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Trends and levels of avoidable mortality among districts: "Healthy" benchmarking in Germany

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ABSTRACT

All developed nations use indicators to monitor the health of their populations, but few nations provide a systematic monitoring of indicators for small regional units. The present study aims to contribute to the literature a single graph that provides a quick and comprehensive overview of the level of and trend in avoidable mortality in each German district as compared to the national average and development. Using mortality data from the German Federal Statistical Office, I calculated the age-standardized number of avoidable deaths, separately for men and women, in each of the 413 local districts in Germany between 2000 and 2008.

For men, the graph illustrates that the districts with the highest rates of avoidable mortality are still located in the former East German states, but that some of these districts have improved significantly between the years 2000 and 2008 and are approaching the nationwide average. The graph for women shows slightly different results. Here, many urban areas show high rates of avoidable mortality with both favorable and unfavorable trends.

Health professionals could use the graph to establish realistic benchmarks that are based on countrywide comparisons of districts to a national average and trend, which may in turn help them to identify local districts in need of primary or secondary prevention programs or a more effective provision of health care.

1. Introduction

Germany is one of the few countries in the world where equality of living conditions among regions (the German *Bundesländer*) is constitutional law [1]. Equitable access to health care and an equal chance at a healthy life for all citizens are generally understood to be part of this goal [2]. Furthermore, the idea of a right to health care and equality of living conditions is closely linked to the World Health Organisation's (WHO) view that the main goals of a health system should be to improve the health of a population, and to try to respond to the reasonable health care expectations of those populations [3]. Together these constitutional mandates and international postulations may provide the theoretical justification for the systematic monitoring of health indicators related to the availability and provision of health care.

Moreover, monitoring health at a local level may inform supply planning in both the outpatient and inpatient sectors. The responsibility for achieving equitable access to health care in Germany has been delegated to the self-administered bodies of the statutory social health insurance (SHI), which covers almost 90% of the German population [4]. In the outpatient sector, the associations of SHI physicians (*Kassenärztliche Vereinigungen*) in each *Bundesland* are legally obliged to provide an equitable level of health care to all ambulatory patients, according to their needs. They attempt to meet this objective through so-called 'needs-based planning', which regulates the number of physicians that are authorized to open a practice in

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each planning region (the 395 planning regions largely correspond to the 413 German districts) on the basis of nationally defined physician–population ratios [5]. Similarly, the inpatient sector is managed at the state level, but the planning process is often linked to the district level. Providing information on health outcomes that reflect the quality of health care provisions in the planning units may be helpful in determining how to meet the health care needs of the populations in these small regional units.

Currently, all developed nations use health indicators to monitor the health of their population at the national or large-scale regional levels, but only some nations provide a systematic monitoring of indicators for small regional units comparable to local districts in Germany. Good examples of health monitoring are the U.S. Dartmouth Atlas of Health Care, the English NHS Atlas of Care, the Austrian "Österreichischer Strukturplan Gesundheit", the Dutch "Zorgatlas des Nivel" or the newly introduced French "Agences regionales de santé". The Dartmouth Atlas for Health Care, for example, not only documents how medical resources are distributed and used in the United States, but also provides a benchmarking tool that enables the comparison of data from regions or hospitals with the national average or state average [6]. On the active policy side, the U.S. state of Oregon serves as an example of a state that has used health benchmarks as part of a long-term project to monitor health and carry out strategic planning. Since 1994 county health departments in Oregon have been required to set yearly priorities and targets in accordance with selected benchmarks [7].

Similar data-gathering initiatives do exist at the district level in Germany, but there is a lack of systematic monitoring or inclusion of the results in strategic planning or financing decisions. Moreover, most of the indicators focus only on health expectancy or mortality. These indicators are, however, influenced by both a high number of deaths in old age and systematic influences by other determinants including environmental, socioeconomic and lifestyle factors. This implies that they do not necessarily reflect the effectiveness of the health care system but primarily the influence of other non-health system determinants.

The present analysis addresses these shortcomings and presents a tool for monitoring and planning health that is based solely on data for avoidable mortality. The indicator 'avoidable mortality' incorporates the notion that deaths from certain causes would not occur given effective prevention measures, or timely and appropriate access to health care, and thus aims to provide a health outcomes measure that reflects the effectiveness of health care [8,9]. In order to account for the fact that the effectiveness of (primary and secondary) prevention and treatment of manifest illnesses substantially decreases after a particular age, only deaths before a specified age (e.g. 70), were considered avoidable.

Various lists of causes of death considered to be preventable or amenable to health care have been published, each of which are based on a different conceptualisations of avoidable mortality [9–23]. In this study, I chose to rely on the list of avoidable deaths compiled by Nolte and McKee [24], whose selection of causes of death is based on earlier work by Tobias and Jackson [25], who updated a list provided by Charlton et al. [26] and by Mackenbach [27]. Nolte and McKee selected conditions that were considered to be amenable to secondary prevention or medical treatment. In line with a later list published by Page et al. [28] who compiled a revision of the list developed by Tobias and Jackson [25], I expanded the list to include additional types of cancer that have lately been identified as being amenable to health care (cancer of the lip, oral cavity and pharynx and cancer of the liver) or as being potentially avoidable by primary prevention (cancer of the esophagus and cancer of the trachea, bronchus and lung). Also added to the list based on Page et al. [28] were traffic accidents, which are avoidable through primary prevention (i.e. road safety), and alcohol-related diseases, which are avoidable through primary prevention of alcohol misuse and are to some extent amenable to health care. Page et al. [28] provide a detailed rationale for including these conditions. Thus, most of the conditions on the list are amenable to secondary prevention or health care. A small share of indications, however, is not under the direct control of the health system but might be responsive to primary prevention programs against smoking and alcohol misuse or might be influenced through public policies.[1]

The concept of avoidable mortality has some important limitations, chief among which is the selection of causes of death identified as potentially avoidable which – even if well informed – remains ultimately subjective [24]. Second, the rates of avoidable mortality are not a fully adequate indicator of health care availability and provision because they are irrelevant to those services that are focused primarily on relieving pain and improving quality of life [24]. Third, the frequently found high correlation with socioeconomic factors suggests that a large share of differences in these deaths is determined by socioeconomic-related differences in lifestyle among regions. While this is to a large extent true for cardiovascular diseases, most cancer types and alcohol misuse, other causes of death (for example death following measles or appendicitis) should not be affected by lifestyle. Moreover, primary and secondary prevention and medical care should contribute to reductions in potentially avoidable mortality even – or especially – in deprived areas with high risk factors and a resulting high need for health care [22].

Table 1 presents an overview of all the types of diseases considered in this study.

Several previous studies have already investigated differences in avoidable mortality within a single country [12,14,30–33]. In a 2004 study for Germany, Wiesner and Bittner [32] used the concept of avoidable mortality to explain differences in mortality rates and life expectancy

[1] Although we aimed, in accordance with the list published by Nolte and McKee [8], to include Hodgkin's disease (for the age group one to 70 years) and leukemia (for the age group one to 44 years) in our analysis as avoidable forms of cancer, mortality data on these two disease entities were incomplete, perhaps due to an error in the official coding of variables provided to us by the German Federal Statistical Office. Considering, however, that the cancer types account for a rather small proportion of overall cancer mortality in the relevant age groups [29], it seems unlikely that the absence of these data has distorted our results in a substantial way [33].