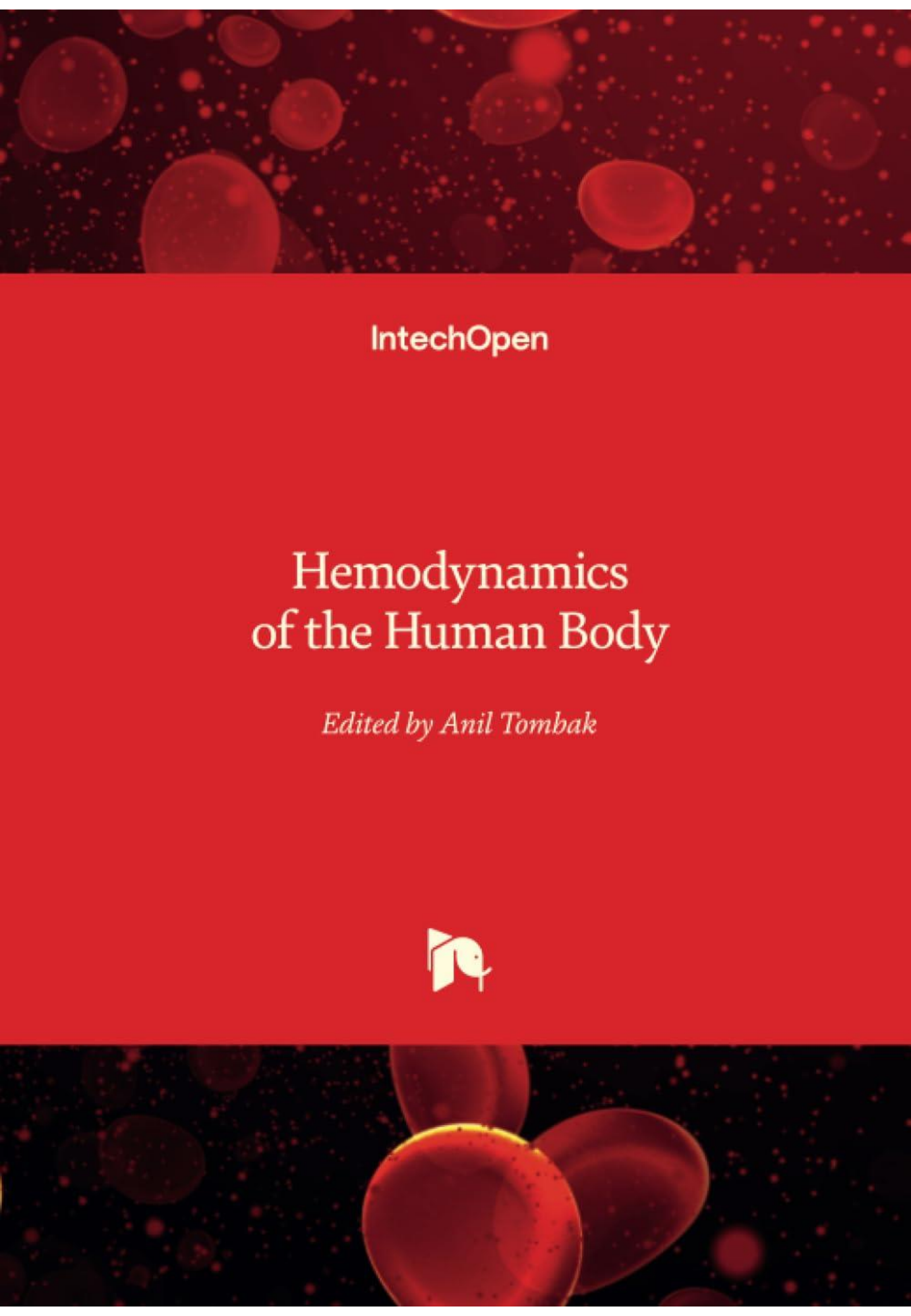


The background of the book cover features a microscopic view of red blood cells. The top half shows a field of cells against a dark red background, while the bottom half shows a more detailed view of several cells against a black background. The cells are depicted with a reddish-orange hue and a granular texture.

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Hemodynamics of the Human Body

Edited by Anil Tombak



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This Edited Volume *Hemodynamics of the Human Body* is a collection of reviewed and relevant research chapters, offering a comprehensive overview of recent developments in the field of medicine. The book comprises single chapters authored by various researchers and edited by an expert active in the hemodynamics research area. All chapters are complete in themselves but united under a common research study topic. This publication aims to provide a thorough overview of the latest research efforts by international authors on hemodynamics, and open new possible research paths for further novel developments.

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Recent Advances in Therapeutic Approach for Hypertension to Improve Cardiac Health

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Abstract

Hypertension (HTN) may be defined as persistent increases in arterial blood pressure (BP), which is one of the severe peak medical health conditions that significantly increase various complications of severe cardiovascular problems including myocardial infarction, stroke, and renal failure. In accord with the World Health Organization (WHO), the incidence of death in countries having low- and middle-class families has been reported three-fourth because of heart disease and stroke. It has been one of the crucial avoidable donors to disease and death across the US, leading to myocardial infarction, stroke, and renal failure, if not diagnosed early and treated properly. Hypertension being a common disease kills people silently nationwide as well as globally. According to the WHO, it is the chief cause of mortality and morbidity, and 1.4 billion people have high BP globally, but only 14 percent are having BP under control across the globe. The Eighth Joint National Committee (JNC 8) Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure (ACC/AHA/JNC 8) has lately released recommendations based on the evidence on treatment thresholds, goals, and medications in managing hypertension that will enhance adults' quality of life (QoL).

Keywords: hypertension, complications, mortality, morbidity, prevention, evaluation, comorbidities, blood pressure

1. Introduction

Hypertension (HTN) may be defined as persistent elevated arterial blood pressure (BP), which is one of the critical medical health conditions that significantly increase the various complications of severe heart and cardiovascular problems with the inclusion of myocardial infarction, stroke, and renal failure. In accord with the World Health Organization (WHO), 3/4th incidence of death because of heart disease and stroke is in low-middle-income countries, which belongs to the vital avertable providers to disease and death across the US, heading to myocardial infarction, stroke, and renal. This is a major let down if not discovered in early stages and treated suitably. Hypertension being a common disease kills people silently nationwide as well as globally [1]. According to the WHO, it is a prominent cause of mortality and morbidity,

and 140 crore people are suffering from high blood pressure (BP) worldwide, but only 14 percent are having a normal BP. Hypertension has been a main risk feature for cardiovascular complications and premature mortality in the US and worldwide, which results in nine million deaths annually [2]. Since it has higher occurrence and risk factors such as cerebrovascular, cardiovascular, and renal diseases, according to the Eighth Joint National Committee (JNC 8), around 77.9 million American adults (almost 1 person among 3 people) and nearly 970 million people have hypertension globally. It is assessed that by the 2025, 156 crore adults will be having HTN; the incidence is alike between both males and females but varies with age; therefore, it is one of the big challenges of public health. The WHO has a statistical data of about 62 percent of cerebrovascular diseases (CVD) and 49 percent of ischemic heart disease (IHD) [3, 4]. In UK, the National Institute for Health and Care Excellence [NICE] explains high BP identified as hypertension, clinically a BP of 140/90 mm of Hg or more confirmed by persistent rise in BP at an average on 135/85 mm Hg [5]. According to the American College of Cardiology/American Heart Association (ACC/AHA) and the Eighth Joint National Committee (JNC 8) Guideline for the Prevention, Detection, Evaluation, and Management of High BP that has recently released, recommendations based on evidence on treatment onsets, objectives, and prescriptions in the supervision of hypertension will improve the quality of life (QoL) in adults.

2. Epidemiology

In past 20 years, countries having high income (HICs) encounter a moderate reduction in hypertension prevalence, but countries having low income (LMICs) have seen a significant increase. The incidence of hypertension is rising worldwide on account of aging of the population as well as lifestyle changes, which include risk causes like high-salt diet and lack of physical activity [6]. High blood pressure is not just limited to older people. In 2015, in England, over 2.1 million people below 45 years of age experienced high BP [7].

In 1990–2015, death rates were documented to be increased in high-middle-income (1.288–2.176 million), middle-income (1.044–2.253 million), low-middle-income (0.512–1.151 million), and low-income (0.146–0.293 million) countries than in higher-income (2.197–1.956 million) countries. According to 2015 data, there were

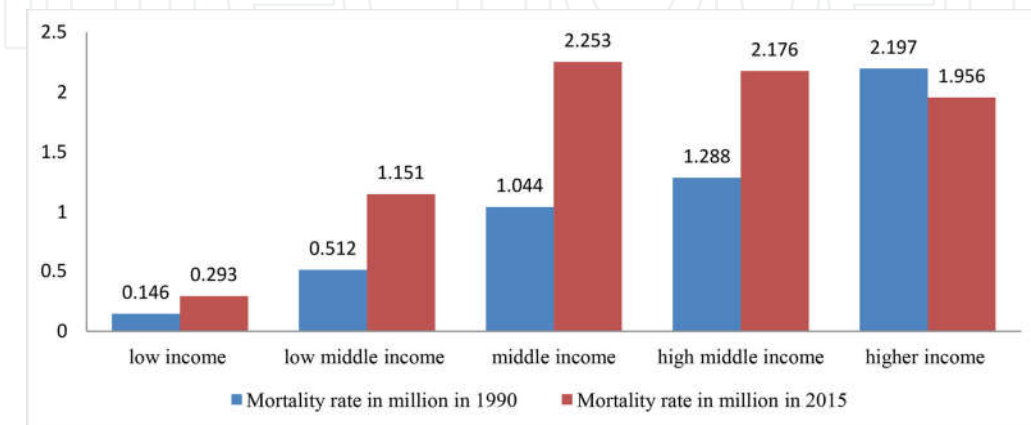


Figure 1. Mortality rate (in million) from the year 1990 to 2015 and low-income vs. high-income countries.