# Prevención Primaria: de la Estrategia Individual a la Poblacional

## Prevención cardiovascular en edades avanzadas

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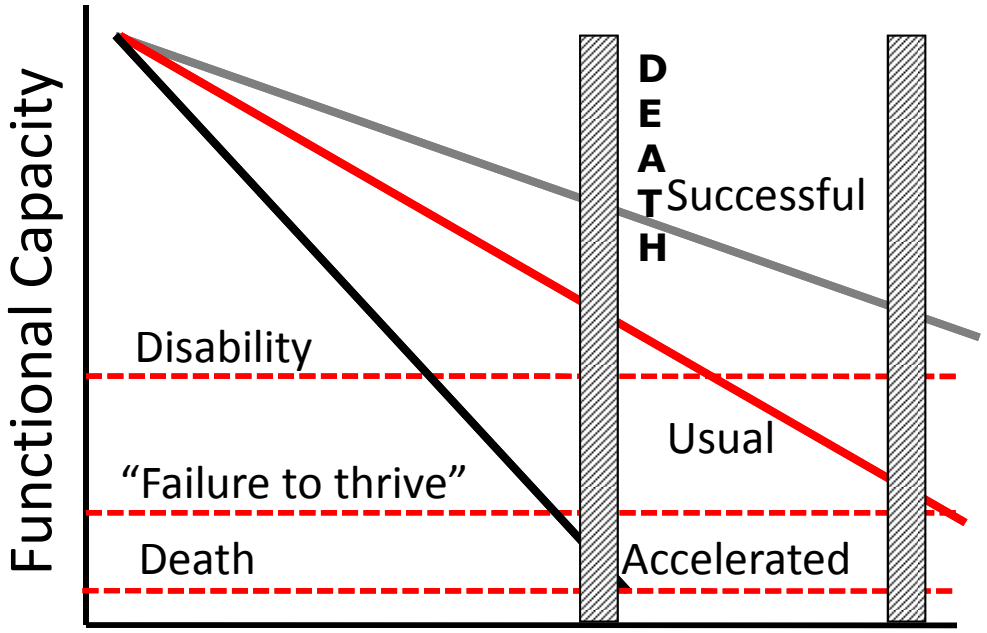
**Sextas Jornadas Científicas del CEIPC**
**Madrid, 2 de diciembre de 2015**

# Contenidos

1. **El escenario**
2. **El objetivo de la prevención cardiovascular en las edades avanzadas**
3. **¿Cómo conseguirlo?**
   - **La estrategia individual**
   - **La estrategia de salud pública**

# 1. El escenario

A diferencia de lo que ocurría hace 40-50 años en que la muerte se producía habitualmente antes de que apareciera la discapacidad, hoy la discapacidad suele aparece antes de la muerte



# 2. La prevención en la edad avanzada

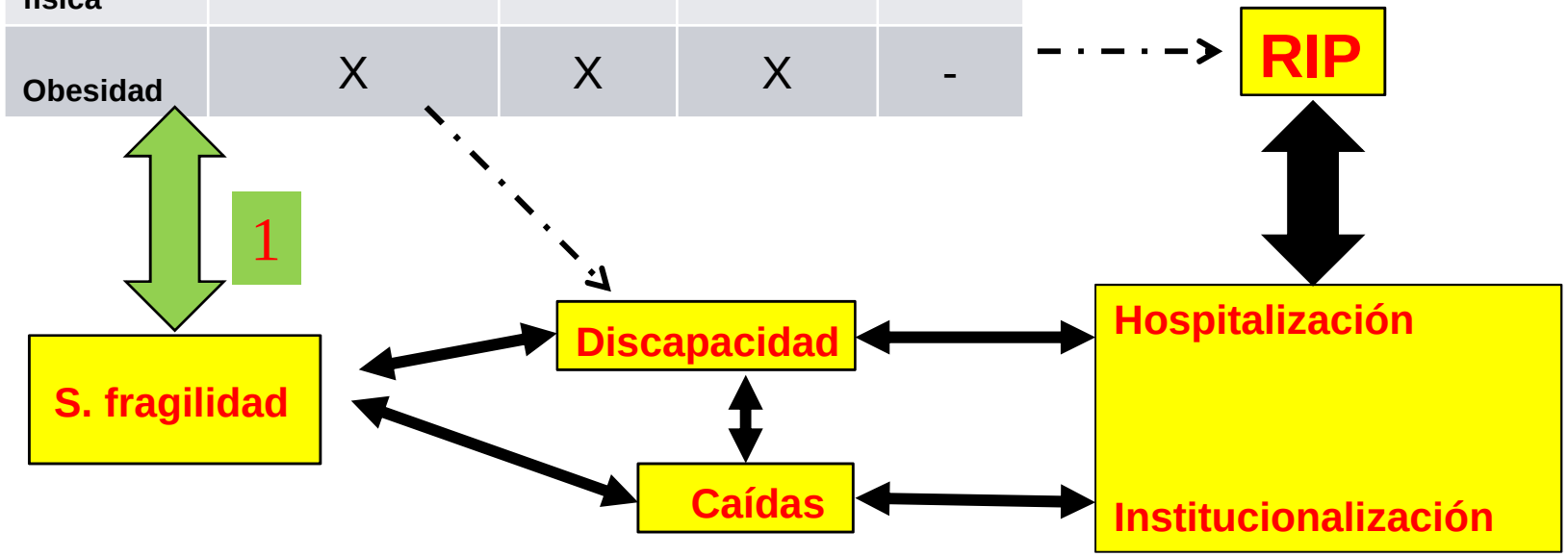
- **Objetivos generales del tratamiento de los factores de riesgo cardiovascular en el anciano**
  - El objetivo prioritario es mantener las expectativas de vida libre de discapacidad, con la **máxima capacidad funcional** y cognitiva, y asegurar la mejor calidad de vida posible.

Gómez-Huelgas R, Martínez-Sellés M, Formiga F, Alemán Sánchez JJ, Camafort M, Galve E, Gil P, Lobos JM. Conferencia de consenso. Tratamiento de los factores de riesgo vascular en el paciente mayor de 80 años. Med Clin (Barc). 2014;143:134.e1-11

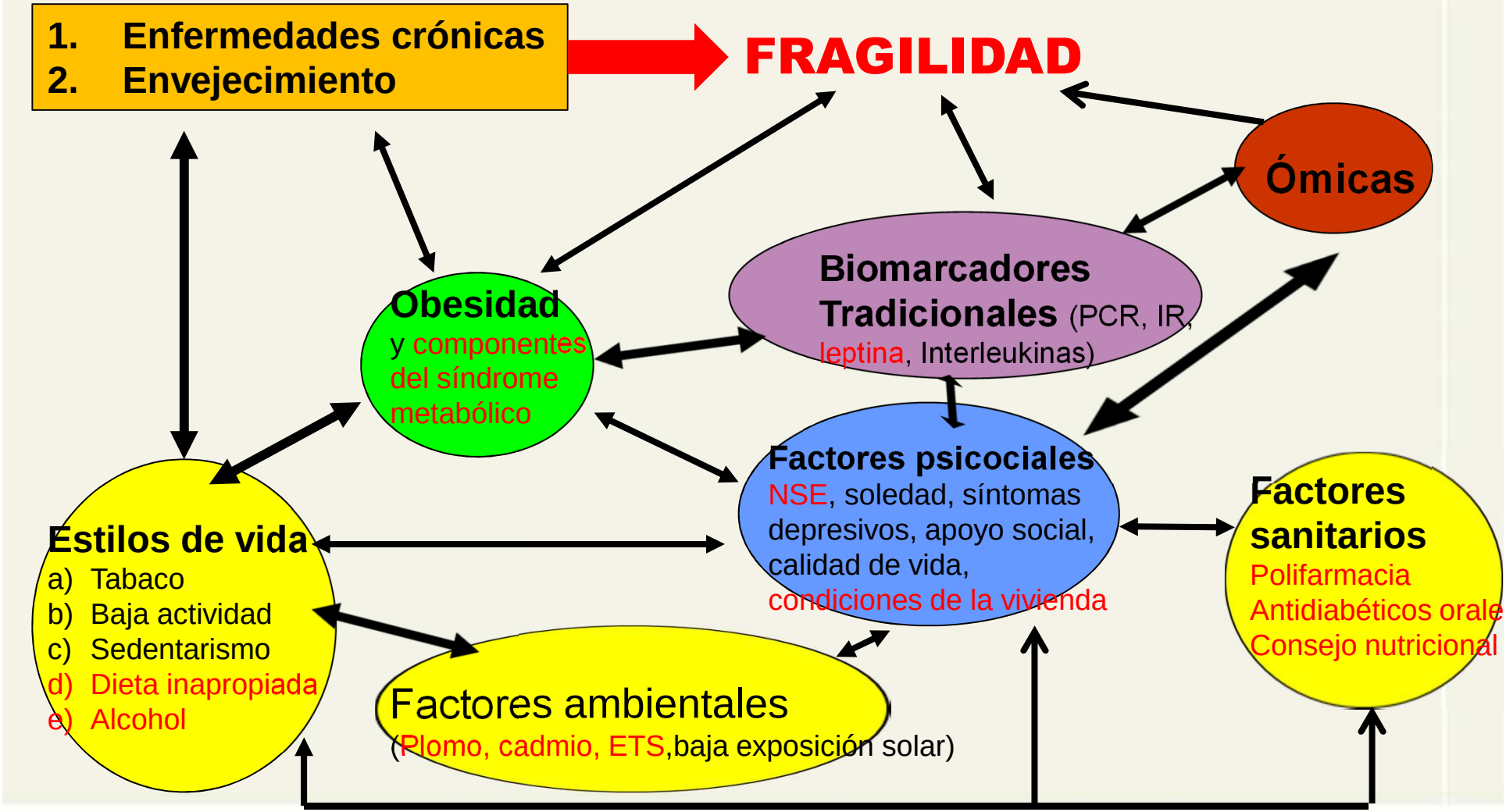
- **Envejecimiento saludable (OMS, 2105)**
  - Envejecimiento Saludable es el proceso de fomentar y mantener la **capacidad funcional** que permite el bienestar en la vejez (durante tanto tiempo como sea posible)
    - La **capacidad funcional** es la capacidad para hacer las cosas que a uno le interesa

# 2. El objetivo de la prevención cardiovascular en las edades avanzadas

| | Enf. cardiovascular | Cáncer | Diabetes | EPOC |
|---|---|---|---|---|
| Tabaco | X | X | - | X |
| Abuso alcohol | X | X | - | - |
| Dieta pobre | X | X | X | X |
| Inactividad física | X | X | X | X |
| Obesidad | X | X | X | - |



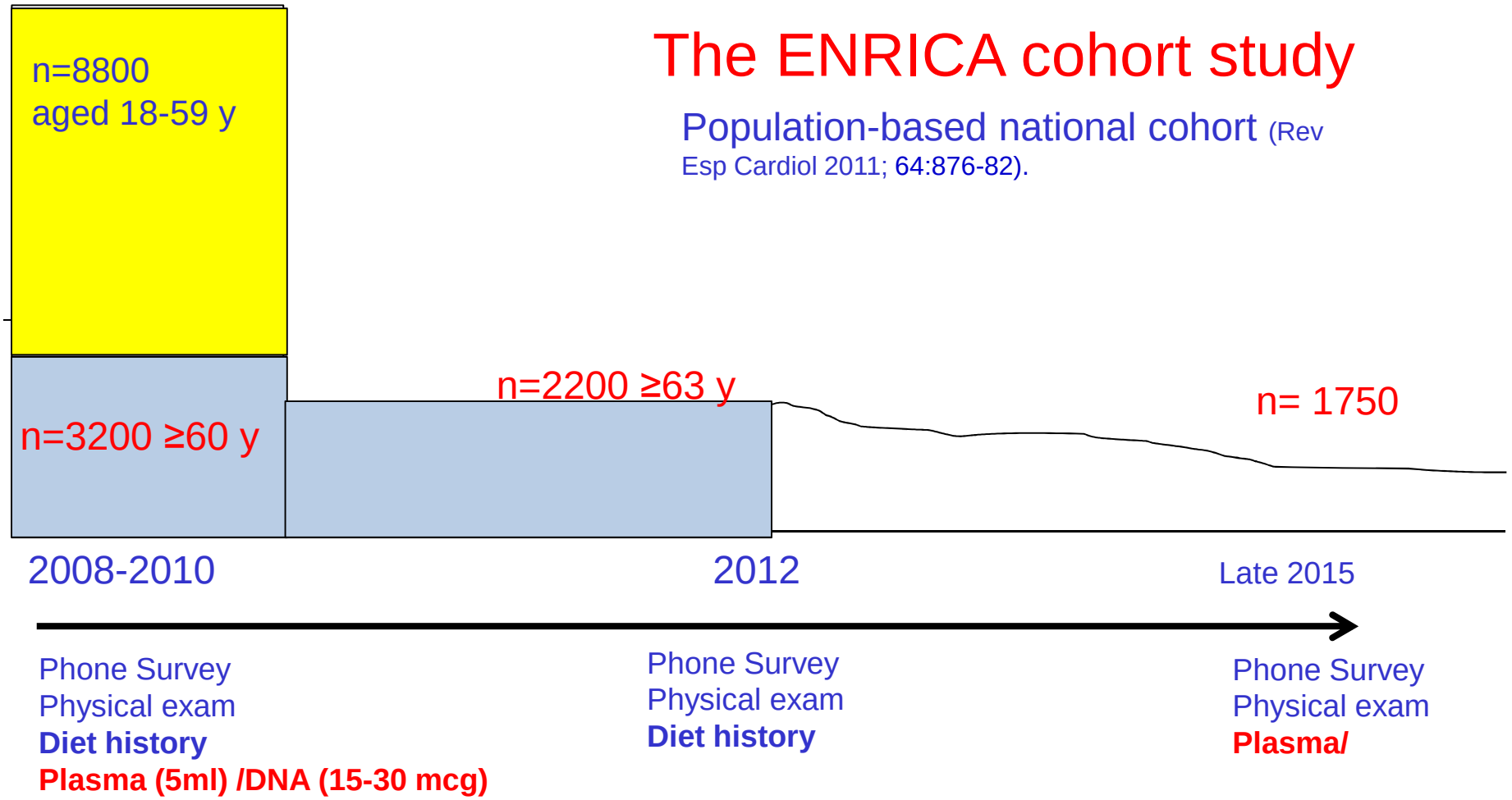
# 4. Determinantes de la fragilidad




**Más efectos directos de cada uno de estos grupos de variables**

# The ENRICA cohort study

Population-based national cohort (Rev Esp Cardiol 2011; 64:876-82).



# The seniors-ENRICA cohort

| | ENRICA (≥60 y at baseline) | | |
|---|---|---|---|
| | **2008-2010** | **2012** | **2015** |
| Phone | • Socio-demographics<br>• Lifestyle (sedentariness, PA, tobacco, alcohol)<br>• Reported morbidity<br>• HRQL (SF-12)<br>• Use of health services<br>• Health advice addressing lifestyle<br>• Weight change | As in 2008-10 plus<br>• Limitation in agility/mobility<br>• Pain<br>• GH-12<br>• Social network and support<br>• Housing conditions<br>• Vision and hearing problems<br>• Urinary incontinence<br>• Falls<br>• Sleep duration and quality<br>• Oral health | As in 2012 |
| Home exam | BP, height, weight, and waist, hip, arm and calf circumferences | As in 2008-10 plus electric bioimpedance, hand-grip, SPPB , and 24-h AMBP in 1000 subjects | As in 2012 **with no 24-AMBP** |
| Other at Home visit | • Validated diet history<br>• Drug treatment<br>• Disability (Lawton-Brody)<br>• Frailty<br>• Biological samples | As in 2008-10 plus<br>• MiniNutritional Assessment<br>• Mini-Mental State Examination<br>• Limitation in AVD (Katz)<br>• Geriatric depression scale<br>• Frailty<br>• **No biological samples** | As in 2012 plus biological samples |
| Nº home visits | **2** | **1** | **1** |

# La dieta mediterránea tiene una asociación dosis respuesta inversa con el riesgo de fragilidad

**Table 1**
Association Between Adherence to the MD and Risk of Frailty During a 3.5-Year Follow-Up of Older Adults (N = 1815)

| | MEDAS | | | | MDS | | | |
|---|---|---|---|---|---|---|---|---|
| | Tertile 1 | Tertile 2 | Tertile 3 | *P* Trend | Tertile 1 | Tertile 2 | Tertile 3 | *P* Trend |
| | | OR (95% CI) | OR (95% CI) | | | OR (95% CI) | OR (95% CI) | |
| Main analyses | | | | | | | | |
| Number of frailty events | 61 | 41 | 35 | | 67 | 36 | 34 | |
| Model 1 | Ref. | 0.76 (0.49–1.18) | 0.55 (0.35–0.86)† | .009 | Ref. | 0.58 (0.37–0.91)* | 0.43 (0.27–0.67)‡ | <.001 |
| Model 2 | Ref. | 0.85 (0.54–1.36) | 0.65 (0.40–1.04) | .07 | Ref. | 0.59 (0.37–0.95)* | 0.48 (0.30–0.77)† | .002 |

Model 1: Adjusted for sex, age, and educational level (<primary, secondary, university).
Model 2: Adjusted additionally for tobacco (never smoker, former smoker, current smoker), BMI (kg/m$^2$), energy intake (kcal/d), cardiovascular disease, diabetes mellitus, cancer, asthma or chronic bronchitis, osteo-muscular disease, depression requiring treatment, and number of drug treatments.
*$P < .05$.
†$P < .01$.
‡$P < .001$.
§As in model 2 but without adjustment for cardiovascular disease, diabetes mellitus, cancer, asthma or chronic bronchitis, and depression requiring treatment.

León-Muñoz , et al. J Am Dir Assoc 2014;15:899-903.

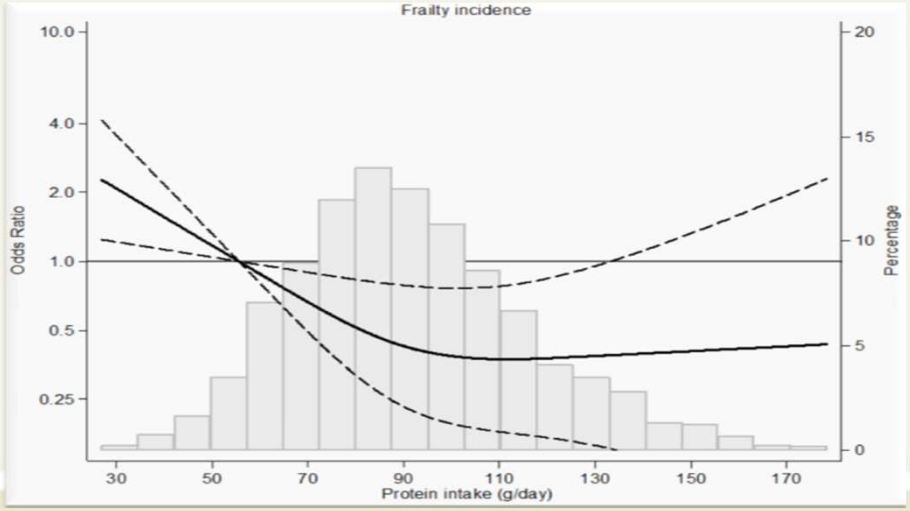
# Otros elementos de la dieta y fragilidad

| | Prudent pattern | | | |
|---|---|---|---|---|
| | Tertile 1 | Tertile 2 | Tertile 3 | |
| | | Odds ratio (95% CI) | Odds ratio (95% CI) | *P*-trend |
| **Main analysis** | | | | |
| Number of frailty events | 48 | 27 | 21 | |
| Model 1 | Ref. | 0.69 (0.41–1.17) | 0.59 (0.33–1.04) | 0.05 |
| Model 2 | Ref. | 0.64 (0.37–1.12) | 0.40 (0.20–0.81)* | 0.009 |

León-Muñoz, et al. BMC Med 2015 13:11

| | <1 serving /wk | 1-6 servings/wk | ≥7 servings/wk | P-trend |
|---|---|---|---|---|
| Whole milk/yogurt | | | | |
| Frailty, n | 62 | 32 | 40 | |
| OR | 1.00 | 1.26 | 1.53 | .10 |
| **Low-fat milk/yogurt** | | | | |
| Frailty, n | 34 | 45 | 55 | |
| OR | **1.00** | **0.55** | **0.52** | **.03** |
| Cheese | | | | |
| Frailty, n | 48 | 53 | 33 | |
| OR | 1.00 | 0.66 | 0.91 | .61 |

Lana, et al. J Am Geriatr Soc 2015;63:1852-60.5

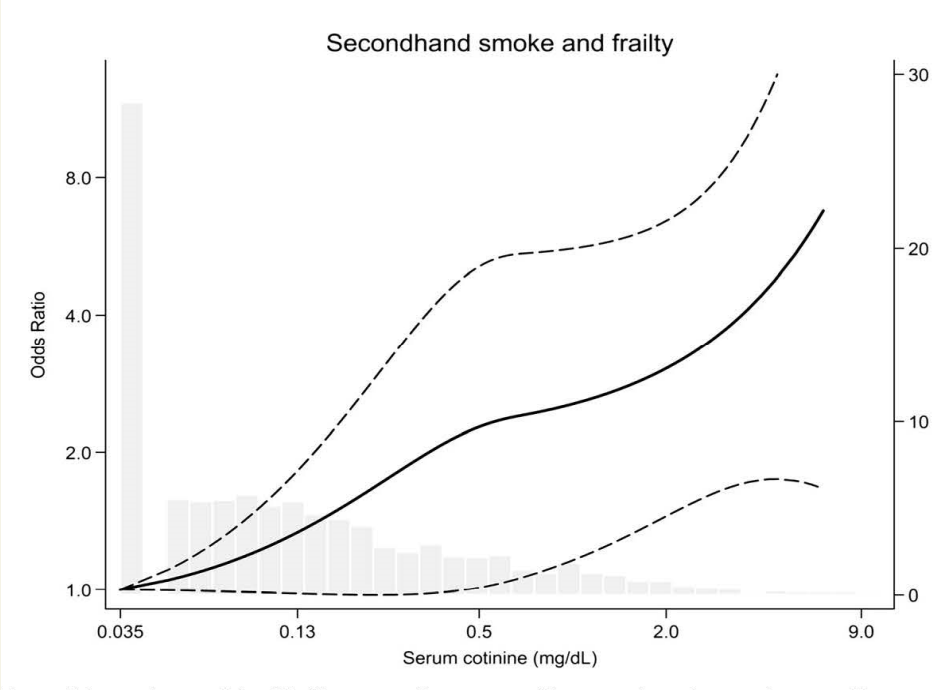



Sandoval, et al. J Gerontol Biol Sci Med Sci. 2015. In press.

| **BMI** | **25-29.9** | **≥ 30** |
|---|---|---|
| OR (95% CI) | Ref. | 1.73 (1.18-2.28) |
| **Waist** | **≤102 men, ≤88 women** | **≤102 men, ≤88 women** |
| OR (95% CI) | Ref. | 1.67 (1.09-2.25) |

García-Esquinas. et al Obesity (Silver Spring). 2015;23:847-55.2015

# Tabaco, alcohol y fragilidad




García Esquinas. Age (Dordr). 2015;37:26.2015

| | Odds ratio (95% CI |
|---|---|
| **Average alcohol consumption (n=2086)** | |
| Non-drinker | Ref. |
| Ex-drinker | 1.03 (0.64-1.67) |
| Moderate drinker | 0.95 (0.66-1.36) |
| Heavy drinker | 0.63 (0.42-0.94)* |
| **Beverage preference (n=1142)** | |
| Other | Ref. |
| Wine | 0.74 (0.48-1.16) |
| **Drinking with meals (n=1142)** | |
| Only outside of meals | Ref. |
| With and outside of meals | 0.72 (0.39-1.33) |
| Only with meals | 0.53 (0.31-0.92)* |
| **Mediterranean drinking pattern[a] (n=2086)** | |
| No | Ref. |
| Yes | 0.62 (0.44-0.87)** |

Ortolá et al. J Gerontol A Biol Sci Med Sci. 2015 Aug 22. [Epub ahead of print]

# Biomarcadores cardiometabólicos y fragilidad

| | Odds ratio (95% CI) |
|---|---|
| **Cardio-metabolic biomarkers** | |
| Hs-CRP (per mg/dl) | **1.48 (1.23-1.80)** |
| Fibrinogen (per g/l) | 1.23 (0.94-1.61) |
| Leptin (per ng/dl, log-transformed) | **1.87 (1.38-2.54)** |
| Systolic blood pressure (per 5 mmHg) | 1.01 (0.96-1.06) |
| HDL-cholesterol (per 5 mg/dl) | **0.91 (0.85-0.99)** |
| Triglycerides (per 5 mg/l) | **1.04 (1.02-1.05)** |
| LDL-cholesterol (per 5 mg/dl) | **0.92 (0.89-0.96)** |
| HbA1c (per 1 % unit) | **1.48 (1.20-1.81)** |

García-Esquinas, et al. J Am Dir Assoc 2015; 16:748-54

# Salud cardiovascular ideal
## (un abordaje a lo largo de la vida)

| | No. of frailty cases | Odds ratio (95%CI) |
|---|---|---|
| **Number of ideal health metrics** | | |
| 0-1 ideal metrics | 40 | Ref. |
| 2 ideal metrics | 31 | 0.46 (0.26-0.81)** |
| ≥ 3 ideal metrics | 46 | 0.50 (0.30-0.83)** |
| *P-value for trend* | | 0.015 |
| **Cardiovascular metric score** | | |
| 0-5 | 26 | Ref. |
| 6 | 27 | 1.07 (0.56-2.05) |
| 7 | 23 | 0.74 (0.38-1.44) |
| 8 | 22 | 0.62 (0.32-1.21) |
| > 8 | 19 | 0.32 (0.16-0.63)** |
| *P-value for trend* | | <0.001 |

Analyses adjusted por potential confounders

Graciani et al. Submitted 2015

# Factores psicosociales y fragilidad

Research report

**Table 5** Percentage of the educational and occupational differences in frailty incidence among older women which is independently explained by the main groups of biological and clinical factors (mediators), and by their overlap

| | Primary or less vs university education<br>Per cent | Manual vs non-manual occupation<br>Per cent |
|---|---|---|
| Tobacco, alcohol and diet | 1.49 | 3.22 |
| Sedentary behaviour* | 8.42 | 2.42 |
| Obesity measures† | 13.87 | 0 |
| Morbidity‡ | 3.97 | 0 |
| Number of medications | 1.00 | 0.81 |
| Overlap | 21.75 | 8.87 |
| Unexplained | 49.50 | 84.68 |

The percentage of the educational disparities in frailty incidence which is independently explained by each group of mediators and by their overlap were calculated as follows: Two models were assessed: (A) educational level+age+number of baseline frailty criteria+all explanatory mediators except those of group X, and (B) educational level+age+number of baseline frailty criteria+all explanatory mediators (full model). The independent contribution of group X is then calculated as the percentage reduction in the OR of model B minus the percentage reduction in the OR of model A. The overlap, interpreted as the non-independent contribution of all groups of mediators, is calculated by subtracting the sum of the independent contributions of all groups of mediators from the percentage reduction in the OR of the full model (model B). The same method was used for the occupational differences in frailty incidence.

*Watching TV, seated in transportation, reading, listening to music.

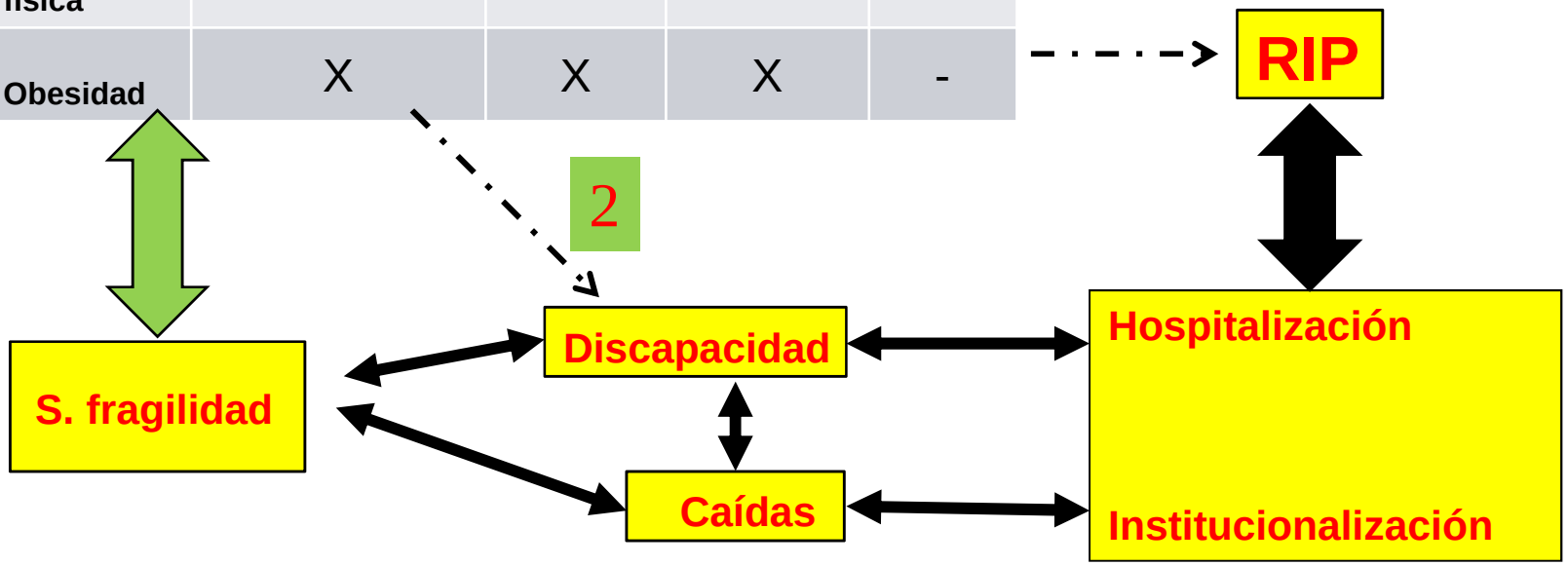
†Body mass index, abdominal obesity.

‡Depression receiving treatment, diabetes, cancer, cardiovascular disease, chronic lung disease, musculoskeletal disease.

Soler-Villa, et al. J Epidemol Community Health. 2015. In press.

# El objetivo de la prevención cardiovascular en las edades avanzadas

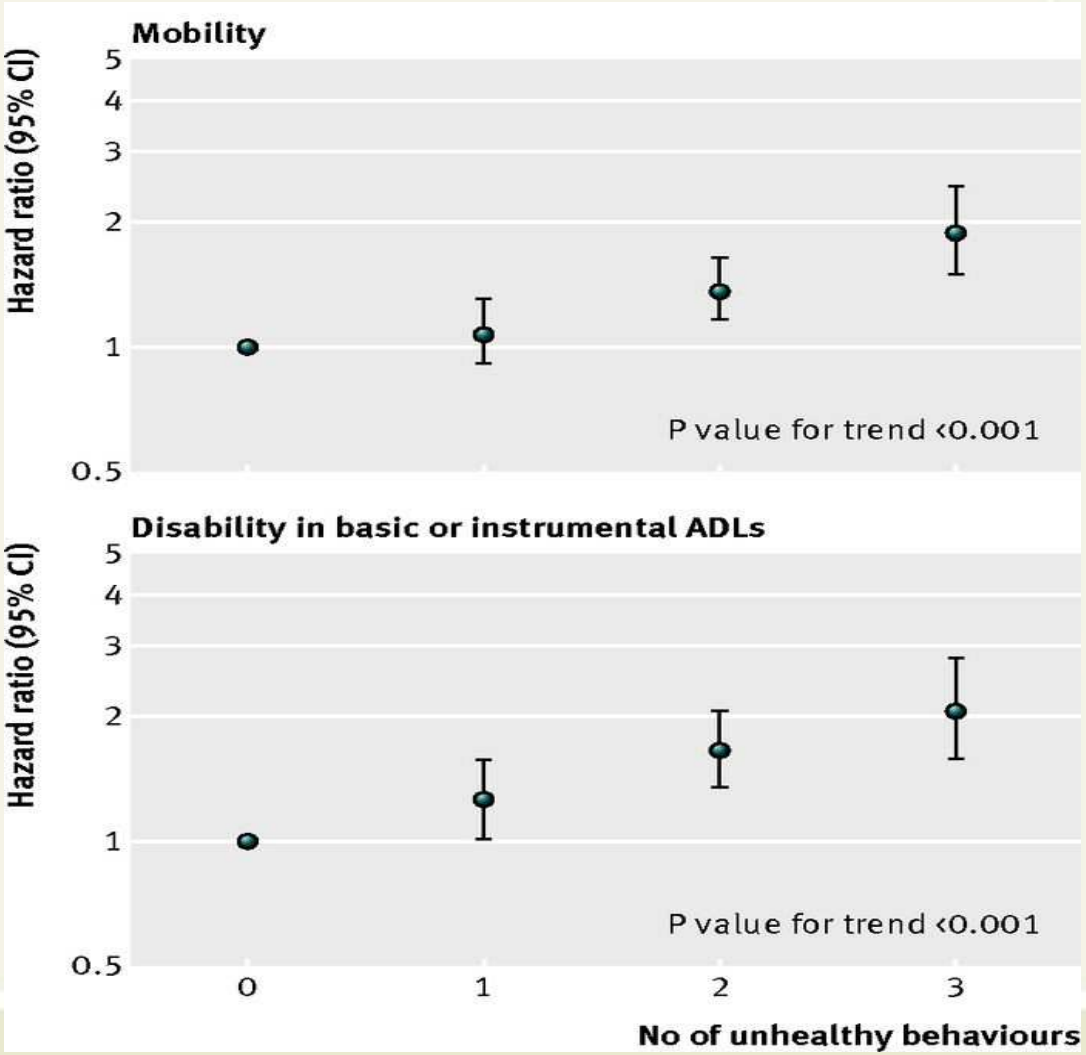
| | Enf. cardiovascular | Cáncer | Diabetes | EPOC |
|---|---|---|---|---|
| Tabaco | X | X | - | X |
| Abuso alcohol | X | X | - | - |
| Dieta pobre | X | X | X | X |
| Inactividad física | X | X | X | X |
| Obesidad | X | X | X | - |



# Hazard ratio of disability according to number of unhealthy behaviors* in older French adults

## The Three-City (Dijon) study

***Low/intermediate physical activity, consumption of fruit and vegetables less than once a day, and current smoking or short term ex-smoking):**




Artaud F et al. BMJ 2013;347:bmj.f4240

# Factors which might explain the association between unhealthy behaviors and increased disability

Table 4| **Role of potential mediators in explaining association between number of unhealthy behaviours and disability**

| Model | Hazard ratio (95% CI)* | Percentage reduction† |
|---|---|---|
| Model 1‡ | 1.40 (1.29 to 1.51) | — |
| Model 1 + body mass index | 1.37 (1.26 to 1.49) | 5.6 |
| Model 1 + cognitive function§ | 1.39 (1.28 to 1.50) | 2.1 |
| Model 1 + depressive symptoms¶ | 1.36 (1.25 to 1.47) | 9.0 |
| Model 1 + trauma** | 1.36 (1.26 to 1.48) | 7.1 |
| Model 1 + chronic conditions†† | 1.34 (1.24 to 1.46) | 11.5 |
| Model 1 + cardiovascular disease and its risk factors‡‡ | 1.38 (1.27 to 1.49) | 3.9 |
| Fully adjusted model§§ | 1.26 (1.16 to 1.37) | 30.5 |

Analyses based on 3844 participants without missing values for any covariates.

*Per increase of one unhealthy behaviour.

†$100\times(\beta_{\text{model 1}}-\beta_{\text{model i}})/(\beta_{\text{model 1}})$.

‡Adjusted for sex, marital status, their interaction, and education.

§Mini-mental state examination score.

¶Centre for Epidemiologic Studies depression scale.

**Bone fracture, recurrent falls.

††Diabetes, Parkinson's disease, vision difficulties, deafness, dyspnoea, non-steroidal anti-inflammatory drug use for joint pain, cancer.

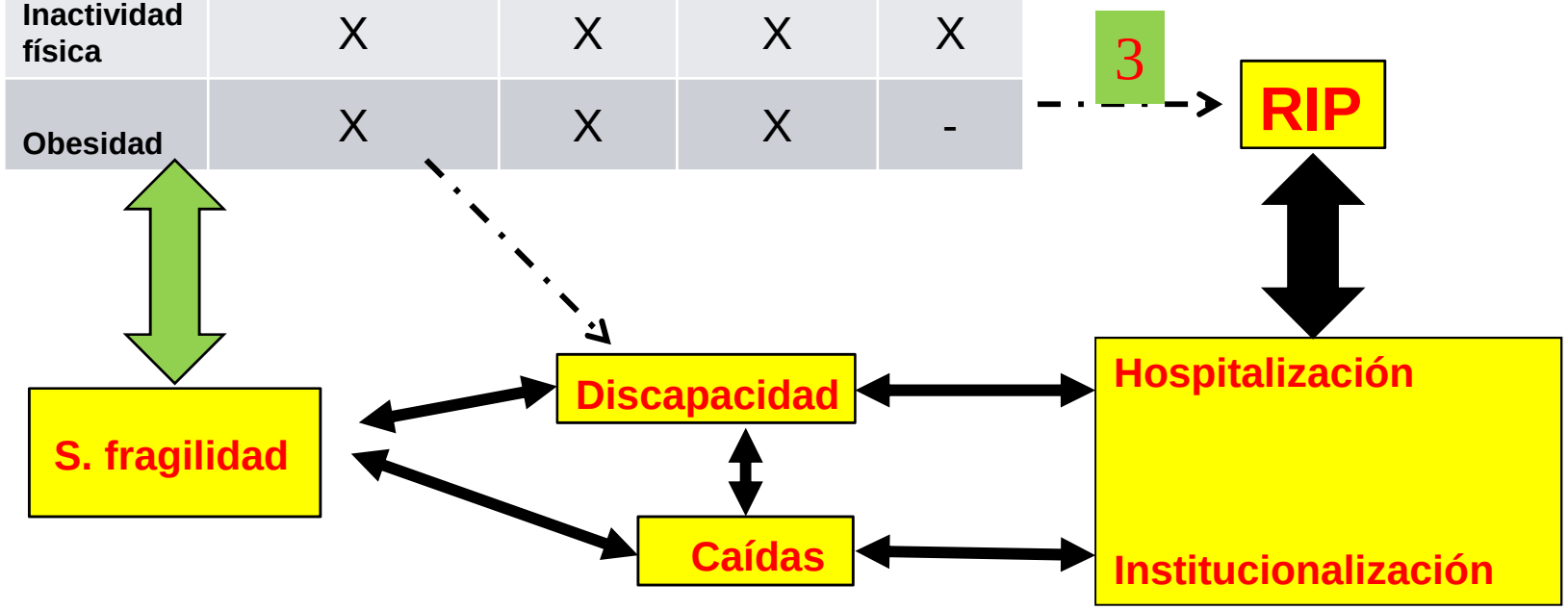
‡‡Stroke, coronary heart disease, lower limb arteritis, hypertension, hypercholesterolaemia.

§§All covariates included in model.

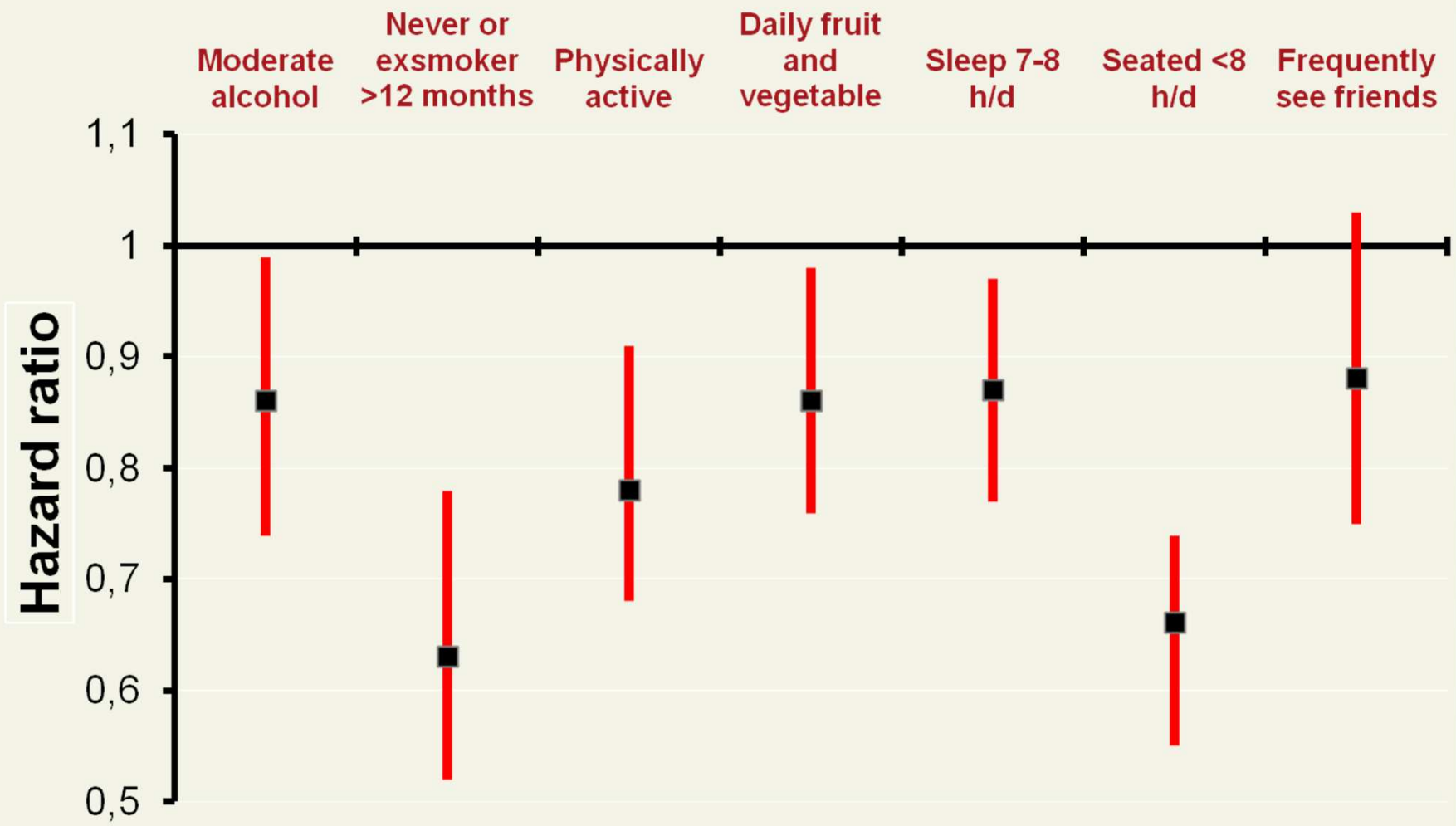
Artaud F et al. BMJ 2013;347:bmj.f4240

# El objetivo de la prevención cardiovascular en las edades avanzadas

| | Enf. cardiovascular | Cáncer | Diabetes | EPOC |
|---|---|---|---|---|
| Tabaco | X | X | - | X |
| Abuso alcohol | X | X | - | - |
| Dieta pobre | X | X | X | X |
| Inactividad física | X | X | X | X |
| Obesidad | X | X | X | - |



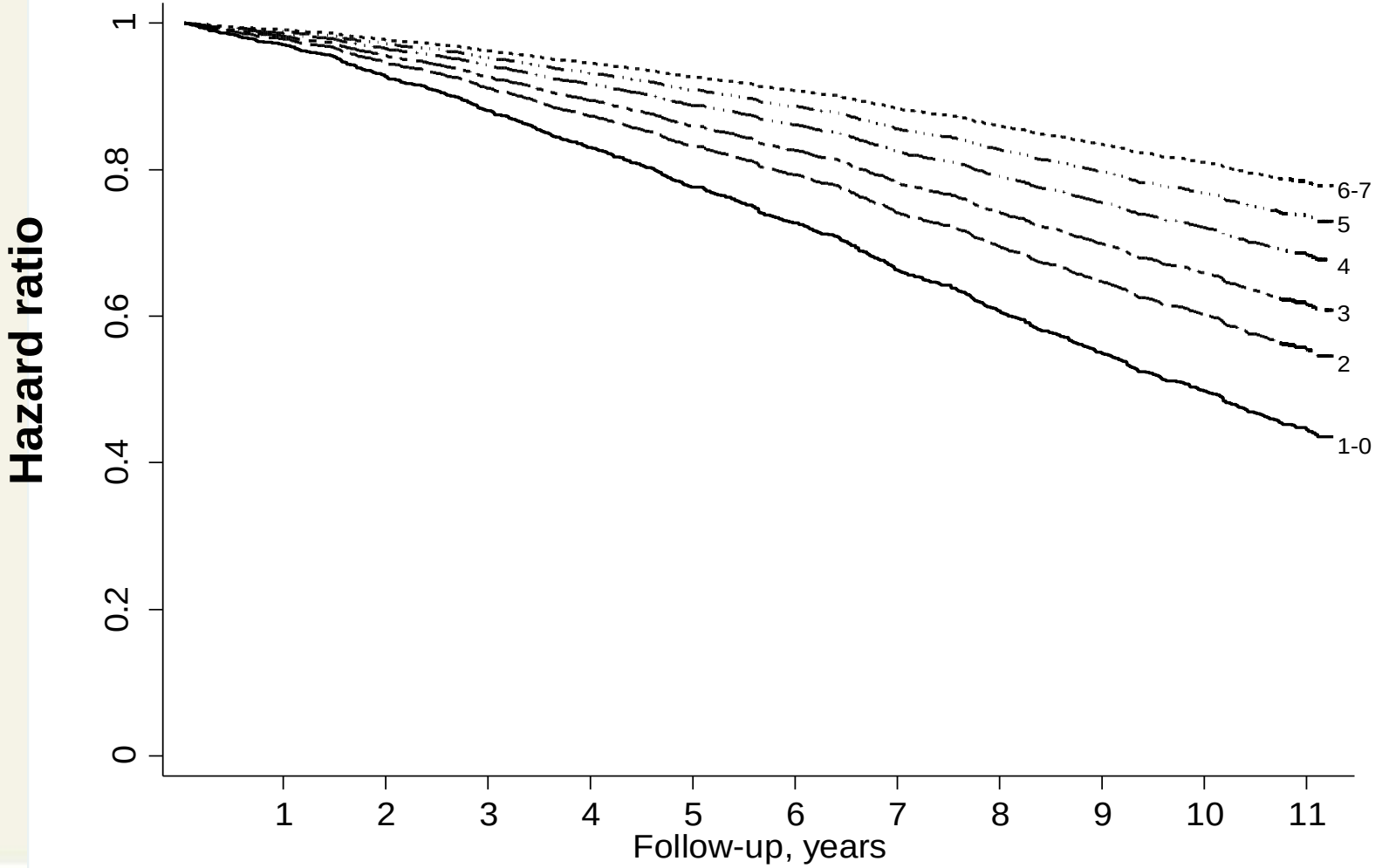
# Health behaviors and mortality over 11-y follow-up among older adults in Spain



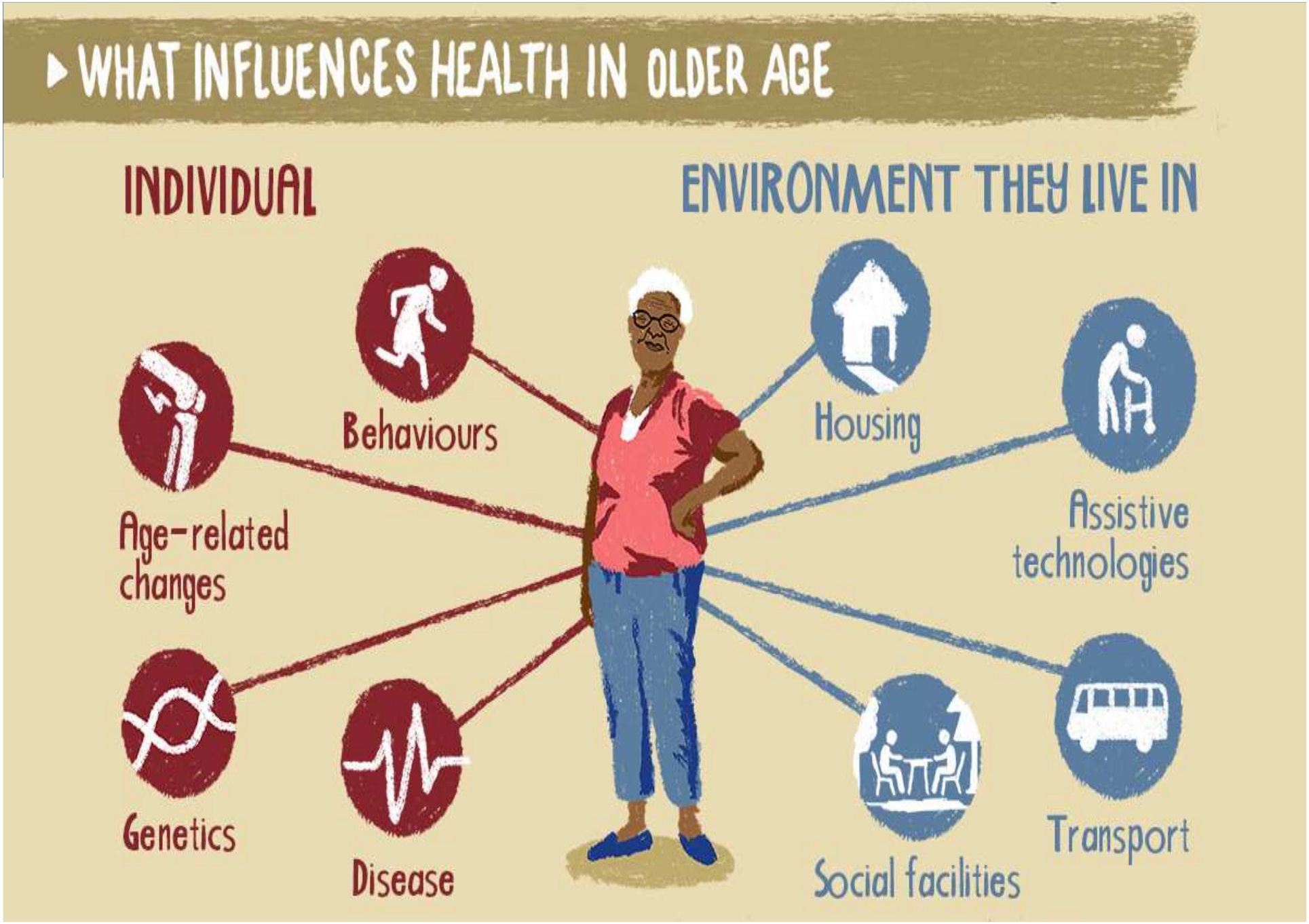

Adjusted for age, sex, SES, social class, BMI, WC, SBP, hypercholesterolemia, comorbidity, and the other health behaviors

**Martínez-Gómez et al. BMC Med 2013; Feb 22;11:47.**

# Adjusted survival over 11 years according to the number of healthy behaviors in among older adults from Spain




Martínez-Gómez, et al. BMC Med 2013; Feb 22;11:47.


WHAT INFLUENCES HEALTH IN OLDER AGE
INDIVIDUAL
ENVIRONMENT THEY LIVE IN
Behaviours
Age-related changes
Genetics
Disease
Housing
Assistive technologies
Transport
Social facilities

# Condiciones de la vivienda y fragilidad

## Housing conditions* and limitations in physical function in older adults

| | Mobility limitations | Agility limitations | Frailty | | IADL disability |
|---|---|---|---|---|---|
| | | | Pre-frail (vs. robust) | Frail (vs. robust) | |
| | OR | OR | OR | OR | OR |
| **No poor conditions** | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| **1 poor condition** | 0.91 | 0.93 | 0.99 | 1.26 | 1.29 |
| **≥ 2 poor conditions** | 1.07 | **1.61** | **2.35** | **15.21** | 1.15 |
| *p-trend* | 0.71 | 0.47 | 0.06 | **<0.01** | 0.39 |

*Apartment building without elevator, no heating at home, or the individual feels cold frequently

García-Esquinas et al. Submitted 2015

# WHAT IS NEEDED FOR HEALTHY AGEING

A change in the way we think about ageing and older people



Creation of age-friendly environments



Alignment of health systems to the needs of older people

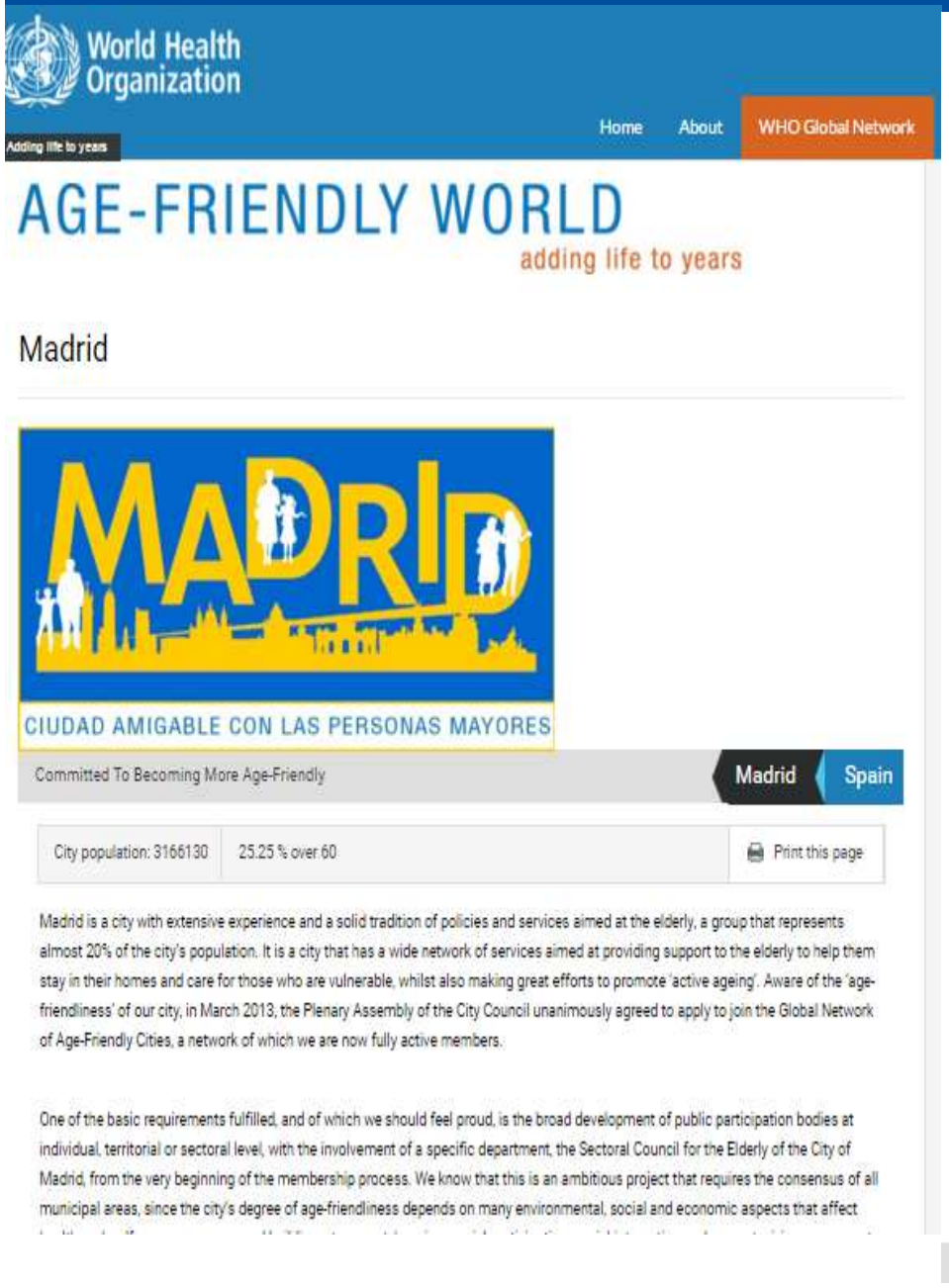


Development of systems for long-term care



# WHO Age-Friendly Themes




World Health Organization
Adding life to years
Home
About
WHO Global Network
AGE-FRIENDLY WORLD
adding life to years
Madrid
MADRID
CIUDAD AMIGABLE CON LAS PERSONAS MAYORES
Committed To Becoming More Age-Friendly
Madrid
Spain
City population: 3166130
25.25 % over 60
Print this page
Madrid is a city with extensive experience and a solid tradition of policies and services aimed at the elderly, a group that represents almost 20% of the city's population. It is a city that has a wide network of services aimed at providing support to the elderly to help them stay in their homes and care for those who are vulnerable, whilst also making great efforts to promote 'active ageing'. Aware of the 'age-friendliness' of our city, in March 2013, the Plenary Assembly of the City Council unanimously agreed to apply to join the Global Network of Age-Friendly Cities, a network of which we are now fully active members.
One of the basic requirements fulfilled, and of which we should feel proud, is the broad development of public participation bodies at individual, territorial or sectoral level, with the involvement of a specific department, the Sectoral Council for the Elderly of the City of Madrid, from the very beginning of the membership process. We know that this is an ambitious project that requires the consensus of all municipal areas, since the city's degree of age-friendliness depends on many environmental, social and economic aspects that affect


Ajuntament de Barcelona
BARCELONA
AGE-FRIENDLY CITY
Home
Presentation
News
Description
Documentation
Description
ABOUT
OBJECTIVES
WHO WE ARE
HOW IT'S DONE
Barcelona, Age-Friendly City is a commitment from Barcelona's City Council to
accessible for and respectful towards the elderly.
Active aging and participation ensures quality of life and well-being for all.
The Age Friendly Cities initiative is promoted by the World Health Organization
aging.
The WHO states that cities should adapt their environment and services so that th
health and actively participate in city life. An Age-Friendly city is a city for people
We are interested in learning about your experiences and hearing your sugge
project's eight different focus areas.
Social and civic participation
Soci
serv

**Cuadro 6.2.** **Ejemplos de intervenciones que contribuyen a lograr las cinco capacidades esenciales para el *Envejecimiento Saludable*, por sector**

| Capacidades | Sector | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Transporte** | **Vivienda** | **Asistencia y protección social** | **Desarrollo urbano** | **Información y comunicación** | **Educación y trabajo** | **Salud y atención a largo plazo** |
| **Satisfacer las necesidades básicas** | - Garantizar opciones de transporte seguro para el acceso a servicios básicos y servicios de alimentación y asistencia sanitaria | - Proporcionar acceso a una vivienda adecuada | - Implementar un seguro social para proporcionar seguridad de los ingresos<br>- Proporcionar asistencia a familias que cuidan a familiares mayores | - Garantizar que las estructuras y los entornos estén bien diseñados y sean accesibles y seguros | - Garantizar el suministro de información clara y accesible sobre los servicios sociales y de salud disponibles para las personas mayores<br>- Garantizar que en la planificación para casos de emergencia se consideren las necesidades de las personas mayores | - Ofrecer programas para volver a capacitarse, adaptados a los trabajadores mayores | - Garantizar la disponibilidad de una variedad adecuada de servicios de asistencia sanitaria y apoyo para promover, mantener y restablecer la capacidad |
| **Aprender, crecer y tomar decisiones** | - Garantizar que los operadores de transporte de primera línea reciban capacitación respecto de las necesidades de las personas mayores y las prácticas no discriminatorias | - Garantizar que las personas mayores dispongan de información sobre opciones de vivienda | - Promover la planificación anticipada de la atención | - Desarrollar infraestructura para peatones que respete los principios del diseño universal<br>- Apoyar el uso de transporte no motorizado | - Ofrecer programas educativos que acerquen a las personas mayores a las nuevas tecnologías que pueden ayudarlos a combatir la soledad y el aislamiento | - Proporcionar acceso a computadoras e Internet por un costo mínimo (por ejemplo, en bibliotecas o centros comunitarios)<br>- Garantizar la inclusión de subtítulos en los programas de televisión para las personas con dificultades auditivas | - Proporcionar presupuestos personales |
| **Tener movilidad** | - Garantizar que el transporte público sea accesible para las personas mayores y las personas con discapacidad<br>- Garantizar que haya asientos reservados para las personas mayores | - Ayudar con las reformas en el hogar | - Garantizar la disponibilidad de opciones especiales de transporte | - Garantizar la seguridad de las rutas para la conducción y para que los peatones crucen las calles<br>- Proporcionar estacionamiento prioritario para las personas mayores con discapacidad<br>- Proporcionar baños públicos limpios | - Garantizar que la información sobre opciones de transporte y horarios se encuentre disponible en formatos accesibles | - Garantizar que los lugares de trabajo se adapten a las necesidades de las personas mayores | - Proporcionar una evaluación temprana de las necesidades de vivienda |

| Capacidades | Sector | | | | | | |
|---|---|---|---|---|---|---|---|
| | **Transporte** | **Vivienda** | **Asistencia y protección social** | **Desarrollo urbano** | **Información y comunicación** | **Educación y trabajo** | **Salud y atención a largo plazo** |
| **Crear y mantener relaciones** | - Garantizar que el transporte público cuente con suficientes paradas y estaciones para que las personas mayores puedan acceder a centros para adultos mayores y centros religiosos, y visitar a sus familiares | - Diseñar viviendas que faciliten la integración comunitaria<br>- Garantizar que la vivienda no esté superpoblada | - Apoyar a las organizaciones voluntarias para facilitar el acceso de las personas mayores a actividades sociales | - Incluir lugares en la comunidad en los que las personas puedan reunirse, como centros comunitarios, centros para adultos mayores y parques públicos | - Proporcionar información accesible sobre ocio y actividades sociales | - Garantizar que los trabajadores mayores tengan oportunidad de compartir sus conocimientos con otros trabajadores | - Apoyar a las personas mayores para que puedan desarrollar y mantener su capacidad intrínseca |
| **Contribuir** | - Garantizar la disponibilidad de transporte para que las personas puedan trasladarse al trabajo o a realizar sus actividades de voluntariado | - Garantizar la ubicación de las viviendas cerca de los servicios y las oportunidades de trabajo y voluntariado | - Proporcionar seguro de desempleo | - Facilitar traslados a pie seguros hacia el transporte (por ejemplo, para ir al trabajo) y los lugares de recreación | - Proporcionar información sobre oportunidades de voluntariado<br>- Organizar campañas de comunicación para desalentar la discriminación por motivos de edad en el lugar de trabajo, tanto por parte de los empleadores como de los empleados más jóvenes | - Garantizar la existencia de diversas oportunidades para los trabajadores mayores<br>- Garantizar que la jubilación sea una opción y no una obligación<br>- Implementar políticas para evitar la discriminación por motivos de edad | - Proporcionar un seguro de enfermedad que incluya cobertura para gastos médicos catastróficos |