



Outcome of the Five-Year-Plan for Chronic Kidney Disease Prevention in Taiwan

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Abstract

Chronic Kidney Disease (CKD) is prevalent in many countries, and the costs associated with the care of patients with End-Stage Renal Disease (ESRD) are estimated to exceed 1 trillion USD over the world. In Taiwan, CKD is very prevalent and ESRD was still one of the diseases with the highest single payment among 20 leading outpatient diseases in 2010-2011. In order to decrease the incidence rate of dialysis, we try by all action measures in the “five-year-plan for chronic kidney disease prevention and enhancing the quality of care, 2012-2016”. In the present study, we analyze with the data from the report of the United States Renal Data System (USRDS) before and after implementation of this program to clarify whether there is any effect of this program on CKD prevention. Three years after this plan has been introduced (2012-2014), the prevalence rate of ESRD increased 11.71% compared with that of 2009-2011, which was three years before implementation of this plan. However, the prevalence rate of 6 years before implementation of this plan was increased 21.53% compared with that of 3 years before implementation. That means the increase of prevalence rate was greatly slowed down after implementation of this plan as well as compared with other developed countries such as the US or Japan. Through substantial focus on the early identification and proactive management of CKD in the last few years, we have identified significant evidence to suggest that the care of people with CKD could be improved and strategies to improve the management of people with CKD have the potential to offer an efficient use of health service resources and well-control the growth of expenditure of outpatient dialysis.

Introduction

Chronic Kidney Disease (CKD) such as nephritis, nephrotic syndrome and nephropathy is prevalent in many countries, and the costs associated with the care of patients with End-Stage Renal Disease (ESRD) are estimated to exceed 1 trillion USD over the world. The prevalence rate and incidence rate of CKD in Taiwan is extremely high. According to the 2011 report of the United States Renal Data System (USRDS), the incidence rate of ESRD in Taiwan was 368 per million populations in 2001, while it was 413.9 per million populations in 2009, and was higher than that in Japan as well as in the United States. The prevalence rate of ESRD in Taiwan was 2667.3 per million populations in 2009, whereas the expenditure of outpatient dialysis was up to 1.37 billion USD in 2011 and ESRD was still one of the diseases with the highest single payment among 20 leading outpatient diseases in 2010-2011. The fact is that, since 2001, the prevalence rate of ESRD in Taiwan has been ranking high among the countries with ESRD statistical data; therefore, it is necessary for related interventions during the early stage of kidney disease. The effective interventions are including of promoting the illness perception for patients with early CKD, lifestyle and nutrition modification to decrease and avoid early CKD from progression to end-stage renal disease. Finally we could decrease the incidence rate and prevalence rate of uremia in Taiwan in order to cut down the medical expenditure of outpatient dialysis. Wouters OJ et al. [1] had previously described early CKD interventions, the optimum time to provide clinical care and the suitable model of renal care are appropriate to retard the progression of CKD. In the present study, we analyze with the data from the report of the United States Renal Data System (USRDS) before and after implementation of “five-year-plan for chronic kidney disease prevention and enhancing the quality of care, 2012-2016 in Taiwan” to clarify whether there is any effect of this program on CKD prevention.

Materials and Methods

There are two ways to reduce the incidence and prevalence rate of ESRD on dialysis including reducing inflow and increasing outflow. The Ministry of Health and Welfare (MOHW) expects to decrease the incidence rate of dialysis by all action measures in the “five-year-plan for chronic

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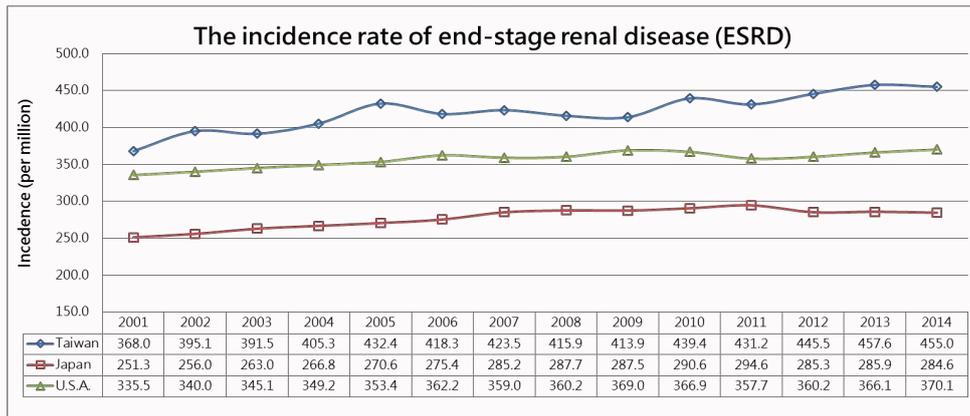


Figure 1: The incidence rate of end-stage renal disease (ESRD).
Source: The United States Renal Data System (USRDS).

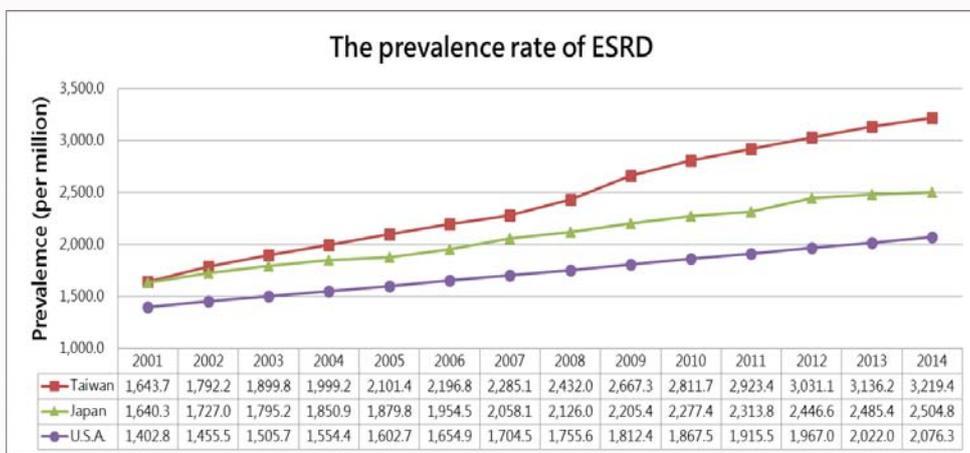


Figure 2: The prevalence rate of ESRD.
Source: The United States Renal Data System (USRDS).

kidney disease prevention and enhancing the quality of care, 2012-2016”, such as: 1. Strengthening the educational propaganda and screening of kidney disease among patients with hyperglycemia, hypertension and hyperlipidemia; 2. Patients involved in the Pay-for-Performance Program for Diabetes under National Health Insurance in Taiwan has to take creatinine examination periodically, and the medical facilities included in this program are required to be able to calculate eGFR [2]; 3. Continue promoting the Pre-ESRD patient care [3,4] and education program under National Health Insurance in Taiwan; 4. To follow-up the evidence-based medicine CKD clinical practice guideline [5] modified for residences in Taiwan; 5. The modified medication instruction guide used in Taiwan based on the United States standards for doctors to limit the potential renal toxicity to minimum amount as possible. Furthermore, we have collected domestic and international evidence-based references of effects and side-effects of the nephrotoxic drugs and medication instructions or standards, besides, we have organized a team of experts to deliberate medication instructions of aboriginal nephrotoxic drugs for reference of prescription; 6. Enhancing the investigation of major illness/injury certificate of dialysis and informing the patient with the model of health education therapy; 7. Continue constructing an integrated database of kidney disease and supervision system, providing an information platform and systematically review the related evidence-based research to provide the aboriginal evidence-based recognition,

prevention and clinical care of CKD.

Meanwhile, to enhance the number of patient having kidney transplantation and decrease the prevalence rate of dialysis, furthermore, to reduce the medical expenditure of outpatient dialysis, the MOHW took all kinds of action measures such as: 1. Continue promoting organ donation and enhancing cooperation with religious groups; 2. Helping citizens sign the authorization for organ and tissue donation with registration on their NHI cards, as well as including the authorization for organ and tissue donation in examples of notice for hospitalized patients; 3. Integrating the possibility and applicableness of persuading organ donation; 4. Legislating regulations for intergroup matching of living donor kidney transplantation to enhance the promotion of organ donation, therefore, the more people knows about organ donation, the higher rate of organ donation and patients receiving kidney transplantation grows annually.

Results and Discussion

Due to the high incidence and prevalence rate of dialysis and the high annual expenditure of outpatient dialysis in 2015 (about 1.36 billion USD) (Figure 1), the five-year-plan for chronic kidney disease prevention and enhancing the quality of care was introduced in 2012. According to the 2016 annually report of USRDS, 3 years after the plan has been introduced (2012-2014) (Figure 2), the prevalence rate of

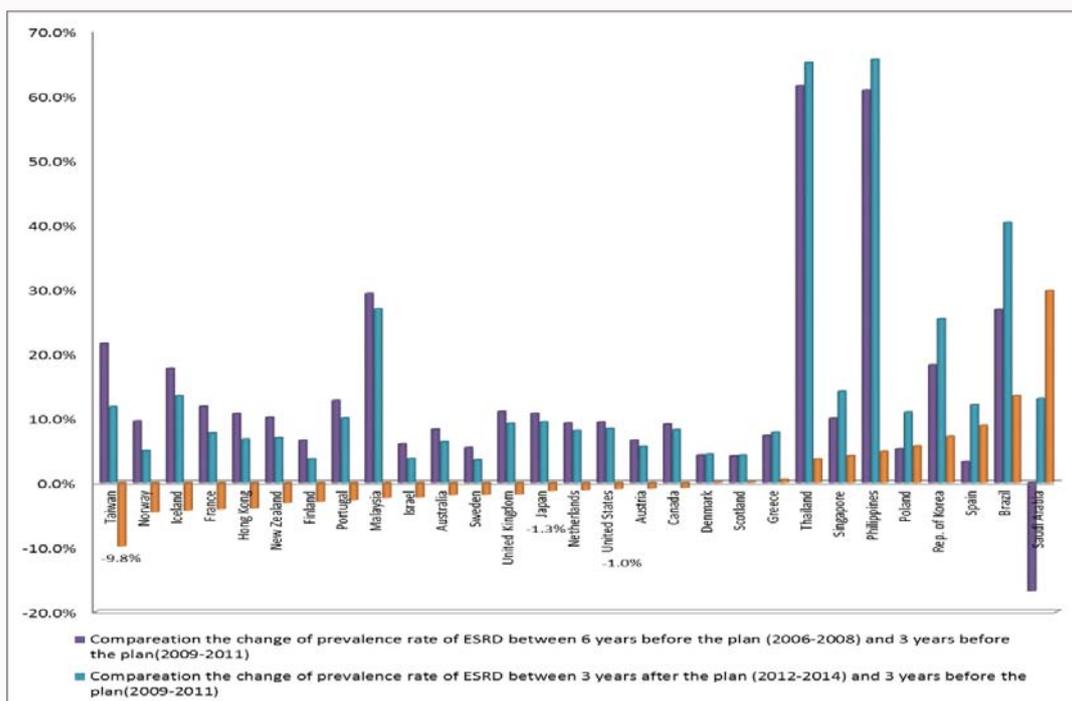


Figure 3: Change of EDRD prevalence from 2006/2008 to 2009/2011 (international comparison).

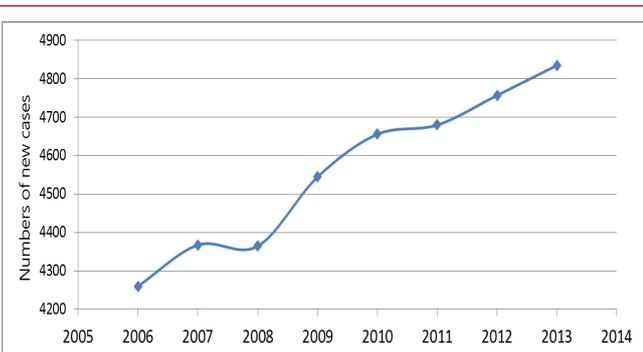


Figure 4: Incidence of dialysis by year (patients under 65 y/o).

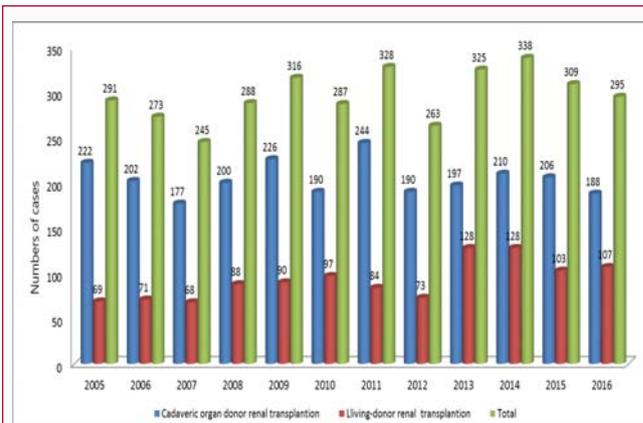


Figure 5: Description of donor kidney transplantation in Taiwan from 2005 to 2016.

end-stage renal disease increased 11.71% compared with that of 2009-2011, which was 3 years before the plan. However, the prevalence rate of 6 years before the plan was higher compared with that of 3 years before the plan. The increase of prevalence rate was greatly slowed down 9.8%, compared with other developed countries such as the US (1.0%) or Japan (1.3%) (Figure 3), showing that introducing the plan is beneficial for preventing chronic kidney disease in Taiwan. Besides, in recent 5 years, the annual growth rate of patient with chronic renal failure who needs dialysis has been decreased to 3% while it was 6% annually in 2001-2010. Although the incidence of patient under 65 grew from 4,260 in 2006 to 4,834 in 2013, the growth rate decreased year by year (Figure 4), which also shows that the control of chronic kidney disease in Taiwan is efficient. Besides, according to the data from The Transplantation Society of Taiwan, from 2005 to 2016, 230 to 325 patients received kidney donation every year, and 36.3 % of total renal transplantation were living-donor renal transplantation (Figure 5) [6].

Conclusions

Through substantial focus on the early identification and

proactive management of CKD in the last few years, we have identified significant evidence to suggest that the care of people with CKD could be improved and strategies to improve the management of people with CKD have the potential to offer an efficient use of health service resources and well-control the growth of expenditure of outpatient dialysis. The MOHW will continue to be deliberating to further open the restriction of living donor kidney donation and transplantation, hoping that after amending the regulation, a more robust organ donation and transplantation medical mechanism could be organized in order to balance evidence-based medicine, medical technique and medical ethics as well as fulfill social consensus and expectation, therefore more patients lining up for organ transplantation could be saved.

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