5 (55.6%)</td>
<td>χ² (1)  = .222 NS</td>
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<tr>
<td>Dependent</td>
<td>2 (22.2%)</td>
<td>3 (33.3%)</td>
<td>χ² (1)  = .277 NS</td>
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<tr>
<td>Histrionic</td>
<td>1 (11.1%)</td>
<td>0 (0%)</td>
<td>χ² (1)  = 1.059 NS</td>
</tr>
<tr>
<td>Narcissistic</td>
<td>1 (11.1%)</td>
<td>0 (0%)</td>
<td>χ² (1)  = 1.059 NS</td>
</tr>
<tr>
<td>Antisocial</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Sadistic</td>
<td>0 (0%)</td>
<td>1 (11.1%)</td>
<td>χ² (1)  = 1.059 NS</td>
</tr>
<tr>
<td>Compulsive</td>
<td>1 (11.1%)</td>
<td>0 (0%)</td>
<td>χ² (1)  = 1.059 NS</td>
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<tr>
<td>Negativistic</td>
<td>2 (22.2%)</td>
<td>0 (0%)</td>
<td>χ² (1)  = 2.250 NS</td>
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<tr>
<td>Self-defeating</td>
<td>1 (11.1%)</td>
<td>2 (22.2%)</td>
<td>χ² (1)  = .400 NS</td>
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<tr>
<td>Schizotypal</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Borderline</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Paranoid</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
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<tr>
<th>Clinical Syndromes</th>
<th>PSY (n = 9)</th>
<th>PSY-FMD (n = 9)</th>
<th>(\chi^2) Test</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Frequency (%)</td>
<td>Frequency (%)</td>
<td>(\chi^2) (1)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>5 (55.6%)</td>
<td>5 (55.6%)</td>
<td>(\chi^2) (1) = .000 NS</td>
</tr>
<tr>
<td>Somatic Symptom</td>
<td>3 (33.3%)</td>
<td>0 (0%)</td>
<td>(\chi^2) (1) = 3.600 NS</td>
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<tr>
<td>Bipolar Disorder</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>3 (33.3%)</td>
<td>3 (33.3%)</td>
<td>(\chi^2) (1) = .000 NS</td>
</tr>
<tr>
<td>Alcohol Use</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Drug Use</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Post-Traumatic Stress</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>-</td>
</tr>
<tr>
<td>Thought Disorder</td>
<td>2 (22.2%)</td>
<td>0 (0%)</td>
<td>(\chi^2) (1) = 2.250 NS</td>
</tr>
<tr>
<td>Major Depression</td>
<td>4 (44.4%)</td>
<td>1 (11.1%)</td>
<td>(\chi^2) (1) = 2.492 NS</td>
</tr>
<tr>
<td>Delusional Disorder</td>
<td>0 (0%)</td>
<td>0 (0%)</td>
<td>(\chi^2) (1) = 2.250 NS</td>
</tr>
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<tr>
<td>BDI</td>
<td>32.00 (4.33)</td>
<td>29.00 (4.33)</td>
<td>.297 NS</td>
</tr>
<tr>
<td>B-SES</td>
<td>25.00 (17.67)</td>
<td>11.11 (13.17)</td>
<td>1.890 NS</td>
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<tr>
<td>WHOQOL - Physical health</td>
<td>36.50 (12.21)</td>
<td>27.37 (9.94)</td>
<td>1.739 NS</td>
</tr>
<tr>
<td>WHOQOL – Psychological</td>
<td>39.34 (9.34)</td>
<td>37.96 (4.39)</td>
<td>.403 NS</td>
</tr>
<tr>
<td>WHOQOL - Social relationships</td>
<td>50.92 (20.60)</td>
<td>41.66 (13.82)</td>
<td>1.120 NS</td>
</tr>
<tr>
<td>WHOQOL – Environmental</td>
<td>48.95 (11.58)</td>
<td>46.18 (6.77)</td>
<td>.621 NS</td>
</tr>
<tr>
<td>BMI</td>
<td>22.21 (2.20)</td>
<td>25.33 (3.81)</td>
<td>-2.118 NS</td>
</tr>
</tbody>
</table>

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Effect of treatment on depressive symptoms

**PSY GROUP** = $F (2) = 9.504, p = .005$

**PSY-FMD GROUP** = $F (2) = 24.943, p = .0001$

**PSY GROUP vs PSY-FMD GROUP**
- T0 vs T1: $t(10) = 1.296, p = .224$
- T0 vs T2: $t(10) = .431, p = .676$
- T1 vs T2: $t(10) = -.773, p = .457$
Effect of treatment on self-esteem

**PSY GROUP** = $F(2) = 3.451, p = .071$

**PSY-FMD GROUP** = $F(2) = 12.191, p = .002$

**PSY GROUP vs PSY-FMD GROUP**
- T0 vs T1: $t(10) = -3.956, p = .003$
- T0 vs T2: $t(10) = -3.371, p = .004$
- T1 vs T2: $t(10) = -1.136, p = .282$
Effect of treatment on QoL - Physical Health

PSY GROUP = F (2) = 4.303, p = .045

PSY-FMD GROUP = F (2) = 5.156, p = .029

PSY GROUP vs PSY-FMD GROUP
T0 vs T1: t(10) = -1.290 p = .226
T0 vs T2: t(10) = -2.716 p = .022
T1 vs T2: t(10) = -.774 p = .457
Effect of treatment on QoL - Psychological Health

PSY GROUP = F (2) = 2.432, p = .138

PSY-FMD GROUP = F (2) = 10.548, p = .003

PSY GROUP vs PSY-FMD GROUP
T0 vs T1: t(10) = -1.691 p = .122
T0 vs T2: t(10) = -2.393 p = .038
T1 vs T2: t(10) = -.339 p = .697
Effect of treatment on QoL – Social Relationships

PSY GROUP = F (2) = 1.422, p = .286

PSY-FMD GROUP = F (2) = 3.386, p = .075

PSY GROUP vs PSY-FMD GROUP
T0 vs T1: t(10) = -1.105 p = .295
T0 vs T2: t(10) = -.657 p = .526
T1 vs T2: t(10) = .329 p = .749
Effect of treatment on QoL – Environment

**PSY GROUP** = $F(2) = .712$, $p = .514$

**PSY-FMD GROUP** = $F(2) = 26.436$, $p = .0001$

**PSY GROUP vs PSY-FMD GROUP**

- T0 vs T1: $t(10) = -1.432$, $p = .183$
- T0 vs T2: $t(10) = -2.514$, $p = .031$
- T1 vs T2: $t(10) = -1.081$, $p = .305$
Effect of treatment on BMI

PSY GROUP = F (2) = .796, p = .484

PSY-FMD GROUP = F (2) = 7.362, p = .010
Limitations

• Small sample size
• Limits of a FMD based on the prescription of real food vs standardized box
• Bias related to the compliance on following the FMD protocol
Conclusions

1. The FT program has shown a strong efficacy on:
   ✓ reducing depression
   ✓ increasing self-esteem
   ✓ increasing QoL

2. The addition of a FMD to the FT program lead to a significant improvement of:
   ✓ Self-esteem
   ✓ Physical QoL
   ✓ Psychological QoL
   ✓ Environment QoL

3. Future directions
   ☐ Evaluate the effects of those treatment on the inflammation related to depression
Fake or real environmental wellness?

Thanks for your attention

Mail to: giuseppe.maniaci02@unipa.it