Perspective

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Diabetes prevention and care in the universal health coverage context: the example of Thailand

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ABSTRACT

Universal health coverage (UHC) is a key policy issue in countries of the World Health Organization (WHO) South-East Asia Region. However, despite projections of significant increases in burden, there is little protection against the financial risks associated with noncommunicable diseases (NCDs), including diabetes. Thailand achieved UHC of all 67 million of the population in 2002, under three public health insurance schemes. The country therefore provides a case-study on diabetes prevention and care in the context of UHC. Although the budget for the Thai Universal Coverage (UC) scheme, which covers nearly 80% of the population, increased significantly during 2003–2013, the proportion allocated to clinical prevention and health promotion declined from 15% to 11%. The financial case for investment in diabetes prevention is made, particularly with respect to a focus on primary care and the use of community volunteers. The UC scheme can expand to nearly 100% population coverage, with a comprehensive benefit package and financial risk protection. Although the rates of complications and fatalities in patients with diabetes have improved over the last few years, achievement of well-controlled fasting blood glucose for all patients is still the main challenge for further improvement. It is recommended that, in order to improve coverage of diabetes care and prevention, it is essential for countries in the WHO South-East Asia Region to include major NCD services, in particular primary prevention, in their UHC strategies. Since a resilient health system is key to UHC delivery, strengthening of the health workforce and infrastructure should be part of any action plan to prevent and control diabetes.

Key words: diabetes, noncommunicable diseases, Thailand, universal health coverage

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BACKGROUND

The aim of universal health coverage (UHC) is to ensure that all people obtain the health services they need without suffering financial hardship when paying for them. Sustainable Development Goal Target 3.8 is to achieve UHC, including financial risk protection; access to quality essential health-care services; and access to safe, effective, quality and affordable essential medicines and vaccines for all. UHC is therefore a key policy issue in countries not only in the World Health Organization (WHO) South-East Asia Region, but also in other regions. Although UHC is gaining in popularity in the region, there are many challenges to implementation. These include expanding coverage to the poor and to non-poor workers in the informal sector, and defining a cost-effective common benefit package that is responsive to the disease burden. Ensuring readiness and adaptability of the supply-side health system presents an even greater challenge.[1]

UHC can be viewed from three perspectives: population coverage, service coverage and protection from financial risk.[2] The definition of service coverage can be controversial, as it requires specification of the range of service packages that should be provided; the design of the UHC system; and the scale of health-system development, which vary among countries.[3] The performance of a health system in relation to UHC can be

measured by assessing multiple criteria,[4,5] such as population coverage, access to and use of health services, protection from financial risk, patient satisfaction with the process, and the result of care.[6] The scope of performance includes health gain, cost containment, health outcome, efficiency, quality, equity, access, choice, transparency, accountability, citizen participation and provider satisfaction.[7] Some criteria are interrelated; for example, accessibility is related to both equity of service and utilization.

Implications of diabetes for universal health coverage

In the context of UHC, noncommunicable diseases (NCDs) have already received global attention, and are given high priority; the 66th World Health Assembly endorsed the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020*.[8] However, in many low- and middle-income countries, there is little protection against the financial risk associated with NCDs; thus, financial costs are largely borne by households themselves, rather than governments or insurance schemes. For example, when patients with diabetes require insulin, this represents an important cost burden for them and their families.[9]

Morbidity and mortality related to diabetes have increased at global, regional and country levels. As one of the major NCDs, diabetes is projected to be the seventh-leading cause of death by 2030.[10] The prevalence of diabetes in 11 countries of the WHO South-East Asia Region is predicted to increase significantly, from 46.9 million patients in 2000 to 119.5 million in 2030.[11] For Thailand, the number of patients with diabetes is predicted to rise to 2.7 million by 2030.[11]

It is anticipated that, in the context of UHC, the higher prevalence of diabetes and higher population coverage with health insurance will lead to increasing use of health services by patients with diabetes. Therefore, the health system needs to be ready to respond to an increased demand, by ensuring not only adequate health financing but also a competent health workforce, sufficient medicines and the availability of other support systems.

The universal health coverage schemes in Thailand

Thailand has achieved UHC of all 67 million of the Thai population covered under the three public health insurance schemes. The Universal Coverage Scheme (UC scheme) is the largest of these, with coverage of nearly 80% of the total population. Most of the members of the UC scheme are from the informal sector and might have low education and low income. The Social Security Scheme (SSS) has the second largest population coverage, at about 10% of the total population. Most members of the SSS are adults with low comorbidity. The Civil Servant Medical Benefit Scheme (CSMBS) is the third scheme in terms of coverage, covering nearly 10% of the total population. Most members of this scheme are in the working age group and have a relatively high income. To date, the Thai UC scheme has resulted in good outcomes as a whole, and in particular for poor families. Members of the population who are worse off receive greater benefit from the UC scheme policy than those who are better off.[12] Utilization of ambulatory care for members of the UC scheme increased from 2.45 to 3.12 visits per person per year between 2003 and 2013, or from a total of 112 to 152 million outpatient visits during the same period.[13] In addition, the national household-representative Thailand Health and Welfare Survey found that, in the context of Thai UHC, having chronic disease was a significant factor in increasing the likelihood of outpatient visits and hospital admission.[14,15]

This article provides an overview of diabetes prevention and care in the context of UHC. Specific examples from the Thai experience are highlighted, in order to synthesize key points and lessons learnt that may be applied to other countries of the WHO South-East Asia Region.

DIABETES IN THE CONTEXT OF FINANCING FOR PREVENTION OF NONCOMMUNICABLE DISEASES

Interventions for the prevention and control of NCDs have been recommended and endorsed; however, less than 50% of countries in the world have responded to the goals of the WHO *Global action plan for the prevention and control of noncommunicable diseases 2013–2020*[8] with an adequate budget for implementation.[16] It is common for the majority of a country's health budget to be for curative services, with little available for health-promotion and preventive services.[17] A WHO working group reported in 2015 that the budget for population-based health-promotion activities in upper-middle-income countries was tiny, at less than 1% of the total health budget.[18]

In 2016, in an analysis of National Health Account data compiled by WHO, Tangcharoensathien et al. demonstrated the following:[19]

- In 2013, countries in the WHO African and South-East Asia Regions had very low total health expenditure per person per year, at US$ 109 and US$ 71, respectively, compared with expenditures in the WHO Region of the Americas and European Region of US$ 3694 and US$ 2354 per person per year, respectively. The total health expenditure in the South-East Asia Region is inadequate to pursue good health outcomes for the population.
- In 2012, the proportion of health expenditure for preventive and public health services was low in all WHO regions, at around 4% of total health spending. The African and South-East Asia Regions spent only US$ 10 and US$ 7 per person per year, respectively, for health prevention and public health services, while the Region of the Americas and the European Region spent US$ 100 and US$ 67 per person per year, respectively. This level of expenditure on prevention and public health services in the African and South-East Asia Regions makes it difficult to respond to prevention and control of NCDs, particularly in the context of increasing levels of NCD in the regions.

The UC scheme in Thailand provides for its members a comprehensive range of essential health services with a primary care focus, covering outpatient, inpatient and accident and emergency services; dental and other high-cost care; and diagnostics, special investigations, essential medicines and medical supplies. The UC scheme also includes clinic-based preventive and health-promotion services provided in health facilities for all the population. The increase in use of essential health services with a package including a wide range of benefits is made possible by a specific protected budget for the UC scheme funded by general taxation. Importantly, the UC scheme applies mixed-method provider payments, with mainly close-ended capitation for ambulatory services and based on diagnosis-related groups, with a global budget for inpatient care. This contributes to cost containment and system efficiency.[20]

The budget for the UC scheme increased significantly between 2003 and 2013, from 30 538 to 108 744 million baht. However, similar to the situation in the WHO South-East Asia Region and other regions, the majority of the budget was for curative services, which includes services for diabetes. Less than 15% of the budget for the UC scheme was for clinical prevention and health-promotion services. Notably, this proportion declined from around 15% to 11% between 2003 and 2013. There is a policy to raise the budget for clinical prevention and health promotion up to 15% again. In 2014, the budget for prevention and promotion was 14%, which was mainly for clinical prevention interventions, such as immunization. In addition, the UC scheme provides special attention for some selected diseases according to their high burden, for example cerebrovascular diseases, diabetes and hypertension. The UC scheme promoted screening for diabetes and hypertension, with an earmarked budget of 1% of the total UC budget in 2014, or about US$ 51 million, and a budget for prosthetics for diabetes patients was earmarked in the rehabilitation category.[21]

Of note, under the UC scheme, managed by the National Health Security Office (NHSO), an innovative financing for health promotion and prevention, the "Community Health Fund", has been created, which is funded equally by the NHSO and the local government unit of each area. This Community Health Fund is pooled at subdistrict level and managed by a multisectoral committee set up at the subdistrict level. The fund was established in 2006 and is mainly for health-promotion and disease-prevention activities, including for diabetes and other NCDs.[22] However, although the system for health promotion and prevention was established nearly a decade ago, its effectiveness for prevention and control of diabetes and other NCDs is not yet proved.

THE FINANCIAL CASE FOR INVESTMENT IN DIABETES PREVENTION

Investment in prevention

Underdiagnosis of diabetes is a cost issue, as it delays the start of treatment, exposing patients to the risk of complications, which in turn leads to higher treatment costs. For example, a study in Thailand demonstrated the median cost of illness for patients with complications is over four times higher (US$ 480) than that for patients without complications (US$ 115).[23]

Further, a cost-effectiveness study on the World Health Organization Package of Essential Noncommunicable (PEN) disease interventions project in Bhutan indicated high value for money on opportunistic screening for diabetes and hypertension. The findings even suggested that expansion of the universal screening programme would be more cost-effective.[24] Such findings demonstrate that investment in prevention (screening) and promotion (awareness of risk factors) in relation to diabetes would be a cost-effective policy and strategy for countries in the South-East Asia Region to adopt.

Focusing on primary care

Focusing on primary care in low-resource settings can ensure efficient resource use, sustainable health financing, and equitable access to basic essential health services[24], especially where a high proportion of the population lives in rural areas. For example, a study in Thailand illustrated that a visit to the regional hospital was 3.48 times more expensive than a visit to a community hospital.[25] Thus, it will be strategic and cost-effective to invest in expansion of facilities for prevention and treatment of diabetes at primary care level, and to equip primary care facilities with adequate human resources and infrastructure.

In addition, increased provision of services by health-care providers at the grassroots level can also contribute to an increase in the demand for health services, as people can easily access services at this level. The doctor and nurse ratio for the population has increased rapidly in remote areas of Thailand since before UHC was rolled out.[26]

Village health volunteers

The primary health-care system in Thailand was set up in 1977, before the *Declaration of Alma-Ata* in 1988.[27] The system comprises not only health personnel at health centres and community hospitals, but also village health volunteers (VHVs) and, initially, village health communicators (this role was subsequently integrated into that of VHVs). These personnel are local community members and so act as a bridge between the primary health-care system and the community. This community health-care system improved in synergy with the primary health-care system when UHC was implemented in 2002.

Prevention of diabetes conducted by trained VHVs has been found in many studies to be effective.[28–31] Interventions for prevention and control of diabetes by VHVs can cover education on the importance of a healthy diet and regular exercise, as well as measurement of body mass index, waist circumference and systolic blood pressure.[29] Key factors for successful interventions for prevention and control of diabetes have been shown to be trust between the patient and VHV; a good relationship and communication between health staff and

the VHV; a good attitude of the VHV towards patients because they are from the same village; networking within patient groups and the VHV; and creative activities.[28]

IMPROVING THE COVERAGE AND QUALITY OF DIABETES CARE AND PREVENTION

Improving coverage

Effective coverage of health services is more challenging than population coverage. The National Health Examination Survey (NHES) conducted in 1991, 1997, 2004 and 2009 provides information on NCDs, including diabetes, in Thailand. The four rounds of NHES showed a progressive increase in the prevalence of diabetes from 1991 to 2009, in both male and female adult populations (see Fig. 1).[32–35]

In the 2009 NHES, 5.1% of male and 6.2% of female adults aged 18–59 years, almost 3.2 million people, had diabetes. When compared with 2004, the proportion of non-diagnosed diabetes reduced from 66% and 49% to 43% and 22% in men and women respectively, while the proportion of well-controlled diabetes increased from 9% and 15% to 20% and 35% in men and women respectively (see Fig. 2). However, effective coverage of patients with well-controlled diabetes was still not satisfactory. Hence, it is crucial to improve effective coverage by promoting active primary prevention, early screening and an effective treatment campaign, in order to prevent serious complications leading to high-cost care, such as end-stage renal disease and diabetic retinopathy.

Quality of diabetes services

The Thai UC scheme regularly monitors indicators related to diabetes services. For many years, these indicators have been presented in the annual report of the UC scheme as a time trend, from 2005 to 2013.[13] The UC scheme shows positive outcomes for patients with diabetes. The accessibility of health services for patients with diabetes increased from 55.0% in 2009 to 95.7% in 2013.[13] The rate of complications for patients with diabetes has decreased for most organs: eye complications decreased from 4.2% in 2011 to 3.5% in 2013 and cardiovascular complication decreased from 1.3% to 0.9%; however, renal complications increased from 5.4% in 2011 to 8.2% in 2013. The fatality rate for patients aged ≥15 years with diabetes with or without complications decreased from 3.58% in 2005 to 2.23% in 2013.[13]

The outcomes of diabetes are attributable not only to factors within the health sector but also to other factors, including good design of the UC scheme, effective health-system strengthening, and a conducive environment to combat risk factors related to diabetes.

- Effective design of the UC scheme requires a comprehensive benefit package, including promotion, prevention, curative and rehabilitation services, with an emphasis on health security of the population, and accessibility to quality of care without financial risk, while also promoting equity and efficiency of the system.
- The capacity of the health system to deliver services is crucial, otherwise the benefit package of the UC scheme will not be available in real practice. This requires a well-

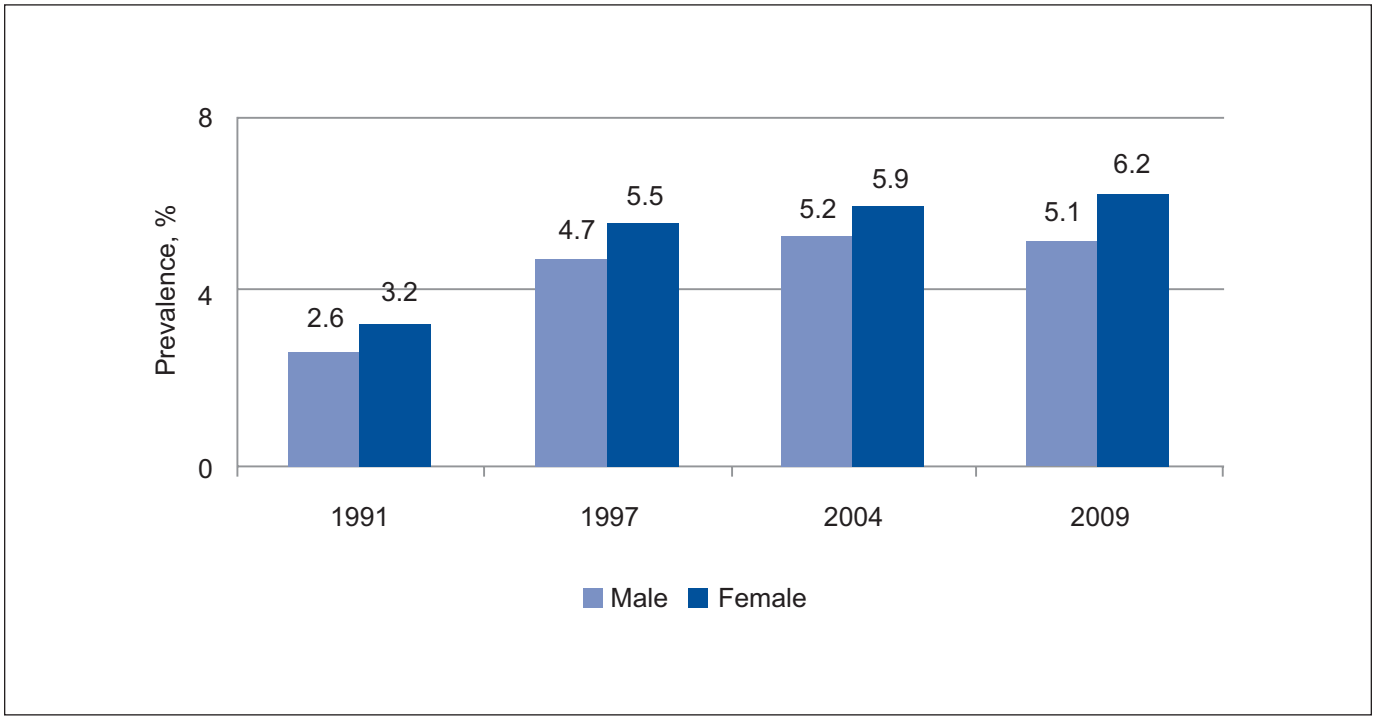

Fig. 1. Prevalence of diabetes in the male and female Thai population aged 18–59 years, 1991–2009[32–35]

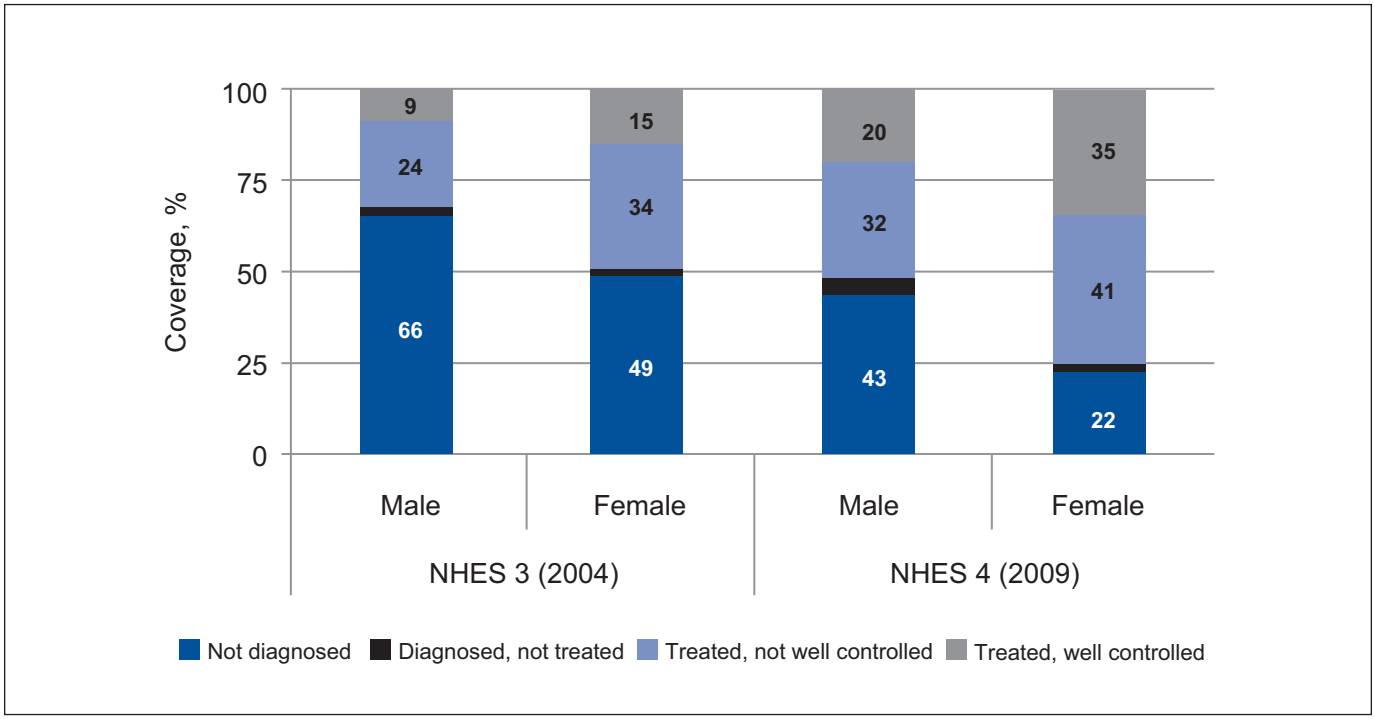

Fig. 2. Effective coverage for diabetes by sex, 2004 and 2009[32–35]

functioning primary health-care delivery system, with a proper mechanism for referral to a higher level of care when complex interventions are needed, and referral back to community level when the patient's condition is stable.

- Innovative financing of a "sin tax" (for products that are harmful to health, such as alcohol and tobacco), managed by the Thai Health Promotion Foundation, provides additional funding for health promotion and addressing social determinants of health, and for community and civil society activities.

Last but not least, population awareness and expectation is another key factor that implicitly urges the health system to be more responsive in relation to the quality of services. The Community Health Fund established by the UC scheme has raised public awareness and collaboration of community and civil society.[22]

CONCLUSION

Universal health coverage as an umbrella for improving diabetes services

The context of UHC is extremely diverse in the 11 countries of the WHO South-East Asia Region. It ranges from an overwhelmingly public system like that in Bhutan to the predominant private-sector financing in India. It is recommended that, in order to improve coverage of diabetes care and prevention, it is essential for countries in the WHO South-East Asia Region to include NCD services, especially for major NCDs like diabetes, in their UHC strategies. Thailand, for instance, has shown that the comprehensive benefit package should be included and managed effectively using a specific protected budget. The Thai UC scheme has set up a flexible budget to promote specific activities for diabetes screening and rehabilitation.

Furthermore, progress should be assessed and monitored regularly. An important dimension of monitoring and evaluation is to ensure inclusion of equitable access to health services, adequate financial risk protection, quality of services and satisfaction among both patients and providers.

More money for health as a whole and for health promotion and disease prevention

The current situation of health expenditure in the WHO South-East Asia Region is inadequate, not only for health services as a whole but also for health-promotion and public health services. It is inadequate now to achieve a good response to the current situation for NCDs and will be even more inadequate in the face of the expected rise in NCD prevalence in the near future. Therefore, there is an urgent need for greater political commitment to investing more in the health sector – greater efforts at prevention now will reduce the expenditure on treatments that is necessary in the future. An innovative health-financing system, as appropriate with the country context, is another policy recommendation. Furthermore, community engagement, with the Community Health Fund as an example, can be an exciting option, not only to mobilize more resources but also to empower the community and build up more ownership by the community.

More health for money: harnessing efficiency gains by applying a focus on primary care and investing in prevention

As experience from Thailand illustrates, expansion of the infrastructure and facilities for diabetes in the primary care setting, with emphasis on measures for prevention, especially health-promotion measures for diabetes, is the most cost-effective approach. The primary care focus must include an efficient referral mechanism, both to refer to a higher level of care when needed and to accept referrals back from secondary care for patients whose condition is stable. The use of VHVs is one policy recommendation, not only for improved efficiency but also for community participation and engagement.

It is challenging, but not impossible, to ensure effective coverage of diabetes services and to monitor the quality of these services. However, it does require commitment and attention from policy-makers and practitioners and sufficient support from an adequate information system.

Health-system strengthening

Ultimately, it is essential that Member States of the WHO South-East Asia Region should concentrate on health-system strengthening. The national health development plan should include investment in expansion of the health infrastructure to rural and remote areas; in provision of committed, trained and dedicated health workforces; in the availability of quality medicines and equipment; in adequate strengthening of the health information system; and in development of a sustainable and equitable health-financing strategy. Crucially, the action plan for prevention and control of diabetes and other NCDs should be in line with the strategy for health-system strengthening.

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