

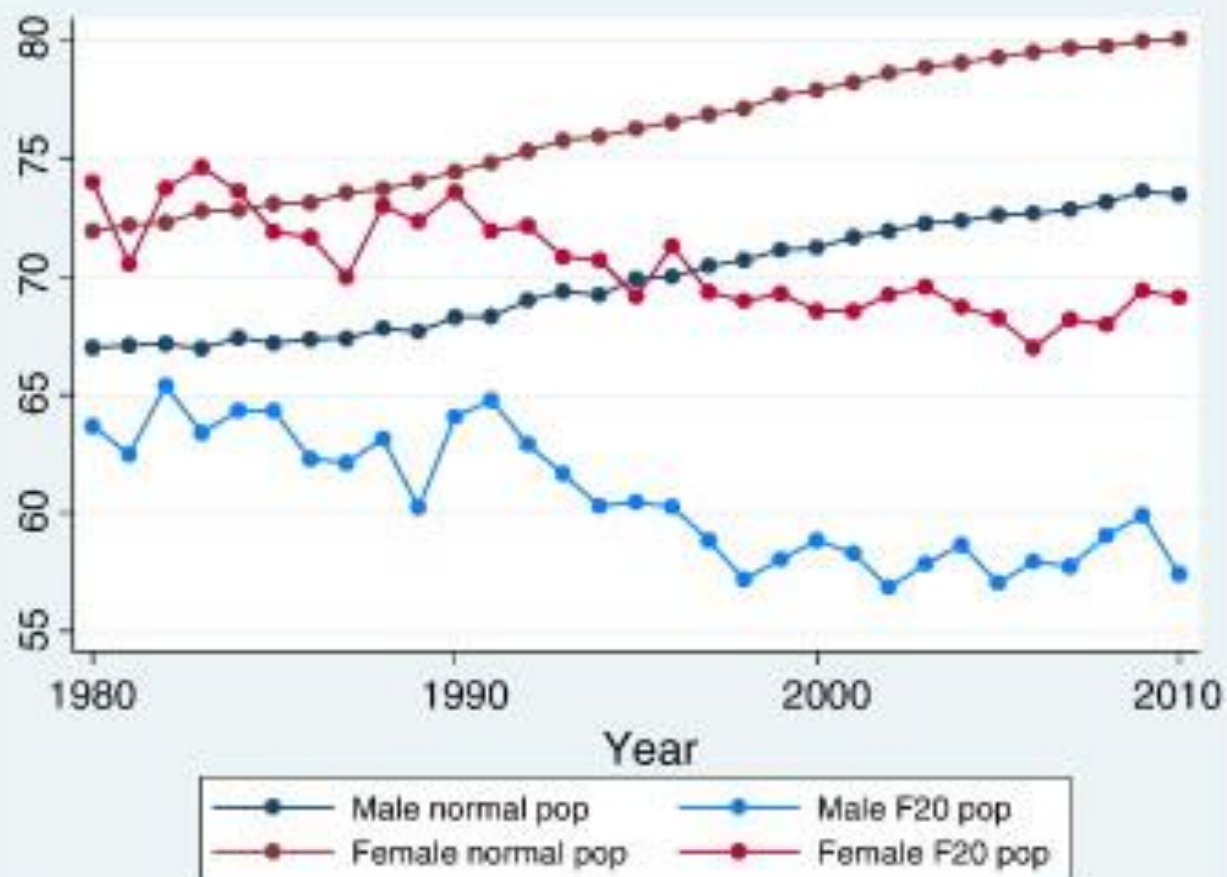


# Preferencias alimentarias en el inicio del tratamiento con clozapina

Marina Garriga, MD, PhD  
Servicio de Psiquiatría y Psicología Clínica  
Hospital Clínic Barcelona  
Universidad de Barcelona  
IDIBAPS, CIBERSAM



# MORTALITY "GAP" ON SMI



Increasing mortality gap for patients diagnosed with schizophrenia over the last three decades – A Danish nationwide study from 1980 to 2010

René Ernst Nielsen <sup>a,b,\*</sup>, Anne Sofie Uggerby <sup>a</sup>, Signe Olrik Wallenstein Jensen <sup>a</sup>, John Joseph McGrath <sup>c,d</sup>

<sup>a</sup> Unit for Psychiatric Research, Aalborg Psychiatric Hospital, Aarhus University Hospital, Aalborg, Denmark  
<sup>b</sup> Team for Young People with Schizophrenia, Aalborg Psychiatric Hospital, Aarhus University Hospital, Aalborg, Denmark  
<sup>c</sup> Queensland Centre for Mental Health Research, The Park Centre for Mental Health, Queensland, Australia  
<sup>d</sup> Queensland Brain Institute, The University of Queensland, Queensland, Australia

Average age of death (2010):  
62.2 yo SCH  
73.4 yo general pop

Fig. 2. Average age of death by year for the schizophrenia and general population over three decades with intentional self-harm excluded as cause of death.



# MORTALITY "GAP" ON SMI



Acta Psychiatrica Scandinavica

Original Article

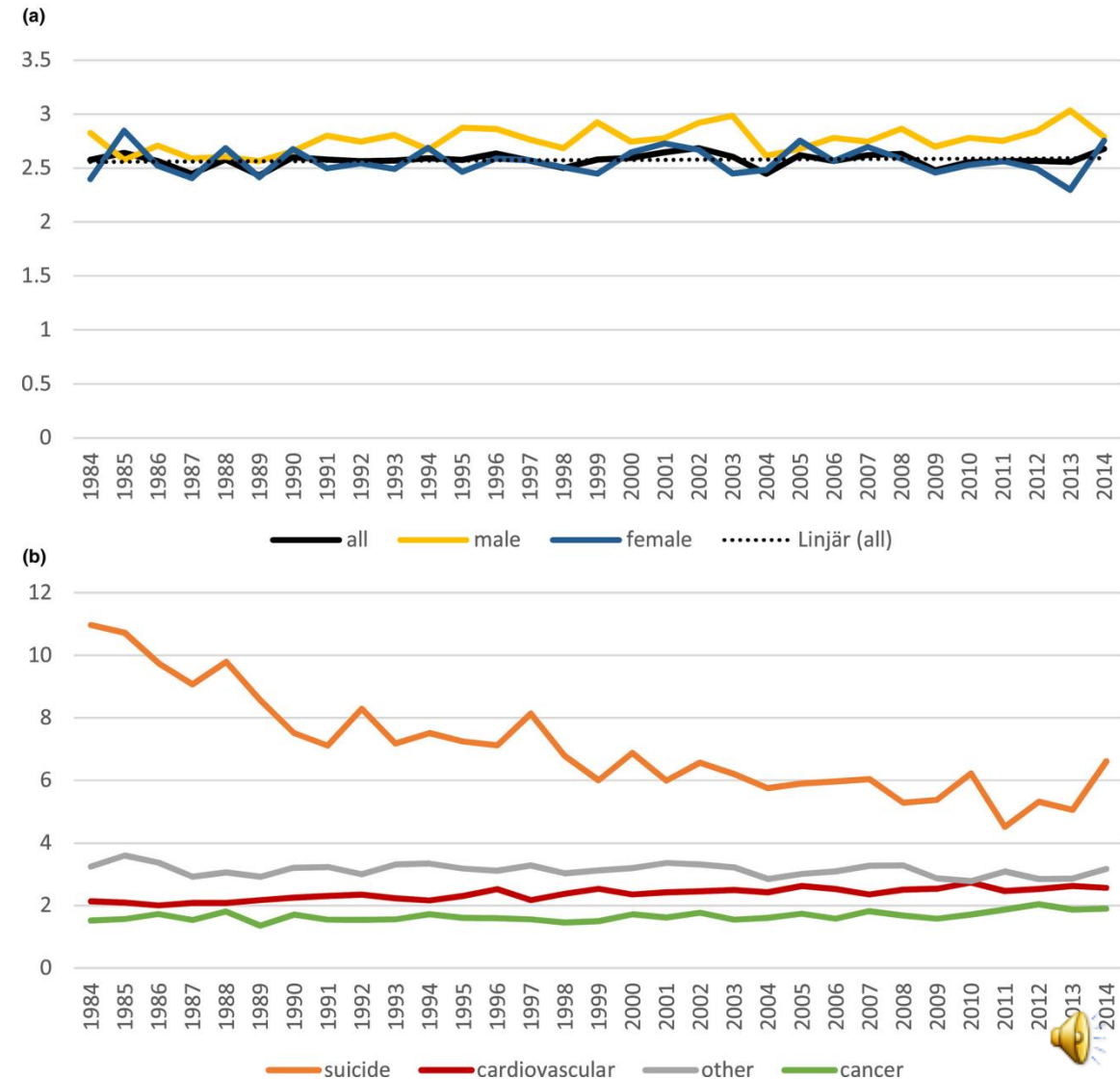
## Mortality in schizophrenia: 30-year nationwide follow-up study

A. Tanskanen, J. Tiihonen, H. Taipale

First published: 13 June 2018 | <https://doi.org/10.1111/acps.12913> | Citations: 53

Mean age at death increased from 57.6 years in 1984 to 70.1 years in 2014 in persons with schizophrenia, and from 70.9 to 77.5 years in the general population.

The SMRs for cardiovascular and cancer deaths showed increasing trends.



# MORTALITY "GAP" ON SMI

Schizophrenia Bulletin vol. 47 no. 2 pp. 474–484, 2021  
doi:10.1093/schbul/sbaa137  
Advance Access publication 3 October 2020

## Excess Mortality and Life-Years Lost in People With Schizophrenia and Other Non-affective Psychoses: An 11-Year Population-Based Cohort Study

Nicholas Chak Lam Yung<sup>1</sup>, Corine Sau Man Wong<sup>1,\*</sup>, Joe Kwun Nam Chan<sup>1</sup>, Eric Yu Hai Chen<sup>1,2</sup>, and Wing Chung Chang<sup>\*,1,2</sup>

<sup>1</sup>Department of Psychiatry, Queen Mary Hospital, The University of Hong Kong, Pokfulam, Hong Kong; <sup>2</sup>State Key Laboratory of Brain and Cognitive Sciences, The University of Hong Kong, Pokfulam, Hong Kong

\*To whom correspondence should be addressed; Department of Psychiatry, Queen Mary Hospital, The University of Hong Kong, Pokfulam, Hong Kong; tel: (852)-22554486, fax: (852)-28551345, e-mail: [changwc@hku.hk](mailto:changwc@hku.hk)

Life-years lost (LYLs) (2016):

Men and women with schizophrenia had 9.53 years and 8.07 years of excess LYLs, respectively.

Standardized mortality ratios (SMRs) (2016):

natural-cause (1.80 [1.74–1.85])  
unnatural-cause (6.97 [6.47–7.49])

Respiratory diseases, cardiovascular diseases, and cancers accounted for the majority of deaths.



# MORTALITY "GAP" ON SMI

RESEARCH ARTICLE

Total and cause-specific standardized mortality ratios in patients with schizophrenia and/or substance use disorder

Ina H. Heiberg<sup>1\*</sup>, Bjarne K. Jacobsen<sup>1,2</sup>, Ragnar Nesvåg<sup>3</sup>, Jørgen G. Bramness<sup>4,5</sup>, Ted Reichborn-Kjennerud<sup>6,7</sup>, Øyvind Næss<sup>7,8</sup>, Eivind Ystrom<sup>6,9,10</sup>, Christina M. Hultman<sup>11</sup>, Anne Høyen<sup>1,5,6,12</sup>

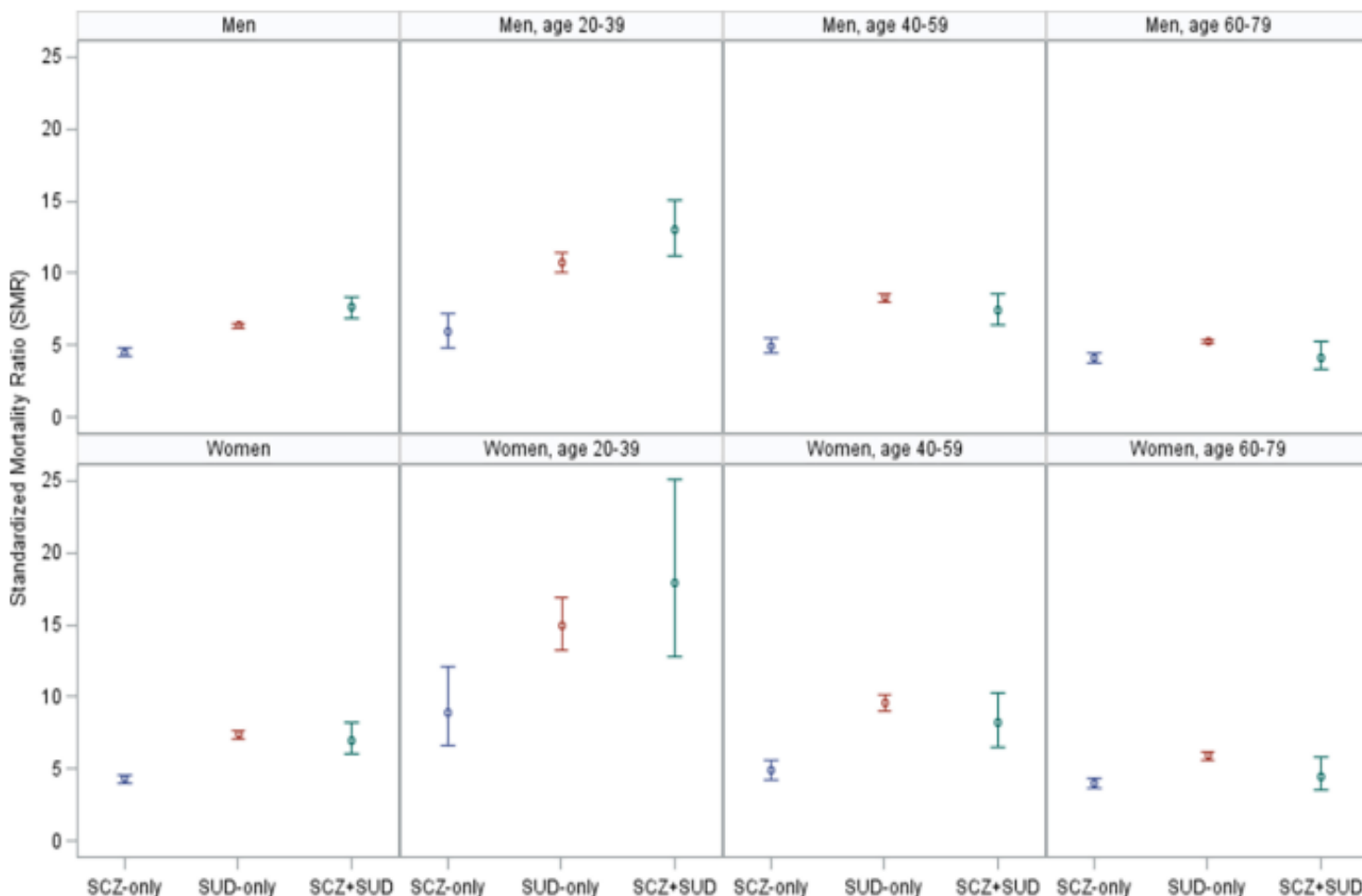
Standardized mortality ratios (SMRs) (2015):

4.9 (95% CI 4.7–5.1) all SCH

4.4 (95% CI 4.2–4.6) SCH (no SUD)

6.6 (95% CI 6.5–6.8) SUD

7.4 (95% CI 7.0–8.2) SCH + SUD

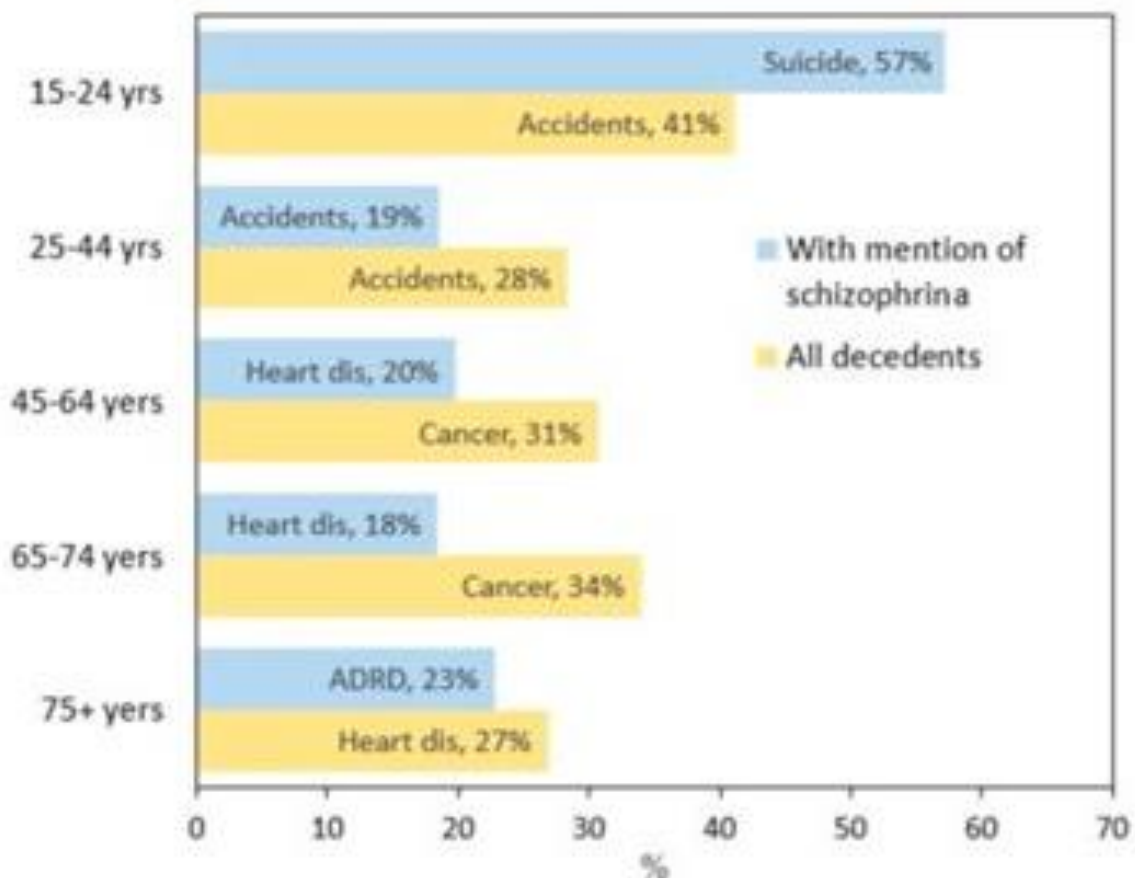


**Fig 1. All-cause age, gender, and calendar-year standardized mortality ratios according to gender and age among patients with schizophrenia and/or substance use disorders.**





# MORTALITY "GAP" ON SMI



## Leading causes of death among decedents with mention of schizophrenia on the death certificates in the United States

Jin-Jia Lin <sup>a,b</sup>, Fu-Weng Liang <sup>c</sup>, Chung-Yi Li <sup>c,d</sup>, Tsung-Hsueh Lu <sup>c,\*</sup>

<sup>a</sup> The Department of Psychiatry, Chi Mei Medical Center, Tainan, Taiwan

<sup>b</sup> Department of Psychiatry, School of Medicine, College of Medicine, Taipei Medical University, Taipei, Taiwan

<sup>c</sup> The NCKU Center for Health Data and Department of Public Health, College of Medicine, National Cheng Kung University, Tainan, Taiwan

<sup>d</sup> Department of Public Health, College of Public Health, China Medical University, Taichung, Taiwan

Cause of death (COD) (2015):  
Heart disease and cancer was the first and the second leading COD throughout the study years



# DISABILITY "GAP" ON SMI

Both sexes, All ages, 2016, DALYs per 100,000

	E Asia	SE Asia	Oceania	C Asia	C Europe	E Europe	HI Asia Pac	Australasia	W Europe	S Latin Am	HI N Am	Caribbean	Andean Latin Am	Central Latin Am	Trop Latin Am	Latin Am	MEANA	S Asia	E Sub-Sah Africa	S Sub-Sah Africa	W Sub-Sah Africa	High Mid SDI	High SDI	Low Mid SDI	Low SDI	Mid SDI	
Cardiovascular diseases	1	1	1	1	1	1	2	3	2	1	1	1	4	3	1	1	1	7	5	4	7	1	2	2	5	1	
Neoplasms	2	3	8	4	2	2	1	1	1	2	2	2	3	4	4	8	8	11	8	8	11	2	1	7	10	2	
Mental disorders	3	7	9	6	5	3	6	2	5	5	3	7	5	5	3	3	6	9	9	9	10	3	4	5	9	4	
Other non-communicable	4	2	5	2	4	5	4	5	4	4	5	3	1	2	2	2	4	5	6	6	5	4	5	4	6	3	
Musculoskeletal disorders	5	6	10	9	3	6	3	4	3	3	4	8	7	7	5	7	10	14	13	12	12	5	3	12	13	6	
Diabetes/urog/blood/endo	6	5	3	8	8	9	7	7	7	6	6	5	8	1	7	5	7	13	12	5	9	6	7	8	11	5	
Chronic respiratory	7	9	4	14	9	15	10	8	9	10	8	14	13	14	13	13	5	17	17	14	17	10	9	10	16	9	
Neurological disorders	8	10	16	10	7	8	5	6	6	7	7	9	10	8	8	11	13	15	14	13	13	7	6	14	15	8	
Transport injuries	9	13	11	13	11	11	12	11	12	12	11	13	11	12	10	10	14	12	15	10	15	9	12	15	14	10	
Unintentional inj	10	11	7	7	6	4	8	9	8	8	9	11	9	11	11	12	9	8	10	11	8	8	8	9	8	11	
Diarrhea/LRI/other	11	4	2	3	13	12	11	12	10	9	12	4	2	9	9	6	2	1	1	2	1	11	11	1	1	7	
Neonatal disorders	12	8	6	5	15	16	16	13	15	13	14	6	6	10	12	4	3	3	3	3	3	3	13	15	3	2	12
Self-harm & violence	13	15	12	12	12	7	9	10	11	11	10	12	12	6	6	15	15	19	16	7	20	12	10	16	19	14	
Digestive diseases	14	16	18	17	14	14	14	14	14	15	15	16	14	15	16	17	17	18	19	16	19	15	14	18	18	16	
Cirrhosis	15	14	17	11	10	10	13	15	13	14	13	17	16	13	14	16	16	20	20	20	18	14	13	17	21	15	
HIV/AIDS & tuberculosis	16	12	19	16	17	13	17	18	17	16	16	10	17	17	17	19	12	4	2	1	4	16	17	6	4	13	
NTDs & malaria	17	18	13	19	21	19	19	21	21	19	21	20	18	18	18	20	18	2	4	17	2	18	21	11	3	18	
Nutritional deficiencies	18	17	15	15	16	17	15	16	16	17	17	15	15	16	15	14	11	6	7	15	6	17	16	13	7	17	
Other group I	19	19	14	18	18	18	18	17	18	18	18	19	21	19	19	18	19	10	11	19	14	19	18	19	12	19	
War & disaster	20	21	21	21	19	21	20	20	20	21	20	18	19	21	21	9	21	21	21	21	21	21	20	20	21	20	11
Maternal disorders	21	20	20	20	20	20	21	19	19	20	19	21	20	20	20	21	20	16	18	18	18	16	21	19	20	17	20



IHME  
Measuring what matters



# TRIP TO THE PAST...



In 1674, Thomas Willis, the famous British physician who identified glycosuria as a sign of diabetes, was the first to address the natural history of comorbid depression and diabetes when he wrote that diabetes was caused by “sadness or long sorrow and other depressions.”

**“Diabetes is a disease which often shows itself in families in which insanity prevails: whether one disease predisposes in any way to the other or not, or whether they are independent outcomes of a common neurosis, they are certainly found to run side by side, or alternately with one another more often than can be accounted for by accidental coincidence or sequence”.**



Henry Maudsley, 1898



*“Besides the psychic disorders, there are also in the physical domain a series of morbid phenomena to record... The obscurity... has been a frequent motive for an examination of the blood picture and of metabolism, but the endings up to now are not very satisfactory.”*

—Emil Kraepelin, 1913






# TRIP TO THE PAST...

1952 the first antipsychotic arrived (chlorpromazine).

The connection remained forgotten for almost 50 years.

<b>Study (reference)</b>	<b>N</b>	<b>Diagnostic method</b>	<b>Results</b>
Kooy, 1919 (39)	40 mood disorder 10 DP 20 controls	FPG	Hyperglycemia in melancholia, catatonia
Raphael et al, 1921 (92)	7 controls 29 DP MDI 7 D	OGTT	Hyperglycemia in DP, MDI (subjects excluded for obesity)
Lorenz, 1922 (93)	107 inpatients	OGTT	Hyperglycemia in catatonia, depressed MDI
Kasanin, 1926 (94)	40 inpatients	OGTT	Hyperglycemia in 22/40 (55%)
Bowman et al, 1929 (90)	295 inpatients 41 controls	FPG >7.5 mmol/L	Diabetes: 14% inpatients, 0% controls
McCowan et al, 1931 (95)	85 psychotic 12 controls	OGTT	Hyperglycemia in mania, melancholia
Tod, 1934 (96)	36 inpatients	OGTT	Hyperglycemia in mania, melancholia and stupor
Whitehorn, 1934 (91)	951 "excited" inpatients	FPG >8.75 mmol/L	13% diabetes (age; chronicity)
Diethelm, 1936 (97)	26 patients	OGTT	Hyperglycemia during acute illness, especially anxiety
Tod, 1937 (98)	28 inpatients	OGTT	Hyperglycemia in patients reduced by hypnotics
Braceland et al, 1946 (99)	29 schizophrenia 25 controls	2h insulin (0.1 U/kg)	Greater insulin resistance in schizophrenia
Freeman, 1946 (100)	95 soldiers, psychosis, 20 controls	2h insulin (0.1 U/kg)	Greater insulin resistance in schizophrenia, MDI 

# MetS FROM THE BEGINNING

**Table 3**  
Metabolic syndrome criteria (IDF and ATP-III-A) and T2DM or impaired glucose prevalence.

	Psychosis (n=84)	Healthy controls (n=98)	Statistics, P
Waist criteria IDF	20% (n=17)	17% (n=17)	0.618
Waist criteria ATP-III	7% (n=6)	5% (n=5)	0.562
Triglyceride criteria	6% (n=5)	8% (n=8)	0.564
HDL criteria	37% (n=31)	25% (n=24)	0.069
Blood pressure criteria	31% (n=26)	28% (n=27)	0.615
Systolic blood pressure	25% (n=21)	19% (n=19)	0.362
Diastolic blood pressure	14% (n=12)	12% (n=12)	0.685
Glucose criteria	4% (n=3)	2% (n=2)	0.529
Metabolic syndrome criteria IDF	6% (n=5)	4% (n=4)	0.562
Metabolic syndrome criteria ATP-III	6% (n=5)	4% (n=4)	0.562
Impaired fasting glucose or T2DM	4% (n=3)	2% (n=2)	0.529
Impaired glucose tolerance or T2DM	12% (n=10)	3% (n=3)	0.021
Total abnormal glucose diagnosis	14% (n=12)	5% (n=5)	0.034

European Psychiatry xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

 **European Psychiatry**

journal homepage: <http://www.europsy-journal.com>

Original article

**Metabolic syndrome or glucose challenge in first episode of psychosis?**

C. Garcia-Rizo<sup>a,b,c,\*</sup>, E. Fernandez-Egea<sup>b,d,e</sup>, C. Oliveira<sup>a</sup>, A. Meseguer<sup>a</sup>, B. Cabrera<sup>a,b</sup>, G. Mezquida<sup>a</sup>, M. Bioque<sup>a,b</sup>, R. Penades<sup>a,b,c,f</sup>, E. Parellada<sup>a,b,c,f</sup>, M. Bernardo<sup>a,b,c,f</sup>, B. Kirkpatrick<sup>g</sup>



# MetS FROM THE BEGINNING

Schizophrenia Research 179 (2017) 57–63

Contents lists available at ScienceDirect

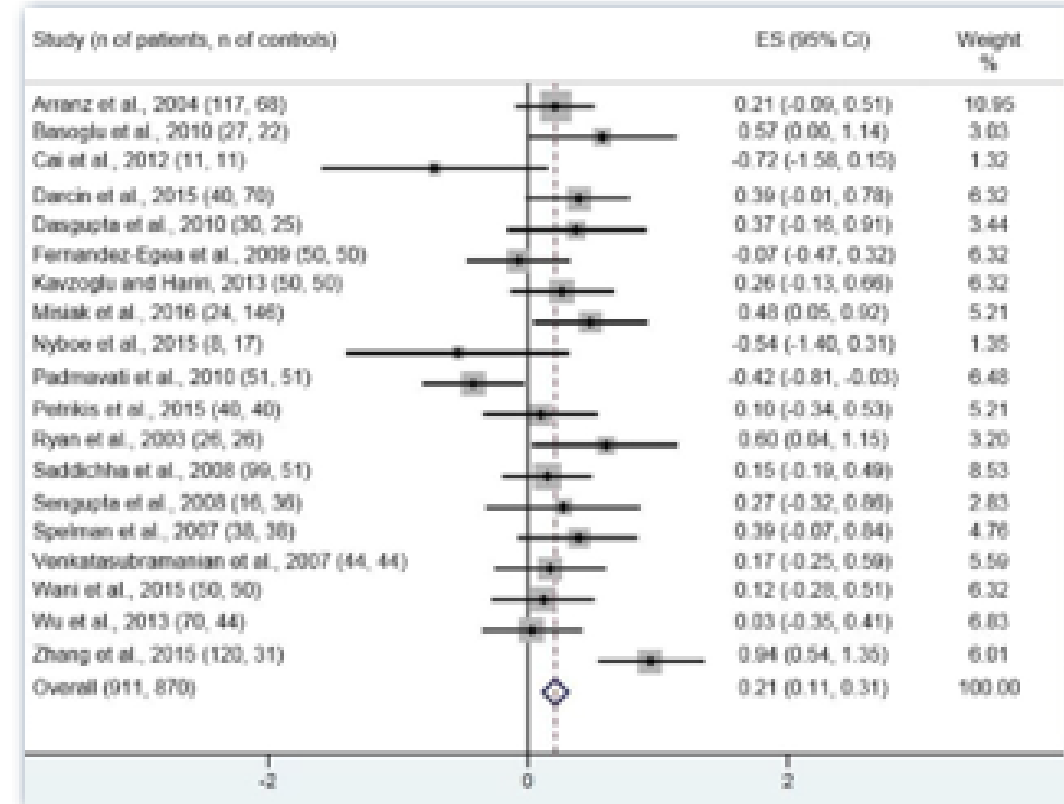
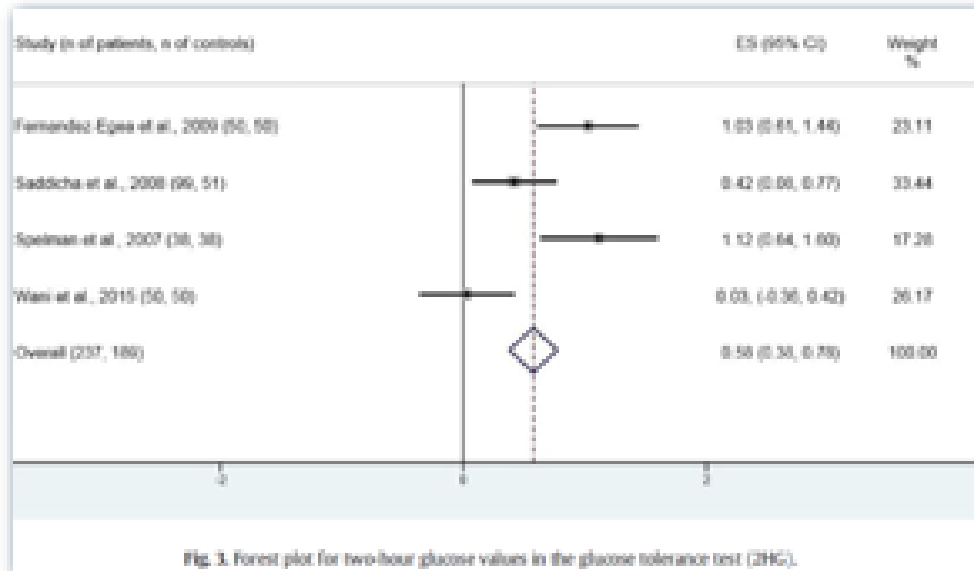
Schizophrenia Research

journal homepage: [www.elsevier.com/locate/schres](http://www.elsevier.com/locate/schres)

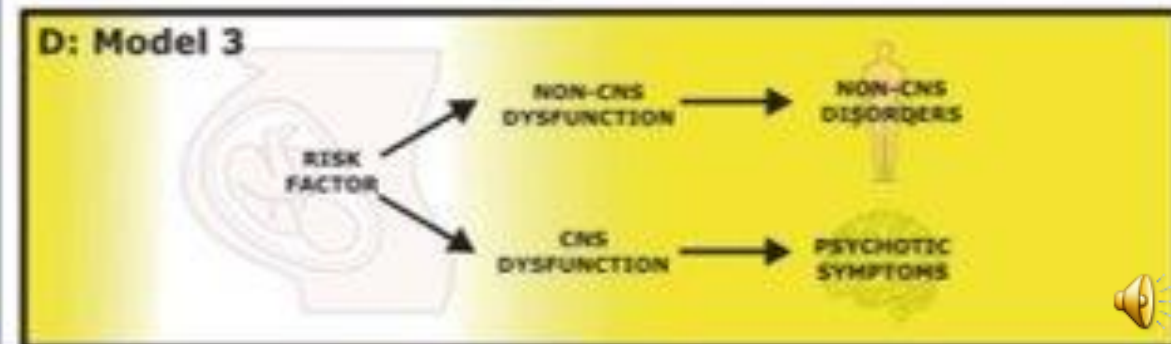
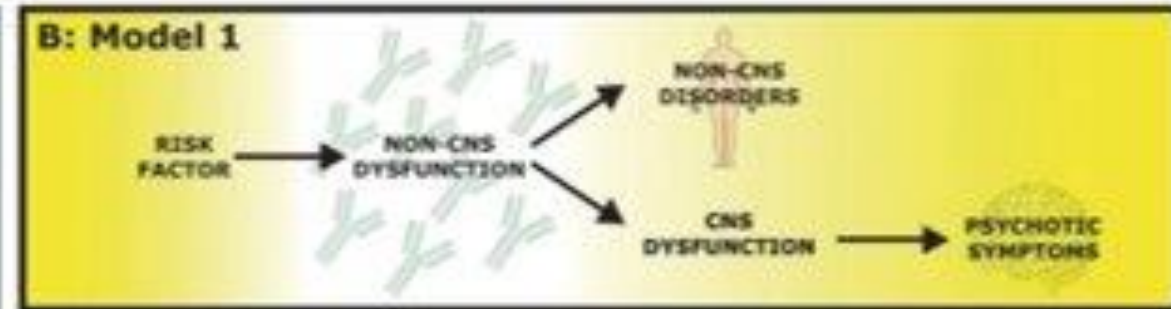
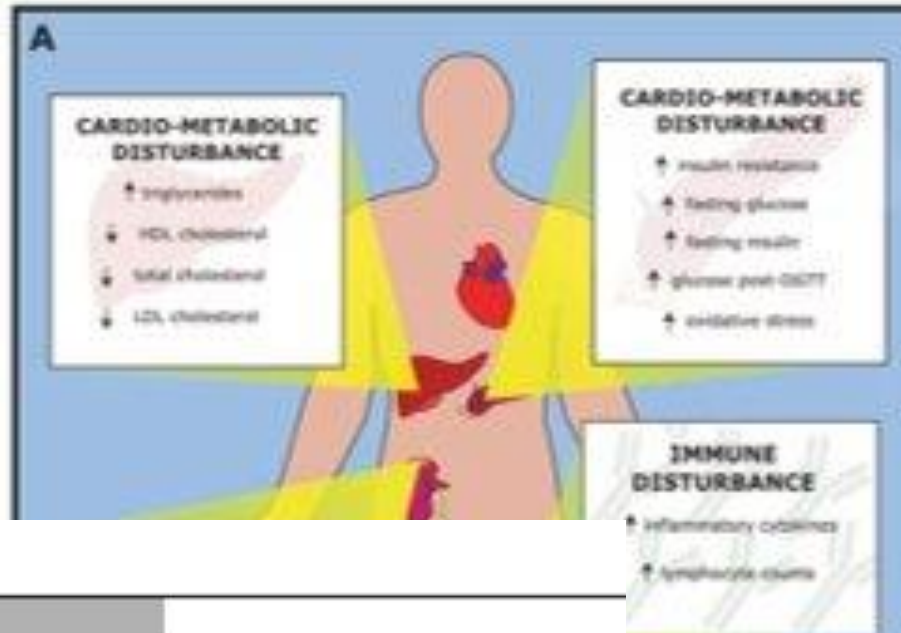


## Meta-analysis of glucose tolerance, insulin, and insulin resistance in antipsychotic-naïve patients with nonaffective psychosis

Anne Marie Greenhalgh<sup>a</sup>, Leticia Gonzalez-Blanco<sup>b,c</sup>, Clemente Garcia-Rizo<sup>c,d,e</sup>, Emilio Fernandez-Egea<sup>f,g</sup>, Brian Miller<sup>h</sup>, Miguel Bernardo Arroyo<sup>c,d,e</sup>, Brian Kirkpatrick<sup>a,\*</sup>



# SCH AS A SYSTEMIC DISORDER



Molecular Psychiatry  
<https://doi.org/10.1038/s41380-018-0058-9>

## PERSPECTIVE

**Is psychosis a multisystem disorder? A meta-review of central nervous system, immune, cardiometabolic, and endocrine alterations in first-episode psychosis and perspective on potential models**

Toby Pillinger<sup>1</sup> · Enrico D'Ambrosio<sup>1</sup> · Robert McCutcheon<sup>1</sup> · Oliver D Howes<sup>1,2,3</sup>

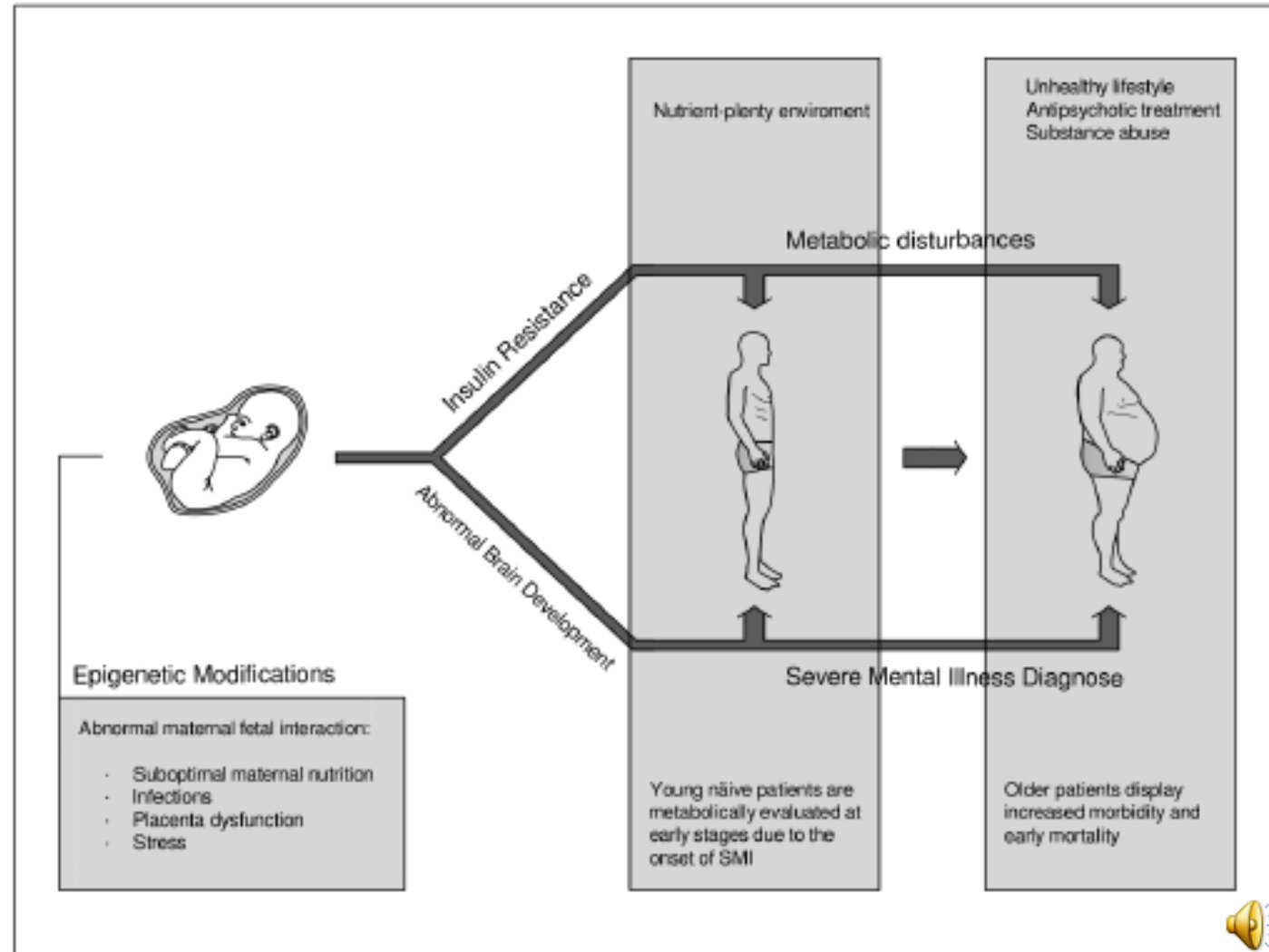
Received: 8 December 2017 / Revised: 1 February 2018 / Accepted: 21 February 2018





# SCH AND FETAL PROGRAMMING

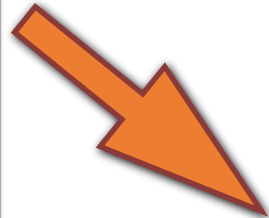
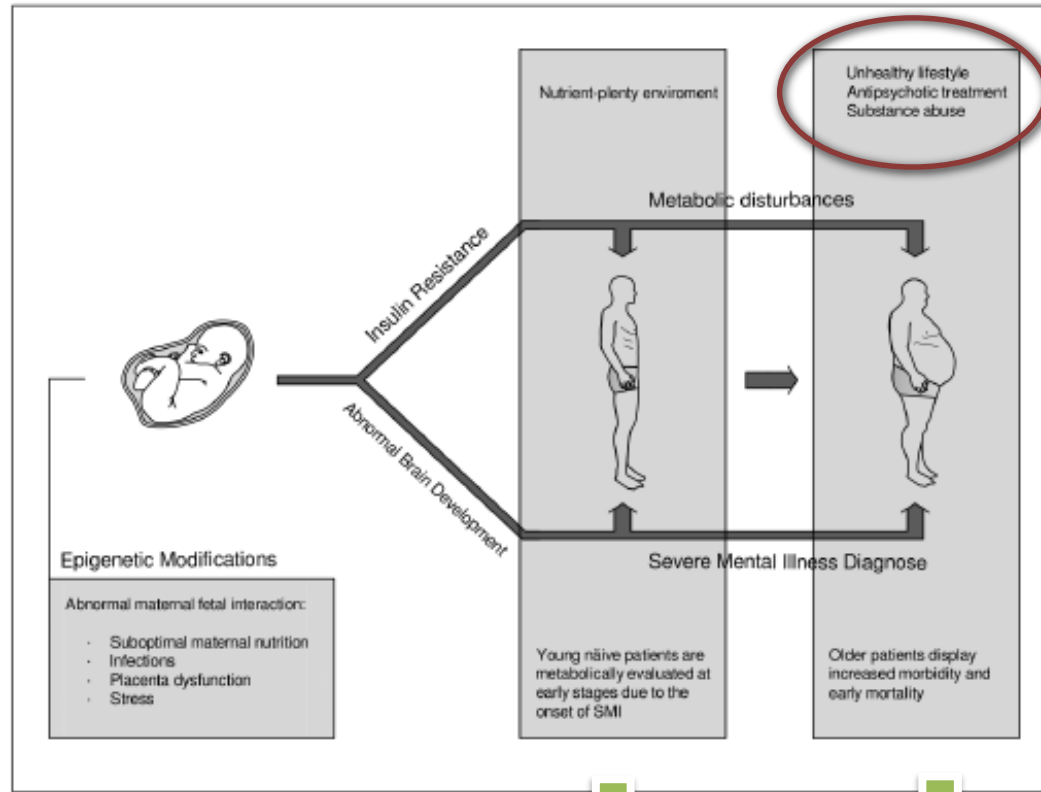
Thrifty psychiatric phenotype schema



# INCEPTION



Thrifty psychiatric phenotype schema



OLZ  
CLZ



FEP      TRS



Early epigenetic modifications might predict similar evolutive Physical/weight changes?



# MetS AND ANTIPSYCHOTICS

		Weight gain	Diabetes risk
SGA	Clozapine	<b>Severe</b>	<b>Severe</b>
	Olanzapine	<b>Severe</b>	<b>Severe</b>
	Quetiapine	Intermediate	Significant
	Risperidone	Intermediate	Low/neutral
	Paliperidone	Intermediate	Low/neutral
	Asenapine	Intermediate	Low/neutral
	Lurasidone	Low/neutral	Low/neutral
	Aripiprazole	Low/neutral	Low/neutral
	Ziprasidone	Low/neutral	Low/neutral
FGA	Chlorpromazine	Significant	Significant
	Haloperidol	Intermediate	Low/neutral
	Fluphenazine	Low/neutral	Low/neutral
	Perphenazine	Low/neutral	Low/neutral



Psychiatric illness

Vancampfort et al., 2012

Poor life-style behaviours

Jackobsen et al., 2018

Poor medical monitoring

Vancampfort et al., 2012

Pro-inflammatory states

Radhakrishnan et al., 2017

“Accelerating aging”

Ridout et al., 2018

Psychopharmacological

Correll et al., 2015 and 2017

Genetic risk

Gebhardt et al., 2010

Epigenetic modifications

Cariaga-Martine et al., 2017



More data needed



# CARDIOVASCULAR RISK FACTORS

## NON-MODIFIABLE

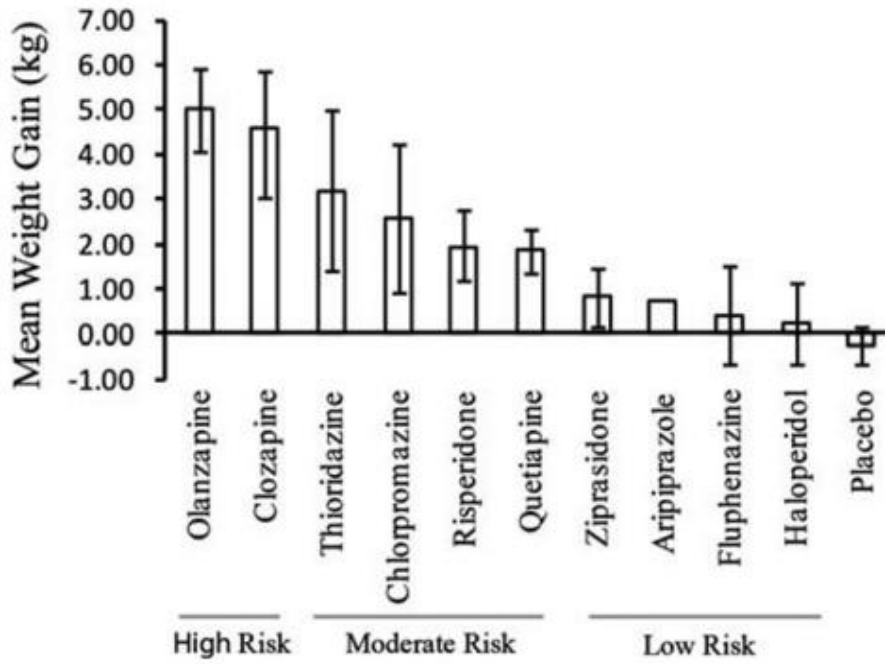
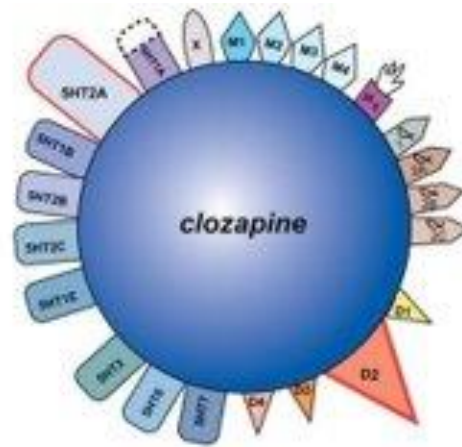
- Genes
- Age
- Gender
- Ethnicity
- Family history
- ...

## MODIFIABLE

- Tobacco / Alcohol
- High blood pressure
- **Hyperlipidemia**
- Diabetes
- **MetS**
- Physical inactivity
- Obesity (abdominal)
- **Unhealthy diet**
- Psychosocial factors
- ...



# CLOZAPINE



# CLOZAPINE AND MetS



RESULTADO EXPEDIENTE - PI14/00753

**Centro Solicitante:** FUNDACION PRIVADA CLINIC

**Centro Realizador:** HOSPITAL CLINICO Y PROVINCIAL DE BARCELONA

**Título:** Evolución metabólica e immune del tratamiento con clozapina: implicaciones terapeuticas

50 pacientes incluidos (06/ 2015-06/2019)

Agudos HCP

CSM Esquerra Eixample, CSM Sants, CSM Montjuic, Hospital de Día Corcega

Inicio                      35 ambulatorios 15 Ingresados

Diagnostico              40 Esquizofrenia y psicosis relacionadas 10 Trastorno Bipolar








# SCH AND EATING PATTERNS



Review

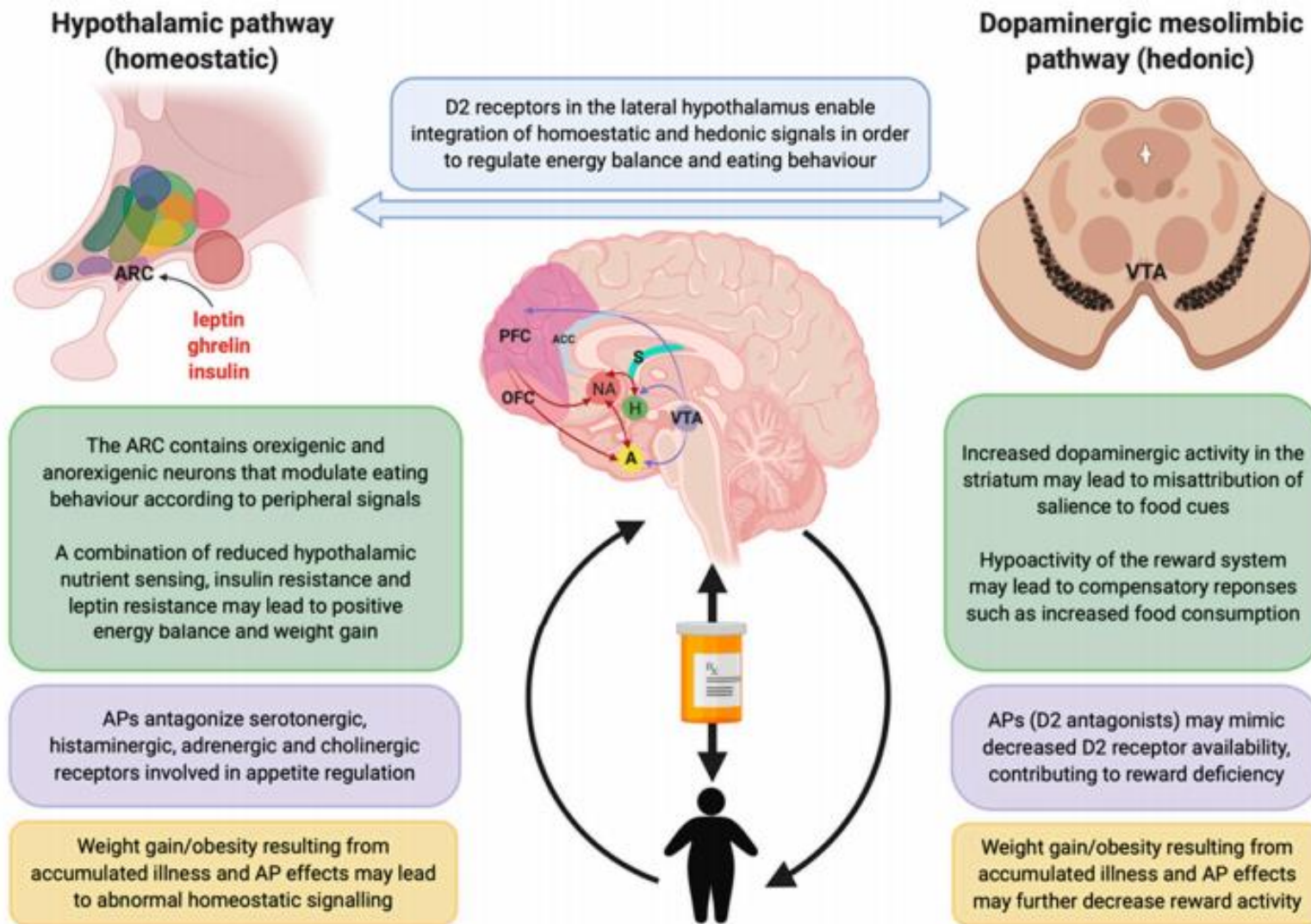
## Exploring Patterns of Disturbed Eating in Psychosis: A Scoping Review

Nicolette Stogios <sup>1,2,†</sup> , Emily Smith <sup>1,2,†</sup>, Roshanak Asgariroozbehani <sup>1,2,†</sup>, Laurie Hamel <sup>1</sup>, Alexander Gdanski <sup>3</sup> , Peter Selby <sup>1,4,5,6</sup>, Sanjeev Sockalingam <sup>1,2,6,7</sup> , Ariel Graff-Guerrero <sup>1,2,6</sup>, Valerie H. Taylor <sup>8</sup>, Sri Mahavir Agarwal <sup>1,2,6,†</sup> , and Margaret K. Hahn <sup>1,2,6,\*</sup> 

**Abstract:** Disturbed eating behaviours have been widely reported in psychotic disorders since the early 19th century. There is also evidence that antipsychotic (AP) treatment may induce binge eating or other related compulsive eating behaviours. It is therefore possible that abnormal eating patterns may contribute to the significant weight gain and other metabolic disturbances observed in patients with psychosis. In this scoping review, we aimed to explore the underlying psychopathological and neurobiological mechanisms of disrupted eating behaviours in psychosis spectrum disorders and the role of APs in this relationship. A systematic search identified 35 studies that met our eligibility criteria and were included in our qualitative synthesis. Synthesizing evidence from self-report questionnaires and food surveys, we found that patients with psychosis exhibit increased appetite and craving for fatty food, as well as increased caloric intake and snacking, which may be associated with increased disinhibition. Limited evidence from neuroimaging studies suggested that AP-naïve first episode patients exhibit similar neural processing of food to healthy controls, while chronic AP exposure may lead to decreased activity in satiety areas and increased activity in areas associated with reward anticipation. Overall, this review supports the notion that AP use can lead to disturbed eating patterns in patients, which may contribute to AP-induced weight gain. However, intrinsic illness-related effects on eating behaviors remain less well elucidated, and many confounding factors as well as variability in study designs limits interpretation of existing literature in this field and precludes firm conclusions from being made.



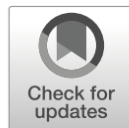
# CLOZAPINE AND FOOD PREFERENCES



# CLOZAPINE AND FOOD PREFERENCES

Psychopharmacology  
<https://doi.org/10.1007/s00213-019-05291-3>

ORIGINAL INVESTIGATION



## Food craving and consumption evolution in patients starting treatment with clozapine

Marina Garriga<sup>1,2,3,4</sup>  · Andrea Mallorquí<sup>5</sup> · Lourdes Serrano<sup>5</sup> · José Ríos<sup>6,7</sup> · Manel Salamero<sup>5</sup> · Eduard Parellada<sup>2,3,4,8</sup> · Marta Gómez-Ramiro<sup>8</sup> · Cristina Oliveira<sup>8</sup> · Silvia Amoretti<sup>2,3,4,8</sup> · Eduard Vieta<sup>1,2,3,4</sup> · Miquel Bernardo<sup>2,3,4,8</sup> · Clemente García-Rizo<sup>2,3,4,8</sup>

### Abstract

**Background** Antipsychotic-induced weight gain has been especially related to clozapine and olanzapine. Underlying mechanisms in relation to food preferences with an increased food craving and consumption of specific nutrients have not been extensively studied in patients with serious mental illness (SMI). We aim to describe specific food preferences (craving) and subsequent food consumption in SMI patients starting clozapine, as well as their possible relation to weight and body mass index (BMI).

**Methods** An observational prospective follow-up study (18 weeks) was conducted in a cohort of 34 SMI patients who started clozapine due to resistant-psychotic symptoms. Anthropometric measures, Food Craving Inventory (FCI), and a food consumption frequency questionnaire were evaluated at baseline, weeks 8 and 18 of treatment. Statistical analysis included generalized estimating equations models with adjustment for potential confounding factors.

**Results** No longitudinal changes over time were found across the different food craving scores after 18 weeks of treatment. However, adjusted models according to BMI status showed that the normal weight (NW) group presented an increased score for the “complex carbohydrates/proteins” food cravings ( $-0.67$ ; 95% CI  $[-1.15, -0.19]$ ;  $P=0.010$ ), while baseline scores for “fast-food fats” cravings were significantly higher in the overweight/obese (OWO) group in comparison with NW patients (NW, 2.05; 95% CI  $[1.60, 2.49]$ ; OWO, 2.81, 95% CI  $[2.37, 3.25]$ ;  $P=0.016$ ). When considering if food craving could predict weight gain, only increments in “fast-food fats” cravings were associated ( $\beta = -5.35 \pm 1.67$ ; 95% CI  $[-8.64, -2.06]$ ;  $P=0.001$ ).

**Conclusions** No longitudinal differences were found for any of the food craving scores evaluated; however, in the NW group, food craving for “complex carbohydrates/proteins” changed. Thus, changes in “fast-food fats” cravings predicted weight increase in this sample. Interventions targeting food preferences may help to mitigate weight gain in patients starting treatment with clozapine.



# CLOZAPINE AND FOOD PREFERENCES

## APPENDIX

### FOOD CRAVING INVENTORY

Food craving is defined as an intense desire to consume a particular food (or food type) that is difficult to resist.

*Directions:* For each of the foods listed below (Items 1-28), please circle the appropriate letter using the following scale.

Over the past month, how often have you experienced a craving for the food?

A = Never  
B = Rarely (once or twice)  
C = Sometimes  
D = Often  
E = Always/almost every day

#### List of foods:

Cake	A	B	C	D	E
Pizza	A	B	C	D	E
Fried Chicken	A	B	C	D	E
Sausages	A	B	C	D	E
French Fries	A	B	C	D	E
Rice	A	B	C	D	E
Hot Dogs	A	B	C	D	E
Hazelnut Spread	A	B	C	D	E
Hamburger	A	B	C	D	E
Biscuits	A	B	C	D	E
Ice Cream	A	B	C	D	E
Pasta	A	B	C	D	E
Fried Fish	A	B	C	D	E
Cookies	A	B	C	D	E
Chocolate	A	B	C	D	E
Pancakes	A	B	C	D	E
Rolls	A	B	C	D	E
Donuts	A	B	C	D	E
Candies	A	B	C	D	E
Brownies	A	B	C	D	E
Bacon	A	B	C	D	E
Croissant	A	B	C	D	E
Steak	A	B	C	D	E
Pie	A	B	C	D	E
Baked Potatoes	A	B	C	D	E
Barbecued Foods	A	B	C	D	E
Mashed Potatoes	A	B	C	D	E
Bagel	A	B	C	D	E

### FOOD CRAVING INVENTORY-SP (Spanish version)

(White, Whisenhunt, Williamson, Greenway, and Netemeyer, 2001. Adaptation and validation by Jáuregui, Bolaños, Valero, and Carbonero, 2010)

El "food craving" se define como un intenso deseo de consumir un alimento concreto (o un tipo de alimento), que resulta difícil de resistir.

*Instrucciones:* Para cada alimento que figura en la lista rodee con un círculo la letra apropiada usando la siguiente escala.

A lo largo del pasado mes, ¿con qué frecuencia ha experimentado "craving" por el alimento?

A = Nunca  
B = Rara vez (una o dos veces)  
C = Algunas veces  
D = A menudo  
E = Siempre, casi todos los días

#### Lista de alimentos:

Pastel	A	B	C	D	E
Pizza	A	B	C	D	E
Pollo frito	A	B	C	D	E
Salchichas	A	B	C	D	E
Patatas fritas	A	B	C	D	E
Arroz	A	B	C	D	E
Perritos calientes	A	B	C	D	E
Crema con avellanas	A	B	C	D	E
Hamburguesas	A	B	C	D	E
Biscuits	A	B	C	D	E
Helado	A	B	C	D	E
Pasta	A	B	C	D	E
Pescado frito	A	B	C	D	E
Galletas, cookies	A	B	C	D	E
Chocolate	A	B	C	D	E
Tortitas, barquillos	A	B	C	D	E
Panecillos	A	B	C	D	E
Donuts	A	B	C	D	E
Caramelos	A	B	C	D	E
Pastelito de chocolate (tipo Brownie)	A	B	C	D	E
Bacon/Panceta	A	B	C	D	E
Croissant	A	B	C	D	E
Filete	A	B	C	D	E
Tarta	A	B	C	D	E
Patatas cocidas	A	B	C	D	E
Alimentos de barbacoa (Costillas, chuletas)	A	B	C	D	E
Puré de patatas	A	B	C	D	E
Rosquillas	A	B	C	D	E

## ANEXO I. Cuestionario de Frecuencia de Consumo Alimentario - CFCA

LISTADO DE ALIMENTOS	¿CUÁNTAS VECES COME?	
	A LA SEMANA	AL MES
Leche		
Yogur		
Chocolate: tableta, bombones, "Kit Kat", "Mars",...		
Cereales inflados de desayuno ("Corn-Flakes", "Kellogg's")		
Galletas tipo "maría"		
Galletas con chocolate, crema...		
Magdalenas, bizcocho...		
Ensamada, donut, croissant...		
	A LA SEMANA	AL MES
Ensalada: lechuga, tomate, escarola..		
Judías verdes, acelgas o espinacas		
Verduras de guarnición: berenjena, champiñones		
Patatas al horno, fritas o hervidas		
Legumbres: lentejas, garbanzos, judías...		
Arroz blanco, paella		
Pasta: fideos, macarrones, espaguetis...		
Sopas y cremas		
	A LA SEMANA	AL MES
Huevos		
Pollo o pavo		
Termera, cerdo, cordero (bistec, empanada,...)		
Carne picada, longaliza, hamburguesa		
Pescado blanco: merluza, mero...		
Pescado azul: sardinas, atún, salmón...		
Marisco: mejillones, gambas, langostinos, calamares...		
Croquetas, empanadillas, pizza		
Pan (en bocadillo, con las comidas,...)		
	A LA SEMANA	AL MES
Jamón salado, dulce, embutidos		
Queso blanco o fresco (Burgos,...) o bajo en calorías		
Otros quesos: curados o semicurado, cremosos		
	A LA SEMANA	AL MES
Frutas cítricas: naranja, mandarina...		
Otras frutas: manzana, pera, melocotón, plátano...		
Frutas en conserva (en almibar...)		
Zumos de fruta natural		
Zumos de fruta comercial		
Frutos secos: cacahuètes, avellanas, almendras...		
Postres lácteos: natillas, flan, requesón		
Pasteles de crema o chocolate		
Bolsas de aperitivos («chips», «chetos», «fritos»...)		
Golosinas: gominolas, caramelos...		
Helados		
	A LA SEMANA	AL MES
Bebidas azucaradas ("coca-cola", "Fanta",...)		
Bebidas bajas en calorías (coca-cola light...)		
Vino, sangría		
Cerveza		
Cerveza sin alcohol		
Bebidas destiladas: whisky, ginebra, coñac...		



# CLOZAPINE AND FOOD PREFERENCES

## APPENDIX

### FOOD CRAVING INVENTORY

Food craving is defined as an intense desire to consume a particular food (or food type) that is difficult to resist.

*Directions:* For each of the foods listed below (Items 1-28), please circle the appropriate letter using the following scale.

Over the past month, how often have you experienced a craving for the food?

A = Never  
B = Rarely (once or twice)  
C = Sometimes  
D = Often  
E = Always/almost every day

#### List of foods:

Cake	A	B	C	D	E
Pizza	A	B	C	D	E
Fried Chicken	A	B	C	D	E
Sausages	A	B	C	D	E
French Fries	A	B	C	D	E
Rice	A	B	C	D	E
Hot Dogs	A	B	C	D	E
Hazelnut Spread	A	B	C	D	E
Hamburger	A	B	C	D	E
Biscuits	A	B	C	D	E
Ice Cream	A	B	C	D	E
Pasta	A	B	C	D	E
Fried Fish	A	B	C	D	E
Cookies	A	B	C	D	E
Chocolate	A	B	C	D	E
Pancakes	A	B	C	D	E
Rolls	A	B	C	D	E
Donuts	A	B	C	D	E
Candies	A	B	C	D	E
Brownies	A	B	C	D	E
Bacon	A	B	C	D	E
Croissant	A	B	C	D	E
Steak	A	B	C	D	E
Pie	A	B	C	D	E
Baked Potatoes	A	B	C	D	E
Barbecued Foods	A	B	C	D	E
Mashed Potatoes	A	B	C	D	E
Bagel	A	B	C	D	E

### FOOD CRAVING INVENTORY-SP (Spanish version)

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A lo largo del pasado mes, ¿con qué frecuencia ha experimentado "craving" por el alimento?

A = Nunca  
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C = Algunas veces  
D = A menudo  
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Salchichas	A	B	C	D	E
Patatas fritas	A	B	C	D	E
Arroz	A	B	C	D	E
Perritos calientes	A	B	C	D	E
Crema con avellanas	A	B	C	D	E
Hamburguesas	A	B	C	D	E
Biscuits	A	B	C	D	E
Helado	A	B	C	D	E
Pasta	A	B	C	D	E
Pescado frito	A	B	C	D	E
Galletas, cookies	A	B	C	D	E
Chocolate	A	B	C	D	E
Tortitas, barquillos	A	B	C	D	E
Panecillos	A	B	C	D	E
Donuts	A	B	C	D	E
Caramelos	A	B	C	D	E
Pastelito de chocolate (tipo Brownie)	A	B	C	D	E
Bacon/Panceta	A	B	C	D	E
Croissant	A	B	C	D	E
Filete	A	B	C	D	E
Tarta	A	B	C	D	E
Patatas cocidas	A	B	C	D	E
Alimentos de barbacoa (Costillas, chuletas)	A	B	C	D	E
Puré de patatas	A	B	C	D	E
Rosquillas	A	B	C	D	E

## SIMPLE CARBOHYDRATES + TRANS FAT

- (e.g. processed sugar, fruit, dairy)+(e.g. fast food)

## COMPLEX CARBOHYDRATES + PROTEINS

- (e.g. breads, vegetables, nuts, legumes)

## SATURATED FAT

- (e.g. fatty meat, butter)

### ANEXO I. Cuestionario de Frecuencia de Consumo Alimentario - CFCA

LISTADO DE ALIMENTOS	¿CUÁNTAS VECES COME?	
	A LA SEMANA	AL MES
Leche		
Yogur		
Chocolate: tableta, bombones, "Kit Kat", "Mars",...		
Cereales inflados de desayuno ("Corn-Flakes", "Kellogg's")		
Galletas tipo "maría"		
Galletas con chocolate, crema...		
Magdalenas, bizcocho...		
Ensamada, donut, croissant...		
	A LA SEMANA	AL MES
Ensalada: lechuga, tomate, escarola..		
Judías verdes, acelgas o espinacas		
Verduras de guarnición: berenjena, champiñones		
Patatas al horno, fritas o hervidas		
Legumbres: lentejas, garbanzos, judías...		
Arroz blanco, paella		
Pasta: fideos, macarrones, espaguetis...		
Sopas y cremas		
	A LA SEMANA	AL MES
Huevos		
Pollo o pavo		
Termera, cerdo, cordero (bistec, empanada,...)		
Carne picada, longaliza, hamburguesa		
Pescado blanco: merluza, mero...		
Pescado azul: sardinas, atún, salmón...		
Marisco: mejillones, gambas, langostinos, calamares...		
Croquetas, empanadillas, pizza		
Pan (en bocadillo, con las comidas,...)		
	A LA SEMANA	AL MES
Jamón salado, dulce, embutidos		
Queso blanco o fresco (Burgos,...) o bajo en calorías		
Otros quesos: curados o semicurado, cremosos		
	A LA SEMANA	AL MES
Frutas cítricas: naranja, mandarina,...		
Otras frutas: manzana, pera, melocotón, plátano...		
Frutas en conserva (en almibar,...)		
Zumos de fruta natural		
Zumos de fruta comercial		
Frutos secos: cacahuètes, avellanas, almendras,...		
Postres lácteos: natillas, flan, requesón		
Pasteles de crema o chocolate		
Bolsas de aperitivos («chips», «chetos», «fritos»...)		
Golosinas: gominolas, caramelos...		
Helados		
	A LA SEMANA	AL MES
Bebidas azucaradas ("coca-cola", "Fanta",...)		
Bebidas bajas en calorías (coca-cola light...)		
Vino, sangría		
Cerveza		
Cerveza sin alcohol		
Bebidas destiladas: whisky, ginebra, coñac...		





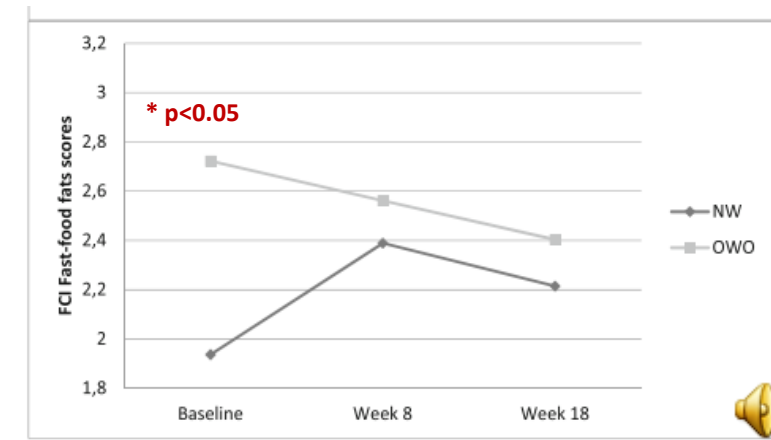
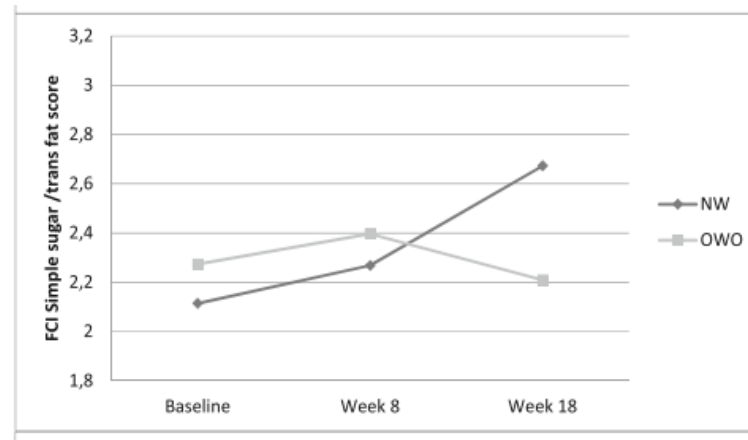
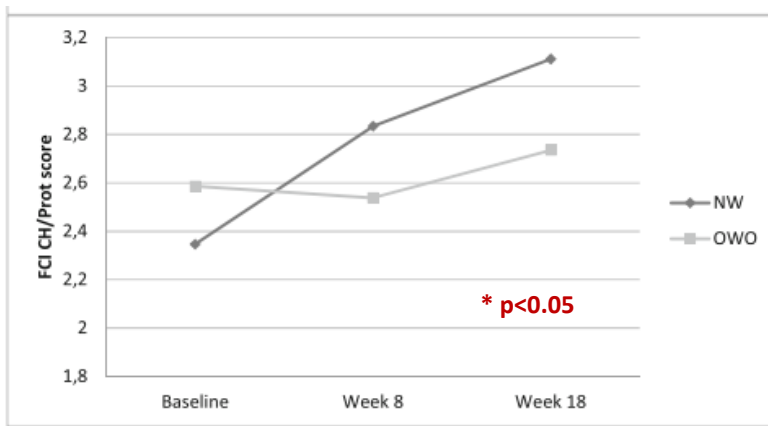
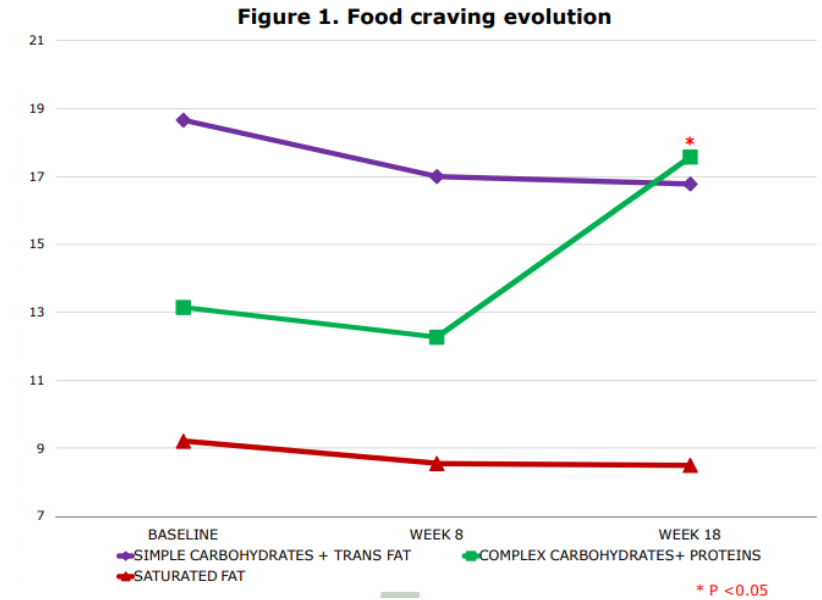
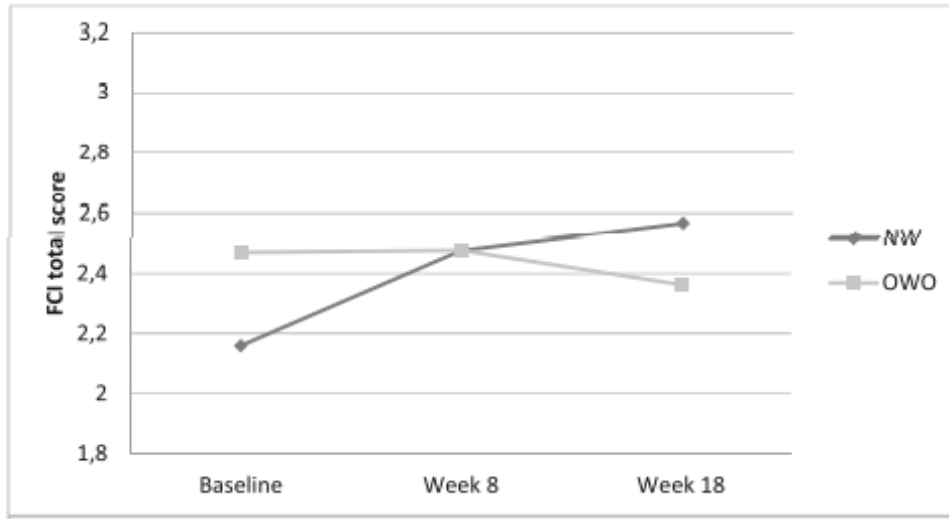
# CLOZAPINE AND FOOD PREFERENCES

**Table 1** Descriptive characteristics of the sample by BMI status

		BMI baseline status			<i>P</i> value
		NM (BMI < 25) <i>n</i> = 13 Mean (SD) or <i>N</i> (%)	OWO (BMI > 25) <i>n</i> = 21 Mean (SD) or <i>N</i> (%)	Total <i>n</i> = 34 Mean (SD) or <i>N</i> (%)	
Age, year		34.5 (11.4)	38.2 (12.8)	36.8 (12.2)	0.411 <sup>†</sup>
Gender	Male	7 (53.9)	14 (66.7)	21 (61.8)	0.456*
	Female	6 (46.2)	7 (33.3)	13 (38.2)	
Early onset psychosis		4 (33.3)	15 (71.4)	19 (57.6)	0.033*
Time on antipsychotics, year		5.2 (7.6)	10.9 (11)	8.5 (10.1)	0.117 <sup>†</sup>
Previous antipsychotic type	FGA	3 (23.1)	0 (0)	3 (8.8)	0.034*
	SGA	7 (53.8)	21 (100)	28 (82.4)	
	None	3 (23.1)	0 (0)	3 (8.8)	
Axis I diagnosis (DSM-IV-TR)	Schizophrenia	9 (69.3)	18 (85.7)	27 (79.4)	0.127*
	Schizoaffective	2 (15.4)	3 (14.3)	5 (14.7)	
	Bipolar disorder	2 (15.4)	0 (0)	2 (5.9)	
PANSS total		80.3 (9.5)	78.7 (23.1)	79.2 (19.3)	0.828 <sup>†</sup>
CGL-S		5.1 (0.4)	4.4 (0.9)	4.7 (0.8)	0.016 <sup>†</sup>
CV risk factors					
Smokers		9 (69.3)	5 (23.8)	14 (41.2)	0.009*
HTA		0 (0)	3 (14.3)	3 (9.1)	0.091*
CV illness		0 (0)	1 (4.8)	1 (3.1)	0.337*
DM		1 (8.3)	1 (4.8)	2 (6.1)	0.685*
Dyslipidemia		1 (8.3)	3 (14.3)	4 (12.1)	0.605*
Anthropometric measures					
Weight (kg)		63.3 (11.8)	90.9 (14.6)	80.9 (19.1)	< 0.001 <sup>†</sup>
ΔWeight (kg)		6.3 (5.2)	0.2 (6.1)	2.3 (6.4)	0.012 <sup>†</sup>
BMI (kg/m <sup>2</sup> )		22 (2.7)	30.3 (3.7)	27.3 (5.3)	< 0.001 <sup>†</sup>
ΔBMI (kg/m <sup>2</sup> )		2.3 (1.9)	0.1 (2.0)	0.9 (2.2)	0.009 <sup>†</sup>



# CLOZAPINE AND FOOD PREFERENCES



# CLOZAPINE AND ITS "MORTALITY" ROLE

## Clozapine and all-cause mortality in treatment-resistant schizophrenia: a historical cohort study

Cho J, Hayes RD, Jewell A, Kadra G, Shetty H, MacCabe JH, Downs J. Clozapine and all-cause mortality in treatment-resistant schizophrenia: a historical cohort study.

**Objective:** Large-scale epidemiological studies have demonstrated a protective effect of clozapine on mortality in people with schizophrenia. Clozapine is reserved for use in patients with treatment-resistant schizophrenia (TRS), but evidence of clozapine's effect on mortality exclusively within TRS samples is inconclusive. Hence, we aimed to investigate the effect of clozapine use on all-cause mortality in TRS patients.

J. Cho<sup>1</sup>, R. D. Hayes<sup>1,2</sup>,  
A. Jewell<sup>3</sup>, G. Kadra<sup>1</sup>,  
H. Shetty<sup>1,2,3</sup>, J. H.  
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<sup>1</sup>Institute of Psychiatry Psychology and Neuroscience, King's College London, <sup>2</sup>NIHR Maudsley Biomedical Research Centre, and <sup>3</sup>South London and Maudsley NHS Foundation Trust, London, UK

Table 3. Hazard ratios of all-cause mortality related to clozapine use in patients with treatment-resistant schizophrenia

	Deaths/total <i>N</i>	HRs (95% CIs)	<i>P</i>
Crude	110/2837	0.73 (0.49–1.08)	0.12
Multivariate Cox proportional hazard models adjusted for			
Sociodemographic variables	110/2837	0.60 (0.40–0.92)	0.02
Plus history of substance use disorders	110/2837	0.61 (0.40–0.93)	0.02
Plus clinical monitoring	110/2837	0.67 (0.43–1.03)	0.07
Plus mental health symptom severity	108/2788	0.71 (0.46–1.11)	0.14
Plus additional mental and physical health problems	108/2783	0.66 (0.42–1.03)	0.07
Plus functional status	104/2720	0.61 (0.38–0.97)	0.04

HR, hazard ratio; 95% CI, 95% confidence interval.



# CLOZAPINE AND ITS "MORTALITY" ROLE

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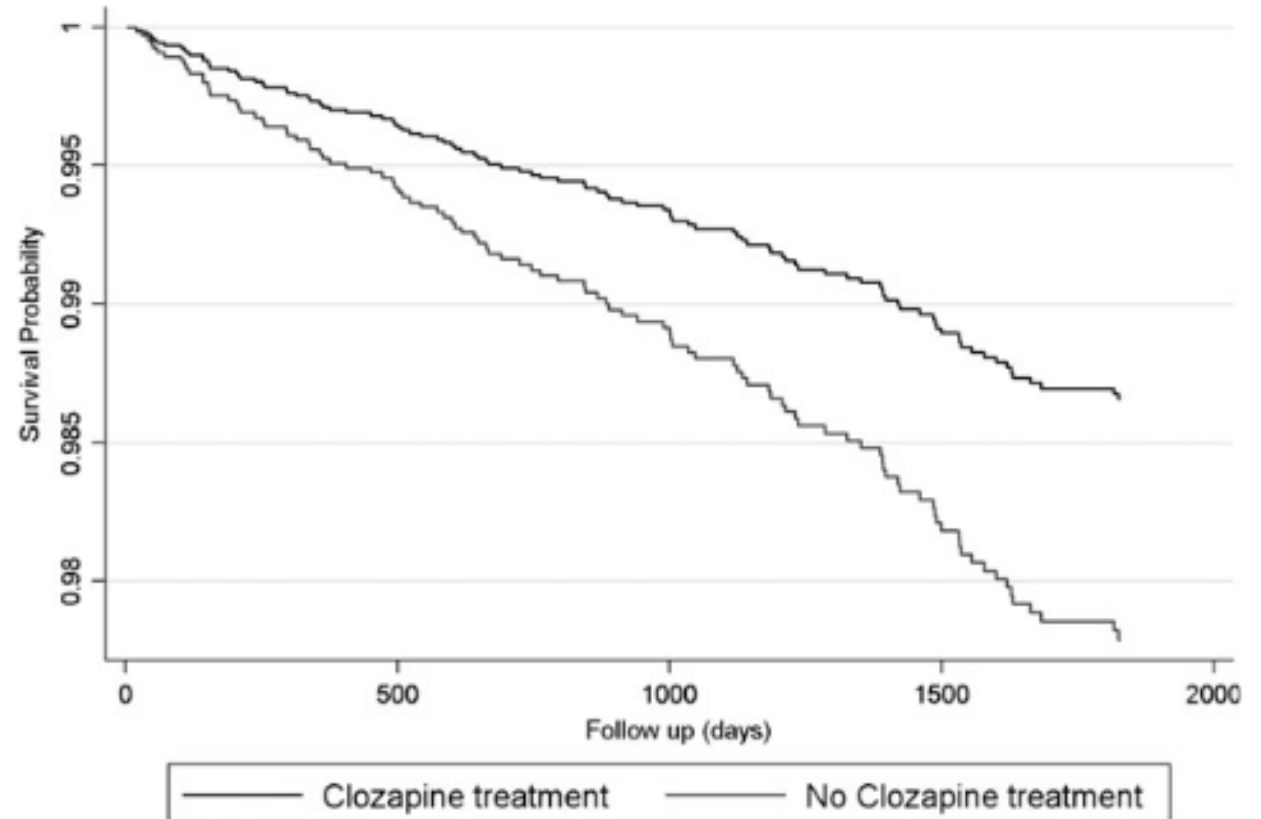


Fig. 2. Survival curves of all-cause mortality in patients with treatment-resistant schizophrenia, stratified by antipsychotic use.





# TAKE HOME MESSAGES

- SMI patients have experienced an increase on the mortality gap in comparison with general population in the last 30 years
- COD are related to cardiovascular risk factors
- AP such as clozapine and olanzapine may influence on this mortality gap
- Underlying mechanisms not deeply studied are related with changes on food preferences
- AP may only influence changes on food preferences on NW SCH patients (complex-CH, proteins)
- Fast food consumption/craving might be related with AIWG



Gracias por su atención!

Magarriga@clinic.cat

**Helping people  
with severe mental  
disorders live longer  
and healthier lives**

