

The Emergence of Non-communicable Disease in Indonesia

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Based on data from the Indonesian Ministry of Health Information Center, the estimated population of Indonesia in 2016 was approximately 258,704,986 people, consisted of 129,988,690 men and 128,716,296 women.¹ This number of Indonesian population represents young population since the proportion of population aged 0-14 years is more than that aged >14 years. Meanwhile, the proportion of population aged 50 years and above is significantly reduced, which is thought to be due to high mortality rate in the middle-aged population. The mortality rate in Indonesia is dominated by non-communicable diseases (NCD).^{1,2} Alteration in environment, technology and lifestyle have changed the pattern of disease in Indonesia to be dominated by NCD such as DM, heart disease, dyslipidemia, obesity, kidney disease, lung disease, and malignancy.^{1,2}

According to the 2014 Indonesian Sample Registration System, the 10 most common diseases were stroke (21.1%), heart disease (12.9%), diabetes mellitus (6.7%), tuberculosis (5.7%), complications of high blood pressure (5.3%), chronic lung disease (4.9%), liver disease (2.7%), traffic accidents (2.6%), pneumonia (2.1%), and combined diarrhea and gastroenteritis due to infection (1.9%).^{1,2} Furthermore, according to Indonesia Basic Health Research 2018, most of NCD such as cancer, stroke, kidney disease, joint disease, DM, heart disease, hypertension, and overweight/ obesity, showed an increasing trend compared to the previous report in 2013.³

Non-communicable diseases are chronic,

often asymptomatic and progressive, thus patients usually did not realize having the disease until the sign and symptoms of its complications occur. This problem drives the need of early screening for high-risk population, early treatment and periodic monitoring. Furthermore, ongoing epidemiological studies are also done to evaluate both established and unknown risk factors, pattern of non-communicable disease development in certain area and the treatment response.⁴

Recent edition included researches about NCD such as atherosclerosis in diabetes, diabetes nephropathy, malignancy, musculoskeletal disorders, and chronic kidney disease. Atherosclerosis and nephropathy are chronic complications in type-2 diabetes mellitus. About three-quarters of the cause of death in diabetic patients is coronary heart disease, one of the progressive atherosclerosis processes. Traditional risk factors such as sedentary lifestyles, obesity, high-calorie diets, smoking, and history of family diseases, as well as non-traditional risk factors such as inflammation have been shown to play a role in the progression of atherosclerosis and cause ischemic vascular disease such as stroke, coronary heart disease and peripheral artery disease.⁵ The linkages of chronic inflammation (periodontitis) that are often experienced by diabetic patients with progression of atherosclerosis was demonstrated by the previous studies with varying results. In addition, research at the molecular level that evaluates the relationship between certain

gene polymorphisms and disease events seeks to map the risk of disease progression based on the distribution of polymorphisms. Gene polymorphisms researches also drive the improvement of health technology such as prediction of disease prognosis, identification of drugs candidate and prediction of treatment failure.⁶ Topic of disease prevention are also investigated starting with detecting early metabolic abnormalities in the relatives of patients with certain metabolic diseases such as diabetes, heart disease and polycystic ovary syndrome.

Besides cardiovascular disease, the prevalence of malignancy in Indonesia has also been increasing. The correlation between metabolic disorders and malignancy had been studied intensively.⁷ Among particular population who had family history of malignancy, chronic inflammation state is thought to promote proinflammatory cytokines-induced cell dysregulation. Since diabetes and obesity are known as chronic inflammation, both diseases are believed and proven to be involved in certain malignancy process. Numerous cohort studies summarized in systematic reviews have shown a link between obesity and cancer incidence, for both overall and for selected cancer sites (eg, endometrial, postmenopausal breast, colon, and esophageal adenocarcinoma).⁷

Finally, the increase of NCD worldwide potentially give serious impact on health cost and quality of life. Prevention of risk factors contributing to NCD should be the main priority in National Health Program to reduce the prevalence of NCD in the future.

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