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REVIEW

Rural Inequalities in the Australian Burden of Ischaemic Heart Disease: A Systematic Review

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Objective To summarise all available evidence on the differences in burden of ischaemic heart disease (IHD) between metropolitan and rural communities of Australia.

Methods Systematic review of peer-reviewed literature published between 1990 and 2014. Search terms were derived from the four major topics: (1) rural; (2) ischaemic heart disease; (3) Australia; and (4) burden of disease. Terms were adapted for six databases and two independent researchers screened results. Studies were included if they compared outcomes related to IHD in adults aged 18 years and over, between (at least) two areas of differing remoteness, at the same point in time.

Results Twenty studies were included and presented data collected between 1969 and 2010. Seventeen studies showed a clear disparity in IHD outcomes between major cities and regional and remote areas, with a consistently higher burden observed outside major cities. Among Aboriginal and Torres Strait Islander populations, fewer differences were observed and some IHD outcomes were not associated with remoteness.

Conclusions Populations outside of major cities in Australia bear a disproportionately high burden of ill health due to IHD, yet the majority of the rural populations are yet to be investigated in terms of burden of disease outcomes from IHD.

Implications Remoteness is a key determinant of IHD burden in Australia. The reasons for increased IHD burden in rural compared to metropolitan communities of Australia are poorly understood, which has implications for the design of targeted interventions to reduce geographical inequalities.

Keywords Rural • Heart disease • Burden • Inequality

Introduction

The most common form of CVD in Australia is ischaemic heart disease (IHD) (also known as coronary heart disease (CHD)), which includes two major clinical presentations: acute myocardial infarction (AMI); and angina pectoris (AP). Ischaemic heart disease significantly contributes to the burden of disease and premature mortality in Australia as well as the rest of the world [1].

Where an individual resides may affect their ability to obtain optimal health status. Population density, and as a result, access to services, varies immensely across Australia [2,3]. Life expectancy in Australia decreases with increasing remoteness [4], and rural populations have significantly

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higher risk of cardiovascular diseases, cancers, and all-cause mortality [1].

The terms 'rural' and 'remote' can be used to describe a wide variety of geographical areas outside of major cities or urban centres [5]. Australian Institute of Health and Welfare (AIHW) 2009-10 data show that death rates from IHD for men and women in remote and very remote areas are 1.3 and 1.2 times greater than for men and women in urban areas [6]. Little is known about how other IHD outcomes, such as case fatality rates, incidence, and prevalence vary by remoteness.

There is some evidence that urban-rural inequalities in IHD and chronic disease burden are also present in the Aboriginal and Torres Strait Islander (ATSI) population [6,7]. ATSI peoples are more likely to live in rural areas than urban areas and are also more likely to suffer from a higher prevalence of chronic diseases [4,8]. This has been suggested as a possible explanation for higher IHD burden outside of major cities [4].

Advances in the prevention and treatment of IHD has successfully reduced heart disease mortality [6]. However inequalities for rural populations remain [6]. Data collected by the Australian Bureau of Statistics (ABS) and the Australian Institute for Health and Welfare (AIHW) indicate that there is much to be discovered about the role of different factors (for example, socio-economic status (SES), ATSI heritage, reduced access to health services or differences in behavioural and clinical risk factors) in contributing to the increased and preventable burden of IHD in rural areas [1,4]. It is also unclear whether this disadvantage is uniform, across all disease indicators, making it difficult to set priorities and identify steps to reduce preventable inequalities. This review sets out to address these limitations and provide a summary of the evidence in this area, to identify gaps in data coverage for Australians, assist in informing policy makers and practitioners, and support the formulation of evidence-based, targeted interventions.

Objectives

The objective of this study was to summarise the available peer-reviewed literature that provided comparisons of the IHD burden between urban and rural areas of Australia, and identify gaps in the literature.

Methods

Systematic review - Prospero review registration #CRD42015020002.

Scope

This review included studies with outcomes relating to the burden of IHD in rural versus urban populations of Australia published in the peer-reviewed literature between 1990 and 2014. Due to significant heterogeneity in the methods and outcomes of studies included here, it was not feasible to perform a meta-analysis. Rural, remote and urban are defined and measured in many different ways including population density, municipal zoning, service provision and urban footprint [14,15]. For the purposes of this publication, the terms 'urban', 'metropolitan' and 'metro' are considered to mean localities defined as major cities by the Australian Statistical Geography Standard (ASGS) remoteness areas [3]. The terms 'rural', 'regional' and 'remote', are understood to mean areas not defined as major cities by the ASGS (including inner regional, outer regional, remote and very remote).

Search Methods to Identify Studies

Six databases (CINAHL, Medline, EMBASE, Academic Search Premier, Rural and Remote Health Database, Health and Society Database) were searched in July 2014. Recent cross-sectional and longitudinal studies conducted in Australia formed the basis for this review. Search terms provided coverage over four main topic areas of (1) rural; (2) ischaemic heart disease; (3) Australia; and (4) burden of disease, and terms were adapted appropriately to each database. A supplement of full search terms is available on request from the corresponding author.

Inclusion Criteria

Studies were included in the review if they: were published in English in a peer-reviewed journal from 1990 to 2014; reported data from a subset of the Australian adult population; and, provided a comparison of at least two regions with differing remoteness classifications at the same point in time. Studies focussing solely on Indigenous Australians that compared regional/remote burden of disease to urban Indigenous populations were included. Studies were included if they reported at least one of the following population level indicators of the burden of IHD as primary outcomes: mortality; morbidity; prevalence; incidence; case-fatality; hospital separations; disability-adjusted life years (DALYs); or treatment outcomes. Data related to any of the specific conditions within IHD were also included (e.g. AMI, AP, Acute Coronary Syndrome (ACS)).

Screening

Screening for studies was conducted independently by two researchers at title, abstract and full text stage (LA & KP). Differences were discussed and resolved by consensus, with referral and discussion with a third reviewer if necessary (MN). The Newcastle Ottawa scale (NOS) for cohort studies was used by two researchers to independently assess the quality of all final full texts that were to be included. The NOS applies three criteria of study selection, comparability to other studies, and quality of outcomes. All studies were assessed against this scale (not just cohort studies), as the criteria applied by the scale are general enough to be transferable [9]. Data extraction was undertaken by the lead researcher, and a 25% sample of the studies was replicated by a second researcher and the two data extracts compared and checked for consistency.

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