INCIDENCE, PREVALENCE, TREATMENT AND COST OF END-STAGE RENAL DISEASE IN INDONESIA

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End-stage renal disease (ESRD) has significantly increased in developing countries such as Indonesia. Chronic glomerulonephritis is still the leading cause of ESRD, while the numbers of diabetes mellitus patients have significantly risen. Data presented in this article were obtained from various nephrology centers in response to the specific questionnaires distributed by Indonesian Society Nephrology (InaSN). These data give the impression that both incidence and prevalence rates in various areas of Java and Bali are increasing over time, although the rates presented here are far lower than expected. Hemodialysis is available in most parts of the country. Continuous ambulatory peritoneal dialysis (CAPD) and renal transplantation programs have been performed in few nephrology centers. Costs for dialysis and renal transplantation are still unaffordable for most ESRD patients. Since the cost burden has significantly increased, nephrology services should be changed from curative to the preventive medicine. Currently InaSN plans to have a detection and prevention program for chronic kidney disease. (*Ethn Dis*. 2006;16[suppl 2]:S2-14–S2-16)

Key Words: Incidence, prevalence, end-stage renal disease, Indonesia

INTRODUCTION

Indonesia is an archipelago country consisting of 17,000 islands, 13,000 of which are inhabited. Data from the Central Board of Statistics of Indonesia reported that in 2004 the total population was 217 million. Almost 60% of them lived in Java Island as shown in Figure 1.[1] Infectious diseases are still major health problems in Indonesia, although cardiovascular diseases have significantly increased. End-stage renal disease (ESRD) has shown an almost exponential growth. Data presented in this article are an initial report from the Indonesian Society of Nephrology (InaSN), which was derived from various nephrology centers in response to specific questionnaires.

INCIDENCE AND PREVALENCE OF ESRD

A national registry for ESRD in Indonesia has not yet been developed. Therefore, the incidence and prevalence of ESRD are not known accurately. The 2002–2004 data from the InaSN based on reports within Java and Bali Islands provide the best estimates to date. Incidence was defined as the total number of ESRD patients who underwent renal replacement therapy in the current year, while the incidence rate was the number per million people. Prevalence was defined as the total number of patients alive on December 31 in the current year, and the prevalence rate represents the number per million people.[5] Figure 3 shows the incidence and incidence rate, while prevalence and prevalence rate of ESRD are shown in Figure 4. Chronic glomerulonephritis was the leading cause of ESRD in patients who underwent hemodialysis (39.9%), followed by diabetes mellitus (17.5%) and obstructive infective kidney diseases (13.5%) as depicted in Figure 2. These features are similar to those reported by other countries in Southeast Asia such as Cambodia, Singapore, and Vietnam.[2] Data in the last 15 years

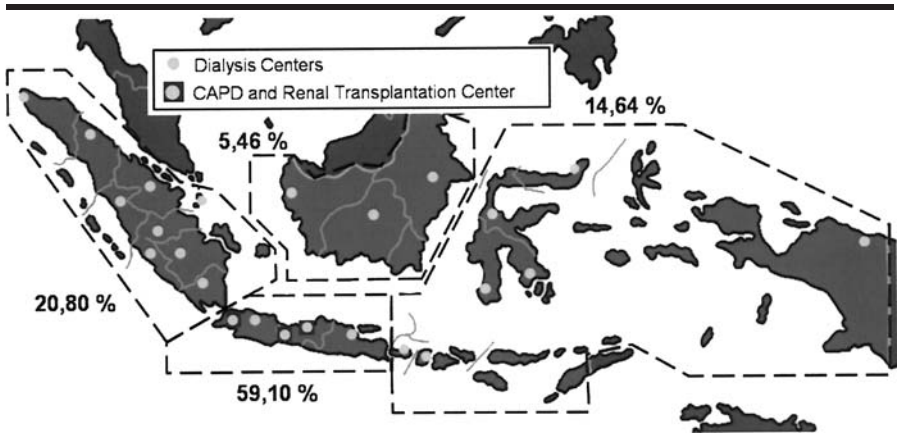

Fig 1. Map of Indonesia. Based on Central Board Statistic data, the 2004 total population was 217 million: 59.10% in Java, 20.80% in Sumatra, 5.46% in Borneo, and 14.64% in the east part of Indonesia. Symbols: ○ depicts cities with hemodialysis centers; ◎ depicts continuous ambulatory peritoneal dialysis and transplantation centers

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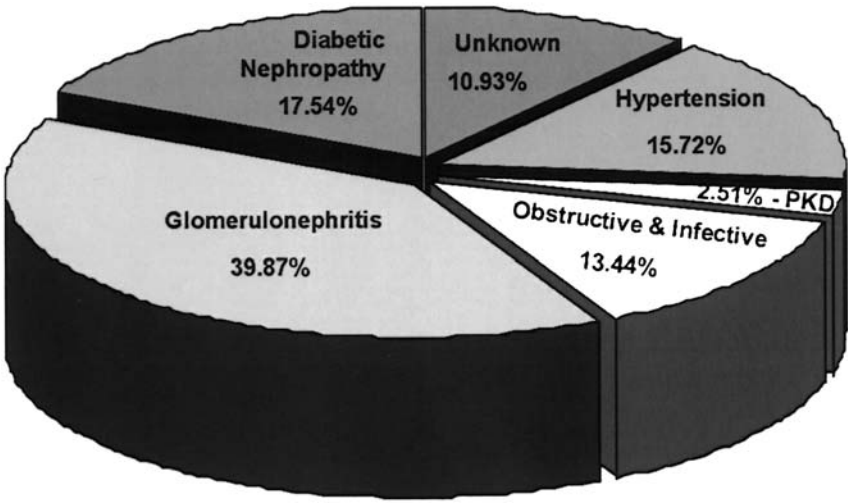

Fig 2. Etiology of end-stage renal disease patients who underwent a hemodialysis program. Based on InaSN data 2000[4]

showed that diabetes mellitus has been the cause of significantly increasing ESRD.[3,4] These data also suggest that both incidence and prevalence rates of ESRD have increased. Since not all nephrology or dialysis centers provided InaSN with their data, the numbers presented in this article underestimate the true rates of ESRD and limit our ability to accurately identify trends.

DEVELOPMENT OF TREATMENT MODALITIES FOR ESRD

Hemodialysis (HD) was first introduced as a modality of treatment for ESRD in the Department of Internal Medicine, Medical Faculty, University of Indonesia, Jakarta, by the late R.P. Sidabutar in 1967.[6] Since then, HD programs and facilities have also been developed and available in other teaching hospitals. Nowadays, HD has become part of routine medical service for ESRD patients. More than 150 HD units are now available and distributed in many parts of the country (Fig. 1). Dialysis still imposes high costs for treatment on most ESRD patients. Most ESRD patients have low income as reported by the Central Board of Statistics of Indonesia. In 2000–2003, the general national income per capita/year was US $865.[7] On the other hand, yearly costs for twice-weekly HD, 5 hours per session, were US $4900–$6500. Since health insurance is primarily limited to government officials, most dialysis costs must be covered by patients themselves. Continuous ambulatory peritoneal dialysis (CAPD) is an alternative dialysis treatment, but it is offered in only a few centers because the costs are still not fully covered by health insurance. Cost for a CAPD catheter insertion was US $1150, while yearly costs for three to four fluid exchanges were US $4800–$6400. The costs significantly increase if peritonitis, a common CAPD complication, occurs.

Renal transplantation was first introduced in 1970 at Dr. Cipto Mangunkusumo Hospital in Jakarta, but the procedure is not widely available. Renal transplantation has now been performed in a few centers in Jakarta, Yogyakarta, Semarang, and Surabaya. Kidneys donors were obtained from living relatives, since cadaveric donors are not yet fully accepted. Costs for renal transplantation included pre-transplantation evaluation, transplantation procedures, and costs for immunosuppressive agents to maintain renal allograft survival. Costs for pre-transplantation and transplantation procedures were US $12,000–$15,650, while yearly costs for immunosuppressive drugs were US $6250–$10,000. A shortage of kidney donors is another problem in renal transplantation; therefore, many patients undergo kidney

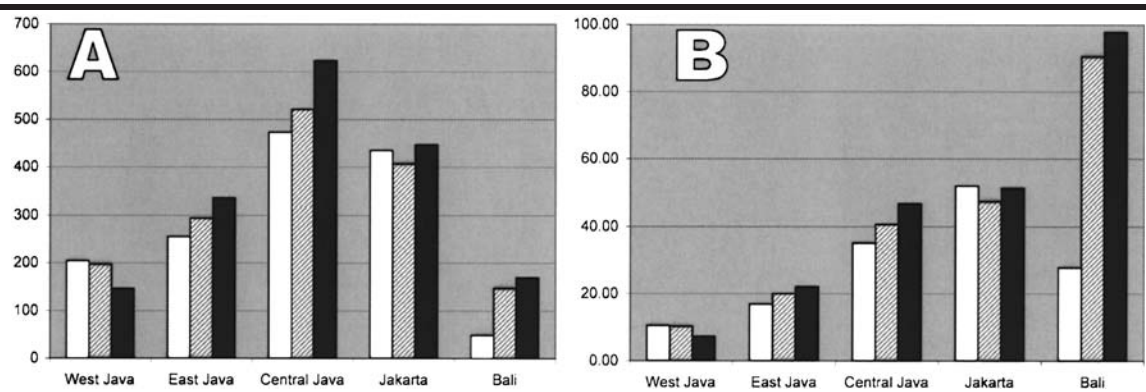

Fig 3. Incidence (A) and incidence rate (B) of end-stage renal disease. Data presented here were far less than expected because not all nephrology or dialysis centers provided data. Symbols: depicts 2002 data; depicts 2003 data; depicts 2004 data

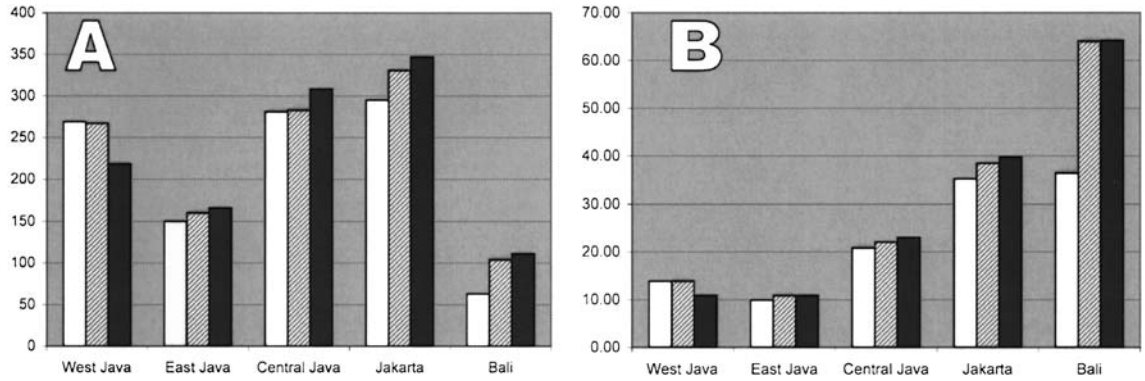

Fig 4. Prevalence (A) and prevalence rate (B) of end-stage renal disease. Data presented here were far less than expected, because of a lack of data. Symbols: depicts 2002 data; depicts 2003 data; depicts 2004 data

transplantation abroad. Human resources for renal transplantation must be upgraded both in terms of quantity and quality.

FUTURE PERSPECTIVE

Besides the fact that renal replacement therapy is still expensive for most ESRD patients, data from government health insurance showed that the burden for dialysis reimbursement significantly increased over time.[4] Therefore, the emphasis of nephrology services in Indonesia should be shifted from curative medicine to preventive medicine. Currently, the InaSN is designing a program titled ''Detection and Prevention of Chronic Kidney Disease in Indonesia: Screening in the Communities.''[8] Three rural areas within Java and one area in Bali will be selected to carry out the pilot study. The objective of this program is to determine the prevalence of proteinuria, hypertension, diabetes mellitus, and obesity in the study population. Data that will be collected from this program could assist and guide the national policy in the prevention of chronic kidney disease.

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AUTHOR CONTRIBUTIONS

Design concept of study: Prodjosudjadi
Acquisition of data: Prodjosudjadi
Data analysis interpretation: Prodjosudjadi
Manuscript draft: Prodjosudjadi
Statistical expertise: Prodjosudjadi
Acquisition of funding: Prodjosudjadi
Administrative, technical, or material assistance: Prodjosudjadi