

PRESS RELEASE

Various studies associate socioeconomic disadvantage and higher rates of cancer

- **Findings illustrate the potential impact of the socioeconomic position upon many pathological processes, including cancer.**
- **Inflammatory and immune system dysregulations are more commonly found in disadvantaged social backgrounds.**
- **Social inequalities are also associated with a 2.1-year reduction in life expectancy between ages 40 and 85 years.**
- **These findings suggest the importance of considering the social economic factor an essential determinant of health.**

Milan/Brussels, 14 May 2018 - People with a more disadvantaged socioeconomic position in society are more likely to develop different types of cancer, according to the compilation of studies carried out by LIFEPATH, a project funded by the European Commission with the aim of investigating the biological pathways underlying social differences in healthy ageing.

The purpose of this analysis is to summarise investigations on social-to-biological processes occurring over the life course with an emphasis on processes involved in social inequalities in cancer. LIFEPATH uses a multidisciplinary approach integrating information on the socioeconomic position, environmental exposures and risk factors with biological measurements. The latest findings illustrate the potential impact of the socioeconomic position upon many pathological processes, including cancer.

The analysis carried out by LIFEPATH shows that inflammatory and immune system dysregulations and biological ageing are more commonly found in disadvantaged social backgrounds. Both are closely related to cancer. Despite this, social inequalities remain neglected as a public health imperative, not clearly identified as a risk factor in public policies as tobacco and sedentary lifestyle are.

Overweight and obesity have been shown to have a social pattern from early childhood. In a large study carried out by Dr Cathal McCrory, from The Irish Longitudinal Study on Ageing (TILDA), it was observed that parent and child body mass index (BMI) is linked to low socio-economic position from age three and remains so across the early childhood years. Thanks for the researches made by Dr Maria Kyrgiou (Imperial College of London) and summarized by IARC (Lauby-Secretan, International Agency for Research on Cancer), there is evidence that higher BMI may produce a dysregulation in the cellular and molecular mediators of immunity and inflammation, both related to cancer.

Another set of important social-to-biological mechanisms involving the immune system may be set up in childhood. A study by V. Garès and colleagues showed that children from more disadvantaged social backgrounds are more likely to be infected by a ubiquitous herpes virus called Epstein Barr virus (EBV). EBV is involved in certain types of cancers (including nasopharyngeal carcinoma, Burkitt lymphoma, Hodgkin lymphoma, and post-transplant lymphoproliferative disorder).

"The main interest of this finding is that early acquisition of pathogens affects the maturation of the immune system and in turn affects its function either positively or negatively", says Paolo Vineis, Professor at the Imperial College of London and leader of the LIFEPAATH project.

Among adults, a large multi-cohort study which investigated the relationship between socioeconomic adversity, risk factors and mortality, showed that social inequalities are associated with a 2.1-year reduction in life expectancy between ages 40 and 85 years. This was the strongest association with life expectancy, just after smoking (4,8 years), diabetes (3,9 years) and physical inactivity (2,4 years).

Another analysis focused more specifically on how the educational attainment of individuals is related to an epigenetic mechanism, DNA methylation, used to represent overall biological ageing. Carried out by Giovanni Fiorito (Italian Institute for Genomic Medicine) it suggests that individuals with a lower level of education experience a higher rate of biological ageing than those with a high education level. The analyses controlled for a number of behavioural factors, but nevertheless accelerated ageing among the more socially disadvantaged remained present. Socioeconomic adversity may be associated with accelerated epigenetic ageing, implicating biomolecular mechanisms that link social circumstances to age-related diseases and longevity.

"These findings underline the importance of considering the social economic factors as important determinants of mortality and accelerated ageing in their own right", says Paolo Vineis.

Prevention, the pathway towards health equality

The LIFEPATH researchers focused on understanding how life-course mechanisms can also be translated into meaningful findings for potential policy use. Results so far for example emphasize the need for primary prevention to slow the trend towards higher body mass and the consequent propensity towards a pro-inflammatory state, especially in childhood and adolescence.

To reduce the impact of socio-economic inequalities on health, it is also key to ensure equal access of the population to primary prevention, promoting a dialogue between researchers, policymakers and other stakeholders. In a world in which the international market for cancer therapeutics represents >\$40 billion per year, it is essential to invest in effective and low-cost interventions, such as primary prevention.

It is important to mitigate the consequences of adverse social trajectories in adulthood, to encourage behavioural change, and limit the consequences of occupational hazards that are also likely to affect biological predisposition to chronic diseases.

About LIFEPATH

LIFEPATH is an EU-funded project aimed to provide updated, relevant and innovative evidence for the relationship between social inequalities and healthy ageing to lay ground for the development of future health policies and strategies. LIFEPATH experts develop an original study design that integrates social science approaches with biology and big data analysis, using existing population cohorts and omics measurements.

Media resources, additional information, photos and videos about the project can be found in online Media Centre of LIFEPATH project: <http://www.lifepathproject.eu>

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