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## Socio-economic inequalities: A review of methodological issues and the relationships with cancer survival

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## Abstract

During the past few decades, many studies on socio-economic factors and health outcomes have been developed using various methodologies with differing approaches. A bibliographic research in MEDLINE/PubMed and SCOPUS was carried out for the period 2000–2011 to describe the influence of socio-economic status (SES) on cancer survival, in particular with reference to the outcome of European research results and the results of some cases of other Western studies.

This review is divided into two sections: the first describing the different approaches of the study on individuals and populations of the concept of “social class” as well as methods used to measure the association between deprivation and health (i.e. ecological level studies, deprivation indexes, etc.); and the second discussing the association between socio-economic factors and cancer survival, describing the roles of various determinants of differences in survival, such as clinical and pathological prognostic factors, together with consideration of diagnosis and treatment and some patients’ characteristics.

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## 1. Introduction

### 1.1. The dimensions of the issue

Owing to a consistent increase in life expectancy and ageing of the Western population, the socio-economic (SE) burden which health systems and social policies have to cope with is growing. Cancer is a disease that is more frequent during old age; in fact, incidence and mortality rise exponentially after 50 years of age. In Europe in the year 2000 more than 65% of all deaths from cancer occurred in the elderly, with an age >65 years [1].

Cancer is a chronic disease whose clinical history has a strong relationship with SE factors which affect cancer risk, access to health care and the possibility of a timely diagnosis, as well as prognosis and therapeutic outcomes. From this point of view, cancer could be defined as a real “social disease” [2,3]. Two European projects, ELDCARe and EUROCHIP, have focused on this issue and shown that the survival of cancer patients is closely linked to both SE and healthcare-related factors [3–6].

Combining these two above-mentioned aspects, strong evidence surfaces of a growing disease burden which must be faced on the basis of the different characteristics of patient groups in the population. For this reason, the definition of “inequalities in health” is of utmost importance if we are to effectively address the current health and social issues and provide adequate information for the improvement of the distribution of existing resources in order to cope with the differing needs of different patient groups, defined by age and SE condition.

It has also been found that belonging to a particular social group strongly influences the chances of survival, and it is expected that this phenomenon will increase over the next few years due to the worldwide increase in SE differences in the population; these can come about following certain events such as an economic crisis or the reduction of state benefits and allowances that can often occur in most Western countries. It is a known fact that SE differences determine healthcare inequalities within a country, but the problem becomes even more marked when analysing the phenomenon

between countries [2]. In this case, the variation in SE levels become by far the main factor influencing health outcomes.

Under these conditions, a mandatory task for the epidemiologist is to provide both politicians and health planners with more adequate knowledge so as to improve the efficacy of their decisions and to allow a better evaluation of those decisions. To this end, scientific research is aware that future developments will have to take into consideration a wider study of variables compared to those considered so far, as well as the relevance of such variables (not specifically clinical ones) as markers influencing health outcomes. In fact, there is a large amount of evidence that psychological status, social support, and economic conditions can also affect the natural history of the disease, from exposure to risk factors right up to treatment and follow-up [7].

### 1.2. Aims

The main aim of this review is to contribute to the interpretation, analysis and discussion of the existing knowledge of the influence of socio-economic status (SES) on cancer survival: in particular, that based on the experience gathered from European areas of research. To this end, the review has been divided into two sections as follows. In the first section on methodology, the purpose is to reproduce the framework in which these SES issues are studied and confronted. The article describes the various approaches of studying individuals and the population, depicts the concept of what we mean by “social class”, and summarises the methods used to measure the association between deprivation and health (for example, ecological level studies, deprivation indexes, building studies, etc.). In the second part of the review, filtration of the results in the light of demographic trends and the growing gap between different SES groups, the purpose is to describe the findings of studies on SES and cancer survival, focusing particularly on European comparisons and on some relevant studies from other Western countries. This part analyses the role of the most important determinants of differences in survival – such as disease extension at diagnosis, tumour biology, and screening programmes – as well as other factors that are responsible for an earlier diagnosis, treatment (i.e.

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