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# Universal health care in Thailand:

## Concerns among the health care workforce

## Authors

Dr Stian H Thoresen (B.A. PGDip. PhD), Research Associate, Centre for Research into Disability and Society within the Curtin Health Innovation Research Institute, Curtin University.

Dr Angela Fielding (B.A. BSocWk. PhD), Senior Lecture & Head of Social Work, School of Occupational Therapy and Social Work and Curtin Health Innovation Research Institute, Curtin University.

## Address for correspondence

Dr Stian H Thoresen, Research Associate, Centre for Research into Disability and Society within the Curtin Health Innovation Research Institute, Curtin University, GPO Box U1987, Perth, Western Australia 6845, Australia. Tel: + 61 (0)8 9266 3745; Fax 61 (0)8 9266 3636; email: S.Thoresen@curtin.edu.au

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#### Abstract

**Objective:** To investigate the impact of the universal health care policy from the perspective of Thai health care professionals.

**Methods:** Semi-structured interviews with purposively selected health care professionals and key informants.

**Results:** Health care professionals at public hospitals, particularly in rural areas, have experienced up to a doubling in the number of daily out-patients; many with superficial symptoms. While the improved access to health care provisions was welcomed, questions regarding the appropriateness of seeking medical advice were raised. Concern regarding equity: between the universal health care policy and two parallel public health cover schemes; rural and urban areas; and the public and private sector also emerged. There are potentials for health care professionals to congregate in the private sector and urban areas where workloads are perceived to be less demanding.

**Conclusions:** The general perception of the health care professionals interviewed suggests that although increased access and health equity was welcomed, this policy has had undesired effects and exacerbated rural-urban and public-private tensions. Universal coverage increased access to health care. However, equity may be further enhanced by consolidating the three public health covers into a single scheme and develop a parallel private income protection insurance scheme.

## Introduction

Thailand's introduction and rapid implementation of a universal health care coverage (UC) has been hailed as an example of "big bang" health reform [1]. Access to health care is viewed as a fundamental human right as outlined in the Universal Declaration of Human Rights [2]. While there are varied definitions of health, the World Health Organization (WHO) in its constitution from 1946 adopted an inclusive framework and defined health as "a state of complete physical, mental and social well-being" [3]. This view has been encapsulated in Thailand with the 9<sup>th</sup> National Economic and Social Development Plan which took place from 2002 to 2006. It defined health as "the state of physical, mental, social and spiritual well-being that is interrelated holistically" [4]. While universal health care intuitively would embrace these inclusive and broad views of health, the implementation of health care policy is usually viewed within the narrow concept of treating infirmity and disease. However, even achieving this narrow concept of health appears to be a challenge, for developed and developing economies, as it would require universal health care coverage. The WHO defines universal coverage as "access to key promotive, preventative, curative and rehabilitative health interventions for all at an affordable cost, thereby achieving equity in access" [5].

The Thai Rak Thai government implemented the tax-funded UC on a populist platform in October 2001 [1, 6-13]. Initially, this policy gave general access to public health service providers with a flat co-payment of 30 Thai baht (US\$0.70-0.80), although this co-payment was later abolished. While there are limitations to services and medications that are included in the UC, the cover is expanding, with for example the inclusion of antiretroviral HIV/AIDS medications in 2003 [14]. It has been noted that the UC and the policies leading up to the UC: have increased access [11, 15, 16]; increased equity [11, 15, 16]; reduced cost [11, 15, 16]; and strengthened provision of primary health care [17]. This paper investigates some

important caveats in this policy, as subjectively perceived by health care professionals through a qualitative study. It is argued that the UC has improved equity in access to health care providers, but not necessarily in health care provision and medical treatment. Furthermore, this policy has exacerbated rural-urban and public-private inequities.

## Background

The various health care covers that existed prior to the UC had several limitations as 25% [18] to 30% [1, 6, 8] of the population were not covered and would have to pay all health care costs in full. A number of studies have showed that health care inequities continued post-UC [16] and 4.5% of the population are still without health covered [1]. These 2.8 million people are generally unregistered or waiting to establish eligibility, often with an Indigenous or alien background, although empirical research has also uncovered Thai nationals meeting the UC inclusion criteria without any form of health coverage [16]. Although the UC replaced previous health care policies which were ineffective and underfunded, the UC has also been criticised. Underfunding and the classifications of health care institutions for funding allocations created both winners and losers. In particular, secondary health care providers are reported to have benefitted from this arrangement while tertiary university hospitals have received insufficient funding to meet the cost of more complex medical treatments [1, 19]. While the principles of the UC have been applauded, modifications in the implementation phases have 're-shaped' the policy with some policy goals being abandoned altogether [20]. The UC has undoubtedly achieved an expansion of health care coverage to the majority of those previously without cover, although it should be noted that reviews of the policy have mainly focused on economic and fiscal implications [13, 20, 21]; cost to health care institutions [18]; cost to health care consumers [15, 16]; and coverage and access to health care [12, 13, 15, 16]. This paper reviews the UC in Thailand with regards to the impact on the health workforce, as perceived by health care professionals themselves. It includes their

perceptions regarding the UC; its impact on their working conditions, workloads and the provision of care. While investigation into the views of policy makers and senior health care professionals with regards to the implementation of the UC has been carried out [13, 20] this paper presents the subjective views of a mixture of health care professionals following the establishment of the policy. This paper presents the views and concerns of a small purposive sample, which add to our understanding of the UC, although they cannot be interpreted as representative of all Thai health care professionals.

### Methods

Semi-structured interviews with health care professionals and key informants were carried out from late 2005 to early 2007. Participants were purposively selected through a combination of snow-ball and convenience sampling. Field visits to rural District Hospitals in four provinces took place, as well as visits to Central Hospitals in three urban areas. Most of the rural District Hospitals could be classified as secondary health care providers, although interviewees included staff from primary health care centres, referred to as contracted units for primary care in the Thai context. The hospitals in the urban areas included Tertiary University Hospitals and Provincial Hospitals that could also be viewed as either secondary or tertiary health care providers, as some of these Provincial Hospitals had more comprehensive medical capacities than others. Staff providing primary health care in urban areas and staff at private health care facilities were also interviewed. In total, 33 health care professionals were interviewed, as outlined in Table 1. In addition, five key informants were interviewed: three civil servants/government officers; one health researcher; and two persons from the non-government sector; including a person from an international non-government organisation engage with health care promotion.

	Bangkok Metropolitan	Central	North- Eastern	Northern	Western	Total
Physicians	5	1	-	2	-	8
Dentists	-	-	2	1	-	3
Nurses	8	-	6	4	1	19
Radiologist	-	-	-	2	-	2
Pharmacists	-	-	-	1	-	1
Total	13	1	8	10	1	33

 Table 1: Interview participants: Profession and province of residence

This research investigated the subjective perceptions among the participants, as perceptions influence behaviour – including decisions related to migration [22]. The perceived impact of the UC health reform among health care professionals regarding their working conditions, provision of health care and health care services were explored. This paper makes a more idiographic representation of the views and concerns of the health care professionals who were interviewed. In particular, it is acknowledged that half of the participants were residing in either the Northern or North-Eastern provinces; provinces with a higher proportion of poor people [15, 20]. Thus, while generalisations based on this study are not warranted, the concerns raised enhance our understanding of the potential ripple-effects of the UC, especially on those with least resources.

## Results

## Increased workloads

There was consensus among the interviewees that health care and access to health care are fundamental human rights and they agreed with this underlying principle of the UC. However, it was indicated that public hospitals were both understaffed and underfunded to deal with the increases in health care consumption induced by the UC. Participants indicated that many public hospitals, particularly District Hospitals in rural areas, experienced up to a doubling in the number of out-patients. It was indicated by a physician currently working at a large public urban hospital but with previous work experience at a Provincial Hospital that he had difficulties coping with the increased workloads. The number of out-patients had increased from around 800 to 1600 per day at that Provincial Hospital.

This is consistent with the increase in per capita annual out-patient visits following the introduction of the UC. In 1996 Thais, on average, made 2.87 out-patient visits per year which decreased to 2.84 visits in 2001. During the first two years of the UC, the number of per capita out-patient visits had increased to 3.62; an increase of 27%. Reviewing specifically the number of out-patients visits requiring consultation with a physician, in accordance with the Health and Welfare Survey, this increased from 198,650,000–208,070,000 in 2001 to 247,500,000–258,390,000 in 2003; equating to 2,443 to 2,795 additional physicians being required over this two-year period [14].

The staff at a rural District Hospital in Northern Thailand indicated that the number of daily out-patients had increased from 150-200 to 250-300 patients a day. This hospital used to have three full time physicians, although one had recently resigned to open a private clinic. This physician, interviewed three months after vacating his post at the District Hospital, indicated that he believed the UC was flawed and he did not wish to work in the public sector any longer. He indicated that he felt the public health care system now had become unsustainable; was underfunded; that the quality of medication provided was poor; and that health policy had become political rather than policy focused.

## Quality

A nurse working at a metropolitan private health institution, recognising the improvement in access to health care, stated:

"The majority of Thai people are poor. Equal health care service at every level is difficult to provide, but now it is better than before as the government has many programs to help people. However, it is still not very good quality and not enough for everyone"

Another nurse working at a public metropolitan hospital outlined the specific differences between the services which would be provided for a patient with gallstones:

"If the patient has UC card or public health insurance provided by the government, he or she will be recommended to have an operation [which is major surgery] to remove the gallstone. He or she will have to stay at the hospital after surgery to recover. But if the patient has sufficient private funds he or she can have micro surgery. It is a special operation that will leave a small wound. The patient can go back home on the same day. This surgery is more than 80,000 baht [US\$1,867-2,133]."

It was illustrated by a physician working at a large public metropolitan hospital that the UC has several limitations which impact on the availability of health care. He indicated that one of the benefits of the UC was that people with low incomes now have better health care services. However, not all patients, even those with severe illness, were able to receive treatment due to budget limitations and capped government funding. He further indicated that he believed that services offered were better prior to the introduction of the UC. A nurse, with experience from both the public and private sector, indicated that although the UC enabled more people to access health services, the quality of health care offered under the UC and the medications provided are:

"Not very good quality and not enough for everyone".

Concern with the quality of the medication and services offered as part of the UC was also voiced by a key informant working for a health promotion NGO. She indicated that the UC has a "double standard" and that people who can afford better health services do not trust the quality of the medications under the UC. The chief of the pharmaceutical unit at an urban public hospital was reluctant to elaborate on the strengths and weaknesses of the UC. She indicated that her hospital provided the same medications, generally generic, independent of what health cover the patients had. She did concede, however, that there were significant budget constraints and that her hospital sought donations and applied for additional budget funds to meet demand. This issue was elaborated on by a nurse at a rural hospital within the same jurisdiction. Particularly with regards to antiretroviral drugs for HIV/AIDS patients, hospitals were given limited supplies. If the allocated medications were insufficient, they would have to approach other hospitals. Generally, as all public hospitals were facing the same dilemma, they would share or trade surplus medications.

#### Curative versus preventative

While the significant increase in numbers of people seeking medical advice could be attributed to the former unaffordability of health care, several health care professionals indicated that people were inappropriately seeking medical advice and were trying to maximise their benefits from the UC. It was also indicated, anecdotally, that people would tell each other what sorts of samples, such as medications, vitamin supplements and bandages they had received at different hospitals and would encourage each other to ask for free samples when visiting health facilities. Health care professionals commonly described a number of their patients as not needing medical attention. A nurse at a public rural hospital indicated that some people came to the hospitals with symptoms reflecting fatigue after manual labouring. They would seek medical advice for sore muscles, requiring rest and not medical attention. A physician at a large public metropolitan hospital indicated that over half of his patients in the Emergency Department were not requiring emergency attention. Complaints from patients were also common as many of these patients did not understand that priority was given based on medical need rather than how long people had been in the queue.

Some interviewees also suggested that the UC created a shift away from primary, or preventative, health care. In addition to the public seeking treatment and medications for any minor symptoms as outlined above, people's attitudes regarding looking after their own health had changed. It was outlined by two dentists working at an urban university hospital, who provided free dental care under the UC, that their patients no longer took care of their teeth. Rather, they would come and see them with an expectation that they would "cure their teeth". Several other interviewees indicated that the public did not have a good understanding of primary and preventative health care, did not look after their health, and had a general attitude that health care professionals would take care of their health care needs. Other health care professionals concurred. It was indicated that the understanding of preventative health and healthy living was poor, and the UC created a mentality that people did not need to look after their own health.

## Discussion

#### Medical care

It can be argued that health care in Thailand is being hollowed out. As illustrated above, the increases in health care demand, often related to minor symptoms according to the interviewed health care professionals, are absorbing resources. A survey from 2006 among the urban poor in North-Eastern Thailand indicated that 52.5% of participants had increased their health care consumption following the introduction of the UC [16]. However, the same

study uncovered caveats with regards to the quality of care: While the participants of that study indicated satisfaction with the health services, concerns about the limited opening hours – or lack of access outside office hours – in addition to income loss were outlined [16]. It should be recognised, however, that the UC has made a great achievement in reducing the "poverty impact" – the proportion of people pushed under the national poverty line as a result of out-of-pocket health care expenditure, particularly in the Northern and North-Eastern provinces [15].

Concern with regards to the quality of care provided under the UC was also raised. Another indication of this mechanism, perhaps, is the increased proportion of private health care expenditure among the more affluent layers of society if this is a result of a distrust of the public health schemes. Somkotra and Lagrada found the proportion of "catastrophic health care expenditure" to be highest among the highest earning quintile in three biennial surveys from 2000 to 2004 [15]. However, this finding may also indicate that although the UC in theory allows universal access to health care, more costly medical care is not universally provided as a result of inadequate funding. A Hospital Director at a rural District Hospital indicated that she had to take great care due to budget restraints before referring any patients to the Provincial Hospital. Her hospital had only 10 beds and could not provide tertiary or specialist health care. However, that hospital would be liable for any costs by her patients if transferred to another hospital for more extensive medical treatment.

Tertiary hospitals, on the other hand, are also under fiscal pressure as a result of the increased number of people with complex medical needs who have registered at their hospitals. While Tertiary hospitals will provide tertiary care for anyone referred through the health care provider the recipient is registered with, a disproportionate number of people with complex medical needs were found to register with Tertiary health care providers as people identified these intuitions to provide these services [19]. Furthermore, while 73% of the UC funding is

allocated to curative health, only 4% of this allocation is earmarked for costly procedures such as chemotherapy and heart surgery [12].

#### Primary health care

Many of the interviewed health care professionals believe that the UC has a detrimental effect on health education and primary health care. This relates to both the shift in attitude among the general population as a result of free health care and the shift in resources from primary health care to symptomatic treatment at health institutions. It was illustrated above that some health care professionals felt that the general population did not feel they needed to care for their own health as health care professionals could now do this free of charge. In addition, as outlined by staff at an urban primary health clinic, the budgets for primary health care are the purview of the Hospital Managers and often suffer due to the increased costs associated with the UC. As a countermeasure, health volunteers are working to promote primary health care in the communities. It has been reported that there are more than 800,000 health volunteers in Thailand. These are not necessarily professionals, but include volunteers and monks at Buddhist temples with more than 800 temples participating in Thailand's Health Promotion Temple project promoting physical and mental well-being [23]. At the opposite side of the spectrum, Thai physicians are arguably overspecialised [24, 25] as almost 52 percent of Thai physicians in 1996 were specialists [26] and more recent figures suggest that as many as 72.5% of medical doctors are specialists [14]. Despite this, it is recognised that Thailand's UC has improved health care with a "reasonable quality of care ensured" [27]. The question remains whether this policy is sustainable and will continue to improve health care or whether the concerns and inadequacies, as perceived by the health care professionals participating in this research, will undermine this policy and the public health care system in Thailand.

## Sustainability

The long-term fiscal sustainability of the UC is unclear although the International Labour Organization (ILO) concluded in its 2004 review on the long-term financial sustainability of the policy that the "UC scheme has been a success". However, it was also noted that the health care costs in Thailand had increased by 20-25 billion baht (US\$583-667 million) annually and the UC "will remain vulnerable to budgetary competition and political manipulation rather than evidence on utilization and cost of service" [21].

Following the ILO review of the UC, the military appointed government abolished the 30 baht co-payment after the 2006 military coup. This, concurrent with the increases in the numbers of people seeking medical advice, has led to the realisation that the UC is unsustainable as no additional revenues have been raised to cover the increasing costs, while benefits covered under the scheme have been extended. There are current calls to reintroduce the co-payments when seeking medical advice, which should be proportional to the services being sought [28].

The sustainability of a health care system is dependent upon the availability of both financial and human resources. Although Thailand has historically had an exodus of physicians migrating overseas, particularly to North America [25, 29-32], current concern relates to the internal inequity and lack of medical doctors in rural areas [30, 33-36]. Physicians, in particular, have been found to leave their positions in the compulsory public service for newly graduated medical doctors to seek employment in the private sector. This was particularly common prior to the Asian Financial Crisis in the late 1990's, but the trend reemerged at the beginning of the new century [25, 29, 32, 37]. It should be noted that this research did not explore medical tourism, which is arguably an integral component of the private health care industry, and may be a confounding factor for inequities in human resources for health.

Insufficient regulation of human resources for health leading to an inequitable internal distribution of health care professionals, between the public and private sector and the urban and rural areas, can render the poor without access to essential health services [32]. While special allowances, including hardship grants, are in place to compensate health care professionals working in remote and rural areas, it has been argued that these policies do not ensure sustainability of the health care system but may enhance tensions. Hospitals only 10 or 20 kilometres apart may have a five- to tenfold differential in additional allowances [30] and hospitals classified as rural institutions but in close proximity to urban centres are benefiting from this policy [38]. In fact, it has been argued that the special allowances for physicians working in rural areas enables individuals to leave the three year mandatory public service and pay the exit fees earlier [39].

## Merging public health covers

There are currently three public health care covers in Thailand [12]. The UC replaced several previous health care arrangements which were considered ineffective. However, the most costly and inefficient cover, the Civil Servant Medical Benefit Scheme (CSMBS), for public servants and their dependants, is still running parallel to the UC. The CSMBS covers about 3 million civil servants and 4 million dependants [21]. Although the benefits provided for recipients of the CSMBS have been scaled down, it is still generous. The generosity of the CSMBS can be viewed as a fringe benefit for the generally poorly paid civil servants [40]. In 2002 the per capita annual expenditure in terms of percentage of average public health expenditure per capita was 159% for the CSMBS and 58% for the UC [21]. Thus the CSMBS is roughly three times as costly as the UC.

The third public health cover is the Social Security Scheme (SSS) which covers employees in the private sector and is based on insurance principles and risk management. As such, this exclusive scheme provides the most sustainable and cost-effective cover. In addition to

providing health cover the SSS also has a social security component, as the name suggests, providing limited income protection and life insurance. Members of the SSS share the insurance premiums with their employers. The introduction of the UC, particularly after the discontinuation of the 30 baht co-payment for service, may lead individuals to opt out of the SSS and utilise the UC.

Overall satisfaction with the UC, particularly among the poorer segments of the population, has been overwhelmingly positive. However, user-fees – now abolished – and the lack of income protection have been cited as inadequacies [16]. Opting out of the SSS reduces the income security as individuals cannot be covered by both the UC and SSS and the membership databases are cross-checked. As such, those individuals who opt out of the SSS to avoid paying the premiums and have health cover under the UC are not simply changing health cover but are also opting out of the social security component. In terms of increasing equity, it may be more cost-effective and egalitarian to merge these three health covers into a single public policy. Private health cover. Merging these three covers into a single scheme can also reduce the administrative costs of running three parallel public health covers.

## Conclusion

This paper has presented subjective perceptions and attitudes among the health workforce in Thailand. Anecdotal evidence from this research suggests that current health care policy is creating additional workloads for health care professionals in the public sector. This has the potential to push more health care professionals out of the public sector. While the UC meets the WHO's definition of universal access to health care, this paper questions the equity in treatment post-access. Further research into the equity in access to complex, or tertiary, medical care in the UC is required. This qualitative study argues that the UC has led to a hollowing-out of the health care system, with its emphasis on patient demand for medical

care at the expense of a planned three tiered health care system based on needs for health education and primary health care; secondary medical care; and complex tertiary medical treatment. While the UC has enabled Thais to access health care service, concerns regarding the equity of the UC were outlined by research participants. While the equity of the UC policy will be improved by increased funding, consolidating the three public health covers into a single scheme, uniform in funding, access and medical care, may further enhance equity.

#### References

- [1] Hughes D, Leethongdee S. Universal coverage in the land of smiles: lessons from Thailand's 30 baht health reforms. Health Affairs 2007;26(4):999-1008.
- [2] United Nations. Universal declaration of human rights; 1948, http://www.un.org/Overview/rights.html.
- [3] World Health Organization. Constitution of the world health organization, http://www.who.int/governance/eb/constitution/en/index.html;2006.
- [4] Wilbulpolprasert S, Siasiriwattana S, Ekachampaka P, Wattanamano S, Taverat R.
   Thailand health profile 2001-2004. Bureau of Policy and Strategy, Ministry of Public Health, 2004.
- [5] World Health Organization. Sustainable health financing, universal coverage and social health insurance; 2005. (http://www.who.int/health\_financing/documents/cov-wharesolution5833/en/index.html).
- [6] Tangcharoensathien V, Wilbulpolprasert S, Nitayaramphong S. Knowledge-based changes to health systems: the Thai experience in policy development. Bulletin of the World Health Organization, 2004;82(10):750-756.
- [7] Suraratdecha C, Saithanu S, Tangcharoensathien V. Is universal coverage a solution for disparities in health care? Findings from three low-income provinces of Thailand. Health Policy 2005;73:272-284.
- [8] Tangcharoensathien V, Tantivess S, Teerawattananon Y, Auamkul N, Jongudoumsuk
   P. Universal coverage and its impact on reproductive health services in Thailand.
   Reproductive Health Matters 2002;10(20):59-69.
- [9] Pannarunothai S, Patmasiriwat D, Srithamrongsawat S. Universal health coverage in Thailand: ideas for reform and policy struggle. Health Policy 2004;68:17-30.

- [10] Suraratdecha C, Okunade AA. Measuring operational efficiency in a health care system: a case study from Thailand. Health Policy 2006;77(1):2-23.
- [11] Prakongsai P, Limwattananon S, Tangcharoensathien V. The equity impact of the universal coverage policy: lessons from Thailand. Advances in Health Economics and Health Services Research 2009;21:57-81.
- [12] Teerawattananon Y, Tangcharoensathien V. Designing a reproductive health service package in the universal health insurance scheme in Thailand: match and mismatch of need, demand and supply. Health and Policy Planning 2004;19(1):i31-i39.
- [13] Teerawattananon Y, Russell S. A difficult balancing act: policy actors' perspective on using economic evaluation to inform health-care coverage decisions under the universal health insurance coverage scheme in Thailand. Value in Health 2008;11(1):S52-S60.
- [14] Pachanee CA, Wibulpolprasert S. Incoherent policies on universal coverage of health insurance and promoting of international trade in health services in Thailand. Health and Policy Planning 2006;21(4):310-318.
- [15] Somkotra T, Lagrada L. Payments of health care and its effect on catastrophe and impoverishment: experiences from the transition to universal coverage in Thailand.
   Social Science and Medicine 2008;67(12):2027-2035.
- [16] Coronini-Cronberg S, Laohasiriwong W, Gericke CA. Health care utilisation under the 30-Baht Scheme among the urban poor in Mitrapap slum, Khon Kaen, Thailand: a cross-sectional study. International Journal for Equity in Health 2007;6(11).
- [17] Kruk ME, Porignon D, Rockers PC, Van Lerberghe W.The contribution of primary care to health and health systems in low- and middle-income countries: a critical review of major primary care initiatives. Social Science and Medicine 2010;70(6):904-911.

- [18] Ngorsuraches S, Sornlertlumvanich A. Determinants of hospital loss in Thailand: experience from the fist year of universal coverage health insurance program. Health Care Management Science 2006;9(1):59-70.
- [19] Khwankhom A. Debt woes piling up for Siriraj. The Nation 2006;March 20:3A.
- [20] Hughes D, Leethongdee S, Osiri S. Using economic levers to change behaviour: the case of Thailand's universal coverage health care reforms. Social Science and Medicine 2010;70(3):447-454.
- [21] International Labour Organization, Thailand: technical note to the government: financing universal health care in Thailand, Geneva: International Labour Office; 2004.
- [22] Lee ES. A theory on migration. Demography 1966;3(1):47-57.
- [23] Treerutkuarkul, A. Thailand's unsung heroes. Bulletin of the World Health Organization 2008;86(1):5-6.
- [24] Srivanichakorn S, Dormael MV. Conditions, constraints, and strategies for increased contribution of general practitioners to the health system in Thailand. Human Resources Development Journal 1998;2(1).
- [25] Wilbulpolprasert S, Pengpaibon P. Integrated strategies to tackle the inequitable distribution of doctors in Thailand: four decades of experience. Human Resources for Health 2003;1(12).
- [26] Milintangkul U. Equivalence determination of qualifications and degrees for education and training of health professions in Thailand. Human Resources Development Journal 1997;1(2).
- [27] Garrett L, Chowdhury AMR, Pablos-Méndez A. All for universal health coverage. The Lancet 2009;374(9697):1294-1299.

- [28] The Nation. Editorial: free healthcare not sustainable. January 7, 2008.http://www.nationmultimedia.com/2008/01/07/opinion/opinion\_30061344.php.
- [29] Wongwatcharapaiboon P, Sirikanokwilai N, Pengpaiboon P. The 1997 massive resignation of contracted new medical graduates from the Thai Ministry of Public Health: what reasons behind? Human Resources Development Journal 1999;3(2).
- [30] Wibulpolprasert S. Inequitable distribution of doctors: can it be solved. Human Resources Development Journal 1999;3(1).
- [31] Mejia A, Bubb B, Escudero JC, Coates B, Pizurki H, RoystonE. Multinational study of the international migration of physicians and nurses: country specific statistics.Geneva: World Health Organization; 1976.
- [32] Wibulpolprasert S, Pachanee CA. Pitayarangsarit S, Hempisut P. International service trade and its implications for human resources for health: a case study of Thailand. Human Resources for Health, 2004;2(10).
- [33] Suriyawongpaisal P. Potential implications of hospital autonomy on human resources management: a Thai case study. Human Resources Development Journal 1999;3(3).
- [34] Sirikanokwilai N, Wibulpolprasert S, Pengpaiboon P. Modified population-tophysician ration method to project future physician requirement in Thailand. Human Resources Development Journal 1998;2(3):197-209.
- [35] Jindawatana A, Milintangkul U, Rajataramya B, Pengpaiboon P. Future policy options for HRH production in the Ministry of Public Health, Thailand. Human Resources Development Journal 1998;2(3).
- [36] Chunharas S. Human resources for health planning: a review of the Thai experience.Human Resources Development Journal 1998;2(2).
- [37] Kittidilokkul S, Tangcharoensathien V. Manpower mix in private hospitals in Thailand: a census report. Human Resources Development Journal 1997;1(2).

- [38] Thoresen SHY, Fielding A. Inequitable distribution of human resources for health: perceptions among Thai healthcare professionals. Quality in Primary Care 2010;18(1):49-56.
- [39] Thoresen SHY. Health care challenges and human resources for health in Thailand: migrations, social and political tensions, and human rights implications. Perth: Curtin University of Technology; 2008.
- [40] Tangcharoensathien V, Supachutikul A, Lertiendumrong J. The social security scheme in Thailand: what lessons can be drawn. Social Science and Medicine 1999;48(7):913-923.