

Area disadvantage, individual socio-economic position, and premature cancer mortality in Australia 1998 to 2000: a multilevel analysis

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Abstract

Objective To examine associations between area and individual socio-economic characteristics and premature cancer mortality using multilevel analysis.

Methods We modeled cancer mortality among 25–64-year-old men and women ($n = 16,340$) between 1998 and 2000 in Australia. Socio-economic characteristics of Statistical Local Areas ($n = 1,317$) were measured using an Index of Relative Socio-economic Disadvantage (quintiles), and individual socio-economic position was measured by occupation (professionals, white and blue collar).

Results After adjustment for within-area variation in age and occupation, the probability of premature cancer mortality was highest in the most disadvantaged areas for all-cancer mortality for men (RR 1.48 95% CI 1.35–1.63) and women (RR 1.30 95% CI 1.18–1.43) and for lung cancer mortality for men (1.91 95% CI 1.63–2.25) and women (1.51 95% CI 1.04–2.18).

Men in blue collar occupations had a higher rate of cancer mortality (RR 1.57 95% CI 1.50–1.65) and lung cancer mortality (RR 2.31 95% CI 2.09–2.56), whereas men in white collar occupations had a lower all-cancer mortality rate (RR 0.78 95% CI 0.72–0.85). Compared with

professionals, women in white collar occupations had an all-cancer mortality rate that was lower (RR 0.85 95% CI 0.80–0.90). When deaths from breast cancer were excluded, women in blue collar occupations had a significantly higher all-cancer mortality rate than professionals (RR 1.12 95% CI 1.02–1.22).

Conclusions Area disadvantage and individual socio-economic position were independently associated with premature cancer mortality, suggesting that interventions to reduce inequalities should focus on places and people.

Keywords Cancer · Mortality · Socio-economic factors · Socio-economic status · Australia

Introduction

There is considerable evidence that an individual's socio-economic position (SEP) is related to their likelihood of cancer mortality [1–9]. There is also evidence that socio-economic characteristics of the areas, in which people reside contribute to cancer mortality [10–15]. Most of the evidence on area disadvantage and cancer mortality has been based on ecological studies. The limitations of ecological study designs are well documented [16]. In brief, ecological studies typically compare the cancer profiles of advantaged and disadvantaged areas using data aggregated to a single geographic scale, such as states, provinces, or postal areas, and hence, are not able to indicate whether, and to what extent, area-differences are due to contextual (area) or compositional (individual) influences. Few studies of cancer mortality have considered individual and area effects simultaneously using a methodology that allows for variation in mortality to be partitioned over multiple levels [17–19]. Yet, in order to develop effective intervention

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