

# Non-Communicable Diseases: Shining a Light on Cardiovascular Disease, Oman's Biggest Killer

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**N**on-communicable diseases (NCDs) are the leading cause of death globally, killing 38 million people each year with almost three-quarters of deaths occurring in low- and middle-income countries. The four main NCDs are cardiovascular diseases (CVDs; predominantly heart attacks and stroke), cancers, respiratory diseases (particularly chronic obstructed pulmonary diseases and asthma), and diabetes. Sixteen million NCDs deaths occur before the age of 70; 82% of these “premature” deaths occurred in low- and middle-income countries. CVDs account for the most deaths annually (17.5 million people), followed by cancers (8.2 million), respiratory diseases (4 million), and diabetes (1.5 million). These four groups of diseases account for 82% of all deaths.<sup>1</sup>

Aging, rapid unplanned urbanization, and unhealthy lifestyles are risk factors for these diseases. Globalization has led to unhealthy lifestyles, which manifest in individuals as raised blood pressure, increased blood glucose, elevated blood lipids, and obesity.<sup>1</sup> Tobacco use, physical inactivity, alcohol abuse, and unhealthy eating all increase the risk of dying from a NCD. Genetics and cancer-associated infections are other known risk factors.<sup>2</sup>

In Oman, NCDs account for approximately 68% of total deaths.<sup>3</sup> Of these deaths, CVDs account for 33%, diabetes and cancer account for 10% each, and chronic respiratory diseases account for 2%. In total, 18% of 30 to 70 year olds in Oman have a high probability of dying from these four NCDs.<sup>4</sup> More than 10% of youth (13–15 years of age) use tobacco products (16% boys and 5% girls), while 12% have been affected by passive smoking.<sup>3</sup> The annual per capita average consumption of pure alcohol in those aged over 15 is 0.9 liters (1.2L in males and 0.4L in females).<sup>5</sup> The prevalence of insufficient physical activity in adolescents is 84% (77% in boys and

90% in girls).<sup>2</sup> Raised blood pressure in adults is seen in 25% of the population (27% in males and 22% in females), while obesity is seen in 21% of the population (19% in males and 24% in females).<sup>4</sup>

CVDs are a group of disorders of the heart and the blood vessels, which include coronary heart disease (CHD), congenital heart disease, cerebrovascular and other vascular diseases. Cardiovascular disease, commonly used interchangeably with heart disease, has increasingly contributed to global mortality rates and currently is the primary cause of death.<sup>6</sup> CVDs are the number one cause of death globally: more people die annually from CVDs than from any other cause. An estimated 17.5 million people died from CVDs in 2012, representing 31% of global deaths. Of these deaths, an estimated 7.4 million were due to CHD and 6.7 million were due to stroke.<sup>7</sup> Over 80% of CVD deaths take place in low- and middle-income countries. Of the 16 million deaths under the age of 70 due to NCDs, 37% are caused by CVDs.<sup>1</sup> In Oman, CVDs are the leading cause of death around 30% of all Ministry of Health hospital deaths.<sup>8</sup>

The World Health Organization (WHO) projects that there will be around 20 million deaths due to CVDs in 2015 reiterating the view that CVDs will continue to dominate mortality trends in the future.<sup>9</sup> Mortality rates are usually linked to epidemiological transitions, which Oman has seen a considerable amount of in the past 25 years. There exists an uneven distribution of age-adjusted CVDs mortality around the world with the lowest rates in advanced industrialized countries and parts of Latin America. This could be attributed to a reduction in the burden of CVD and improvements in lifestyle-related risk factors associated with CVDs in these countries. Hence, age-adjusted mortality rates are higher in Oman and Saudi Arabia, compared to countries like Japan, France, and the United States.

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The highest mortality rates are in Eastern Europe and a number of low- and middle-income countries.

Hypertensive heart diseases are the main form of all CVDs in Oman (accounting for 71%) whilst ischaemic heart disease is the foremost cause of CVDs death globally.<sup>6,8</sup> The incidence of acute coronary syndrome among Omanis is one of the highest in the world with a crude incidence rate of 338.9 per 100,000 person-years.<sup>10</sup> This could be attributed to the changing lifestyles of Omanis and hence greater susceptibility to cardiovascular risk factors. Individuals with hypertension, diabetes mellitus, a family history of CHD, dyslipidemia, and those working in sedentary occupations were found to have a high risk of CHD.<sup>11,12</sup>

Congenital heart diseases, a range of birth defects that affect the normal functioning of the heart, also form an important component of heart disease in Oman. With an incidence of 7.1 per 1000 births, congenital heart disease accounts for around 5% of all congenital disorders.<sup>13,14</sup> A predominance of simple defects, rather than cyanotic and complex defects, was seen in the older age-group owing to early mortality and loss of follow-up among patients with complex forms of the disease.<sup>15</sup> Currently, tertiary hospitals in Muscat and a recently opened centre in Sultan Qaboos Hospital, Salalah, are the only centers available that cater to interventional cardiology and cardiac surgery. This results in long waiting lists for patients who require this service. The recently opened National Cardiac Centre at the Royal Hospital is a step in the right direction and more needs to be done to meet the expected increased demand in the future.

The trends seen provide a compelling justification for the urgent need to address the growing burden of CVDs. A national policy has been developed for NCD and discussions are underway to form a coordinated multisectoral action plan to implement targets and indicators in line with the global WHO targets and indicators, as well as develop and strengthen a surveillance system. A national strategic program for NCDs, which aims to conduct research covering the full spectrum of NCDs (identification, management, and control and prevention), is already underway.

There is also a need to standardize methodologies and to improve national reporting and early prevention efforts. Primary and secondary prevention efforts are vital to decrease mortality rates

in the middle-aged and beyond.<sup>9</sup> Community-based initiatives, including the Nizwa Healthy Lifestyle Project and the Health Promoting School Initiatives, provide a framework for addressing health concerns particularly CVDs, and promoting a healthy diet and physical activity. Prevention through the promotion of a healthy lifestyle should be the cornerstone of reducing CVDs in Oman and has to start as early as at preschool level. The medical community in Oman, especially the research community, should take up this challenge head-on and work on addressing the preventive and curative components of CVDs.

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